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The Phrase Structure of Quantifier Scope

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The Phrase Structure of Quantifier Scope

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by

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PUBLICATIONS AND PRESENTATIONS

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ABSTRACT OF THE DISSERTATION

The Phrase Structure of Quantifier Scope

by

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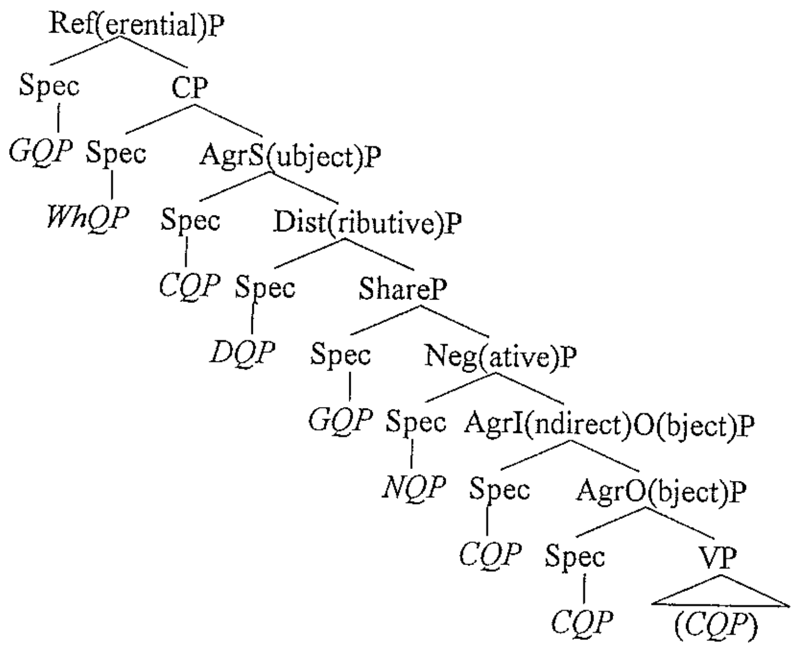
This dissertation presents a novel theory of quantifier scope in LF within the framework of Generative Grammar, incorporating assumptions from Chomsky's (1992) Minimalist Program. In the standard theory of scope (May 1985), all quantifier phrases (QPs) have access to the same scope positions; scope is uniform across QP-types. This theory greatly overgenerates. Judgments of relative scope show that different QPs are assigned scope differently, and license different grammatical processes that are related to scope (such as pronominal binding, polarity licensing, etc.)

The distinctive feature of the theory developed in this dissertation is that scope positions are assigned as a function of QP-type. Subclasses of QP's (QP-types) encode distinctive semantic properties via a set of morphological features. Each QP-type has a designated scope position in the Specifier of the functional projection where its features can be checked. Checking takes place by movement: in LF in languages like English; before Spell-out in languages like Hungarian.

This proposal is based on the theory of QP-types introduced by Szabolcsi (1995a). Szabolcsi develops the standard DRT typology in terms of a three-way distinction: (i) Group-denoting QP's (GQPs): *two men, ... , the men, ...* , which introduce individual (group) variables; (ii) Distributive QP's (DQPs): *every man, each man,* which introduce set variables; and (iii) Counting QP's (CQPs): *few men, more than five men, at most five men, more men than women, ...*: these do not introduce variables, but are interpreted as generalized quantifiers. Two further types are distinguished, as standardly done: Negative QP's (NQPs), and Wh-phrases (WhQPs).

The following hierarchy of functional projections, and corresponding scope positions, are proposed:



Four additional topics are addressed in this dissertation: (i) Subjacency effects with DQPs and GQPs; (ii) distributive readings with DQPs and GQPs; (iii) the relation between negation (and NQPs) and DQPs; (iv) the phenomenon of pair-list (or family of questions) readings.

CHAPTER 1

LF THEORIES OF SCOPE

0 Introduction

In this chapter I present an overview of three LF theories of scope. Theories of this type assume the existence of a syntactic level of derivation, L(ogical) F(orm), serving as the syntax-semantics interface, which is distinct from other levels commonly assumed by generative theories of syntax. One of the properties of LF is that scope relations can be defined at this level. I review the basic assumptions and theoretical goals of this type of approach in section 1.

Next, in section 2, I consider what linguistic facts motivate taking the LF way to scope. In particular, I review the basis for the systematic correlation between scope assignment and syntactic structure which LFTSs predict.

In section 3, I consider how existing LFTSs differ based on the theoretical desiderata of section 1 and some of the empirical facts reviewed in section 2 (I do not attempt to show how LFTSs account for all of the facts of section 2). I cover three main approaches: May's (1985); Aoun&Li (1989, 1993); and Hornstein (1994). The first two are within the tradition of *LGB* and *Barriers*; the last is within the Minimalist program. These proposal will be first overviewed and then briefly evaluated.

In the following chapters, I will present a new theory of scope in the LFTS tradition. The present chapter is intended both as an overview of the essential literature, and as an introduction to the theoretical proposal to be developed in the rest of this dissertation.

1 Defining LFTSs

The notion of 'LF theory of scope' (henceforth LFTS) was originally defined by the proposals of May (1977, 1985). In these important works, May outlined the overall approach and showed its feasibility in a *GB*-style theory of grammar.

LF is regarded as a syntactic level that interfaces to the semantic interpretation component. The standard reference for the latter is an appropriate type of intensional logic.

In logic, quantifiers are operators that apply to propositions, and that bind variables inside such propositions. In standard notation, the portion of a well-formed formula (logical expression) to which a quantifier applies is the scope of that quantifier. The logical notion of scope is therefore a simple notion with artificial languages.

The goal of LFTSs is to define a set G of operations that adjust syntactic phrase markers and yield representations that are isomorphic to sentences of logical languages. Rules of semantic interpretation can then apply compositionally (to the output of G) and assign the correct truth conditions. It is understood that G can often yield more than one output for a single sentence *s*; each output corresponds then to a distinct 'reading' of *s*. LFTSs, accordingly, interface between syntactic phrase markers and logical formulas. In so doing, they clarify the quantificational structure of natural language sentences.

LFTSs fulfill this task according to the principles listed below:

(1) **Scope positions**
If L is the LF representation of a sentence *s* containing a quantificational element α, the assignment of scope to α is represented as a relation between the thematic position of α and another position β in L, its scope position.

(2) **Scope chains**
When α and β are distinct, they are links of a chain. This type of chain is an Operator-variable chain.

(3) **Well-formedness conditions on scope chains**
The Operator-variable configurations that represent scope are subject to well-formedness conditions. Scope-assignment chains are subject to the same well-formedness conditions as syntactic chains.

The assumption in (3) is a fundamental claim of LFTSs, and represents a strong hypothesis about the interaction of semantic scope and syntactic structure. In LFTSs, scope is integrated into syntax: it is a syntactic phenomenon.

On the basis of these hypotheses, LFTSs provide the following definitions of scope relations between quantifier phrases (QPs):

(4) **Representation of relative scope**
The scope of a quantifier phrase QP_1 with respect to another quantifier phrase QP_2 is determined by c-command relations between the scope position assigned to QP_1 and that assigned to QP_2 at LF.

(5) **Scope ambiguity**
Given a sentence *s* containing QP_1 and QP_2, if speakers perceive the scope relation between QP*1* and QP*2* as ambiguous, either (i) two (or more) unambiguous LFs are derived, or (ii) an explicit principle of scope interpretation (Scope Principle) applies ambiguously to one LF derivation.

LFTSs differ with respect to how they implement the parameters in (1) through (5). This will be illustrated in section 3, where specific LFTSs will be compared.

2 Syntax-Semantics Interface Phenomena

LF theories of scope embody the claim that syntactic structure is directly relevant for the determination of scope. The basis for this claim is considered in this section. The facts that will be reviewed provide an initial set of generalizations against which LFTSs can be measured.

One type of motivation for LFTSs is that syntactic movement, though it might be driven by forces that are independent of scope, directly interacts with, and is relevant to, the determination of scope relations. I will examine some of the basic facts in 2.1 through 2.4. Another type of motivation is that syntactic relations or configurations that do not (necessarily) come about through movement equally determine scope relations. These will be reviewed in sections 2.5 through 2.9.

2.1 A'-movement and scope

A'-movement correlates with scope assignment. Take Wh-movement as an illustration. In languages like Germanic or Romance, where Wh-movement applies in the overt syntax, fronted Wh-phrases may (and typically do) gain wide scope interpretation over quantifiers in the clause they are preposed to. For example, in matrix Wh-questions with *who, what,* the fronted Wh-phrase can usually be construed as wide scope with respect to quantifiers like *every, most,* etc., even when these c-command the thematic position of the Wh-element. This is reflected in the interpretation of such questions: usually Wh-questions support an 'individual' answer. An individual answer consists in specifying one entity which fulfulls the argument role of the Wh-phrase. So, *What did everyone buy?* can be answered as: *—Madonna's last CD.* Similarly, *Who bought two books?* can be answered as: *—John did,* etc.

A'-moving XP to position Y implies that XP can be assigned Y scope. Thus, movement entails scope. But to some extent the relation goes also the other way. In some cases, if XP cannot, for semantic reasons, take Y scope, movement of XP to Y is blocked. This has been shown by Szabolcsi&Zwarts (1992) in their semantic analysis of the Weak-Island effects. The result of their investigation is that movement is not possible when the scope assignment which would result produces semantic incoherence. Consider the following illustration:

(6) a. How do you think I solved this problem?
b. * How do you regret that I solved this problem?
c. * How didn't you solve this problem?

As Szabolcsi&Zwarts explain, manners denote in join-semilattice domains: in these structures, only the 'join' operation (corresponding to set union) is defined. 'Referential' Wh-elements denote in richer domains (Boolean algebras), where in addition to join, the 'meet' and complement operations are defined (corresponding, for sets, to intersection and complementation). Thus, in a join-semilattice, if *x, y* belong to the domain, we are only assured that their join, or sum, exists in the domain; but if *x, y* belong to a Boolean algebra, their join, meet, and complements also do.

Taking scope over a (syntactic) domain D implies performing all the operators that occur in D. In (6b), containing a factive context, the computation requires performing the logical operation of set-intersection; in (6c), taking scope over negation requires performing complementation. Neither of these operations are defined in join-semilattices. A manner Wh-phrase cannot therefore take scope over the factive or negative islands in (6b-c).

Szabolcsi&Zwarts' conclusion is that in these cases, no movement is possible because no scope assignment is possible. In some cases, thus, there is a bi-directional relation between scope and A'-movement.

These observations point to one of the ways in which syntactic structure is relevant for scope. Sections 2.2, 2.3, and 2.4 will elaborate this theme further. These facts validate some of the basic principles of LFTSs. They however do not argue specifically for the existence of a level of LF (the facts can equally be captured by taking S-Structure as the syntax-semantics interface level, cf. Williams 1986).

2.2 A-movement and scope

Consider Raising constructions. These show that A-movement is relevant for scope, because quantificational arguments that have undergone syntactic raising may gain scope over the predicate of the clause they have raised to, despite the fact that they are not arguments of these higher predicates.

(7) a. Few hippogryphs_1 are likely t_1 to be captured.
b. It is likely that few hippogryphs will be captured.

The QP *few hippogryphs* in (7a) can be intepreted as wide scope with respect to the intensional predicate *be likely*. Accordingly, (7a) can be construed as: 'there exists a small number of hippogryphs, such that it is likely that they will be captured.' This interpretation does not seem natural in (7b): the latter example does not convey the (speaker's) implication that hippogryphs exist.

(8) a. Everyone seemed to someone to be spying for the Dean.
b. It seemed to someone that everyone was spying for the Dean.

The sentences in (8) provide another illustration. It is natural to construe (8a) to mean that we can find, for every person x in consideration, some (possibly different) y such that it seems to y that x is spying for the Dean (i.e. (8a) has the scoping *everyone>someone*). But this construal is not available in (8b), even though the assignment of thematic roles is the same in (8a,b).

We arrive at the following generalization: a QP that has undergone raising gaines scope over material that it c-commands (after raising); in particular, over predicates of which it is not an argument. A-movement extends scope, just like A'-movement does.

Consider now the Principle in (9):

(9) If QP_1 is an argument of predicate P, QP_1 takes scope over P.

This principle can be taken as an axiom of any theory of scope.

Adopting the theory of Case assignment in Chomsky 1992, the Axiom in (9) can be derived as a by-product of the generalization given above. As proposed in Chomsky 1992, subjects undergo movement to their Case position in Spec,AgrSP (=Spec,IP); objects raise to Spec,AgrOP (at least by LF). Evidence from scrambling languages (and other considerations) suggest that PP complements also move to Spec,AGRXP positions for Case/Agreement (cf. Pica & Snyder 1995 for an implementation of this suggestion within an LF theory of scope).

One more example of the relevance of Case-movement to scope is given by ECM constructions. The contrast below shows that the subject of the lower clause can extend its scope to the higher clause when it is Case-marked by the higher V, as in (10a). This is not generally true of subjects of complement clauses, as shown by (10b).

(10) a. Someone expected everyone to be spying for the Dean. [ok: *everyone>someone*]
b. Someone expected that everyone was spying for the Dean. [* *everyone>someone*]

Note that the proposed derivation of the principle in (9), as well as the discussion of the scope asymmetry provide an argument for the level of LF and thus for the LFTS approach.

2.3 Reconstruction of A-movement and scope

LFTSs (since May 1977) have also accounted for another property of raising constructions. An argument QP that has raised to a higher clause can still be interpreted in the position it occupied before raising. For example, (7a), repeated below, allows for an interpretation like (7b) where the subject QP is narrow scope with respect to the raising predicate. This can directly be accounted for on the assumption that QP is reconstructed inside the lower clause. Note however that scopal reconstruction cannot apply in (7c), a control structure. But here the subject of the matrix and the subject position in the embedded clause are not links in a chain.

(7) a. Few hippogryphs$_1$ are likely t_1 to be captured.
b. It is likely that few hippogryphs will be captured.
c. Few hippogryphs$_1$ are anxious PRO$_1$ to be captured.

These facts show that intermediate links and the foot of the chain can provide scope positions, and not just the head of the A-chain.

Similarly, in (11a), *someone* can be construed as narrow scope with respect to *every professor*; but this is not possible in (11b), a control structure.

(11) a. Someone$_1$ seems t_1 to hate every professor in this department [ok: *every>some*]
b. Someone$_1$ promised PRO$_1$ to attend every class [* every>some]

A theory of scope needs thus make provisions for reconstruction. LFTSs (and syntactic theories of scope in general) are able to correctly state the generalization governing these cases because they can discriminate between raising (which can be undone by reconstruction) and control. Unlike raising constructions like (7a), control structures, exemplified in (7c) and (11b), do not involve movement, hence are not predicted to manifest the same ambiguity. In (7c), *few hippogryphs* cannot be interpreted as narrow scope with respect to the predicate 'being anxious', and in (11b) *someone* cannot be construed as narrow scope to *every class.*

2.4 Reconstruction of A'-movement and scope

Reconstruction appears also be be available with A'-movement. A theoretically relevant case of reconstruction of Wh-phrases is considered in ch. 5. There I argue that the so-called 'family of questions' readings of sentences like *What did everyone buy for Max* (cf. May 1985) involve reconstruction of the Wh-phrase. Hornstein (1994) similarly assumes that reconstruction is available to QPs under these circumstances.

There are other cases where A'-reconstruction takes place. Consider VP-preposing. Reconstruction seems obligatory in this case. A sentence like the following appears to have only a *someone>everyone* construal, which implies that reconstruction of the moved VP must take place by LF[1]:

(12) ? Visit everyone, someone will.

Next, consider topicalization. Sentences like (13a) are ambiguous between an *every>some* scoping and a *some>every* construal. The existence of the former provides a further argument that reconstruction must be allowed to apply with A'-movement. However, only the *some>every* scoping is available for the left dislocation in (13b), which is structurally similar, but does not involve movement.

(13) a. Some student (or other), John proclaimed was flunked by every professor.
b. As for some student, John proclaimed he was flunked by every professor

2.5 Ellipsis and scope

An important argument for LFTSs is provided by VP-ellipsis, and in particular the related phenomenon of Antecedent Contained Deletion (henceforth ACD).

As argued by May, who originally pointed out the significance of this construction, ACD offers a powerful argument both for LF and for a rule that moves the whole QP to a higher scope position. VP-deletion is generally possible if neither the gap nor its antecedent VP c-commands

[1] Thanks to Dominique Sportiche (class notes, Winter 1995) for these examples. A peculiar thing with this type of sentences is that they don't seem to naturally allow for a distributive construal *everyone>someone*. Usually, distributive construals are taken as diagnostic of wide scope of the quantifier *every*. It would seem that (12) lacks the scoping that its S-Structure displays. In the theory to be presented in ch. 2, universal-distributive quantifiers like *every, each* are assigned a clause internal scope position where they check their distributivity features. The universal quantifier in (12) is sitting outside of this distributive-checking position. This suggests the hypothesis that in this structure the quantifier is unable to check its distributive feature in the appropriate position. Therefore the scoping *everyone>someone* is actually available; under this scoping the whole set of individuals that the quantifier talks about is taking wide scope. What is missing is a distributive construal, whereby the indefinite *someone* can co-vary with each individual in the domain of *every*. The theory of scope to be presented in ch. 2 will provide support for this analysis. .

the other. May assumes that VP gaps need to be 'filled' at the level of semantic interpretation by copying the VP they are anaphoric to, as in (14) below.

(14) a. John kissed Susan and Bill did [e], too
     b. John kissed Susan and Bill did [kiss Susan], too

This procedure yields an infinite REGRESS PROBLEM when the VP gap is contained inside a relative clause (as in (15a,b)). This shows that we cannot interpret quantificational elements *in-situ* (lest we incur the regress problem). Rather, a VP-internal QP like *everyone* in (15a), must be interpreted as if it were c-commanding the VP. In addition, it is crucial that not just the quantifier, but the whole of its restrictor clause (in this case, the relative clause), be moved out of the VP, by 'pied-piping' it along with the quantifier.

(15) a. John kissed everyone that Bill did [e]
     b. John kissed everyone that Bill did [kiss everyone that Bill did [kiss everyone that Bill did [...]]]
     c. [everyone that Bill did [e]]$_i$ [John kissed t$_i$]
     d. [everyone that Bill did [kiss t$_i$]]$_i$ [John [$_{TP}$ (-ed) [$_{VP}$ kiss t$_i$]]]

To complete his argument, May (1985) notes that ACD does not appear to be licensed when the head of the relative (which must be appositive in this case) is a name:

(16) a. Dulles suspected everyone (who) Angleton did.
     b. * Dulles suspected Philby, who Angleton did.

But this is as expected, May continues, if ACD involve a movement rule that applies only to quantificational NPs (under the assumption that names are non-quantificational).

ACD have, in recent years, been the subject of much debate. There are questions as to whether ACDs do indeed provide strong support for a scope assignment rule with the format of May's QR (I will return to ACDs in section 2.3 and in ch. 3). But the regress problem they uncover remains a basic argument for LF.

2.6 Binding and scope

There exist significant interactions between scope and pronominal binding. Since the seminal work of Reinhart (1983) a growing body of evidence has been uncovered, suggesting that the structural conditions of pronominal binding interact with scope assignment. Consider the following example as an illustration. (17a) is unambiguous: it lacks the scoping *every>some*, which is normally available when these quantifiers co-occur in the same clause.

(17) a. Some musician$_1$ will play every piece that he$_1$ knows
     b. [some musician]$_1$ [every piece that he$_1$ knows]$_2$ [t_1 will play t_2]
     c.* [every piece that he$_1$ knows]$_2$ [some musician]$_1$ [t_1 will play t_2]

(17a) resist a construal where *every piece* takes wide scope because giving the QP *every piece that he knows* wide scope (assuming the relative clause pied-pipes as part of the restrictor of the universal QP), would remove the pronoun from the c-command domain of *some musician,* preventing binding. The corresponding LF, (17c), is therefore excluded; the only LF representation for (17a) is (17b).

Let's now consider evidence that scope movement licenses binding. The first example is given by the so-called Inverse-Linking constructions (from May 1985). Despite lack of S-Structure c-command, the embedded QP *every firm* in (18) can bind the pronoun if the QP is construed as taking wide scope over the subject *some representative*:

(18) [Some representative [of every $firm_1$]] despises it_1
ok: 'for every firm x, some representative of x despises x'

A second example is presented in Hornstein 1994. Consider:

(19) a. John kissed every $child_1$ [after Bill introduced him_1]
b. Orson will drink no $wine_1$ [before its_1 time]

Direct objects do not c-command inside an adjunct clause (this is shown by the fact that an object Wh licenses a parasitic gap; recall that there is an anti-c-command requirement between the real gap and the parasitic one). Thus it is surprising that the quantificational object in (19) can bind the pronoun. However, the desired c-command relation between QP and pronoun can be achieved at LF if the QP moves higher than VP.

To summarize: the data considered in this section argue for an approach to scope in terms of LF-movement; they also argue for the hypothesis that LF-movement involves pied-piping. The same holds for the data on negative polarity licensing to be considered next.

2.7 *Polarity licensing and scope*

Negative polarity (NPI) licensing appears to interact with scope in a way similar to pronominal binding. The following examples illustrate how polarity licensing restricts scope. Consider:

(20) a. Several professors didn't want an assistant [who understood a lot about computers]
b. Several professors didn't want an assistant [who understood anything about computers]

(20a) has a subject-wide scope reading, where the object is narrow scope with respect to negation; the object receives a non-specific interpretation: the professors didn't want *any assistant* with such qualifications. In addition, (20a) can receive an object-wide-scope interpretation. We may construe the sentence as asserting the existence of an assistant with such-and-such qualifications, who several professsors didn't want to hire. (20b) is minimally different from (20a) in that it contains an NPI inside the relative clause. Observe that (20b) disallows the object-wide-scope construal, unambiguously receiving the scope interpretation *several>not>a.* This follows from the logic of NPI licensing: the NPI needs to be in the c-command domain of negation at LF.

A similar illustration is given by sentences like:

(21) a. Many attacks didn't affect two people that had a lot to do with the layoffs.
b. * Many attacks didn't affect two people that had anything to do with the layoffs.

The most natural reading of (20a) is the construal *two>many>not* (*many>not>two* might also be possible, but it is less natural). In (20b), however, this construal is excluded (whereby the sentence becomes degraded) by the presence of the polarity item, which needs to be licensed in the scope of negation.

2.8 *Tense licensing and scope*

Recent work (cf. Abusch 1988, Stowell 1993, 1994, Brugger&D'Angelo 1994) has pointed out that the scopal interpretation of QPs + relative clauses depends on the relation between the tense of the relative clause and the tense of the clause in which the QP + relative occurs. Abusch (1988) shows there is a correlation between NP scope and temporal interpretation. Consider a relative clause that occurs within the complement of an intensional verb: the temporal ordering of the event in the relative and the event of the intensional verb depends on the *de dicto/de re* interpretation of the NP which heads the relative. If the tense of the relative is interpreted as prior to that of the intensional verb, only a *de re* reading is possible. Stowell (1993) offers the following illustration of Abusch' generalization:

(22) Mary thought that John gave his book to a boy who hit Bill

Stowell notes that "if we force the independent reading of the relative clause tense by imagining a situation where the hitting time follows both the giving time and the thinking time, the NP containting the relative must be construed *de re*; the speaker is committed to the existence of a boy who hit Bill, and claims that Mary thought that John gave his book to this boy" (1993:21).

The theory proposed by Stowell (1993) analogizes tenses to scopal elements, whose licensing typically requires them to be in certain structural relations (expressible in terms of c-command) with other tenses in the sentence. Thus the licensing of a given tense may require its clause to scope out, in LF, to a higher position where it can enter in the appropriate structural configuration with its (temporal) licensor.[2] In (22), for example, the independent tense construal of the relative is derived by QR-ing the indefinite *a boy who* ... to the matrix clause. This yields the obligatory *de re* construal without additional assumptions.

In Romance languages like Italian, where the distinction between subjunctive and indicative is quite active, one observes a correlation between the scopal interpretation of an NP and the temporal interpretation of the relative clauses that the NP heads. Brugger&D'Angelo (1994) present numerous cases.

(23a,b), from Italian, exemplify a configuration where a relative clause is embedded inside the

[2] Stowell argues against Enç's (1987) binding-theoretical account of sequence of tense interpretation, which claims, in particular, that the tense of a (restrictive) relative clause can always be independent of that in the superordinate clause with respect to temporal sequencing.

complement of a volitional verb. Such verbs select subjunctive complement clauses. No such requirement exists however for a relative clause embedded inside this complement. If the relative clause has indicative mood (23a), the indefinite that heads the relative must be construed as wide scope with respect to the QP in the subjunctive complement. If the relative, on the other hand, has subjunctive mood (23b), either scoping of the indefinite seems possible.

(23) a. Vorrei che Mario desse ogni libro
(I)'d like that M gave(subjunctive) every book
a uno studente che ha aiutato sua madre.
to a student that (he) has helped(indicative) his mother

b. Vorrei che Mario desse ogni libro
(I) would like that M gave(subjunctive) every book
a uno studente che avesse aiutato sua madre.
to a student that (he) had helped(indicative) his mother

2.9 *Phrase structure and scope*

The availability of certain scope readings is also determined by the internal constituent structure of NPs. Restrictive and appositive relative clauses enforce distinct constraints on the scopal interpretation of their head NPs.

(24) a. Every student talked to a professor who was visiting the department at the time
b. Every student talked to a professor, who (by the way) was visiting the department at the time

Whereas the restrictive relative in (24a) allows either a wide or narrow scope reading of the indefinite *a professor*, the appositive relative in (24b) forces the indefinite to be wide scope.

Assuming that appositive relatives are to be analyzed as conjuncts, with the relative pronoun coreferential with the head (cf. Jackendoff 1977), the phrase structural representation of (24b) is, in the relevant respects, analogous to that of:

(25) Every student talked to a professor$_1$, and he$_1$, by the way, was visiting the department at the time

In (25) the pronoun is not in the c-command domain of the quantifier *every student* (neither at Spell-out nor at LF), and thus it cannot be bound by the universal QP. Given that *a professor* antecedes the pronoun in the matrix conjunct, the indefinite cannot be in the scope of the universal quantifier.

3 Three Theories of Scope

The principles listed in section 1 determine a field of research that has been developed in various directions. In this section, I consider three of the main theoretical approaches. These will be compared on the basis of how they implement the principles and desiderata in 1.1 and how they account for (at least some of) the facts of section 2.

3.1 May (1985)

May's (1977, 1985) account of QP scope is too well known to require extensive summary. A brief sketch of the proposal in May 1985 is however given below (3.1.1). In the next subsection (3.1.2) I comment on May's contribution.

3.1.1 Overview of May (1985)

The standard GB definition of the syntactic rule of scope assignment, due to May (1977, 1985) is as follows. QPs, *qua* quantificational elements, must be associated with a position from where they can bind variables. Scope assignment accomplishes this.

(26) **Scope Configuration**
Scope is represented as an Operator-variable configuration at LF.

The relation between a QP α and its scope position β is expressed by moving α to β. From β, α antecedes its trace, which is interpreted as a bound variable. It follows as a corollary that positions that mark scope are distinct from the positions where arguments occur.

(27) **Scope Positions**
Scope positions are non-thematic positions.

In May's theory, scope positions are A'-positions. This is referred to as the QR hypothesis.

(28) **Quantifier Raising (QR)**
a. QPs undergo movement at LF; this movement, QR, is a subcase of move α, operating in the mode of adjunction to non-thematic XP positions.
b. QR obeys the usual locality conditions on move α, e.g. Subjacency.
c. QR applies uniformly to all QPs.
d. Neither QR nor any particular QP is landing-site selective; in principle, any QP can be adjoined to any XP. Typical adjunction sites are IP, VP, PP, DP.

The scope assignment rule (QR) is neither selective as regards TYPE OF QP (it applies in the same way to all QP-types, per (28c)), nor LANDING SITE (QPs can be adjoined to any non-thematic XP, per (28a&d)). May's own Wh-Criterion, which forces the movement of certain [+Wh] XPs to land in Spec of [+Wh] CP, has no equivalent for (non-Wh) QPs.

These combined claims represent a tenet not only of May's but of virtually all LFTSs. This assumption will be one of the foci of the discussion in the next chapter, where I introduce the theory of scope to be presented in this thesis. Abstracting away from May's own definition of the scope assignment rule, I refer to this basic tenet as the Uniformity of Quantification Hypothesis:

(29) **Uniformity of Quantification Hypothesis**

a. The scope assignment rule applies in the same way to all types of QPs;
b. The rule does not assign designated scope positions to any QPs.

3.1.1.1 QP/QP scope interactions

May (1985) includes both an account of QP/QP and QP/Wh interactions. Let's consider QP/QP interactions first.

(30) a. Some student admires every professor
b. [*IP* every professor$_2$ [*IP* some student$_1$ [*IP* t_1 [*VP* admires t_2]]]]
c. [*IP* some student$_1$ [*IP* t_1 [*VP* every professor$_2$ [*VP* admires t_2]]]]
d. * [*IP* some student$_1$ [*IP* every professor$_2$ [*IP* t_1 admires t_2]]]

The classic scope ambiguity in (30a) presents two scope construals: *some student* can be wide scope (*some>every*), or narrow scope with respect to *every professor* (*every>some*); in this latter interpretation, students may co-vary with individual choices of professors.

The ambiguity is accounted for in terms of the LFs in (30b,c). QR applies freely (as a subcase of move α), subject only to general well-formedness conditions on the output of movement. (A derivational alternative to (30b), given in (30d) and featuring reverse order of adjunction to IP, is ruled out by the ECP (the intervention of QP$_2$ blocks proper government of the subject trace).

The resulting class of LFs are then evaluated, in their scopal significance, by the Scope Principle. This principle determines relative scope assignment, by stating that when the scope positions of two QPs govern each other, these are free to be construed in any relative scope. Otherwise, relative scope is given by c-command relations in LF.

(31) **Scope Principle** (May 1985)

a. A class of occurrences of operators Ψ is a Σ-sequence iff for any operator O_i, $O_j \in \Psi$, O_i governs[3] O_j, where 'operator' means 'phrase in A'-position'.
b. If QP$_1$ and QP$_2$ are members of a Σ-sequence, they are free to take on any type of relative scope relation.
c. Otherwise, QP$_1$ takes wide scope over QP$_2$ iff QP$_1$ c-commands QP$_2$ but QP$_2$ does not c-command QP$_1$.

On the basis of the Scope Principle, the LF in (30b) is found to support both the scoping *some>every* and the scoping *every>some*. The LF in (30c), not allowing mutual government

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3 Government and c-command are defined as follows (from May 1985):

- A governs B iff A c-commands B, and there are no maximal projection boundaries between A and B (IP=S not being maximal).
- A c-commands B iff every maximal projection dominating A dominates B, and A does not dominate B.

between the two QPs, unambiguously supports only the *some*>*every* reading.

Although scope positions are exclusively A'-positions (cf. above), May proposes a mechanism to handle the A-reconstruction facts overviewed in section 2.3. This is known as Q-Lowering.

Recall that a sentence like (7a), repeated here, allows a reading where it has the same truth-conditions as (7b); this ambiguity is characteristic of raising constructions.

(7) a. Few hippogryphs$_1$ are likely t_1 to be captured.
    b. It is likely that few hippogryphs will be captured.

The LF representations provided by May for the scope ambiguity of (7a) are as follows (May 1985:99):

(32) a. Few hippogryphs$_1$ [e$_1$ are likely [t_1 to be captured]]
     b. [e$_1$ is likely [few hippogryphs$_1$ [e$_1$ will be captured]]]

In (32b), representing the narrow scope reading, the (matrix) subject QP has been 'lowered' (reconstructed) to the subject position of the embedded clause. It is then adjoined to the lower IP by a further application of QR. When we consider the status of the empty category based on the standard (GB) typology of such objects, the resulting structure (32b) is found to be well formed. May notes first that the status of the lower trace (e$_1$) has changed, after lowering, from that of an A-trace (an anaphor) to that of a variable, since its binder is an A'-position. As for the higher EC, it qualifies as an expletive: it is unbound, governed (by finite Infl), and non-thematic. Thus the representation of (7a) (=32a) is non-distinct from that of (7b). In LF, they both contain chains headed by an expletive (CHAINs).

3.1.1.2 QP/Wh interactions

Relative scope between QPs is represented straightforwardly in May's theory since distinct LF representations (e.g. (30b,c)) can be mapped one-to-one to truth-conditionally distinct scope readings. The Scope Principle however, allows LFs to be scopally ambiguous. This possibility is exploited when we move from QP/QP to QP/Wh interactions. The basic desideratum is to account for the so-called 'family of questions' or 'pair-list' readings.

These readings arise when quantifiers like *every* occur as co-arguments with Wh-phrases. The availability of pair-list interpretations depends on argument structure. They are generally possible when the quantifier is in subject position; impossible when the Wh-phrase is the subject and the quantifier is a VP-internal argument. The contrast between (33) and (34) illustrates.

(33) a. Who read every book?
     b. ok: '(tell me) which person x read every book'
     c. * 'for every book y, (tell me) who read y'
     d. *Answer:* —John did (=read every book).

(34) a. What did every student read?

b. ok: '(tell me) what y is such that for every student x, x read y'

c. ok: 'for every student x, (tell me) what x read'

d. *Answer*: —John read *Ulysses*, Mary read *War&Peace*, Susan read *Decameron* ...

The question in (33) is unambiguous: it only can be answered as in (33d), corresponding to the reading given in (33b). In the syntactic configuration (34a) that supports pair-list, the question is ambiguous, as given in (34b,c). In addition to the 'individual answer' reading (34b), also available with (33a), (34a) has a reading where the quantifier seemingly takes scope over the Wh-phrase. This can be paraphrased as in (34c); this interpretation of the question correlates with the availability of 'list' answers, as in (34d).

The descriptive generalization on the distribution of pair-list that May's theory supports is that pair-list is available whenever the thematic position of the QP is higher than that of the Wh-element.

Several principles interact in the derivation of pair-list readings as presented in May 1985. One side effect of this machinery is that LFs no longer disambiguate relative scope.

After QR has applied freely to (well-formed) S-Structures, the following principles are invoked to derive scope assignment.

First, a new general constraint on the well formedness of LF phrase markers is introduced, the Path-Containment Condition (PCC, from Pesetsky 1982).

(35) **Path-Containment Condition (PCC)**

a. Intersecting A'-categorial paths must embed, not overlap.

b. A path is defined as the sequence of nodes $n_1, \ldots, n_k$ connecting the binder ($=n_1$) to its bindee ($=n_k$); in a path, every n_j immediately dominates n_{j+1}.

The PCC is employed by Pesetsky to account for contrasts such as between (36a-b): the grammaticality of these sentences depends on whether the path of the Wh-elements overlap or embed. The examples are annotated so as to show the application of the PCC.

(36) a. * [*CP1* Who$_i$ do [*IP1* you [*VP1* wonder [*CP2* what$_j$ [*IP2* x_i [*VP2* saw x_j]]]]?

Path(*who$_i$*) = {IP2, C'2, CP2, VP1, I'1, IP1, C'1, CP1};

Path(*what$_j$*) = {VP2, I'2, IP2, C'2, CP2}.

Path(i) overlaps with path(j).

b. [*CP1* What$_j$ do [*IP1* you [*VP1* wonder [*CP2* who$_i$ [*IP2* x_i [*VP2* saw x_j]]]]?

Path(*who$_i$*) = {IP2, C'2, CP2};

Path(*what$_j$*) = {VP2, I'2, IP2, C'2, CP2, VP1, I'1, IP1, C'1, CP1}.

Path(i) is embedded into path(j).

Coming back to the examples involving interactions between Wh-elements and QPs, given in (33a)-(34a), the PCC allows the representations in (37a,b), and excludes (37c).

(37) a. [CP what$_2$ did [$IP1$ every student$_1$ [$IP2$ t$_1$ [VP read t$_2$]]]]?
Path(*what$_2$*)={VP, I', IP2, IP1, C', CP};
Path(*every student$_1$*)={IP2, IP1}.
Paths embed.

b. [CP who$_1$ [IP t$_1$ [$VP1$ every book$_2$ [$VP2$ read t$_2$]]]]?
Path(*who$_1$*)={IP, C', CP};
Path(*every book$_2$*)={VP2, VP1}.
Paths are disjoint.

c.* [CP who$_1$ [$IP1$ every book$_2$ [$IP2$ t$_1$ [VP read t$_2$]]]]?
Path(*who$_1$*)={IP2, IP1, C', CP};
Path(*every book$_2$*)={VP, I', IP2, IP1}.
Paths overlap.

Once the (free) application of QR is constrained by the PCC, the Scope Principle determines relative scope assignment. On the basis of the Scope Principle, the LF in (37a) is found to support both the scoping *what>everyone* (the individual question interpretation) and the scoping *everyone>what* (the pair-list interpretation). This is because Wh and QP govern each other, since IP is not, in May's (1985) analysis, a maximal projection. The LF in (37b), not allowing mutual government between the Wh and QP, unambiguously supports only the *who>everything* reading. Only the individual answer is possible, not the list answer.

The PCC applies not only to Wh/QP relations, but equally to QP/QP interactions. It can be verified that the LFs in (30b,c), but not the one in (30d), satisfy the PCC. This derives the basic ambiguity of simplex transitive sentences with *every* and *some* as co-arguments.

Pair-list readings appear to be available also in questions containing a subordinate clause, with the QP contained in the embedded clause (38a).

(38) a. Who do you think everyone saw at the rally?
b. [CP who$_2$ do [$IP1$ everyone$_1$ [$IP1$ you think [$IP2$ x$_1$ [VP saw x$_2$]]]]

To derive the pair-list representation in (38b), May assumes that QR can raise the universal quantifier to the matrix IP by successive-cyclical application.

3.1.2 Comments on May (1985)

May 1985 represents the classic *LGB* account of scope. May's work has shown that syntax and semantics are intimately tied in, and can be integrated in a relatively simple and conceptually elegant way. His theory of LF brings within the purview of then current theories of syntax phenomena that were previously thought of as mostly semantic in nature.

May's theory of LF has empirical motivation that goes beyond the desire to endow the theory of syntax with a semantic interface. The account provided for some of the phenomena of section 2, especially ACDs, shows that there are not only theoretical advantages to doing things this way; there are empirical generalizations that require this type of account.

The significance of LF for the theory of grammar has become all the more apparent in recent years, owing to Chomsky's (1992) Minimalist program. In this framework, considerations of 'virtual conceptual necessity' leave only two levels at which theoretical generalizations can be stated: Phonological Form (PF) and Logical Form (LF). Within Minimalism, generalizations that were previously stated in terms of 'S-Structure' must now be reanalyzed as LF phenomena (unless they can be shown to be purely PF).

Despite the fact that LF has become the one level at which to state phenomena like Case assignment, Binding, and licensing conditions for various syntactic elements (or perhaps all the more because of it), it is clear that some basic features of May's theory need revision. The focus of some recent criticism is the notion of QR itself.

From a theoretical point of view, the technical notion of QR has become unsatisfactory. May's intention was to choose the null hypothesis in characterizing QR, i.e. to regard it simply as move α. Yet it appears that QR operates differently than most other syntactic rules. This reaction is expressed in various ways by Sportiche 1993, Hornstein 1994, and Brody 1993. I consider their objections in turn.

Hornstein's criticism of QR will be reviewed more fully in section 3.3: in part, Hornstein finds QR lacks 'morphological' motivation. Following Chomsky' (1992) Minimalist program, he assumes that NPs are drawn from the Lexicon laden with morphological features and that features need to be 'checked off' in appropriate functional categories for the derivation to be licit. Feature checking licenses movement. Ordinary features are Case and Phi features. Recall that the driving force of QR, as defined by May, is simply the 'quantificational' character of QPs: this does not seem to be on a par with 'morphological(ly realized)' features.

Brody objects on grounds that it is unclear "whether the relation standardly expressed by QR exhibits the usual cluster of movement properties" (1995:96), i.e., Subjacency. I address this issue in ch. 3, arguing that--on a closer look--scope assignment is, as in May's statement of the rule, governed by Subjacency. Here I note that Brody's criticism finds some justification in the fact that the issue of the boundedness of QR has often been unclear.

One source of confusion is that claims about the clauseboundedness of QR must apply to all QPs, disregarding differences in QP-types (recall that QR applies uniformly to all QP-types). It is generally acknowledged that indefinites like *a student* and numerical QPs like *two students* are not clausebounded in their scope. But QPs like *few students, more than five students, more students than teachers, ...* are clausebounded, and indeed, extremely local in their scope (as will be discussed in detail in ch. 2; some of the original observations are due to Liu 1990). Universal distributive QPs like *every student* are generally aknowledged to be clausebounded when in *that*-complements, but not so when in non-finite clauses.

The examples below illustrate these points. Among other possible scope interpretations, (39a) allows extraclausal scope of *two girls*; but this construal is apparently impossible for *few girls* in (39b). (39c-d) show that extraclausal scope of *every girl* is possible in non-finite clauses (39d), but impossible from within a *that*-complement (39c).

(39) a. Every boy believed that Mary had said that two girls wanted to go to the party
ok 'for every boy x, there are two girls y,z such that Mary had said that y,z wanted to to go to the party'
b. Every boy believed that Mary had said that few girls wanted to go to the party
* 'for every boy x, there are few girls (e.g. y and z) such that Mary had said that y and z wanted to go to the party'
c. Some boy believed that Mary had said that every girl wanted to go to the party
* 'for every girl y, there is some boy x who believed that Mary had said that y wanted to go to the party'
d. Some boy will believe every girl to be beautiful
ok/? 'for every girl, there will be some boy who believes her to be beautiful'

In his various works on quantifier scope, May's own position appears consistently to be that QR is constrained by Subjacency. But his analyses are sometimes problematic (as noted by Lasnik 1993). May 1977 assumed that QR was clausebounded (a Subjacency effect). However, May 1985 maintains that QR operates successive-cyclically. The difficulty is that successive cyclic operation extends to the case of *every*-QPs inside *that*-complements, notwithstanding empirical evidence to the contrary. As observed at the end of section 3.1.1.2, this much is required by his treatment of pair-list readings of questions where an *every*-QP is inside a (*that*-) complement clause.

A third type of criticism of QR centers on its mode of operation, free adjunction. In this respect, QR does not resemble either Wh-movement or--what should be more surprising--the movement of negative QPs, both of which have been argued to have designated landing sites and operate in the mode of substitution.

The point is made forcefully in Sportiche 1994. He suggests that adjunction rules be eliminated from the grammar. The proposal that I present in ch. 2 overcomes this difficulty by assuming that scope assignment is substitution, and takes place through Spec-Head agreement. LF-movement of QPs becomes formally analogous to movement of negative words and to Wh-movement.

Empirically, May's proposal is able to express most of the facts and generalizations listed in section 2, even though some areas covered by his theory have undergone major revisions in recent years: the treatment of ACDs and of QP/Wh interactions are cases in point. The former will be discussed in section 3.3; the latter will be the subject of ch. 5.

Aside from this, however, QR faces an empirical problem: it massively overgenerates scope assignment. Many (perhaps most) scope assignments allowed by QR go against speakers' intuitions. Overgeneration derives from two kinds of factors, which can be summarized as follows: (i) QR is mostly insensitive to certain argument structure configurations; and (ii) QR is insensitive to QP-types.

The difficulty in (i) derives (largely) from the fact that QR applies to an argument without 'seeing' its A-chain. Aoun&Li (1993) point out that the ambiguity of sentences (structurally) like *Some man loves every woman* is not attestested in some languages, like Chinese; raising structures are also unambiguous in this language. The relevant (and distinctive, with respect to English) property of these languages is, according to Aoun&Li, that subjects are not generated VP-internally.

Furthermore, even within Germanic languages, Aoun&Li point out that in certain argument configurations there is no scope ambiguity: the scope relation between the first and second object in double-objects is unambiguous; and objects do not take scope over subjects across negation. These cases will be discussed in detail in the next section.

As for (ii), ch. 2 (section 1) will show that when we consider a wide variety of QP types (rather than focussing on interactions between *every* and *some*), most of the (symmetrical) scopings that QR makes available are never realized.

Whereas it is perhaps understandable that May shied away from this complexity at the time when he presented his original proposal, the difficulties mentioned in this section prompt for a revision of the theory of QR.

3.2 Aoun and Li (1989, 1993)

Aoun&Li develop their syntactic theory of scope in two stages: their 1989 article, 'Constituency and Scope', and their 1993 book, *The Syntax of Scope*. These proposals are sufficiently distinct to warrant separate presentation.

Aoun&Li do not question the basic premises of May's proposal, including the definition of QR. They however provide extensive criticsm of May's use of the PCC and of the Scope Principle; these assumptions will be replaced by others, more in the spirit of Generalized Binding.

First, they show that the PCC makes the wrong predictions when cross-linguistic evidence is considered. (Recall that the PCC is called in to account for pair-list readings in questions.) Aoun&Li point out that languages that do not conform to the PCC still behave like English with respect to Wh/QP interactions: questions present the same type of ambiguities. Second, they show that the Scope Principle is unable to account for (the peculiar) QP/QP scope interactions in Double-Object constructions; and besides, that the Scope Principle fails to capture the differences in scopal interpretations between active and passive sentences in languages like Chinese.

Consider the PCC first. This principle appears not be applicable in Chinese. As observed by Huang (1982), in this language sentences like (40a) can receive either interpretation (40b) or (40c) :

(40) a. He wondered who$_1$ bought what$_2$
b. 'for which x_1 did he wonder which x_2 is such that x_1 bought x_2?'
c. 'for which x_2 did he wonder which x_1 is such that x_1 bought x_2?'

In other words, these sentences are ambiguous between subject or object *Wh* being paired with the *Wh* in matrix Comp. The interpretation in (40b) should be excluded (by the PCC) on a par with the ungrammatical **Who did you wonder what saw?* considered in (36). Yet questions with quantifiers show the same type of ambiguity as their English counterparts: Chinese questions corresponding to English *Who bought everything (for Zhangsan)?* are unambiguous (only individual answer), whereas questions like *What did everyone buy (for Zhangsan)?* are again ambiguous between an individual answer and a pair-list answer. This is a contradiction for the

PCC. Aoun&Li point to similar inadequacies for Spanish.[4]

May's Scope Principle appears also to have empirical problems, in English as well as in Chinese. As pointed out by Larson 1990, VP-internal arguments in Double-Object constructions display a curious lack of scope ambiguity, which is found both in English and Chinese. The second object is scopally 'frozen' in its position. There is no inverse scope reading *every problem > one student* in (41a).

(41)	a. John assigned one student every problem	[unambiguous: * *every* > *one*]
	b. John assigned one problem to every student	[ambiguous]

This contrasts with (41b), exemplifying a Prepositional Indirect Object construction (PIO), where scope ambiguity resurfaces.

May's scope principle would assign either scoping to the quantifiers in (41a), since there would be well formed representations (by the PCC) where both quantifiers would govern each other. For example, we could adjoin *one student* to IP, and then adjoin also *every problem* to IP. Since no maximal projections intervene between them, the two QPs govern each other (recall the discussion in 3.1.1.2).

Another failure of May's scope principle is apparent when we consider cross-linguistic evidence bearing on scope construal. Aoun&Li observe that in Chinese transitive sentences like (42a) no scope ambiguity is present, unlike in English.

(42)	a. Everyone arrested a woman	[Chinese]	[unambiguous]
	b. Everyone is likely to see a woman	[Chinese]	[unambiguous]
	c. Everyone was arrested by a woman	[Chinese]	[ambiguous]

Sentences which correspond to raising constructions are also unambiguous (cf. 42b): only the *every > some* scoping is available. However, the ambiguity re-surfaces in passive sentences like (42c).

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[4] In Spanish, extracting a subject is better than extracting an object out of a *wh*-island:

(iv)	a.		Quién	no	sabes	qué	compró?
			who	don't (you)	know	what	bought
	b.	*	Qué	no	sabes	quién	compró?
			what	don't (you)	know	who	bought

This shows the PCC is also inoperative in this language. But questions with quantifiers behave as in English.

3.2.1 *Overview of Aoun and Li (1989)*

On the basis of these observations, Aoun&Li 1989, while maintaining QR essentially as in May, seek for alternative principles for interpreting (and restricting) the application of QR. They propose two new principles: the Minimal Binding Requirement (MBR) and the(ir own, new) Scope Principle (henceforth, SP). (These principles will also be maintained in their successive (1993) account, though techically their domain of application will change.)

The MBR prohibits configurations where quantifiers are stacked.

(43) **Minimal Binding Requirement (MBR)**
Variables must be bound by the most local potential antecedent (A'-binder):
* [Q1, Q2 ... [...vbl1 ... vbl2, ...]].

The SP says that scope is a relation between chains, rather than QPs: ambiguities of scope corresponds to cases where chains overlap.

(44) **Scope Principle (SP)**
A quantifier Q_1 has scope over a quantifier Q_2 if Q_1 c-commands a member of the chain containing Q_2.

Given these principles, the derivation of scope ambiguities in simple transitive sentences proceeds quite differently than in May (1985). The MBR forbids scope ambiguity configurations like (45b), where two QPs are both adjoined to IP. These structures were licit by May's account, and formed the basis for the derivation of the object-wide-scope reading (since the QPs govern each other):

(45) a. Some student visited every professor
b. [*IP* every professor$_2$ [*IP* some student$_1$ [*IP* t_1 visited t_2]]]

To derive the object-wide-scope reading of (45a), Aoun&Li merely adjoin the object QP to VP, as allowed by the MBR. The desired reading is derived because there is one element of the (A-)chain of the subject which is c-commanded by *every professor*: namely the VP-internal trace of the subject, t_1, as shown in (45c) below.

(45) c. [*IP* some student$_1$ [*IP* vbl$_1$ [*VP* every professor$_2$ [*VP* t_1 visited vbl$_2$]]]

Some comments are in order to see that the LF in (45c) is well-formed. The MBR only applies to variables; NP-traces don't need to conform. We are free to interpret a chain link as a variable or as an NP-trace so as to produce a configuration that satisfies the MBR. In (45c), chain links are marked as t(race) or v(aria)bl(e) as required. The fact that the binder of t_1 is not the 'most local' is of no consequence. (45c) is well-formed since we can interpret the trace in Spec,IP as a variable (given that it is locally bound); but the trace in Spec,VP (which is not bound by the most local A'-binder) as a non-offending NP-trace.

The P-marker in (45c) does not disambiguate scope—a feature that we have seen already in May (1985). (45c) is compatible with either interpretation, per SP. The *some>every* interpretation obtains since *some student* c-commands the whole chain of *every professor*. The *every>some* construal, as noted, crucially hinges on the NP-trace in Spec,VP being c-commanded by *every professor*, which is adjoined to VP.

This treatment allows us to derive the lack of scope ambiguity in an SVO active Chinese sentence. Recall that the availability of the object-wide-scope hinged on the NP-trace in Spec,VP. Crucially, this trace is absent in Chinese. The reason is that Chinese has a weak Infl; such a degenerate Infl does not allow the subject to raise from VP-internal position (cf. *Barriers*). Consequently, in an active Chinese sentence, which is SVO, the subject is base-generated in Spec,IP. In this language, then, a sentence structurally similar to (45a) can only be assigned an LF like (45d) after QR. This LF is unambiguous by the SP:

(45) d. [*IP* some student$_1$ [*IP* vbl$_1$ [*VP* every professor$_2$ [*VP* visited vbl$_2$]]] [Chinese]

This account is supported by two facts. First, passive Chinese sentences like (45e) show the same ambiguity as active English sentences. This is because the (derived) subject (*some student*) has a VP-internal trace, which is c-commanded by the agent-phrase *every professor*, that has been adjoined to VP:

(45) e. Some student was visited by every professor [Chinese] [ambiguous]
f. [*IP* some student$_1$ [*IP* vbl$_1$ [*VP* every professor$_2$ [*VP* was visited t$_1$ by vbl$_2$]]]

Second, raising structures are unambiguous in Chinese: in this language the counterpart of a sentence like (46a) only has the *two>everyone* construal:

(46) a. Two men are likely to see everyone [English] [ambiguous]
b. Two men [*V* likely see] everyone [Chinese] [unambiguous]

Aoun&Li (1989) trace back this contrast to the application of reanalysis (cf. (46b)): the raising predicate and the embedded verb are 'reanalyzed' as one complex predicate. This effectively makes raising structures analogous to monoclausal active sentences. Thus the lack of ambiguity in (46b) is derived on a par with that of active transitive sentences (cf. (45d)).

Aoun&Li's approach can also handle the lack of scope ambiguity with Double-Object (DBO) constructions: the relevant example is repeated below in (47a), and contrasted with a prepositional indirect object construction (PIO), given in (47b), where the ambiguity resurfaces.

(47) a. John assigned one student every problem [DBO] [unambiguous: * *every > one*]
b. John assigned one problem to every student [PIO] [ambiguous]

Aoun&Li's goal is to analogize the difference between PIO/DBO to the difference between active/passive constructions in Chinese. They offer an account that adapts Kayne's (1984) small clause analysis of DBOs. I will not review the motivation for their particular analysis of these constructions, focussing instead on their proposed mechanism of scope assignment.

Kayne proposes that the second object functions as a small clause predicate which assigns its subject (=the first object, in (47a) *one student*) a possessor role. Aoun&Li's analysis of DBOs adopts this hypothesis. Their proposed structure is as follows:

(47a) ... $[_{VP1}$ $[_V$ assigned $]$ $[_{SC}$ $[_{NP1}$ one student $]$ $[_{VP2}$ $[_V$ e $]$ $[_{NP2}$ every problem$]]]]$

In this structure, *one student* has not undergone NP-movement. Thus there is no trace of *one student* that *every problem* can c-command after adjoining to VP2. The MBR forbids *every problem* from adjoining any higher than *one student*, since QPs cannot be stacked. Accordingly, (47a) is unambiguous, like active sentences in Chinese.

PIO constructions result, in Aoun&Li's (1989) analysis, from applying passive to the small clause of DBOs. This delivers the re-emergence of scope ambiguity in these constructions. Consider the structure for PIOs:

(47b) ... $[_{VP1}$ $[_V$ assigned $]$ $[_{SC}$ $[_{NP1}$ one problem$_2]$ $[_{VP2}$ $[_V$ e $]$ $[_{NP2}$ t_2 $]$ to every student$]]]]$

one problem, originating in the position occupied by NP2 in (47a), is raised to NP1, to get Case; *every student* is treated as an adjunct. Movement of *one problem* leaves an NP-trace, which ends up c-commanded by *every student* as the latter adjoins to V'2 at LF. The universally quantified QP can thus receive wide scope over the indefinite. The situation is parallel to that of a Chinese passive sentence.

3.2.2 *Overview of Aoun and Li (1993)*

Aoun&Li's 1993 further extends the empirical coverage of the account, even if at the cost of added complexity. Some basic directions also change. The main innovation is that the distinction between A and A' positions becomes crucial to the determination of scope. Now, only A'-position count; scope is taken entirely out of the domain of A-positions. The SP is unchanged; but the MBR is qualified in its application by a Generalized Binding condition:

(48) **Minimal Binding Requirement (MBR, revised)**
   a. Variables must be bound by the most local potential antecedent (A'-binder):
   b. QP_i is a potential A'-binder for variable v iff co-indexing QP_i to v does not violate any principle (such as theta-criterion, principle C, etc.)'.

The assumption that only A'-positions are now relevant for scope enforces an altogether different approach from Aoun&Li 1989. In a nutshell, the change is as follows: instead of allowing QPs in non-theta positions to (so to speak) reconstruct to narrow scope positions (as in Aoun&Li 1989), scope ambiguity rests now on allowing only QPs in theta positions to take wide scope. For example, whereas in Aoun&Li 1989 object wide scope was derived by (effectively) reconstructing the subject inside VP, in Aoun&Li 1993 the same result is obtained via a derivational option in which May's QR is applied only to the object.

More in detail, scope assignment proceeds as follows. The scope assignment rule is differentiated into two distinct adjunction rules: one, Q-R,[5] raises just the determiner (quantifier), adjoining it to NP; the other, QP-R, raises the whole NP. QP-R is simply May's QR. In line with *Barriers*, adjunction is only permissible to non-theta positions. QP-R precedes Q-R; QP-R is obligatory if the QP is in a theta-position, otherwise optional. Q-R alone can apply to non-theta positions.

When QPs in non-theta positions only undergo Q-R, they are assigned an extremely local scope which effectively takes them out of the purview of the MBR. (Q-R is too local to allow for quantifier-stacking). Objects can take wide scope over subjects because they must avail themselves of QP-R, whereas subjects may choose to just Q-R.

Let's illustrate with examples. To derive scope construals that conform to S-Structure c-command relations, e.g. subject over object (=S > O), both QPs undergo QP-R: subject to IP, object to VP.The MBR, as seen in the previous section, prevents an object QP from adjoining above the subject. (The application of QP-R is then followed by Q-R, which is however irrelevant to relative scope, as noted).

(49a) exemplifies the LF corresponding to the S > O scope of (45a). A-positions, recall, are now irrelevant to scope: only A'-positions count.

(45a) Some student visited every professor

(49) a. [*IP* [*NP* some [x student]]$_1$ [*IP* vbl$_1$ [*VP* [*NP* every [y professor]]$_2$
[*VP* visited vbl$_2$]]]]

The derivation of the object-wide-scope reading hinges on the distinction between Q-R/QP-R. Since the subject has the option to undergo just Q-R, the object is free to adjoin to IP and gain wide scope (recall that a Q-R'ed NP effectively does not count for the MBR). The derivation below illustrates.

(49) b. [*IP* [*NP* every [y professor]]$_2$ [*IP* [*NP* some [x student]]$_1$ [*VP* visited t$_2$]]]]

This account extends straightforwardly to Chinese active sentences: the subject is in a theta position, hence QP-R must apply to the subject; but then, by the MBR, the object cannot undergo QP-R to IP, and only S > O is derived, as in (49a). The contrast between PIOs and DBOs in English is similarly accounted for.[6]

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5 Aoun&Li motivate Q-R on logico-semantic grounds, as it yields a transparent mapping of quantificational structures into logical form by distinguishing restrictor and nuclear scope, as in Heim (1982). Hornstein's (1994), however, points out that this operation does not always yield the right results.

A rule similar to Q-R has been previously introduced by Dobrovie-Sorin, who calls it DR (Determiner Raising). In an early proposal of hers, DR applied to derive the local scope that is characteristic of non-specific indefinites. Cf. Dobrovie-Sorin 1994.

6 Aoun&Li's (1993) account of the lack of ambiguity in DBOs follows Larson's (1988, 1990) treatment a bit more closely than their 1989 proposal. In Prepositional Indirect Object constructions, the direct object, originating as a VP-internal argument, moves to the subject of VP position, followed by raising of V itself. Thus, the direct object is in a non-

We come now to Wh/QP interactions. The refinements in the 1993 account are largely motivated by the need to handle interactions of QPs with Wh-elements. In this domain, restricting scope positions to A'-positions (thus excluding both NP-traces and variables in A-position from consideration) proves crucial to obtaining the correct results.

Perhaps more than with QP/QP interactions, Aoun&Li's treatment of Wh/QP interactions is based largely on the approach in May (1985). The main issue is to derive the distribution of 'family of questions' or pair-list (PL) readings. As noted by May, PL is possible when *every* is in subject position, but not when the Wh-phrase is:

(50) a. What did everyone buy for Max? [ok PL]
b. Who bought everything for Max? [* PL]

May's account, as seen in the previous section, ascribes the constrast to the operation of the PCC (which subsumes ECP effects), plus the application of May's Scope Principle. The relevant structures (which satisfy the PCC) are repeated below.

(51) a. [*CP* what$_2$ [*IP* everyone$_1$ [*IP* t$_1$ buy t$_2$ for Max]]]
b. [*CP* who$_1$ [*IP* t$_1$ [*VP* everything$_2$ [*VP* bought t$_2$ for Max]]]
c.* [*CP* who$_1$ [*IP* everything$_2$ [*IP* t$_1$ bought t$_2$ for Max]]]

By May's own Scope Principle, (51a) is scopally ambiguous, given that the *Wh* and the QP are in the same Σ-Sequence (=govern each other; IP does not count as maximal projection). This does not obtain, however, in (51b), since the two scopal elements are separated by IP+VP. (51c), which would incorrectly yield PL for (50b), is excluded since the subject trace is not properly governed (locally A'-bound).

While QP/QP interactions are cross-linguistically different (at least to the extent noted in English and Chinese), Wh/QP interactions appear not to vary in the same way across languages; furthermore, as noted, the PCC does not appear to hold in Chinese. Aoun&Li therefore propose an alternative way to analyze May's LFs in scopal terms.

The LF-structure given by May (1985) to represent the PL interpretation of (51a) is the same that Aoun&Li use to derive the pair-list interpretation. What needs to be demonstrated is that this interpretation doesn't violate the MBR.

The structure in question, (51a), is more fully repeated in (51d), corresponding to Aoun&Li's (1993) ex. [41], ch. 2. Q-R of *every* is omitted because irrelevant:

(51) d. [*CP* what$_2$ [*IP* everyone$_1$ [*IP* vbl$_1$ [Agr [*VP* t$_2$ [*VP* t$_1$ buy vbl$_2$ for Max]]]]]

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theta position, like the subject of a passive Chinese sentence. In Double Object constructions, as in Larson's account, the preposition *to* is absorbed. Its object, however, does not raise, but incorporates with the V, receiving a possessor theta role, and moves along with it. This prevents *every problem* from adjoining any higer than VP2, by the MBR.

(47a) ... [$_{V1'}$ [$_V$ assigned one student]$_i$ [$_{VP2}$ [$_{NP0}$ [every problem$_1$][$_{V'2}$ [$_{V'3}$ t_i [$_{NP}$ t_1]]]]

(47b) ... [$_{V1'}$ [$_V$ assigned$_i$] [$_{VP2}$ [$_{NP0}$ [one problem$_1$][$_{V'2}$ [$_{V'3}$ [$_{V2}$ t_i][$_{PP}$ to every student]] [$_{NP}$ t_1]]]]

This structure does not violate the MBR because *everyone*$_1$ is not a potential A'-binder for vbl$_2$. The reason is as follows. Co-indexing vbl$_2$ with *everyone*$_1$ implies co-indexing vbl$_2$ to vbl$_1$ as well; but this creates a Principle C violation (vbl$_2$ ends up being bound by either t_1 or vbl$_1$), as variables have status comparable to R-expressions for the purposes of the Binding theory. The revision in the MBR given above states that *everyone*$_1$ is only a potential binder for variable x if coindexing x and *everyone*$_1$ does not incur a grammatical violation. Thus *everyone*$_1$ does not count as a potential binder for vbl$_2$ in (51d). The MBR is accordingly not violated.

The structure in (51d) is scopally ambiguous. Recall that only A'-positions are relevant to the application of the SP in (51d); neither of the theta positions occupied by t_1 and vbl$_2$, matters. The scoping *everyone>what* is obtained by *everyone* c-commanding the intermediate trace left, in VP-adjoined position, by *what*; whereas the other scoping, *what>everyone*, follows from *what* c-commanding *everyone*. Note that this effectively amounts to applying reconstruction to the Wh-phrase.

Consider now the configuration in (51b), which does not support a pair-list interpretation. The LF for (51b) is given below in (51e), which is identical to May's (51b). Note that (May's) (51c), which was ruled out by the PCC, is not ruled out by the MBR.

(51) e. [*CP* who$_1$ [*IP* vbl$_1$ [*VP* everything$_2$ [*VP* t_1 bought vbl$_2$ for Max]]]

As before, given that t_1 (and also vbl$_2$) don't count, (51e) can only be read with the scoping *who>everything*, as desired.

Independent support for the assumption that only A'-position matter for the determination of scope is provided by Aoun&Li using more complex Wh/QP interactions in English. Consider the following sentences, which elaborate in various ways on the basic type of Wh/QP interaction featured in (50). The corresponding LFs are also given, showing their structural similarities.

Whereas (52a) does not support pair-list interpretation, (52b) is usually judged as conveying one.

(52) a. What do you wonder whether everyone saw? [unambiguous]
a' [*CP* what$_2$ [*IP* you [wonder [*CP* whether [*IP* everyone$_1$ [*IP* vbl$_1$ [*VP* t_2 [*VP* saw vbl$_2$]]]]]]
b. What do you think everyone saw? [ambiguous]
b'. [*CP* what$_2$ [*IP* you [think [*CP* t_2 [*IP* everyone$_1$ [*IP* vbl$_1$ [*VP* t_2 [*VP* saw vbl$_2$]]]]]]

The relevant difference between (52a-b) lies in the status of the VP-adjoined Wh-trace, t_2. This shows that intermediate traces can be relevant for scope assignment, conforming to the principle that the syntax of scope is the domain of A'-positions. In (52a), this trace can be deleted (per Lasnik&Saito 1992).[7] The VP-adjoined trace is c-commanded by the QP; thus the possibility of assigning wide scope to *everyone* over the Wh-element depends on it. By deleting it in LF, the pair-list interpretation is accordingly eliminated.

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[7] Or, as proposed in Hornstein 1994, through appropriate extensions of the Generalized Binding framework.

Consider now (52b), which supports pair-list. The Wh-trace in VP-adjoined position cannot be deleted in this structure, given antecedent government from the trace in the embedded CP. Thus the QP can be given scope over Wh.

The account of Wh/QP interactions presented for English extends without change to Chinese, where as noted, the same distribution of list readings obtains. The derivations of the LF structures for the Chinese questions are analogous to the English ones. The LF for the Chinese question with *everyone* in subject position and the Wh-phrase as direct object is given below in (51f). The MBR is satisfied in this structure in the same way that it was in the English example, cf. (51d). This well-formed representation yields two scoping, because the QP c-command a link of the chain of *what*, and *what* c-commands a link of the chain of the QP.

(51) f. [*CP* what$_2$ [*IP* everyone$_1$ [*IP* vbl$_1$ [*VP* V vbl$_2$]]]] [Chinese] [ambiguous]

A number of other constructions are analyzed by Aoun and Li, with discussion of both English and Chinese examples, such as: DP-internal scope interactions between QPs and between QPs and Wh-elements; scope configurations involving interpretive chains, such as *though*-constructions, parasitic gaps, and relativization; and the different scopal behavior of Wh-arguments and Wh-adjuncts. I do not include these aspects in the brief overview offered here. I only summarize their treatment of scope construals with raising constructions and their account of the interactions between QPs and negation.

As noted by Hornstein (1994) in his own summary of their proposal, the account in Aoun&Li 1993 has some advantages over the 1989 one in handling scope assignment with raising constructions. Recall that raising constructions in English are systematically ambiguous depending on whether the (subject) raised QP is interpreted in its Case position or reconstructed in the lower clause. The 1989 account derived the scoping *every>some*, attested in constructions like (53a) below, on grounds that the subject NP-trace inside the embedded infinitive was c-commanded by *everyone* (cf. (53b)):

(53) a. Someone seems to love everyone [ambiguous]
b. [*IP* someone$_1$ [*IP* vbl$_1$ [*VP* seems [*IP* everyone$_2$ [*IP* t$_1$ to love vbl$_2$]]]]]

This explanation fails, however, to account for the lack of scoping *every>some* when a reflexive occurs in the matrix, as in (53c) (Hornstein's (1994) ex. [14], Ch. 3).

(53) c. Someone$_1$ seems to himself$_1$ to have attended every rally [unambiguous]

The lack of narrow scope for *someone* in (53c) is manifestly due to the presence of the reflexive, which needs to be licensed by the subject in its matrix Case position. This in turn should block reconstruction of the subject QP. It seems thus that the correct account of the narrow scope reading of subject of raising predicates (as in these examples) must involve a process that can be blocked in cases such as (53c), like reconstruction, or Q-lowering (cf. 3.1.1.1).

Aoun&Li's (1993) account involves lowering. If lowering applies to (53a), then t$_1$ in (53b) is not a theta-position, hence Q-R can apply to the subject. As we saw above in the discussion of object wide scope in SVO sentences like (49b), if the subject QP only undergoes Q-R, adjunction of the object to IP can take place without violating the MBR. This yields the object-wide-scope reading. The derivation is summarized in (53d):

(53) d. [*IP* t_1 [*VP* seems [*IP* [*NP* every [y one]]$_2$ [*IP* [*NP* some [x one]]$_1$ to love t_2]]]]]

It is appropriate at this point to outline Aoun&Li's treatment of scope interactions between QPs and negation. This topic will be of particular significance in the following chapters, especially ch. 4. The basis observation is that negation seems to block object wide scope. Aoun&Li note the following contrast:

(54) a. Someone loves everyone [ambiguous]
b. Someone does not love everyone [unambibuous]

The lack of ambiguity of (54b), which does not display object-wide-scope, is derived via the MBR. The only well-formed LF representation for (54b) is (54c)(Q-R omitted):

(54) c. [*IP* someone$_1$ [*IP* vbl$_1$ [NEG [*VP* everyone$_2$ [*VP* loves vbl$_2$]]]]]
d. * [*IP* everyone$_2$ [*IP* someone [NEG [*VP* t_2 [*VP* visited t_2]]]]

(54d) is ruled out by the MBR: negation intervenes as a potential binder for the variable of *everyone*, ruling out any LF where *everyone* is raised any higher than VP. The conclusion is that Qps can never move across negation.

For Aoun&Li, this claim establishes an analogy between QPs and non-referential Wh-elements: both have stricter locality conditions than 'referential' Wh-elements like *who, what*. Specifically, they are sensitive to Weak Islands (like negation).

The following Generalized Binding principles expresses the equivalence assumed by Aoun&Li between QPs and non-referential Wh-phrases:

(55) a. **The Antecedent Requirement (=the MBR)**
A variable must be bound by the most local potential antecedent
b. **The Locality Requirement**
A variable, if it is subject to the Locality Requirement, must be bound by an A'-binder α within the minimal maximal category containing α and the variable.

Whereas QPs and Wh-adjuncts need to satisfy both (55a,b), Wh-arguments only satisfy the Antecedent Requirement. This latter principle thus subsumes the MBR.

3.2.3 Comments on Aoun&Li

Out of the brief presentation of Aoun and Li (1989) given in section 3.2.1, the following points are to be noted. Aside from the specifics of the analysis, the introduction of the MBR and of the SP underwrite empirical generalizations that are beyond the reach of May's theory.

What affords the extended empirical coverage achieved by Aoun&Li is, largely, the decision to consider A-positions (and in particular, thematic positions) as relevant for scope assignment. A crucial role is played by the SP (and in part also by the MBR). Effectively, the MBR restricts the availability of free adjunction to IP (objects cannot adjoin over subjects); but new scope positions are obtained by considering relative scope between QPs in terms of relations between their chains, as mandated by the SP. In Aoun&Li 1989, the effects of the SP are comparable to allowing reconstruction of a QP to its theta position: object-wide-scope construals rest on taking NP-traces into account.

In this sense, Aoun&Li can be seen as the forerunners of the (radical) direction taken by the Minimalist treatment of scope given by Hornstein 1994 (and other proposals in the same framework): the entire argument chains of QPs are relevant to the determination of their relative scope.

Considering now their (1993) account as well, and their overall contribution, Aoun&Li's proposals represent a development of May's QR approach: they assume May's definition of QR. Their proposals are in the direction of fine-tuning its operation so as to achieve greater empirical adequacy. Therefore, the difficulties noted with May's definition of QR (cf. section 3.1.2) carry over to Aoun&Li's account.

Aoun&Li's work is to be credited with pioneering a closer integration between scope and argument structure. They show the relevance of argument structure to scope in at least two ways: they point to the peculiar scope assignment properties of Double-Object constructions in English; and analyze the lack of scope ambiguities found (in active SVO and in raising construction) in East-Asian languages. As a result of this approach, they derive interesting cross-linguistic predictions on the availability of inverse scope readings in English-type languages vs. Chinese-type languages. This is achieved chiefly through the SP and MBR, as noted in 3.2.1.2.

One particular problem with Aoun&Li's account of QP/Negation interaction is their conclusion that (all) QPs belong together in the same class as non-referential Wh-elements. This runs into empirical difficulties. First, this conclusion is falsified by the fact that indefinite QPs like *some book*, or numeral QPs like *three books* can take object wide scope over negation:

(56) a. Every student didn't read some book
   ok 'for every student x, there is some book y such that x didn't read y (though x may have read other books)'
  b. John didn't read two books
   ok 'There are two (particular) books that John didn't read'

Second, as will be argued in ch. 4, distributive universal QPs whose determiner is *each* can in some cases take object-wide-scope over c-commanding negation.

Relatively little of Aoun&Li's contribution seems to survive in the theory of scope proposed by Hornstein (1994), other than the emphasis on seeing relative scope between QPs as a relation between their chains (see below). Chiefly responsible for this is the adoption, by Aoun&Li, of the QR Hypothesis, and their reliance on ECP-like principles (Generalized Binding) for constraining the application of the scope assignment rule.

3.3 Hornstein (1994)

In his forthcoming book *LF: The Grammar of Logical Form. From GB to Minimalism*, Hornstein proposes an altogether new treatment of scope phenomena, in order to conform to Chomsky's (1992) 'A Minimalist Program for Linguistic Theory'. Hornstein maintains that, if consistently pursued, the new theoretical direction urged by Chomsky requires "a wholesale revision of previous GB approaches to LF." (1994:ch. 9).

Minimalism gives the study of LF a more central place in linguistic theory than any previous approach. Given the minimalist reduction of the levels of syntactic description to LF and PF, no phenomena, including conditions on rule application, should require to be stated at S-Structure, since this does not exist as an (identifiable) level. Hornstein interprets this task as involving two essential steps.

First and foremost, it must be shown that all grammatical processes that are not expressible merely as PF conditions are to reformulated as phenomena statable at LF . The role of LFTSs changes radically within Minimalism because this framework requires a tight and complete integration of processes like QP scope, ellipsis, tense and polarity licensing, etc. into the core modules of grammar. All of these phenomena are now to be stated at the same level (LF) as the phenomena covered by Binding Theory, Case Theory, and Theta Theory. This is a recognized objective of all work within Minimalism.

The second step in Hornstein's program is perhaps less widely endorsed among linguists working within Minimalism. Being skeptical about the possibility to treat QR and covert Wh-movement on a par with overt movement, Hornstein sets out to eliminate LF A'-movement entirely.

This elimination directly affects the way scope assignment is handled. I consider this part of Hornstein program in the next section.

3.3.1 The elimination of LF A'-movement

Hornstein's motivation for eliminating A'-movement in LF comes mainly from the discrepancies that are known (since Huang 1982) to exist between overt and covert movement. Given that there is no longer a distinction between 'overt' and 'covert' syntax, movement must behave in LF as it does in the overt syntax. There can't be exceptions to Subjacency at LF. Hornstein reviews the evidence in favor of the assumption that A'-movement at LF is indeed subject to Subjacency and find this evidence inconclusive. Thus, given that A'-movement at LF seems to be obeying somewhat different constraints than overt movement, Hornstein's solution is to eliminate it.

As far as can be surmised from his (1994) work, Hornstein proposes to implement his program to eliminate LF A'-movement as follows:

(57) **Elimination of A'-movement at LF** (Hornstein 1994)
- a. QR is eliminated. Scope assignment is entirely through A-chains.
- b. Raising of Wh-in-situ is eliminated. Different mechanisms take care of Wh-in-situ.
- c. Movement of Negative words to Spec,NegP is assimilated to A-movement.

I consider each point in turn. Let's start from the elimination of QR.

3.3.1.1 The elimination of QR

"Given Minimalist concerns," Hornstein says, "it is hard to see what could motivate QR-like processes." These concerns are expressed by two sorts of considerations, as it has already been mentioned in section 3.1.2:

(58) **Minimalist objections to QR** (Hornstein 1994)

a. If all movement must be, strictly speaking, morphologically driven, QR lacks the right type of driving force: the need of quantificational elements to establish their scope (=bind a variable) does not appear to be a 'morphological' need;

b. Adjunction processes are suspect: the paradigmatic A'-movement, Wh-movement, is by substitution.

Two further objections must be added to this list, as pointed out by Hornstein 1994 and by Lasnik 1993. The first objection concerns parasitic gap (PG) constructions. The problem that these pose for the QR hypothesis (as well for covert Wh-movement) is that LF movement does not appear to license them:

(59) a. * Who reviewed what [after reading PG]

b. * John reviewed each/every book [after reading PG]

The second objection comes from long-standing observations that some conditions on anaphora crucially hold at S-Structure. As Chomsky (1981) observes, neither QR nor covert Wh-movement rescue S-Structure Condition C violations, as in (60a,b):

(60) a. * He_1 liked every book that John_1 read

b. * Who said that he_1 liked which book that John_1 read?

c. Which book that John_1 read did he_1 like?

However, overt movement can, as shown by (60c). This apparently forces the conclusion that Principle C must only hold at S-Structure. But this conclusion is unacceptable in a Minimalist framework.

Hornstein's objections to QR (as listed in (58)) are both driven by theory internal preoccupations, and reflect the need to put LF movement more in line with syntactic movement. The alternative is to dispense with it entirely. Hornstein's solution is to adopt the latter alternative. Accordingly, he sets out "to reanalyze quantifier scope phenomena in Minimalist terms without invoking any form of adjunction (or A'-movement)".

Unlike the elimination of S-Structure conditions, which is a indispensable assumption of Minimalism (and which will be endorsed in the account presented here), Hornstein's attempt to eliminate A'-movement is only one possible solution to the problems in (58).

After presenting Hornstein's arguments, I will remark on some of its difficulties (in section 3.3.2). Ch. 2 will continue and develop the discussion. There I will propose an alternative treatment of scope phenomena which is largely compatible with the Minimalist program and its goals.

3.3.1.2 Scope as a function of A-movement

To eliminate A'-movement from LF, Hornstein proposes that scope is purely a function of A-movement:

(61) **Scope Positions at LF** (Horstein 1994)
The relative scope of quantified arguments is determined at LF in terms of their A-chains.

This stance is opposite to the one taken by Aoun&Li (1993), for whom scope (and LF relations) are to be stated exclusively in terms of A'-positions.

Given this basic orientation, Hornstein's theory is articulated in the following additional assumptions:

(62) **Chain Pruning at the CI Interface**
Only a single link in a chain is interpreted at the Conceptual-Intentional interface. Accordingly, all but one member of a multi-membered chain must be deleted.

(63) **Scope Principle (SP-H)**
Relative quantifier scope is grammatically reflected at LF (after the requisite deletion) in terms of asymmetric c-command: A quantified argument Q_1 takes scope over a quantified argument Q_2 iff Q_1 c-commands Q_2 (and Q_2 does not c-command Q_1).

(64) **Preference Principle** (on Chain Pruning)
Definites, D-linked, presuppositional QPs sit in positions outside the VP-shell. A-chains headed by such QPs are forced to delete traces inside the VP-shell (cf. Diesing 1992).

The combined action of Chain Pruning and Hornstein's own Scope Principle (abbreviated here as SP-H) implements a view of scope which is partly similar to the one developed by Aoun&Li (1989): the relative scope between two QPs is determined on the basis of the structural relation between their chains. QP_1 takes scope over QP_2 insofar as (any) one link in the A-chain of QP_1 c-commands (in LF) (any) one link in the A-chain of QP_2.

Since scope is seen as a function of A-movement, the classic scope ambiguities in SVO sentences with *every* and *some* are accounted for as follows (I adopt Hornstein's convention to enclose in round parentheses chain links that have been pruned):

(65) Someone attended every seminar
  a. [*AgrSP* Someone [*TP* [*AgrOP* every seminar [*VP* (someone) [*V'* attended (every seminar)]]]]] [*someone > every*]
  b. [*AgrSP*(someone) [*TP* [*AgrOP* every seminar [*VP* Someone [*V'* attended (every seminar)]]]]] [*every > someone*]

In (65a) the surviving A-links after Chain Pruning are: in the chain of *someone,* the copy in the nominative Case position (Spec,AgrSP); in the chain of *every seminar*, the copy in the accusative Case position (Spec,AgrOP). By the SP-H, the subject takes wide scope (asymmetrically).

In (65b), the surviving link in the A-chain of *someone* is the lowest one, in VP-internal position; the surviving link in the chain of *every seminar* is the one in Spec,AgrOP. Asymmetrical c-command between these two links determines the scoping *every seminar>someone*.

Hornstein's theory can handle the Chinese facts brought up by Aoun&Li straightforwardly. Recall that Chinese active sentences (as well as Raising constructions) are unambiguous, whereas ambiguity resurfaces with passive sentences. These facts are within the reach of any theory that views relative scope as a relation to be stated over chains, or, equivalently, that allows reconstruction of the subject QP in VP-internal position. Hornstein assumes, as Aoun&Li do, that Chinese subjects are generated in Spec,AgrSP. The object-wide-scope is obtained, in his system, by deleting, in the subject chain, the link in AgrS and saving the one in VP-internal position (deleting the VP-internal link in the object chain is also necessary). The lack of a VP internal subject position in Chinese derives the absence of the reading.

The lack of ambiguity in raising constructions is derived in the same way. As Hornstein says, "there is no set of deletions which will allow a copy of the subject to be within the scope of a copy of the object because the subject is generated outside the embedded VP in Chinese" (1994:198). The location of the links in the A-chains of subject and object in a Chinese Raising construction are given in the representation below.

(66) [*AgrSP1* SUBJ [*AgrOP1* [*VP1* V [*AgrSP2* SUBJ [*AgrOP2* OBJ [*VP2* V OBJ]]]]]]

In this diagram, even if save the highest link in the object chain (in Spec,AgrOP2) and the lowest link in the subject chain (in Spec,AgrSP2), the subject link still asymmetrically c-commands the object link.

In Chinese passive sentence an NP-trace of the (derived) subject must be in the thematic object position; if this link is saved, the by-phrase (adjoined to VP) can take scope over it.

3.3.1.3 Wh-movement at LF

The second part of Hornstein's elimination of A'-movement from LF consists in arguing that (i) Wh-in-situ does not raise at LF to CP, and (ii) the LF relations that are relevant to the interpretation of Wh-in-situ are expressible in terms of A-positions. To properly present this alternative treatment, it is helpful to start from Hornstein's account of another phenomenon, which is independently crucial to LFTS: Wh-QP interactions.

3.3.1.3.1 Wh/QP interactions

Hornstein's aim is to provide an account of Wh/QP interactions that does not invoke ECP-related principles. An alternative is provided by Chierchia's (1991, 1993) proposal.

Chierchia addresses a core semantic issue: proposals for the interpretation of pair-list readings typically assume some form of QUANTIFICATION INTO QUESTIONS. The QP that supports the list reading is assigned scope over the question. In the basic case of quantification in a declarative sentence, as in *Every student came*, "the quantifying operation combines an NP meaning $\wp$ and a formula ϕ relative to a variable x_n to yield a new formula" (1993:205). This format, as Chierchia notes, can be generalized to operate not just on sentential formulas, but on any expression whose type 'ends in *t*' (*t* for truth value), i.e. to any expression whose interpretation is a function into truth values.

Various devices can be employed to interpret questions as semantic object of the desired type (functions into truth values). I will return to a more detailed discussion in ch. 5, section 1.1. Chierchia proposes a genuine alternative. His account is based on the insight that pair-list construals are a subcase of Engdahl's (1986) 'functional' interpretation. Engdahl observed that questions with quantifiers quite generally allow for answers as in (67b). This type of answers is distinct from the 'individual' answer in (67a) and (when available) the pair-list answer in (67c):

(67) Who does every Italian man fear?
 a. The Pope
 b. His mother-in-law
 c. Gianni fears Mrs. Maria Rossi, Guido fears Mrs. Rosetta Bianchi, ...

Instead of providing an individual (67a) or a list (67c), the functional answer in (67b) gives a procedure (a function) to compute individual answers for each member of the domain of the QP *every Italian man*. Though (67b) resembles more closely (67a) in that it consists of a single NP, the use of a bound pronoun (*his*) yields the same effect as the list in (67c). The latter simply 'spells out' the pairs <*argument* x, *value* f(x)> for the function in (67b).[8]

Chierchia capitalizes on this observation to provide a syntactic and semantic account of pair-list without resorting to quantification into questions. He proposes that the LF representation of questions that receive either a functional or a pair-list interpretation differs from that of individual questions in that the Wh-trace has complex (internal) structure. Such a 'functional trace' contains both an empty category with an 'f-index', functioning as a standard Wh-trace, and an empty element with an 'argument-index' which functions like a bound pronominal. The argument index corresponds to the bound pronoun in the functional answer.

There are, in principle, three possible derivations for questions with quantifiers. These are given below (cf. Chierchia 1993:211):

(68) a. [*CP* Who$_j$ [*IP* every Italian man$_i$ [*IP* t_i fears t_j]]] [individual interpr.]
 b. [*CP* Who$_j$ [*IP* every Italian man$_i$ [*IP* t_i fears t_j^i]]] [functional interpr.]
 c. [*CP* [Who$_j$ every Italian man$_i$] [*IP* t_i fears t_j^i]]] [pair-list interpr.]

Chierchia assumes May's QR applies to the subject QP. The individual interpretation (68a) has

8 Using an 'answer-space' (cf. Hamblin 1973, Karttunen 1977) approach to the semantics of questions, where questions denote sets of propositions, the interpretation of (67a) and (67b) are as follows:

(viii) a. $\{p : \exists x\ [\text{person}(x) \wedge p = {}^\wedge\forall y\ [\text{Italian man}(y) \Rightarrow \text{fear}(y,x)]\}$
 'the set of propositions p, such that for some person x, p is the proposition that for every Italian man y, y fears x'
 b. $\{p : \exists f\ [p = {}^\wedge\forall y\ [\text{Italian man}(y) \Rightarrow \text{fear}(y,f(x))]\}$
 'the set of propositions p, such that for some function f, p is the proposition that for every Italian man y, y fears the value of f at y'

an LF with a standard Wh-trace. The functional (68b) and the pair-list (68c) interpretations require a functional trace. In addition, pair-list requires the QP to 'absorb' with the Wh-in-Comp. Absorption is the syntactic process that Higginbotham&May (1981) use to deal with multiple Wh-questions (as well as other phenomena). An absorbed Wh-QP yields an interpretation where the question operator ranges over both the domain of the quantifier and that of the Wh-element. This corresponds to (an adaptation of) Groenendijk&Stokhof's Domain Restriction schema (to be discussed further in ch. 5, 1.1).[9]

This analysis makes a direct prediction on the distribution of pair-list readings: pair-list reading will be excluded whenever the functional trace c-commands (in LF) the trace of the QP. If the functional trace should c-command the thematic position of the QP, we would have a Weak-Crossover (WCO) violation, given that the QP is co-indexed with the argument-trace, which is a pronominal element. The configuration in (69) is structurally analogous to the classic WCO pattern in (70):

(69) a. Who loves everyone? [* pair-list]
b. [*CP* Who$_j$ [*IP* everyone$_i$ [*IP* $t_j^{[+pro]}{}_i$ loves t_i]]]

(70) a. ?? His$_i$ mother loves everyone$_i$ [WCO]
b. ?? [*IP* everyone$_i$ [*IP* his$_i$ mother loves t_i]]

This takes care of the subject-object asymmetries in the distribution of pair-list readings. Similarly, in Double-Object constructions, pair-list are predicted to be possible when the QP is the first object and the Wh-element is the second object; excluded in the reverse configuration.

(71) a. What did you give everyone for Christmas? [ok pair-list]
b. Who did you give everything? [* pair-list]

Hornstein adapts Chierchia's analysis as follows. Assuming Chomsky's (1992) copy-and-delete theory of traces (as he does generally, cf. 3.3.1), individual readings correlate with deleting all but the copy of the Wh-element in Comp; functional and pair-list readings are possible (subject to WCO) when the copy in Spec,CP is deleted. All the rest is as in Chierchia, though there is no

9 The semantic interpretation of a pair-list question like (c) in the example considered here is given by Chierchia (1993) as follows. This interpretation employs Domain Restriction. (The introduction of 'families of questions' over plain propositions is motivated by Chierchia's desire to generalize his interpretation to questions with quantifiers other than universals. Technically, a 'family of questions' Q is a generalized quantifier over individual question interpretations.)

(ix) $\{Q : \exists A[\text{witness}(\textit{every Italian man}, A) \wedge Q = \{p : \exists f \in [A \rightarrow X]\ \exists x \in A\ [p = {}^{\wedge}\text{fear}(y,x)]\}$

'the set of families of questions Q, such that for some set A, A the witness set of the QP 'every Italian man' (i.e. A=the set of Italian men), Q is the set of propositions p, such that p is the proposition that for some function f, some member of A fears x' absorption.[10] To illustrate:

(72) a. Who does everyone love?
b. [*CP* Who$_j$ [*AgrSP* everyone$_i$ [*VP* t$_i$ love (who)]]]
c. [*CP* (Who) [*AgrSP* everyone$_i$ [*VP* t$_i$ love who$_j^i$]]]

Thus, by adopting Chierchia's analysis, Hornstein can provide an account of Wh/QP interactions that has two basic desiderata: (i) it does not involve ECP-related principles (which could not be used in a Minimalist setting without considerable reformulation); (ii) it does not involve applying QR-like processes to the QP (in order to move it to a position where it can quantify over the Wh-element in Spec,CP): instead, it assumes something analogous to reconstruction of the Wh-element.

3.3.1.3.2 Superiority

The standard account of Superiority violations in the *Principles&Parameters* framework is based on the ECP. The Wh-in-situ is adjoined to the Wh-in-Comp in LF (where they undergo Absorption), and the Superiority effects are derived because the adjoined element cannot locally bind or antecedent-govern its trace:

(73) a. Who bought what?
[*CP* [what$_i$] who$_j$ [*IP* t$_j$ bought t$_i$]]
b. * What who bought?
* [*CP* [who$_j$] what$_i$ [*IP* t$_j$ bought t$_i$]]

Pursuing his program to eliminate LF-movement and the use of the ECP, Hornstein proposes to derive Superiority effects as an extension of his treatment of pair-list readings. The hypothesis that pair-list and multiple interrogation are syntactically to be treated via one generalization (independently proposed by Williams 1994) derives some plausibility from the fact that multiple questions receive interpretations very similar to those of pair-list questions.[11]

Hornstein's proposal is as follows. Assume that the Wh-in-Comp functions like the QP in pair-list questions: if we take the list as the spell-out of a function, it is the element which provides the set of arguments for the function, i.e. that 'generates' the list. The Wh-in-situ is, instead, interpreted as a functional expression (i.e. as containing a bound pronoun co-indexed with the Wh-

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[10] Since Hornstein assumes that Absorption does not exist, it is not clear how he proposes to reformulate Chierchia's distinction between pair-list and functional readings. As is well known, functional readings do not display the distributional asymmetries that pair-list does (for example, functional readings are supported by negative quantifiers: *Who does no Italian married man love? --his mother-in-law*; but negative quantifiers do not support pair-list. The same holds for a number of other quantifiers).

Plus, Chierchia locates the potential source of cross-linguistic variation in the existence of pair-list reading for questions with quantifiers in whether the language has absorption (of the requisite sort). Hornstein's account presumably loses this cross-linguistic prediction, too.

[11] Note however that Lasnik&Saito (1992) maintain that Superiority is an irreducibly separate principle.

in-Comp).

Superiority effects can then be accounted for in terms of WCO, just like the distribution of pair-list readings in questions with quantifiers. The pronominal element in (74b) is co-indexed with a variable (t_i) on its right, amounting to a WCO violation.

(74) a. Who bought what?
[*CP* who$_i$ [*AgrSP* (who)$_i$ bought what$_j^{[+pro]}$$_i$]]
b. * What who bought?
* [*CP* what$_i$ [*AgrSP* who$_j^{[+pro]}$$_i$ bought (*what*)$_i$]]

This account extends to the configurations where Superiority effects are usually found. To account for the lack of Superiority effects with D-linked Wh-phrases, as in (75a) below, Hornstein makes the assumption that 'bare' Wh-elements like *who, what* must be in A'-position (Spec,CP) to acquire a D-linked interpretation. But elements like *which* N are 'inherently D-linked;' accordingly, they can be interpreted in A-position, voiding WCO effects. Thus, an LF like (75b) can be provided for (75a):

(75) a. Which book did which man read?
b. [*CP* (Which book) [*AgrSP* which man$_j$ read which book$_i^{[+pro]}$$_i$]]

3.3.1.4 Negative words

The final obstacle to the elimination of A'-movement from LF is represented by the theory of negative words (cf. Laka 1990, Zanuttini 1991, Haegeman 1994, Moritz&Valois 1994, etc.). According to these proposals, negative quantifiers (and/or negative polarity items) get licensed by moving, at LF, to Spec,NegP, the projection that hosts clausal negation.

Hornstein proposes that Spec,NegP be treated as an A-position, or at least on a par with an A-position (i.e. as an 'L-related' position). In favor of this assumption he lists the following points: first, in Slavic languages, the presence of negation affects Case marking, shifting it from Accusative to Genitive. Hornstein assumes that Genitive is assigned in Spec,NegP. Hence this position must be an A-position.

A second argument is that clausal negation induces minimality effects for Case-movement of subjects. As observed by Aoun&Li (cf. 3.2.2), negation blocks the inverse scope of an object over the subject (O>S). An example is repeated below in (76a):

(76) a. Someone doesn't love everyone [* *everyone>someone*]
b. [*AgrSP* someone$_1$ [*NegP* Neg-Op [*Neg'* Neg [*TP* [*AgrOP* everyone [*VP* PRO$_1$ loves (everyone)]]]]]]

Hornstein hypothesizes that this is because the subject of a negative sentence is generated in Spec,AgrSP. A controlled PRO occurs in the subject's thematic position in Spec,VP. The LF structure of (76a) is therefore as in (76b).

Raising of the subject from Spec,VP to Spec,AgrSP can be blocked (by Minimal Chain Link) under the following two assumptions, which Hornstein embraces: (i) when negation is overt, Spec,NegP is filled by an Op; (ii) Spec,NegP is an A-position: it would then qualify as a closer possible landing site for a subject on its way to Spec,AgrS.

Hornstein accordingly suggests an alternative treatment for the subject-object asymmetries originally observed in Kayne (1984), and exemplified below:

(77)	a.	Jean	n' exige	que	Paul	voit	personne	
		Jean	neg.requires	that	Paul	see.sbjnct	no one	
	b.*	Jean	n'exige	que	personne	soit	arrêté	
		Jean	neg.requires	that	no one	be.sbjnct	arrested	

He points out that the ECP account of the asymmetry rests on the assumption that the intermediate CP does not offer a possible landing site for the negative word (unlike with Wh-movement): if this were a possible landing site for *personne* at LF, the trace in subject position would be properly governed. Assuming that preverbal subjects in Romance are actually in A'-positions, then the contrast derives from improper movement: *personne* moves from an A'-position (the subject of the embedded clause) to an A-position (Spec,NegP of the matrix).

As for the ability of negative words to license Parasitic Gaps (PGs), this is possible because negative QPs A-move at LF. The relevant facts have been pointed out by Longobardi (1991). In (78a), licensing of the negative word is blocked by the adjunct island; but in (78b), the negative word in the adjunct clause is licensed 'parasitically' on the one in the matrix.

(78)	a. *	Non	fa	questo	lavoro	per	aiutare	nessuno
		Neg	does.3s	this	work	to	help	no one
	b.	Non	fa	niente	per	aiutare	nessuno	
		Neg	does.3s	nothing	to	help	no one	

Hornstein analyzes the classic PGs with Wh-phrases as licensed via the A' binder of the 'real' gap, thus revamping Chomsky's (1982) analysis of the phenomenon. Specifically: the 0-Operator which antecedes the PG (and is assumed to be responsible for Subjacency effects) moves to the A'-binder so that the chain of the PG composes with that of the licensor. It is not clear how this account extends to parasitic gaps with negative QPs, as in (78). Since the negative QP in the adjunct clause could not A-move to Spec,NegP of the matrix, there must be a different type of licensing. Hornstein suggests that the negative QP of the matrix, by undergoing movement to Spec,NegP in LF, is in a structural position where it can bind the PG (at LF, the level where licensing occurs).

On the other hand, given Hornstein's elimination of A'-movement in LF, it is expected that neither Wh-in-situ nor non-negative QPs should license PGs. To support this prediction, he points to the following examples:

(79) a. * Who reviewed what [after reading PG]
b. * John reviewed each/every book [after reading PG]

In conclusion, for Hornstein A'-movement is only possible if it manifests overtly; in other words, all A'-movement should be driven by strong (language-specific) features which must be checked by Spell-Out. Weak feature cannot drive A'-movement.

3.3.2 Further features and predictions of Hornstein's analysis

Before commenting on Hornstein's proposal, I review below two remaining features of his analyis: his treatment of A-reconstruction facts, and of ACDs.

3.3.2.1 A-reconstruction

It is immediate, in Hornstein's framework, to derive the scopal behavior of subject of raising verbs. Any link of the A-chain of the subject in the examples below yields a scope position in which to interpret the raised argument.

(80) Someone seemed to attend every class [ambiguous]
  a. [Someone seemed [*AgrSP* someone to [*AgrOP* every class [*VP* someone attend (every class)]]]]
  b. [(someone) seemed [*AgrSP* (someone) to [*AgrOP* every class [*VP* Someone attend (every class)]]]]]

A strong argument for Hornstein's assumption that Case positions are scope positions comes from ECM constructions. As mentioned in section 2.2, an ECM subject, like *every student* in the example (81a) below, can have scope over the (subject of the) matrix clause. Accordingly, (81) is ambiguous between the scopings *someone>every* and *every>someone* (cf. 81b,c). This behavior contrasts markedly with that of *every student* as subject of tensed complement: cf. (82) where only the scoping *someone>every* seems possible.

The contrast is predicted, under Hornstein's theory, since an ECM subject, being Case marked by the matrix verb, has access to Spec,AgrOP of the matrix. From there, it c-commands the VP-internal position of the matrix subject. Thus it can take scope over it. No Case chain extends from the embedded clause to the matrix when the embedded clause is finite. The relevant derivations are self-explanatory:

(81) a. Someone expected every student to attend the seminar [ambiguous]
  b. [*AgrSP* Someone [*TNS* [*AgrOP* (every student) [*VP* (someone) expected [*AgrSP* every student [to attend the seminar]]]]
  c. [*AgrSP* (someone) [TNS [*AgrOP* every student [*VP* Someone expected [*AgrSP* (every student) [to attend the seminar]]]]]

(82) a. Someone expected that every student would attend the seminar [unambiguous]
  b. [*AgrSP* Someone [*TNS* [*VP* (someone) expected [*CP* that [*AgrSP* every student [*TNS* would [*VP* (every student) attend the seminar]]]]]

3.3.2.2 ACDs

Hornstein proposes to handle the basic ACD cases considered by May 1985, and repeated below in (83a), via raising the QP to Spec,AgrOP, as independently required for Case checking. The ellipsis gap is then copied at LF.

(83) a. John kissed everyone that Bill did [e]
b. John [*AgrOP* [everyone that Bill did [e]]$_1$ [AgrO [*VP* kiss t$_1$]]]]

(The analysis developed by Lasnik 1993b, though different in other respects, converges on this point with Hornstein's). A-movement eliminates regress, just like QR does. As the derivation shows, Hornstein assumes pied-piping of the restrictive clause. This is possible, according to suggestions in Chomsky 1992, because A-movement is not subject to the principle that the restrictor should be left as low as possible. This principle is required only for A'-movement.

Hornstein shows that an A-movement analysis solves a number of problems that the QR analysis faces. First, it seems that covert Wh-movement does not generally support ACD.

Baltin (1987) pointed out that ACDs are not licensed by LF Wh-movement. Covert Wh-movement licenses ACDs only limitedly to the clause containing the in-situ Wh-phrase. The antecedent of the ellipted VP in (84a) can only be the embedded VP (cf. 84b), not the VP of the matrix clause (cf. 84c). Thus there seems to be a 'boundedness' constraint on ACDs:

(84) a. Who thought that Fred read how many of the books that Bill did
b. ok: 'Who thought that Fred read how many of the books that Bill read'
c. * 'Who thought that Fred read how many of the books that Fred thought he had read'

This boundedness constraint is derived under the hypothesis that ACDs are not licensed by covert Wh-movement of *how many of*...., which operates successive cyclically, but rather by raising to Case. Raising to Case, observes Hornstein, is more local (in the cases on hand): we cannot move successive cyclically to higher Specs of AgrOP in (84c). Thus only the reading in (84b) is derived, via raising to Spec,AgrOP of the same clause.

Overt Wh-movement can (marginally) license ACD, as shown in (85), from Lasnik 1993. In contrast with (84a) above, (85b), where *how many of*... has moved overtly, marginally supports the reading missing in (84c), according to Hornstein:

(85) ? How many of the books that Bill did did you think that Fred read?

Thus it seems that only overt Wh-movement licenses ACDs; the covert type of movement assumed by May apparently doesn't, as shown by the missing reading in (84c). These data supports Hornstein's assumption that there is no LF movement of Wh-phrases.

Hornstein's analysis also finds another asymmetry with overt movement. Overt Wh-movement seems to (marginally) license ACD from subjects of embedded finite clauses:

(86) ? Who that you did did Harry predict has been a liar

But, as observed by Larson&May (1990) subjects of finite clauses cannot host an ACD site (cf. (87b)). ACD is not licensed across a finite clause boundary. On the other hand, ECM subject offer a suitable ACD site, as shown by the contrast with (87a):

(87) a. ? I expect everyone you do __ to visit Mary
b. ?* I expect that everyone you do __ will visit Mary

This contrast is derived straightforwardly if ACD rides on Case movement.[12]

A final point for Hornstein's analysis is that it extends to NPs heading an appositive relative, such as the name (*Angleton*) in the following example. This is because raising to Case does not discriminate between quantificational and non-quantificational arguments.

(88) Dulles suspected Angleton, who, incidentally, Philby did (as well / too / not)

ACDs with appositive relatives were initially excluded by May (as noted in section 2.5), who actually used them as evidence for his analysis, arguing that QR does not apply to names and definites, that usually head appositive relatives. But as both Hornstein and Lasnik observe, the particular examples that May found ungrammatical (cf. (16) above) are probably to be excluded for different reasons: small stylistic changes (given in parentheses in (88)) make them marginally acceptable.

3.3.3 Comments on Hornstein (1994)

Hornstein's proposal is perhaps more motivated by the need to account for (mostly) old and (partly) new data in a different theoretical framework--namely Minimalism--than by the need to present striking new data.

His approach achieves a high degree of theoretical elegance, uncovering new directions in the treatment of scope in LF. The theory of scope to be presented in the following chapters assumes, by and large, the same underlying Minimalist principles. In contrast with Hornstein, it develops an alternative approach to QR. In particular, it incorporates, relative to one type of QPs, a treatment similar to Hornstein's view of scope as a by-product of A-movement. (This treatment was developed independently of Hornstein's, in Beghelli 1994 and 1995a).

Given the special interest of Hornstein's theory for the proposal to be presented in this work, I will return, in ch. 3, to a discussion of certain specific differences between Hornstein's approach and the one developed in this thesis. In keeping with the introductory tone of this chapter, I review here Hornstein's program on a more general level.

I outline below, as a preview of some of the points to be developed in the rest of this thesis,

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12 The same result can also be achieved via QR, but only under the assumption that movement of universal distributive quantifiers (*every, each*) cannot cross a *that*-complement. As noted by Lasnik 1993, this conflicts with May's (1985) view that *every*-QPs can move successive cyclically, which he needs to account for pair-list interpretation of question like (xii) below. A solution consists in abandoning May's account of pair-list in terms of QR. I will return to these issues in ch. 3, where I discuss ACDs, and in ch. 5, where I present an alternative view of pair-list.

(xii) Who do you think everyone saw at the rally?
ok: 'for every person x, who do you think x saw at the rally?'

the main differences between Hornstein's approach and the one presented in this thesis, mentioning (but not discussing in any detail) some of the motivations behind them.

Largely, the objections to QR listed in section 3.1.2 do not apply to Hornstein's approach. The three problems listed there: the lack of morphological motivation, the Subjacency issue, and the free adjunction issue, are simply eliminated in Hornstein's approach. Scope assignment comes 'for free', as a side effect of a type of movement which is independently motivated.

This is very elegant, as noted. There remain, however, empirical problems. These derive mostly from the fact that Hornstein's approach does not distinguish between QP-types, thus conforming to the Uniformity of Quantification Hypothesis (a point that he acknowledges). As will be shown in the next chapter, scope taking is QP-type specific: different QP-types have different scope behavior. The reduction of scope relations to relations between A-chains cannot account for these asymmetries in scope construals any better than the QR approach. The burden that the alternative I will propose has to bear is to show that the three types of objections listed in section 3.1.2 can be overcome. (This will be done in chapters 2 and 3.)

The Preference Principle represents Hornstein's attempt to deal with QP-types. This principle, which refers to Diesing's (1992) account of the licensing of 'presuppositional' QPs, forces pruning of the VP-internal links in the Case chains of definites, D-linked, and 'strong' quantifiers. The discussion in ch.2 will show that the scopal diversity displayed by QP-types goes well beyond what is predicted by the Preference Principle.

In addition, there seem to be some specific problems with this principle. The object-wide-scope construal of a sentence like:

(89) Every man loves some woman
ok: 'there is some woman y such that every man loves y'

is standardly accounted for by giving the indefinite in object position wide scope over the universal quantifier. Yet this violates the Preference Principle, given the need for the universal quantifier (which is 'strong') to be interpreted in VP-external position.[13] Since the Preference Principle favors deleting the VP-internal copy of *every man*, *some woman* cannot achieve wide scope. However serious a violation of the Preference Principle this may turn out to be, it does not appear that the corresponding construal is in any way contrived. The wide scope reading of the indefinite is perfectly natural.

Possibly, a way out of this difficulty would be to assume that 'specific' indefinites should be treated differently from other QPs, namely, should be kept outside the reach of ordinary scope assignment mechanism. Such proposal have been made in the literature, beginning from Fodor & Sag (1982), though they are problematic. Ch. 3 will feature a discussion of some of these proposals. There I will argue that indefinites like *some woman* in the example above should be treated on a par with other QPs. In particular, I argue that that the presence of Subjacency effects indicates that they undergo scope movement in LF.

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[13] Note that this type of example does not create the same problem for Diesing, since she assume May's QR: the universal quantifier and the wide scope indefinite, being both 'presuppositional', must move outside VP; they accordingly are adjoined to IP.

Another difficulty with Hornstein's account of QP/QP interactions is the assumption that these are strictly clause-bounded. This follows from the fact that usually A-chains are clausebounded (other than with Raising predicates). It is well known that indefinite QPs can scope out of their clauses and take scope in higher clauses. (Given that these QPs, as I argue, show Subjacency effects, their extra-clausal scope cannot be chalked off to a *sui generis* type of scope assignment). Moreover, there is evidence that extraclausal scope is also available with distributive universal QPs (such as those built with *each, every*). This evidence will be reviewed in chs. 3 and 5.

A further problem concerns the cross-linguistic applicability of an account of scope strictly in terms of A-chains. Languages like KiLega and Hungarian, which will be reviewed in ch.2, feature quantifier movement as overt A'-movement. This sheds reasonable suspicion on the hypothesis that scope, in other languages, is just a side-effect of A-chains. Why would scope assignment be so different across languages?

Some of the objections that have been listed above in discussing Hornstein's program to eliminate scope movement (beyond Case movement) also apply to his decision to reduce covert Wh-movement to A-movement or to eliminate it altogether. One major issue is again Subjacency. Hornstein assumes that there are no Subjacency effects induced by LF-movement. All movement in LF is A-movement: since A-chain links must be closer to one another than required for Subjacency violations to show up, there cannot be any Subjacency effects.

As mentioned above, in ch. 3 of this thesis I will argue that LF movement of QPs is sensitive to Subjacency. Ruys (1993) points to numerous examples of Subjacency restrictions on the scope of QPs built with *every/each*. These will be reviewed in ch.3, 1.2, where I will show that Subjacency effects are also found with indefinite QPs, though they are hidden in many cases by the interference of other factors (ch. 2, 1.3).

Here I briefly list some other facts concerning LF movement of Wh-elements and negative QPs. Their discussion and illustration will be postpone till ch. 3.

Consider first Wh-in-situ. It is well known that in some cases Wh-in-situ appears to ignore Subjacency, yet various explanations have been put forth in the literature to justify these violations (cf. Brody 1993 for a review). Even assuming that there are no effects in some cases, Subjacency does show up in a number of other cases. For example, Brody 1993 shows that Subjacency effects with Wh-in-situ (in English) are hidden by the ability of these elements to make use of a kind of parasitic licensing; Subjacency resurfaces when the island is embedded into another one. (Brody's account will be reviewed in ch. 3, section 1.1).

Let's consider, finally, negative QPs. Kayne (1983, 1984) and especially Longobardi (1991), present considerable evidence that negative movement has properties of A'-movement (cf. ch. 3, 1.1). Some of these properties are successive cyclic movement, Subjacency effects, and parasitic licensing, as argued in particular by Longobardi.

A further set of difficulties with Hornstein's program to eliminate A'-movement has to do with the specifics of his attempt to reduce negative movement to A-movement. Even assuming that Spec,NegP is Case-related, there is no evidence that negative words move to Spec,NegP for Case-related reasons. Hornstein's arguments for the reduction of negative movement to A-movement are in fact rather indirect: he simply points to the possibility of alternative explanations for the data; no crucially decisive evidence is presented. For example: Hornstein's alternative treatment of the ECP asymmetries with *personne* observed by Kayne (1983), and reviewed in section

3.3.1.4 rests on the assumption that Spec,NegP is an A-position; but this has not been demonstrated.

In fact, precisely this assumption is problematic. Even though negation appears to interact with Case assignment, there is hardly any direct evidence that Spec,NegP is a Case position. Next, the argument based on the blocking effect of negation on the object-wide-scope interpretation rests on a spurious generalization. Ch. 4 will discuss this issue in detail. To anticipate some of the facts, there is no blocking in the general case (special circumstances produce the effect in some cases). Indefinite QPs can easily take scope across negation, as observed in section 3.2.3 (recall that e.g.: *John didn't read three books* can be construed as 'there are three particular books that John didn't read'). The generalization actually fails with universal (distributive) QPs whose determiner is *each*.

It appears, therefore, that Hornstein's arguments for the elimination of LF A'-movement are far from conclusive.

The first part of Hornstein program, the Minimalist elimination of S-Structure conditions, has on the other hand received support by research conducted in recent years. These investigations have suggested that various phenomena that used to be thought of as S-Structure phenomena are indeed LF phenomena. Hornstein (1994) and Lasnik (1993), among others, endeavor to demonstrate the feasibility of an approach where conditions on Case assignment, anaphora and binding can be stated strictly as LF conditions.

Recent aproaches to tense phenomena (cf. Stowell 1993, 1994) and polarity licensing (cf. Uribe-Echevarria 1994) also point in the same direction.

The facts reviewed in section 2 show the existence of interactions between quantifier scope and binding, polarity and tense licensing, as well as Case assignment. These interactions present the Minimalist theorist with a dilemma: either quantifier scope can be fully integrated with other types of movement (in line with May's original program) or some other independently motivated mechanism takes the place of QR.

Hornstein argues for the latter alternative. In this dissertation, I will argue for the former. This will be done on the basis of the proposal to be presented in the next chapter.

CHAPTER 2

A TARGET LANDING SITE THEORY OF SCOPE

0 Outline of the chapter

This chapter introduces the main theoretical proposal of this thesis: an LF theory of scope assignment. Successive chapters will develop specific applications of this proposal.

The chapter is organized as follows. In section 1 I present some of the basic empirical motivation for the approach: I review a number of semantic and syntactic facts showing that different QP-types do not behave alike with respect to scope. Section 2 features an outline of the fundamental assumptions of the theory, which will be commented and discussed in the rest of this and in the successive chapters. In section 3 I discuss the typology of QPs that I assume, and the characterization of the semantic functions that the theory presented here associates with particular syntactic positions in LF (this section draws in part on Szabolcsi 1995a, and previous work of hers). The remaining sections (4 and 5) review motivation from cross-linguistic data. Section 5 is devoted to Hungarian, presenting the analysis in Szabolcsi 1995a; this analysis provides direct support for the hypotheses in section 2.

The theory of scope of this chapter is based on (mostly still unpublished) work co-authored with Tim Stowell: in particular, Beghelli&Stowell 1994, Beghelli&Stowell 1995a,b. (Cf. Note [1] for authorship information).

1 Initial motivation for the proposal

1.1 Syntax and scope

As seen in ch. 1, scope phenomena have relevance for syntactic generalizations (cf. sect. 1). Scope appears not to be separable from syntax. More important, the study of syntactic phenomena where scope is relevant indicates that scope assignment behaves as if it took place via (covert)

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[1] In this chapter, sections 2 and 3 (in part) are based on material elaborated jointly by this author and Tim Stowell. Section 2 of chapter 4 is also based on joint work. This author is solely responsible, however, for the theoretical presentation of this material. Naturally, I also am uniquely responsible for any errors (both of presentation and content) for the whole of this work. I am grateful to Tim Stowell for allowing me to use joint research in this thesis.

movement chains. This indication receives some further support from the existence of languages (e.g. KiLega and Hungarian--to be considered later in this chapter) where scope assignment does occur in terms of overt movement.

Despite this interaction of scope and syntax, the theory of scope is not yet fully integrated into the theory of syntax. Some basic question remain in the way of this integration. These were mentioned in ch. 1: if scope is movement, what is its driving force? What is its mode of operation? Does it operate like syntactic movement ordinarily does, by substitution into Specifier positions? And most importantly, does scope movement obey the same constraints as syntactic movement (in particular, does it obey Subjacency)?

These questions were not resolved by, and in fact acquired significance as a result of, the work of May and Aoun&Li. They become all the more urgent in a Minimalist perspective, as remarked by Hornstein (cf. ch. 1, sect. 3).

Hornstein's solution was to eliminate covert scope movement altogether, reducing it to a side-effect of (independently motivated) A-movement.

In this chapter, I'll present an alternative approach, which is largely consistent with Minimalist assumptions, yet tries to overcome the problems in question. The proposal aims at achieving a greater integration between the scope module and the and the syntactic module of the grammar by proposign that scope movement is much more alike overt syntactic movement than previously thought, both in terms of driving force and mode of operation. In the next chapter, I will review the existing evidence that scope movement obeys island constraint, and propose some new evidence to this effect, which comes from the scope behavior of indefinite QPs.

The main motivation for the theory of scope to be presented in this work is, however, empirical. This will be the topic of this section. Given a (monoclausal) sentence *s* containing two QPs α and β, the task of a theory of scope is to predict which relative scope construals involving α and β are accessible to speakers of the language. I will show that even in the simplest cases of scope interactions of this type, existing theories of scope greatly overgenerate.

Recall from ch. 1 that LF theories of scope (including, to a large extent, Hornstein's) assume a principle of Scope Uniformity, which amounts to treating all QPs as undergoing the same mechanism of scope assignment. The symmetric scope relations that arise when the 'classic' quantifiers from first-order logic, *every* and *some,* interact in the same local domain, are taken as generally representative of scope interactions between (all the other) natural language quantifiers.

The next subsection will be devoted to a refutation of this assumption. I will show that even in the simplest cases of scope interactions, say between QPs in subject and object position in a monoclausal transitive sentence, scope is not symmetric in most cases. That is, whereas the subject QP is generally able to take scope over the object QP, which the subject c-commands, the reverse construal, where the object QP takes scope over the subject QP, fails in a large number of cases.

These observations support the assumption of a principle of Scopal Diversity (cf. sect. 2): distinct types of QPs participate in correspondingly distinct scope assignment processes. This principle represents a return to the spirit of the pioneering work on scope in generative grammar: Kroch 1974, where specific rules apply to particular QP types in order to derive their diverging scope possibilities.

Justification for the claim of Scopal Diversity, which in turn provides the basic motivation for the theories to be developed in later sections, is, as noted, empirical in nature. The evidence comes from different types of data. In this section I review the most basic data, provided by the availability of scope construals. I present three generalizations; after reviewing each, I turn to convergent syntactic data, pertaining to pronominal binding and the licensing of polarity items.

1.2 A Typology of Quantifier Phrases

For reference in the presentation to follow, I informally introduce below the typology of quantifier phrases (QPs) that I assume in this work.

(1) **QP-Types**

a. **Interrogative QPs (WhQPs)**. These are familiar Wh-phrases such as *who, what, which man*, etc.

b. **Negative QPs (NQPs)**. QPs such as *nobody, no man*, etc. (In this group belong also French n-words such as *personne* 'nobody', and possibly Italian/Spanish n-words such as *nessuno/nadie* 'nobody', which sometimes require an overt negative element to license them.)

c. **Distributive-Universal QPs (DQPs)**. These are QPs built with *every, each*. Their characteristic property is to allow only a distributive interpretation. In English, all DQPs are universally quantified and require singular agreement.

d. **Group-denoting QPs (GQPs)**. To this class belong various subtypes, each with partly different properties: (i) indefinite QPs and plain existentials built with *some, several*; (ii) 'bare-numeral' QPs like *one student, two students*, ... ; (iii) definite QPs like *the students, these students*, ...; and 'partitive' QPs like *one of the men, two of the men*, ... GQPs may (and often do) receive collective interpretations.

e. **Counting QPs (CQPs)**. These include cardinality expressions of varying monotonicity: decreasing QPs like *few men, fewer than five men, at most six men*, ...; increasing QPs like *more than five men, at least six men*, ...; and non-monotone ones like *between six and nine students, more (students) than (teachers)*,.... Typically, these QPs are built with 'modified numeral' quantifiers. Their characteristic semantic property is to 'count' individuals with a given property.

Individual quantifiers within these classes may have additional idiosyncratic properties. Case in point is the subclass of definite GQPs. Even more fine-tuned distinctions must sometimes be drawn within the same type or class: in chs. 4 and 5, for example, where the focus of the presentation is on DQPs, I discuss the individual properties of *each* and *every*.

1.3 Rejection of the Uniformity of Scope Assignment Hypothesis

Let's begin by considering again the Uniformity of Scope Assignment Hypothesis (UQSAH), which I will reject:

(2) **Uniformity of Quantifier Scope Assignment Hypothesis (UQSAH)**

a. The scope assignment rule does not apply differently to different QPs. Each QP-type has access to the same scope positions as any other QP-type.

b. There are multiple scope positions accessible to each QP-type. The choice among these does not depend on QP-type.

The UQSAH is not an assumption entertained just by LF Theories of Scope (LFTSs). It finds analogues in the semantics literature. The standard semantic procedures for computing scope all assign scope domains to quantifiers irrespective of the type (meaning) of the quantifier and of other operators and scope-taking elements that might occur in the quantifier's scope domain.

Szabolcsi (1995a) summarizes the operation of semantic rules of scope assignment in the following schema. Semantic treatments of scope commonly provide that the semantic operator, α, is 'prefixed' to a domain D, irrespective of what α means and of what other operator β may occur in D:

(3) $\alpha\ [_D \ldots \beta \ldots]$

Montague's (1976) QUANTIFYING IN, Cooper's (1983) QUANTIFIER STORAGE, TYPE LIFTING (Hendricks 1993, van der Does 1992, and others), Keenan's (1984) ACCUSATIVE/NOMINATIVE EXTENSIONS, to quote a few, all conform, in the relevant respects, to the schema in (3).

The UQSAH entails two separate assumptions about the nature of scope assignment:

(4) **Type-Independence**

The scopal properties of a given quantifier are independent of its inherent semantic type.

(5) **Scopal Ambiguity**

Any given pair of QPs occuring syntactically within the same local domain (i.e. clause) are scopally ambiguous.

There is a considerable body of evidence indicating that Scopal Ambiguity does not hold in many, actually most, cases. Consideration of the pertinent data leads to the conclusion that different QP types have correspondingly different scope possibilities. This contradicts Type Independence.

Some of the basic evidence against the UQSAH is already available by looking at the scopal relation between subject and object QPs in simplex SVO configurations[2].

Focussing on simplex transitive sentences (SVO), let our task be to determine which relative scope construals are available for various choices of QP-types in S(ubject) and O(bject) positions.

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2 The structural location of positions like prepositional indirect objects (PIOs) and adjuncts has been object of debate (cf. e.g. Pesetsky 1994). Certain qualifications are therefore necessary when assessing scope relations involving PIOs and adjuncts. I return to this in ch. 4. The arguments against the UQSAH given here are independent of these considerations; only scope relations between subjects and objects need to be considered.

The data unequivocally show that the relative scope of two QPs is not symmetrical in the general case. Given two arbitrarily chosen QPs α and β, in S and O position respectively, α (the subject QP) can typically scope over β (the object), but not vice versa: β often cannot be construed as taking scope over α.

Symmetric scope interactions are sometimes found, as in the standard case of SVO sentences featuring *every* and *some*, like the following:

(6) a. Some student/one of the students read every book [ambiguous: either S>O or O>S]
b. Every student read some book/one of the books [ambiguous: either S>O or O>S]

This situation is, however, far from being the general case, or even from being the representative case--contrary to what often assumed in the literature. Individual quantifier types appear to avail themselves of different scope assignment processes.

Three descriptive generalizations militate against the UQSAH. These relate to the availability of inverse scope. I call INVERSE SCOPE the scope construal that obtains when QP1 takes scope over QP2 despite the fact that QP2 c-commands QP1 at Spell-Out.

(7) **Asymmetries in the relative scope of QPs in Subject-Object positions**
a. In object position, CQPs and NQPs do not take inverse scope over subject GQPs;
b. The inverse scope of object GQPs is not associated with distributivity;
c. In object position, DQPs do not take inverse scope over subject NQPs.

I consider these claims (and some further ones) in turn in the remainder of this section. The presentation is organized around key claims.

1.4 Lack of inverse scope with CQPs and NQPs

I begin with the first claim in (7). Subject QPs can generally take scope over object QPs. But inverse scope is only available in selected cases; often it is excluded.

In particular, CQPs and NQPs do not take scope over a subject GQP. The examples below, for example, lack a construal where the object is assigned (inverse) scope over the subject QP:

(8) a. Some student read more than five books
* 'for more than five x, x a book, some student read x'
b. Some student read more books than magazines
* 'for more x's (x a book) than y's (y a magazine) there is some student who read x'
c. Some student read few(er than three) books
* 'for few(er than three) x's, x a book, there is some student who read x'
d. Some student read no books
* 'there are no books that some student read' (=no books were read by any student)

The judgments reported above are relative to the sentences uttered with neutral intonation; the determiner *some* is to be taken as the stressed version, to be distinguished from the unstressed version, *sm* (cf. Milsark 1974): inverse scope construals are sometimes possible with the latter (I'll return to these readings in section 3.4, where I suggest that QPs like *sm*, or *a*, have additional properties not shared by ordinary GQPs).

Some student in (8a,b,c,d) can be substituted with other GQPs: analogous judgments hold when the subject QP is *two students*, or *one of the students*, etc.[3]

Some comments are in order to assess the significance of these examples. As observed in Beghelli&Stowell 1995a, commonly three types of interpretation are associated with scope judgements involving quantifier phrases. These can informally be characterized as follows.

A first type of interpretation often involved in scope judgements has to do with distributivity. QP_1 is judged to have scope over QP_2 if the sentence supports a construal where we first build a predicate by composing the verb with QP_2, and then we apply this predicate to the individual (atomic) elements in the set QP_1 'talks about.'

Using (8a) to illustrate, this reading can be paraphrased as 'for each book (in a set of more than five), there is some possibly different student who read that particular book.' In other words, we 'pick' students based on our pick of books.

It is quite clear that the sentences in (8) do not support distributive readings where students are chosen on the basis of our choice of books. This is to say, in the judgment of speakers, (8a)--and similarly (8b,c)--cannot receive a logical translation like the one given below:

(8a) Some student read more than five books

(9) * $\exists X\, [\#(X) \geq 5 \wedge \forall x \in X\, [\text{book}(x) \rightarrow \exists y\, [\text{student}(y) \wedge \text{read}(y,x)]]]$

Thus, the objects in (8) fail to display (inverse) scope over the subject at least on account of the distributivity test.

The second type of interpretation is tied in with existence presuppositions. A quantifier phrase QP_1 is judged to have scope over QP_2 because the set of individuals QP_1 'talks about' is presupposed to exist. In (8a), for example, by giving the object CQP wide scope, we would have that the existence of a relevant set of more than five books in the situation is entailed both by (8a)--in at least one of its readings--and by the negation of (8a), i.e. the statement *It is not the case that some student read more than five books* (again in at least one of its readings). This entailment does not seem to be possible. By this criterion too, (8a)--and similarly (8b,c) lack an inverse scope construal.[4]

Kiss 1994 and Szabolcsi 1995 offer a different, but converging argument to characterizing the lack of inverse scope with CQPs. They suggest that an object QP can be interpreted as wide scope

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3 Again, caution has to be exercised with respect to intonation: inverse scope construals are marginally available to some speakers when the numeral is stressed.

4 A warning is (again) in order concerning intonation: at least with monotone increasing CQPs like *more than five books*, some speakers manage to construe wide scope readings in sentences like (8b). However, when one looks closely at these readings, it appears that they require some special intonational clues (albeit subtle ones, such as a slight pause before the VP-internal CQP). The claim made above, as all claims made here about scope construals with QPs, are relative to neutral intonation.

iff it can be construed as the subject of predication. The object wide scope interpretation of (8a), which I claim is not available, would accordingly be that 'there is a set with six or more books in it, such that some student read this set of books.' Using logical formulas, this construal of (8a) can be represented as follows (X is a second order variable over sets; # a cardinality operator; and subscripts are added to indicate which portion of the formula translates the predicate phrase):

(8a) Some student read more than five books

(10) * $\exists X\,[[\#(X)\geq 5 \wedge (\forall x{\in}X\,[book(x)])] \wedge [_{Pred}\,\exists y\,[student(y) \wedge read(y,X)]]]$

It does not seem natural, however, to construe (8a,b,c) as (i) asserting the existence of a set of books (with the desired cardinality) and as (ii) predicating the property 'was read by some student' of the set and/or its individual members.

These tests for the lack of inverse scope in sentences like (8a,b,c) can be supplemented with further diagnostics, which involve the use of intensional predicates. Consider the examples below.

(11) a. John is looking for more than five unicorns (for the stables of his new villa)
b. John is looking for more unicorns than hippogryphs (for the stables of his new villa)
c. John is looking for few unicorns (for the stables of his new villa)

In these examples, the QP *more than five unicorns* cannot be construed with a *de re* interpretation. These sentences cannot be understood as to require any belief on the part of the speaker that there are such things as unicorns and hippogryphs in the situation. This shows quite clearly that CQPs like *more than five unicorns, more unicorns than hippogryphs* do not support, in object position, readings where they are associated with an existence presupposition.

The only interpretation that (8a) naturally supports can be captured by the following logical formula:

(12) $\exists y\,[student(y) \wedge Mt5x\,[book(x) \wedge read(y,x)]]$

The third type of scope interpretation relies on interactions between logical operators, such as negation (or modals). A quantifier phrase QP is assigned scope inside an operator or scopal element X if it supports a construal where the quantificational force of X applies to QP. If we analyse the semantic purport of the QP *no books* in (8d) as Negation+Existential, we can apply this diagnostics to a paraphrase of (8d) like 'some student did not read a(ny) book(s).' When we do this, we find that the negation associated with this translation of *no books* cannot apply to *some student*: clearly the sentence does not have a construal 'it is not the case that some student read a(ny) book(s),' since this entails that no students read any books. Therefore, this test also indicates (where applicable) that the object in (8) does not take inverse scope over the subject QP.

(8d) Some student read no books

(13) * $\neg\,[\exists x\,[student(x) \wedge \exists y\,[book(y) \wedge read(x,y)]]]$

The scope behavior of CQPs and NQPs contrasts with that of GQPs. It is a standard observation that in object position, GQPs can take scope over a subject QP. Examples like the following, involving propositional attitude verbs, confirm that GQPs satisfy the second and third diagnostic of scope. The translations feature the relevant readings.

(14) a. John wants to go out with two ballerinas.
  ok 'there are two ballerinas (say, Jill and Sue) that John wants to go out with'
 b. It is not the case that John wants to go out with two ballerinas (but he'd love to date the others).
  ok 'there are two ballerinas (say, Jill and Sue), such that it is not the case that John wants to go out with'

I return to the scope of GQPs in the next subsection.

To sum up our findings for now: object CQPs have been found to fail all the tests of inverse scope over subjects. This argues for separating them from both GQPs and DQPs, as these have the ability to take inverse scope (though not equally, as will be seen below). Similarly, object NQPs have been found not to take scope over a GQP subject.

Within the framework of an LF theory of scope, these data point to the conclusion that neither CQPs nor NQPs have access to scope positions from where they (c-)command the scope position of a subject GQP.

The data that will be considered in the next subsection will allow us to refine these conclusions. As far as CQPs are concerned, syntactic data argues for the assumption that CQPs do not actually avail themselves of movement in LF (above and beyond movement to their Case/Agreement positions). There is evidence, however, that NQPs have access to a scope position related to that of clausal negation.

1.4.1 Syntactic tests for CQPs

The inability of CQPs to take inverse scope over a subject QP has been argued for in the previous sub-section on the basis of the availability of scope construals (or lack thereof). I present here convergent data of a syntactic nature, first from the licensing of Negative Polarity Items (NPIs) and positive tags, and then, in section 1.4.1.2, from pronominal binding (Inverse Linking).

This evidence argues for two points: (i) certain QP-types interact with syntactic phenomena in a way which is consistent with the assumption that they undergo movement in LF; (ii) these interactions distinguish between QP-types, and are consistent with the assumption that different QP-types move to different positions in LF.

1.4.1.1 Asymmetries with decreasing CQPs

The assumption that CQPs do not undergo LF-movement (above and beyond movement for Case and Agreement) finds support in certain asymmetries found with decreasing CQPs like *few*. These asymmetries have been studied in Beghelli 1995a; following the terminology of that paper, I call downward-entailing CQPs 'NNDs': Non-Negative Decreasing QPs.

The asymmetries shown by NNDs relate to two types of syntactic phenomena: (i) the licensing of a particular class of Negative Polarity Items (NPIs), which I call SENSITIVE; and (ii) the distribution of positive tags.

Both of these phenomena have largely been thought of as having a semantic basis, in that they depend on matters of semantic scope. It can be shown, however, that a purely semantic analysis cannot capture the facts. These require a syntactic account, in terms of LF licensing.

1.4.1.1.1 The licensing of 'sensitive' NPIs

Sensitive NPIs include *a single thing, a damn thing, any(thing)...at all, a red cent, a word,* etc. Semantically, they are distinct from ORDINARY NPIs like *any, any of the, anything,* because they are non-referential items that resist D-linking. Syntactically, the distinction between sensitive and ordinary NPIs lies in the stricter locality in the former's licensing.

First, sensitive NPIs need to be clausemates with their licenser. So lack of clausemateness in (15b-c) disturbs the licensing of the sensitive NPI in (15b), but does not seem to affect the ordinary NPI in (15c):

(15) a. John said that Mary didn't hear a damn thing (that Bill said)
b. ?? John didn't say that Mary heard a damn thing (that Bill said)
c. John didn't say that Mary heard any of these things

Second, the licensing of sensitive NPIs fails across certain scopal elements like *because*-clauses, while ordinary NPIs can survive this environment (cf. Johnston 1993, who elaborates on observations in Linebarger 1987). When clausal negation cooccurs with a *because*-clause, two readings are possible: either the head proposition can be negated (NH, 'Negated Head' reading in Johnston's terminology) or the adjunct proposition can be (NA, 'Negated Adjunct' reading):

(16) Marty didn't sell his bike because the gears were broken
NH: 'Marty didn't sell his bike, because the gears were broken'
NA: 'Marty did sell his bike, but not because the gears were broken'

Example (17), from Linebarger, shows that when a sensitive NPI occurs in the head clause, only the NH reading is possible:

(17) He didn't budge an inch because he was pushed
ok 'He didn't move, and this was because he was pushed' (NH)
* 'He moved some, but not because he was pushed' (NA)

However, if the sensitive NPI is substituted with an ordinary one, as in (18) —from Johnston—both NA and NH readings are again possible.

(18) Leo didn't sell any (of the) shares because the market was unstable
ok 'Leo didn't sell any of the shares, and this was because the market was unstable' (NH)
ok 'Leo sold some of the shares, but not because the market was unstable' (NA)

The NA reading of (17) seems to be ruled out because—unlike the ordinary NPI in (18)—the sensitive NPI cannot scope over the intervener (the *because*-clause) to an intermediate position where it is in the immediate scope of negation. Thus the contrast points to the fact that sensitive NPIs have very local scope: they are not able to scope over elements that are higher in LF.

Sensitive NPIs have a further property that distinguishes them from ordinary ones. In addition to clausal negation, ordinary NPIs can be licensed by a c-commanding NND. It is immaterial whether the licensing NND is preverbal (e.g., a subject) or postverbal (e.g., a complement of the V):

(19) a. Few of the students read any of the books on the list
  b. I gave few of the students any of the books on the list

Now, sensitive NPIs can be licensed by clausal negation:

(20) a. I don't believe a single thing Mary says
  b. Prof. Smith didn't teach us a damn thing about phonology

But they are not generally licensed when c-commanded at Spell-Out by a decreasing QP.[5] A preverbal/postverbal asymmetry appears: a subject NND is a much better licenser than a VP-internal NND:

(21) a. At the party, few people heard a single thing Mary said
  b. ?* I told few people a single thing about our plans

(22) a. Few people know a damn thing about contemporary art
  b. ?* Prof. Smith can teach few people a damn thing about phonology

(23) a. These days, few people would give a red cent to charity
  b. ?* These days, John would give few charities a red cent

The data in (21-23) support, then, the following generalization:

(24) NNDs show a pre-/postverbal asymmetry in that only when preverbal do they license sensitive NPIs, thus patterning with clausal negation (Neg°); but postverbal NNDs do not license sensitive NPIs.

This generalization provides evidence for two sorts of claims. First, the licensing of sensitive NPIs (thus of NPIs in general) cannot be stated with reference to S-Structure conditions, but should be

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[5] Before discussing the relevant data, it is necessary to recognize, and control for, an ambiguity in the use of NNDs. Sometimes NNDs have negative force: this is their 'few ... if any', or decreasing, meaning; at other times they have a non-monotone meaning, paraphrasable as 'some ... , but a small number of'. With the non-monotone meaning, NNDs are poor licensers for sensitive NPIs in any position. I focus here exclusively on the decreasing meaning of NNDs.

stated in LF. Next, assuming the licensing conditions are to stated in LF, post-verbal NNDs do not move even as high as the position of clausal negation.

Let's consider these claims in turn. The asymmetry in (21,22,23) is unexpected under the *Principles&Parameters* theory of NPI licensing. Although the exact conditions on the licensing of NPIs (both ordinary and sensitive) are in part still unclear, in a *Principles&Parameters* framework it is standardly assumed (on the basis of Ladusaw 1979) that NPIs are licensed when they are (i) c-commanded at S-Structure by their licenser; and (ii) in the (immediate) scope of such licenser (decreasing QPs being one type of licensers among others). When the licenser is a QP, its semantic scope varies with its position: the whole clause for a subject, the VP for a VP-internal argument. Accordingly, it is predicted that a subject decreasing QP will license NPIs anywhere in the clause, and a VP-internal one anywhere within VP.

Straightforwardly, in (21b), (22b), and (23b) the postverbal NND both c-commands the NPI at S-Structure, and takes it in its (immediate) scope. Therefore, the standard theory predicts that licensing should take place. The fact that this is not so shows that this theory needs revision. (For other arguments in the same direction, cf. Uribe-Echevarria 1995).

The asymmetries are also unexpected (and puzzling) under a QR account, or under any scopal theory that implements the Uniformity of Scope. Under these theories, all QPs (including decreasing ones) would then be free to take clausal scope, whether they are pre- or post-verbal. The asymmetry would be unaccountable for.

We see thus that scope phenomena require a more articulated account, where different QP-types are distinguished as to their scope possibilities. This is what a theory of scope which is based on the assumption of Scopal Diversity will allow us to do.

The data are consistent with the hypothesis that subject NNDs and Neg° belong together under a syntactic generalization (at LF): the fact that clausal negation always licenses sensitive NPIs suggests that this licensing must involve the presence of an Operator comparable to the Negative Operator: i.e a downward-entailing Operator as high as Neg°. We then need a mechanism whereby subject NNDs activate an Operator comparable to the negative Operator in Neg°. This is because, since NNDs as subjects pattern like Neg° with respect to licensing of sensitive NPIs, we cannot say that NNDs are just intrinsically less able than Neg° to license NPIs (and S-Structure c-command is also not the relevant parameter).

The data suggest, crucially for our concerns here, that VP-internal NNDs do not pattern with Neg°, because their scope position is lower than NegP in LF. This conclusion is consistent with the assumption that CQPs take scope in LF in their Case positions.

The situation is expressed by the following claim:

(25) Assume that sensitive NPIs are directly licensed only by Neg°, and that NNDs license indirectly, by 'activating' Neg°. The asymmetry derives from the fact that preverbal NNDs, being structurally higher than Neg°, are able to 'activate' it by a process of agreement/licensing. Postverbal NNDs do not activate Neg° because at LF they remain lower than the position of Neg°.

The negative force of a Neg° 'activated' in this way will be comparable to that of its activator.

Hence it will not be equivalent to that of clausal negation, but sufficient to license an NPI.

There are several options to implement the claim in (25), though this is a separate issue from the main point of this section, namely that NNDs do not avail themselves of LF movement to scope position, above and beyond (independently required) movement to Case/Agreement positions.

One hypothesis is to adopt the solution proposed by Moritz&Valois (1994) in their account of French *personne*: activation of Neg° is brought about by the movement of a subject NND from its VP-internal base position to its Case position. We assume that a subject decreasing QP goes through Spec,NegP and can thereby activate an Operator in Neg° by Spec-Head agreement[6]. Another possibility is to consider an NND in Spec,AgrSP or in Spec,CP—as in (?)—as being in the Spec of the 'extended' projection of NegP, using Grimshaw's (1991) notion of Extended Projection. This proposal can be refined using a consonant suggestion by Bill Ladusaw (p.c.): assume the Operator in Neg° can be activated generally through c-command. We could consider the downward-entailing Operator in Neg° itself as a polarity item. It would be activated whenever a decreasing operator c-commands it (or when lexically filled by overt clausal negation).

1.4.1.1.2 The distribution of positive tags

The second type of asymmetries found with NNDs like *few* relates to the distribution of positive tags: whereas subject *few* can license positive tags, *few* in VP-internal position can't.

(26) a. Few students came to the party, *? didn't they?
ok did they?
b. You saw few people at the party, ok didn't you?
* did you?

The same asymmetries are not found with NQPs like *no*, witness the following examples:

(27) a. No students came to the party, *? didn't they?
ok did they?
b. You saw no students at the party, * didn't you?
? did you?

Positive tags are otherwise licensed by sentences that contain clausal negation (cf. Klima 1964).

These data are consistent with the standard treatment on negative words (cf. Zanuttini 1991, Haegemann 1994, and others), which assumes that they move to Spec,NegP for negative checking. Given this assumption, we expect Neg° to be 'activated' in LF whenever a NQP is an

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6 As mentioned in Haegeman (1994), this treatment can in principle be extended to other cases of preverbal (non-subject) NND constituents—cf. (vi) below—assuming movement to preverbal position:

(vi) a. On few occasions has Moe lost a single penny at Blackjack
b. Seldom has Jack (even) lifted a finger to help us

argument (given the assumption that NQPs must check their negative features in Spec,NegP), with similar effects as when clausal negation occurs overtly. The facts in (27) thus provide direct evidence for NQPs moving to Spec,NegP.

The examples in (26), on the other hand, suggest that decreasing CQPs like *few* can only make the clause negative through overt movement, as when Case movement propels the QP to take scope over the whole clause. The fact that VP-internal *few* fails to make the clause negative confirms the hypothesis that CQPs do not move as high as NegP, but only to their Case positions in Spec,AgrOP. Unlike VP-internal NQP *no students*, a CQP like *few students* does not activate Neg°, when in VP-internal position, and thus does not make the clause negative.

These facts provide a strong argument for a theory of LF as developed in this chapter since they show that the licensing of positive tags is strictly a syntactic phenomenon. Both *few* and *no* are decreasing (=downward entailing) quantifiers; yet their licensing properties are different, and appear to be statable only at a syntactic interface level such as LF.

The differential LF behavior of decreasing CQPs and NQPs is further displayed by asymmetries in scope construals. As noted in (8c), the scope of DQPs is upwardly restricted by the occurrence in subject position of a NQP or by a decreasing CQP like *few* (I will return to these data in section 1.6). The relevant examples are anticipated in (28a,b). Similarly, clausal negation restricts the scope of DQPs, as repeatedly observed in ch. 1 (cf. (28c)).

(28) a. Few students read every book
 * 'for every book y, few students read y'
 b. No students read every book
 * 'for every book y, no students read y'
 c. Jane didn't read every book
 * 'for every book y, Jane didn't read y'

Yet, when the decreasing QP is in VP-internal position, there is a contrast between *no* and *few* in their ability to restrict the scope of DQPs:

(29) a. (Unfortunately) John introduced less than three/few people to everyone
 ok 'for every person y, John introduced less than three/few people to y'
 b. ? (Unfortunately) John introduced no one to everyone
 * 'for every person y, John introduced no one to y'

1.4.1.2 Inverse Linking

Inverse linking (May 1985) was shown in ch.1, section 2.6 to provide evidence that QPs like *every candidate* in (31a) below, raise (pied-piping their restrictor) in LF to a position where they can bind a pronoun, since the QP does not c-command the pronoun at Spell-out.

Directly relevant to the issue of diversity of QP-movement is the fact that inverse linking is selectively available depending on QP-type. A CQP like *more than one candidate* can bind a singular pronoun under c-command, as shown in (30b). In this respect it behaves like the DQP *every candidate* in (30a):

(30) a. Every candidate sent in her application.
b. More than one candidate sent in her application.

Yet, whereas DQPs support pronominal binding under inverse linking, CQPs do not, consistently with the hypothesis that these take scope *in situ*.

(31) a. One referee of [every candidate]$_1$ recommended her$_1$ warmly
b. * One referee of [more than one candidate]$_1$ recommended her$_1$ warmly

The sentence in (31b) only supports the construal that some x is the referee of more than one candidate; thus pronominal binding fails. This confirms the hypothesis that CQPs have extremely local scope; in fact, that they take scope *in situ*.

1.4.2 Further syntactic tests for NQPs

The previous section has provided some evidence for the hypothesis that post-verbal NQPs extend their scope as high as, but no higher than, the position of clausal negation, which I refer to as NegP. This position is standardly assumed to be lower than the subject Case position (at least in languages like English).

The inability of NQPs to take inverse scope over a subject is matched by a well-known fact concerning the licensing of NPIs. Within a theory of scope which, on Minimalist grounds, assumes that this type of generalizations should be stated in LF, this translates into the claim that NPIs are licensed when commanded, in LF, by a licensor. In addition to clausal negation, an NQP may license NPIs:

(32) a. John didn't read any books
b. No student read any books

However, in English a subject NPI cannot be licensed by an NPQ in object position:

(33) * Any students read no books

This datum shows that the NQP does not have access, in LF, to a position where it can take scope over the subject NPI.

1.5 Availability of inverse distributive scope

I turn now the second claim in (7), repeated below. This observation introduces another type of scopal asymmetry.

(7b) In object position, GQPs do not take distributive scope over subjects QPs.

This claim is substantiated by examples like the following. Whereas a distributive construal can be associated to the inverse scope construal of (34a), this is impossible with (34b):

(34) a. Two students read every book
  ok 'for every book x, there is a possibly different set of two students who read x'
b. Two students read three books
  ok 'there is a set of three books, such that each of the two students read that set of books'
  * 'for each of three books, there is a possibly different set of two students who read that book'.

When in object position, GQPs like *three books* clearly appear to take inverse scope by the first and third diagnostic, but fail the second, distributivity, in the sense of the term used here.[7] Not only numeral GQPs, but GQPs in general (e.g. those built with *some, several, the, many,* etc.) show this type of effects. They fulfill the second test of scope discussed in the previous section: they allow construals where there is a unique set of three books, which act as subject of predication (and is presupposed to exist in the situation; cf. the first translation given for (34b)). However, the fail the first test: they do not support distributive readings (cf. the second translation for (34b)). In this, they contrast with DQPs (cf. 34a), which not only take scope, but also distribute, over a GQP or CQP in subject position.

The same observation, that existential and numeral QPs can take inverse scope but do not distribute is also reported in Ruys (1993), who attributes it originally to Verkuyl (1988) and van der Putten (1989).

A proper account of the scope properties of GQPs requires separating distributivity as a distinct component of scope. Even when scope is symmetrical (in 34b either the subject or the object can take scope over each other) distributivity need not be. This again contradicts Scopal Ambiguity.

1.5.1 The licensing of 'a different N'

The claim that with GQPs inverse scope is not accompanied by distributivity is independently supported by syntactic data, pertaining to the licensing of items like *a different book.* The generalization on the distribution of *a different* N is actually broader than the claim we are

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7 The example discussed in (34b) helps see how the notions of distributivity and scope employed here are different from the notions standardly used by logicians and philosophers of language.

As regards distributivity, the usual logical notion assumes that if QP α takes scope over (a proposition ϕ containing) a QP β, yielding a logical configuration of the form $\alpha x\ [_{\phi} \ldots \beta \ldots x \ldots]$, and α is not singular, it then follows that α receives a distributive interpretation (over ϕ and β). This is because, in the sense of 'distributive' employed by logicians, the truth of $\alpha x[_{\phi} \ldots \beta \ldots x \ldots]$ entails that for any x, ϕ holds of x.

The notion of distributivity that I assume here is, instead, the following. I will say that a QP α occuring in a sentence *s* supports a distributive-reading if under this reading we can construe individual elements in the domain of α to co-vary with (the witness set of) another quantifier β that also occurs in the logical representation of *s*. Thus I separate distributivity from scope; whereas these two notions tend to be conflated in logic.

There is a second respect in which these two notions are distinguished here. This relates to the notion of scope. I assume that the scope of the discourse referent associated with a GQP (or DQP) α may be different from the scope of the distributive operator associated with α. This is because I distinguish separate subcomponents in the logical notion of scope. This point will receive ample illustration in the next chapters.

considering, but consistent with it. QPs like *a different* N--in the relevant reading--are licensed only in the LF scope of DQPs, but not of GQPs.

Consider a sentence like *Every student read a different book.* NPs like *a different book* have two readings: a distributive reading, meaning that the share of distribution (a book) associated to each individual in the distributor set (the set of students) is distinct from all other individual shares; and a non-distributive reading, where the NP is anaphoric to a discourse referent introduced in a previous clause, and the meaning is that the NP *a different book* denotes an individual book which is distinct from the previously mentioned book. The distributive reading only is relevant here.

On this reading, *a different* N must be licensed in the scope of a DQP (i.e. *every/each student*): GQP subjects do not license *a different* N, unless an overt distributor, such as a floated *each*, is present:

(35) a. Every student read a different book
b. Each student read a different book
c. * Five students read a different book
d. * The students read a different book
e. Five students each read a different book
f. The students each read a different book

Furthermore, *a different student* in subject position can be licensed (in its distributive reading) by a DQP in object position, but not by a GQP:

(36) a. A different student read every book
b. A different student read each (of these) books
c. * A different student read five books
d. * A different student read the books

The data on the distribution of *a different* N shows, then, (i) that DQPs have access to a scope position higher than that of a subject GQP like *a different book*; and (ii) that although GQPs seem to support distributive readings when in subject positions, their distributive force is not sufficient to license 'distributee' items like *a different* N, unless an overt distributive element is added (e.g. a floated *each*). This supports the conclusion that the scope of GQPs is divorced from distributivity, or at least, from the type of 'strong' distributivity possessed by DQPs.

Of course, GQPs do support what appear like distributive readings in some cases. Consistenly with the data reviewed above, I take these 'distributive' readings with GQPs to arise via a special mechanism. I will discuss this in detail in ch. 4. I will leave this aside for now. I take the data presented so far to argue for the hypothesis that GQPs are not intrinsically distributive.

1.6 Restrictions on the inverse scope of DQPs

From the previous discussion, one would conclude that symmetric scope interactions (per Scopal Ambiguity) are at least available with distributive quantifiers like *every, each*. There is an important exception even to this claim. This is expressed by (7c), repeated below.

(7 c) In object position, DQPs do not take scope over subject NQPs

Whereas *every/each* N can freely take inverse scope (and distribute) over a subject indefinite, they don't do so when the subject QP is a NQP (or even a downward-entailing CQP)[8]. The examples that follow illustrate.

(37) a. No students read every book
  * 'for every book x, no students read x'
 b. Few students read every book
  * 'for every book x, few students (if any) read x'

The judgements for examples like (37) are especially clear: if indeed *every book* took wide scope over *no students*, we would be allowed to read (37a) to mean that no books were read by any students; and (37b) is a statement about the ability of students to read all of the books; it does not say anything about how many students read each individual book.

GQPs show a different behavior. Object GQPs can take inverse scope over clausal negation (38a). As exemplified by (38b), object GQPs can also take inverse scope over subject NQPs:

(38) a. John didn't visit two professors
  ok 'there are two professors, such that John didn't visit them'
 b. No student(s) visited two professors
  ok 'there are two professors, such that no student(s) visited them'

In the construals given above for (38a,b), the GQP *two professors* acts as subject of predication (the property of not being visited by John or by any student is predicated of a group of two professors). This observation suggests that the inability of DQPs to take inverse scope over NQPs does not depend on a general ability to take inverse scope (as otherwise they can), but follows from some incompatibility between distributivity and negation. We will see in ch. 4 that this is indeed the case.

There are other situations where scope is not uniform; these will be encountered in the course of the next chapters. The three generalizations given in (7) are sufficient to show that Scopal

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[8] QPs whose determiner is *most* also block wide scope of DQPs, at least when *most* is used generically (cf. viii.a). When *most* is used non-generically, but as a counting quantifier, inverse distributive scope with *every* in object position seems possible (cf. viii.b). The'counting' meaning of *most* in these contexts seems to be 'more than $n\%$', $50 < n < 100$. Consider the contrast:

(viii) a. Most students take every music appreciation class (that is offered at this university)
  * 'for every music class, most students took it (maybe different majorities for each class)'
 b. Most of the students took every music appreciation class (that was offered)
  ? 'for every music class, most of the students took it (maybe different majorities for each class')

I will not discuss generic quantifiers in this thesis. The data presented above is, however, consistent with the hypothesis that the scope position of generic QPs is higher than DistP.

Ambiguity is most often not realized. This in turn shows that the Uniformity of Quantifier Scope Assignment Hypothesis is incorrect, in that it crucially relies on Type Independence.

Scopal Ambiguity can only be maintained relative to certain combinations of quantifier-types. The clearest such case is when a distributive quantifier like *every, each* interact (in the same clause) with an indefinite.

It is somewhat paradoxical, when we look at things from this point of view, that theories of scope have routinely based their predictions almost entirely on this particular choice of quantifiers. No doubt, this has to do with the special attention that *every* and *some* have received in classical logic. But what is perfectly fine to do when building a logical calculus should not guide linguists in accounting for natural language.

1.7 Rejecting the Uniformity of Quantifier Scope Assignment Hypothesis

The data considered so far are however sufficient ground to reject the UQSAH. The evidence leaves no doubt that the UQSAH cannot stand as it is. The question is whether it is desirable to nevertheless maintain the UQSAH, supplementing it with a variety of independent assumptions and/or 'filters'. One example of this strategy is offered by Hornstein's recourse to the Preference Principle (cf. ch.1, 3.3.3.1).

The shorcomings of the Preference Principle have been discussed in ch.1. Above and beyond the problems with this particular principle, the point of view adopted here is that supplementing the UQSAH with additional constraints is not explanatory. The data reviewed in the preceding sections show that QP-types interact in complex ways, above and beyond what a 'Preference Principle' can capture. A specific theory of QP-types and their accessible scope positions is needed.

The rejection of the UQSAH motivates a wholesale revision of some of the standard principles of LFTSs. Once the full consequences of this move are implemented, there are theoretical advantages to be metet out.

2 Overview of the Target Landing Site approach

In this section I present a general overview of the theory of scope that I will propose, beginning with some theoretical background assumptions. In section 2.8 I will show how the asymmetries of scope observed in section 2 can be derived from the TLS theory to be presented in this chapter.

2.1 Theoretical assumptions

The LF theory of scope to be presented in this chapter is referred to as a 'Target Landing Site' theory of scope (henceforth TLS). This theory has the following essential features.

2.1.1 Scope in LF

First, it is an LF Theory of Scope (LFTS), as defined in ch. 1. In addition to assuming an LF level of syntactic description, it shares the premises of this type of theories, repeated here from ch. 1 (1.1).

(39) **Scope positions**
If L is the LF representation of a sentence s containing a quantificational element α, the assignment of scope to α is represented as a relation between the thematic position of α and another position β in L, its scope position.

(40) **Scope chains**
When α and β are distinct, they are links of a chain. Scope chains are syntactic chains.

(41) **Representation of relative scope**
The scope of a quantifier phrase α with respect to another quantifier phrase β is determined by the c-command relation between the scope position assigned toα and that assigned to β at LF.

2.1.2 'Target Landing Sites'

These general assumptions are supplemented by the following principles, which define the Target Landing Site approach properly:

(42) **Scopal Diversity**
Distinct QP types have distinct scope positions and participate in distinct scope assignment processes.

(43) **Target Scope Assignment**
Each (sub)type Q of quantifier phrases has a target scope position in the specifier of a functional projection; this position is associated with an invariant logico-semantic function, which matches the semantic and morphological properties of Q.

Scopal Diversity represents a rejection of the Uniformity of Quantification Hypothesis. Consequently, there is no longer an omnivorous rule like May's QR, operating in the mode of adjunction. Target landing sites break down May's QR into several distinct scope assignment mechanisms.

2.1.3 'Minimalist' assumptions

The empirical claims that this proposal makes can in principle be expressed in a variety of current theoretical frameworks: Sportiche's (1993) Reductionist Approach, Chomsky's (1992) Minimalist Program, or Brody's (1993) Lexico-Logical Form.

I will not focus here on the differences between these approaches. For concreteness of presentation, however, the proposal is cast in a framework largely compatible with the premises of Chomsky's Minimalist Program (Chomsky 1992).

I therefore assume the following Minimalist principles, which are directly relevant to a theory of scope (cf. Hornstein 1994). I do not present an articulated exposition of the Minimalist framework except for notions that are most immediately necessary to expressing the analysis in the following sections.

(44) **Interface Levels**
LF and PF are the sole grammatical levels.

Thus locality conditions on movement (Subjacency), Case Theory, Binding Theory, etc. are to be stated exclusively as LF conditions.

(45) **Primacy of X-Bar Theoretical Notions**
The basic grammatical relations are X'-theoretic: head, specifier, complement.

Notions like government (and constraints that rely on them, such as the ECP) are abandoned.

(46) **Licensing of Syntactic Movement**
Movement is driven by the need of morphological licensing.

These principles, and the one in (45) in particular, prompt the formulation of a theory of Case where this morphological feature is licensed (checked off) in Spec-Head agreement between an argument XP endowed with Case features and an Agr°+Case Checker Head (the standard checkers for Nominative and Accusative being T and V, respectively).

Consistently with a Minimalist framework, the notion of scope chain is implemented derivationally as follows:

(47) **Scope by Movement**
Scope chains are movement chains. According to the Scope Chains assumption (cf. (40) above) movement that assigns scope is syntactic movement: (i) it has the same mode of operation; and (ii) it obeys the same locality conditions.

In addition to Subjacency, movement is constrained by a suitable interpretation of Rizzi's (1990) Relativized Minimality principle. The objective is to enforce a 'shortest move' requirement, to the effect that movement must not skip a potential landing site. Thus an A-chain link cannot be formed by skipping over an intervening landing site for A-movement, and similarly for A'/A° movement.

An implementation of Shortest Move that has intuitive appeal is given by Ferguson&Groat's (1994) feature-relativized Shortest Move Requirement (SMR):

(48) **Shortest Move Requirement** (Ferguson&Groat 1994)
A category moving to check feature(s) of a given type may not skip moving into an immediate relation with the closest c-commanding head which checks features of that type. (An immediate relation is defined as a relation with the head of the category targeted for movement)

Under this formulation of Shortest Move, an XP endowed with feature γ cannot move across a category that checks γ. It is to be noted that Ferguson&Groat's principle dispenses "with the need for relativizing movement with respect to a doubly-stipulated typology of position types (that is, X° vs. XP positions, A vs. A' positions." (1994:sect. 1).

A final assumption of the theory to be presented here (which departs from some current implementations of the Minimalist framework) is the availability of Pied-Piping:

(49) **LF Pied-Piping**
Movement at LF can avail itself of Pied-Piping.

2.2 Type-relative nature of scope assignment

Recall the typology of quantifier types given in (1), section 1.1: in addition to WhQPs and N(egative)QPs, I have assumed a distintion between three further types: D(istributive)QPs, G(roup-denoting)QPs, and C(ounting)QPs.

The distinctions between these QP-types are morphologically based. Each QP type has distinct morphological properties (with sub-types in some cases), such as whether it binds singular or plural pronouns, can combine with collective predicates, etc. These properties will be reviewed in section 3.

The typology in (1) provides the basis for the diversity of scope assignment which a TLS theory assumes. The starting point of a TLS theory of scope is the claim that to each of the types in (1) is associated a distinct scope assignment mechanism:

(50) **Type-relative nature of scope assignment**
The scope of a QP is a function of the type QP belongs to.

Assigning each QP-(sub)type a distinct scope position gives us the possibility, in principle, to express all the generalizations given in section 1. To anticipate the direction that will be taken: first, we can account for the very local scope of CQPs by essentially excluding them from undergoing scope movement in LF. Second, we can capture the fact that GQPs can take wide(st) scope over negation and DQPs by assigning GQPs the highest scope position in the clause. Finally, we can express the fact that the scope of GQPs is divorced from distributiivity by segregating the scope positions accessible to GQPs from that of DQPs.

Implementing the principle in (50) requires a revision of the rule of scope assignment. As seen in ch. 1, LFTSs invoke a rule of Quantifier Movement, be it QR or NP-movement, that applies uniformly to all QP types. This rule operates according to the Uniformity of Quantifier Scope Assignment, repeated below in a theory-neutral formulation:

(51) **Uniformity of Quantifier Scope Assignment Hypothesis (UQSAH)**

a. The scope assignment rule does not apply differently to different QPs. Each QP-type has access to the same scope positions as any other QP-type.

b. There are multiple scope positions accessible to each QP-type. The choice among these does not depend on QP-type[9].

2.3 *Target landing sites*

Assume instead that each quantifier type (and/or sub-type) has a dedicated (target) landing site reserved for it in the functional superstructure of the clause. This satisfies the principle in (50): the scope position of each QP is a function of its type, i.e. of the semantic properties associated with the type.

The model for this proposal is the standard treatment of Wh-quantifiers and (more recently) of the licensing of negative words (NQPs). Standardly, interrogative WhQPs take scope in the Spec of CP, undergoing Spec-Head agreement with the Question Operator in C. It is assumed that WhQPs carry a [+Wh] (i.e. interrogative) feature, and that this feature needs to be CHECKED by agreement with a head that bears the same feature.

In the same spirit, a research tradition originating with Laka (1990), Zanuttini (1991), and developed by Haegeman (cf. especially 1994), Moritz&Valois (1994), and others, has argued that negative words are syntactically licensed by undergoing movement at LF to the Spec position of NegP, the INFL projection that hosts clausal negation[10]. In Spec,NegP negative words check their [+neg(ative)] features by agreement with Neg°. Though work on Neg-movement has focussed on Romance (where negative words appear to have sometimes polarity, sometimes quantificational properties), the proposal has been extended to Germanic as well (cf. Haegeman 1994 for a comprehensive account).

The theory of scope that is presented in this chapter extends these research directions to other quantifier types, as suggested in Beghelli&Stowell (henceforth abbreviated as B&S) 1995a,b. It assumes a richer set of functional projections than the standard 'Split Infl' hypothesis. In addition to AgrSP, T(ense)P, NegP, AgrOP, I assume (following B&S) the existence of (i) a distributive projection (DistP); (ii) an existential projection (ShareP); and (iii) a referential projection (RefP). In the last two sections of this chapter I will provide cross-linguistic support for these assumptions.

Functional projections (including the new ones) have fixed and unique position in the syntactic structure of the clause. The TLS approach locates QP-type specific scope positions as the specifier position of functional projections.

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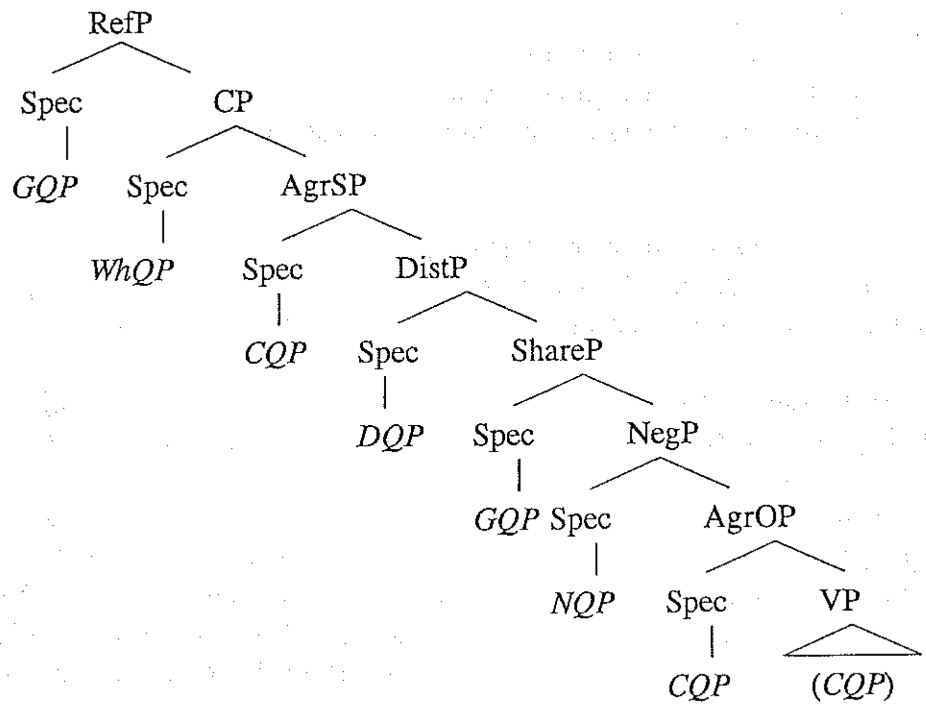
9 A partial exception to this generalization is given by Hornstein's Preference Principle. Some problems with this principle have been mentioned in ch.1, 3.3.3.1. Cf. also section 4.1.

10 Technically, movement is not always (though most often perhaps) invoked. Haegeman (1994), arguing that licensing takes place at S-Structure, suggests the possibility that licensing is carried out via operator CHAINs, rather than movement chains. Brody's (1995) representational lexico-logical form similarly dispenses with movement (whether at LF or before Spell-out). In particular, for the kind of LF relation we consider here, Brody proposes that the head of the chain is a scope marker.

The diagram in (52) summarizes the TLS proposal presented here, and gives the hierarchy of functional projections that it assumes.

(52)



The central hypothesis in a TLS approach is the following:

(53) **Licensing of QPs in LF**

a. QPs are licensed in LF by moving into the specifier position of that functional category which suit the semantic and/or morphological properties of their (QP-) type.

b. (In addition to WhQPs and NQPs) Distributive-universal QPs (DQPs) and Group-denoting QPs (GQPs) are licensed by entering into Spec-Head agreement with appropriate Operators.

I assume the following general principle:

(54) **Semantic Anchoring of Clause Structure**

There exist fixed and unique positions in the functional structure of the clause for a number of logico-semantic Operators. These Operators reside in X° positions, as follows:

a. The negative operator resides in Neg°;
b. The question operator resides in C°;
c. The distributive operator resides in Dist°;
d. Existential (closure) operators are available in Ref° and in Share°.

Quantifier phrases whose semantic properties (as given by their morphological class) require licensing by Operators (i.e. GQPs and DQPs) do so by Spec-Head agreement in the projection of the corresponding Operator; in this configuration QPs can check their features by activating the Operator.

I assume that scope positions can be filled multiply. A number of technical solutions can yield this result, including some version of May&Higginbotham (1981) rule of Absorption.

2.4 Licensing conditions for QP-types

For the most part, I will not be concerned with the licensing conditions on WhQPs and NQPs. For these, I assume the standard account, as mentioned in the previous subsection. We can, for example, assume an appropriate LF version of Rizzi's (forthcoming) Wh-Criterion and of Haegeman's (1994) Neg-Criterion, requiring WhQPs and NQPs to check their features in Spec,CP and Spec,NegP, respectively.

I will focus, from now on, on the licensing conditions for the remaining QP-types. The set of principles to be presented in this subsection develops the proposal in Beghelli 1994. In that paper, I introduced a ternary division between QP types other than negative and interrogative, corresponding to the one given in (1) among DQPs, GQPs, and CQPs. I also proposed that one type of QPs (MNQPs in that paper, CQPs here) do not undergo quantifier movement, but take scope *in situ*.

The licensing conditions presented below presuppose a semantic theory of QP-types which I take from Szabolcsi 1995a. I present now, for reference purposes, a statement of the licensing conditions for the various QP-types. After introducing the licensing conditions for GQPs, DQPs, and CQPs, I will show how the scope facts reviewed in section 2 can be accounted for.

2.4.1 Licensing of GQPs

GQPs can be informally described as group-denoting QPs. In the spirit of current DRT treatments, let's assume that GQPs contribute a discourse referent, i.e. they introduce a variable. The discourse referent contributed by GQPs is a restricted variable ranging over individuals in the model. The individuals can be either singular (atomic) individuals, or plural individuals. As standardly provided in the semantic literature, plural individuals can be regarded as elements (*i-sums*) in an appropriate lattice structure (cf. e.g. Link 1983, etc.). I refer to both singular and plural individuals as groups.

The groups over which the (restricted) variables range correspond to witness sets of the QP.

The formal definition of witness set, originally given in Barwise&Cooper (1981) is as follows:

(55) **Witness set**

A 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 (cf. Szabolcsi 1995).

[A quantifier Q lives on a set A ($A \subseteq E$; E the set of entities provided by the model), if Q is a set of subsets of E such that, for any $X \subseteq E$, $X \in Q$ iff $(X \cap A) \in Q$. (Barwise&Cooper 1981:178)].

Informally, a witness set for the GQP *two men* is any set consisting of two men (and no non-men). Hence the restricted variable introduced by the GQP *two men* is any group that consists of two men.

GQPs, then, are interpreted as restricted variables which are existentially closed at the point where they are introduced. In the TLS approach, this account is implemented as follows:

(56) **Licensing of GQPs**

a. GQPs introduce 'group' variables; these are restricted variables ranging over singular or plural individuals (both standardly regarded as groups--cf. Link 1983--though the term is usually applied to plural individuals).
b. The group variable introduced by a GQP must be bound by an existential Operator.
c. GQPs are licensed by Spec-Head agreement with an existential Operator.
d. Existential Operators are available in RefP and ShareP; these carry distinct semantic features. When in Spec,ShareP, GQPs realize the semantic feature of having a group referent; when in Spec,RefP they realize the semantic feature of being the subject of predication.

Introducing a group variable is taken to be a a morphological requirement since it is associated with a class of QPs that can be morphologically defined. As listed in section 1.1, only definite DP's, bare-numeral QPs and a restricted set of other QPs belong to this class, which I refer to generally as GQPs. In addition, GQPs have a further characteristic morphological property: when they denote a plural individual, they cannot bind a singular pronoun (cf. * *The girls lost her hat*).

Individual subtypes of GQPs follow restricted versions of the schema in (56), depending on their morphological features. Indefinite GQPs (*some men/man, several men...*) and bare-numeral GQPs (*two men, three men ...*) have access either to Spec,RefP, where they are interpreted as subjects of predication, or to Spec,ShareP, where they can be narrow scope with respect to a higher quantifier, for example a DQP.[11] Certain GQPs, such as *a different book*, in its 'distributive' reading (as in *Every student read a different book*; to which I will return below), only have access to Spec of ShareP, and cannot be endowed with the [+subject of predication] feature. QPs that move to Spec,ShareP are interpreted as distributees, and they check the feature

[11] As the reader may have noted, I do not concern myself in this work with generic quantifiers and genericity in general. Tentatively, I assume they have access to a target position at least as high as that of DQPs. Some remarks on the interaction of generic quantifiers and *every*-QPs are given in ch. 5, section 6.

of introducing group referents ([+group referent]).

A specific proposal for definite GQPs will be introduced in the next chapter (section 1.3.4). For now, let's assume they are endowed with a morphological feature [+subject of predication], and move to Spec,RefP.

When an existential Operator binds (by Spec-Head agreement) the group variable of the GQP, the latter is assigned a group, or collective reading. Distributive readings with GQPs are discharged through an additional mechanism, which is different from the process by which DQPs gain distributive readings. This will be argued for in ch. 4. For now, let's only consider the group reading of GQPs.

2.4.2 Licensing of DQPs

DQPs, and their distributivity properties, are one of the foci of this work. I will argue, starting in ch. 4, that they show distinct distributive properties in certain contexts, namely, when they occur in negative or interrogative clauses. I ascribe this special behavior to the presence of Operators such as Negation, Question (and possibly the Generic Operator--cf. ch. 5).

Partly to explain this differential behavior, I propose a treatment of DQPs which is unlike the standard treatment in DRT. In DRT only (in)definites introduce discourse referents; what I call here CQPs are placed in the same class as DQPs, and interpreted as generalized quantifiers.

Rather than considering DQPs as pure quantifiers, I assume (as proposed by Szabolcsi 1995a on the basis of independent data) that DQPs do introduce discourse referents, albeit of a different type than GQPs: DQPs introduce not group/individual, but set referents. I return to a discussion of this point in section 4.

Next, I assume that the set variable introduced by DQPs can be bound by Negative and Interrogative Operators, in addition to the Existential Operator. Binding by the Existential Operator takes place as the default case, when there are no Negative/Interrogative Operators present (i.e. in plain, non-negative, declarative sentences). Note that the group referent introduced by GQPs can only be bound by Existential Operators. The scope properties of GQPs, as will be argued, are not affected by the presence of such Operators.

In ordinary non-negative, declarative clauses, there appear to be no essential differences in the scopal behavior of *every* and *each*. Differences between them do show up when these quantifiers are contained within negative or interrogative clauses, where their set variable is in the scope of, and bound by, the Negative or Question Operator. In these contexts *every* appears to lose some of its distributive properties; *each*, on the other hand, is either ungrammatical, or uniformly distributive in all these contexts.

To account for this behavior, I will assume that the distributive feature of *every* are underspecified, and are inhibited when its set variable is bound by Negation or Question. The distributive features of *each* are not so affected.

In this chapter, I only consider DQPs in plain, non-negative declarative clauses. In such cases I assume that the set variable introduced by a DQP is bound by an Existential Operator, whose site is Ref°. When its set variable is bound by an Existential Operator, *every* shows the same distributive property as *each*. No difference between *every* and *each* needs thus to be assumeed at this stage of the presentation.

A final basic difference between the treatment of GQPs and DQPs offered here is that the latter are (normally) related to a Distributive Operator in Dist°, whereas the former never are. A discussion of the differences between DQPs and GQPs with respect to distributivity will be included in ch. 4.

In the account proposed here, DQPs like *each man* or (in non-negative/interrogative contexts) *every man*, are licensed in LF by moving to Spec,DistP. In this configuration, the distributive Operator in Dist° applies to the individual members of the set introduced by the DQP. I assume, without further elaboration, that this is reflected in the morphological property of triggering singular verbal agreement and binding a singular pronoun (despite the fact that DQP are semantically plural, i.e. introduce a plural discourse referent). This provides some plausibility to the claim that only QPs that have a [+singular agreement] feature have access to Spec,DistP.

The notion of distributivity associated with DQPs is somewhat different from the usual notion employed in logic. It is rather a syntactic (linguistic) notion. A more complete discussion will be given in ch. 4; but it is useful to anticipate some points here. In a distributive relation between two QPs, I distinguish (following Choe 1987) the 'distributor' QP from the 'distributee' (or 'share') QP, which takes narrow scope with respect to the distributor.

For the kind of distributivity associated with DQPs to be satisfied, it is crucial that both a distributor and a distributee terms be simultaneously present. Whereas the distributor checks its features in Spec,DistP, the distributee--cf. (57d) below--checks its features in Spec,ShareP.

I will refer to a QP as distributive when, as distributor, it supports a reading where for at least two distinct individuals in its domain, there are corresponding distinct shares. So, in *Every student read some book*, *every student* is distributive under the S > O construal because it is intended that there are at least two students *x*, *y*, such that the book read by *x* is different from the book read by *y*.

The licensing conditions for DQPs are given below, anticipating the conclusions to be reached in later chapters:

(57) **Licensing of DQPs**

a. DQPs introduce set variables; these are restricted variables ranging over sets.

b. The set variable introduced by a DQP can be bound by an existential Operator; alternatively, it can be bound by the Question Operator, or by the Negative Operator.

c. All DQPs have a morphological feature [+singular (agreement)]. In addition, *each*-QPs are endowed with a feature [+distributive]. DQPs built with *every* are underspecified for [distributive].

d. Only QPs that are [+singular] may have access to Spec,DistP; QPs that are [+distributive] must access Spec,DistP at LF. [+distributive] is checked by Spec-Head agreement with the distributive Operator in Dist°.

e. For a DQP to be licensed (as a distributor) in Spec,DistP, the (adjacent) Spec,ShareP position must also be filled by an existential term functioning as distributee.

2.4.3 Licensing of CQPs

The licensing conditions for CQPs are the simplest, since they do not introduce discourse referents:

(58) **Licensing of CQPs**

a. CQPs are interpreted as Generalized Quantifiers; as such, they cannot be bound by Operators.

b. CQPs are licensed in their Case/Agreement positions, i.e. Spec,AgrXP.

From the point of view of an LFTS, they can be said to be licensed *in situ*. Since they do not introduce variables which need binding, like GQPs and DQPs do, they do not undergo further LF-movement. In this approach, CQPs are treated just like Hornstein treats all types of QPs.

2.5 Scope as an epi-phenomenon

In a TLS approach, movement at LF is landing site-selective. "Individual subcases of 'QR' no longer form a natural class of movement-types distinct from the traditional 'Wh-movement' or 'NP-movement' types; rather, each QP-type undergoes a kind of directed movement to the extent that it seeks out a specific landing site—just like Wh-movement and Case-driven DP-movement to AgrOP or AgrSP." (B&S 1995a).

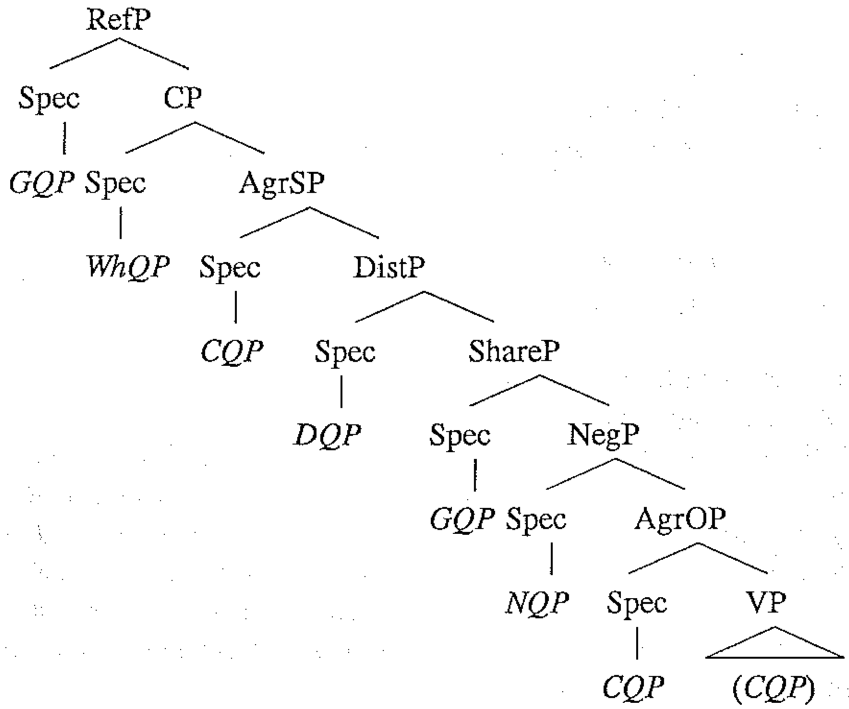
This model has consequences for the form of the scope assignment rule. The mode of movement of QPs at LF is not that of adjunction, but rather that of substitution to a Spec position, in line with a number of recent proposals (e.g. Sportiche 1993 and Brody 1993). Movement of QPs at LF is thus similar to most other types of overt movement.

On a less technical level, the assumption of target landing sites implies that scope is not a unitary phenomenon. The driving force behind the traditional notion of QR was the need of certain DPs to establish scope (i.e. operate on a proposition and bind a variable within it), *qua* quantificational elements. In the TLS approach, the need to establish scope is no longer the driving force behind QP movement at LF. There is, in fact, no longer any 'scope assignment rule' properly. Scope assignment is a consequence of a number of independent processes. Such processes are driven by the licensing needs of QPs. It is claimed that the semantic properties of QP-types are licensed syntactically though their association with morphological features of QP-types.

The TLS approach, as it is implemented here, teases apart subcomponents of scope, such as group reference and distributivity (as characterized in section 1.3.2). This involves a departure from the traditional notion of scope (and related notions such as distributivity in the traditional logical sense) as they are employed in (model-theoretical) semantics and among philosophers of language. Only CQPs correspond to generalized quantifiers; neither GQPs nor DQPs correspond directly to the quantifiers familiar to logicians and semanticists.

To summarize our discussion so far, unlike standard theories of scope in LF, the TLS approach assumes that each QP-type targets its individual scope positions. The hierarchy of scope positions is repeated from (52), and is taken to be fixed.

(52)



This hierarchy provides sites for the Operators listed in (54). Whereas scope positions are Specifiers, the Operators are hosted by heads: Ref° hosts an Existential Operator; C° the Wh-Operator; Dist° the Distributive Operator; Share° an Existential Operator; and Neg° the Negation Operator.

Only QPs that introduce discourse referents (variables), i.e. DQPs and GQPs, need to be related to Operators. This is accomplished via movement; this takes place, in languages like English, at LF.

CQPs are interpreted as generalized quantifiers; hence they do not introduce discourse referents and do not move to Operator positions. They take scope in their Case/Agreement positions.

The asymmetries introduced by the hierarchy in (52) are reflected in the basic asymmetries of scope observed in section 1. Tough a more complete account will be offered in section 2.9, it is immediate to observe that the two of the three empirical observations in section 1 can be directly stated in the approach to scope presented here.

The fact that as objects, neither NQPs nor CQPs gain scope over a subject GQP follows because neither NQPs (which scope in Spec,NegP) nor CQPs (which scope in Spec,AgrOP) have access to scope positions that are higher than the lowest scope position of GQP, which is Spec,ShareP (refer to (52)).

The lack of inverse distributive scope on the part of GQPs derives from the fact that these are not given access to Spec,DistP, the scope position of distributors. GQPs have, however, access to Spec,RefP (and/or to Spec,ShareP): this allows them, as objects, to take (inverse) scope over NQPs and CQPs in subject position (and for that matter, over any type of QP in subject position).

But these wide scope construals of GQPs are dissociated from distributivity, since Spec,DistP is not involved.

2.6 A classic scope ambiguity revisited

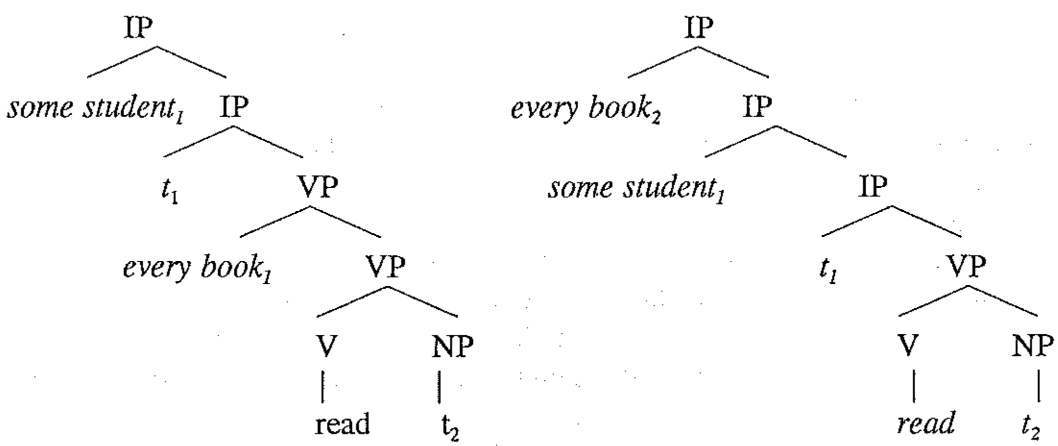
To offer a concrete illustration of the workings of the theory of scope presented here, I give below the derivation of the classic scope interaction involving *every* and *some*, exemplified in (59) below.

(59) a. Some student read every book [*some* > *every* or *every* > *some*]
b. Every student read some book [*every* > *some* or *some* > *every*]

For simplicity, I take May's (1985) treatment as representative of the standard account. (The differences between May's account and Aoun&Li (1989, 1993), Hornstein (1994) are irrelevant here. Common to all these approaches is that, in accordance with the Uniformity of Quantifier Scope Assignment Hypothesis, the different scoping of *every* N correspond to multiple scope positions at LF. May and Aoun&Li represent the wide vs. narrow scope of *every book* in (59a) by moving it to IP and VP, respectively.[12] Hornstein represents the wide vs. narrow scope of *every student* in (59b) by interpreting only its copy in AgrSP and AgrOP, respectively.)

May's account can be schematically represented as follows. S > O and O > S stand for subject and object wide scope readings, respectively:

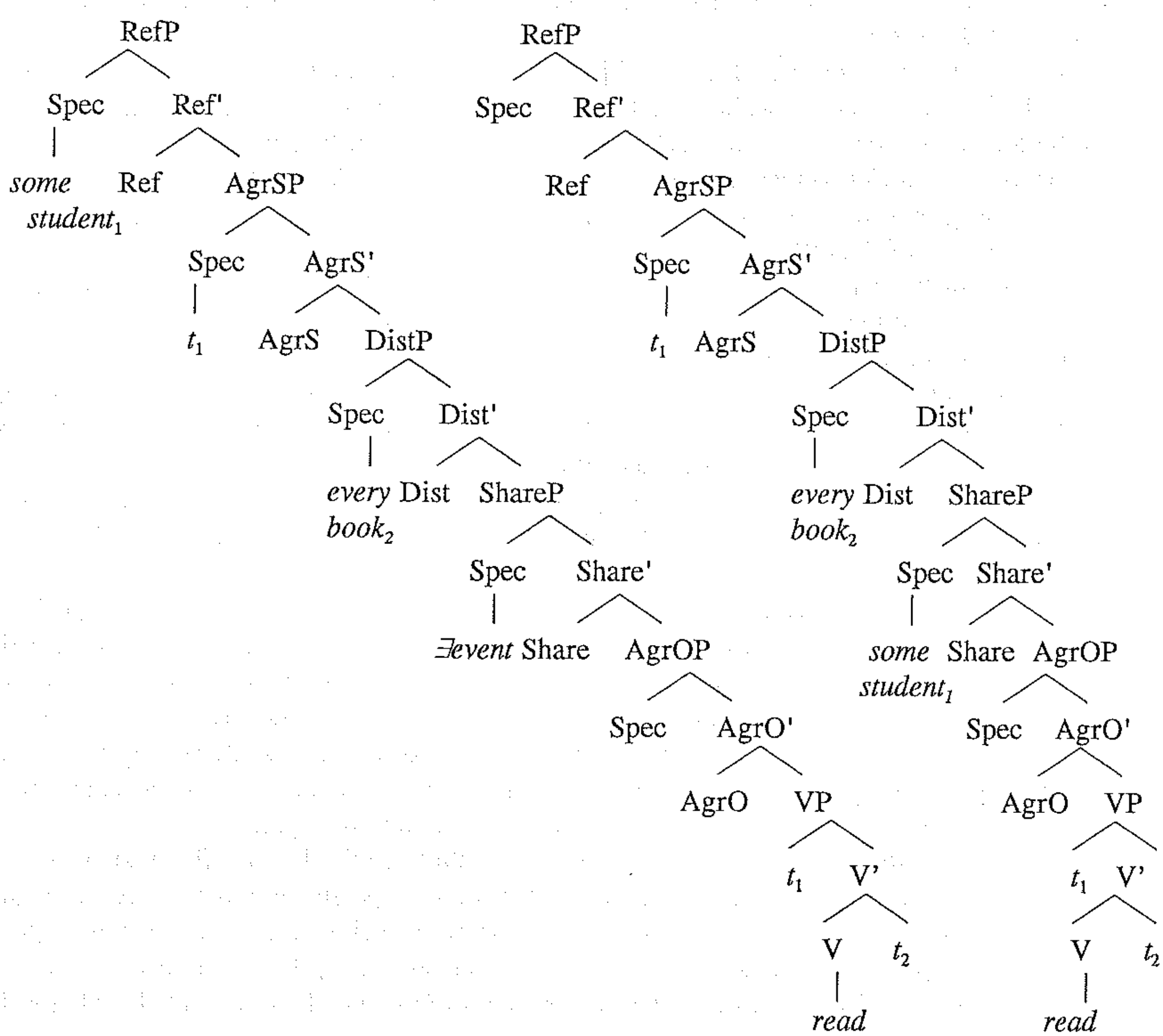
(60) a. S>O b. O>S



[12] In May 1985, in addition to the structure given in (60b), adjunction of both QPs to IP (as in 60a) produces an ambiguous scope representation, per his Scope Principle; I gloss over this point here.

In lieu of these representations, the following alternative account of the scope ambiguity in (59a) is provided. The LF representations are given in (61); comments follow.

(61) a. S>O b. O>S



In both (59a,b), *every* N has the same meaning and logical function. It (i) introduces a set (=its restrictor set), and (ii) distributes a property (=the interpretation of the rest of the clause) over the individual members of this set. Therefore, no matter whether is taking narrow or wide scope, it lands in the same LF position. This position is identified as Spec of DistP. The logical function associated with the QP is that of distributor.

Things are otherwise with *some* N. It is a commonplace observation that the indefinite receives distinct interpretations in the two readings of (59a) (and likewise in 59b). When wide scope, the indefinite becomes the logical subject of the predication expressed by the whole clause: so in (59b), assigning wide scope to *some book* amounts to predicating on it the complex property of being read by every student. The same holds for the wide scope reading of *some student* in (59a). The wide scope indefinite takes on the role of logico-semantic topic of the sentence. In neutral terms, let's thus characterize the wide scope interpretation of the indefinite as one where it has the (topic-like) feature of logical subject of predication. In (61a) this position is given as Spec of Ref(erential) P(hrase).

In the narrow scope construal for the subject in (59a), *some student* is on the receiving end of the distributive dependency brought about by *every book*, which as noted has the semantic role of 'distributor.' In this construal, *some student* fulfills the role of distributee: it represents the 'share' assigned to each individual student by the distributive relation (cf. Choe 1987). Its logical function is to provide group referents to be shares of distribution. In the diagram (61b) this position is given as the Spec of ShareP.

Note that in the subject wide scope construal of (59a) no lexical DP can fulfill the role of distributee. In (61a) the event argument is assigned the role of distributee.

In the Davidsonian tradition (cf. Davidson 1967, Kratzer 1989, Parsons 1990, Schein 1993), verbs are regarded as predicates over events. Following Stowell (1991) I assume that there is a theta-position for the event argument inside VP. In non-negative, declarative sentences like (59), the event argument is existentially quantified. It can therefore raise to Spec,ShareP just like *some student* does in (61b). As in Schein (1993), the logical translation of the subject wide scope reading of (59a) is therefore that 'some student x is such that for every book y, there is an event e of reading, where the agent is x and the theme is y.'

Thus, (61a) represents the subject wide scope of *some student read every book* by specifying that (i) *some student* is the logical subject of (and has thus wide scope over) a predicative structure; (ii) this predicate is formed by a distributive operator associating individual books to events of reading, where the variable of *some student* is the agent and that of *every book* the theme. This appears to correctly represent the logical relations involved. By specifying in (61a) as in (61b) which arguments fulfill the roles of distributor and of distributee, we account for the fact that the quantifier *every* is distributive under either reading of (59a).

(61b), representing the inverse scope reading of (59a), similarly specifies that under this contrual, the sentence is interpreted by applying a distributive operator to a predicative structure, as follows: individual books are associated to the property of being read by some student (to be more precise, the property holds of y's such that 'for some student x, there is an event of reading where x is the agent and y the theme'). The two readings of (59b) can be represented analogously.

2.7 LF movement

To continue with the presentation of the TLS approach, let's consider some issues tied in with the assumption of movement in LF. A central question is the status of the scope positions I have hypothesized.

The A/A'-distinction is undergoing a process of revision in recent years. Traditionally, only A'-movement had semantic (and scopal) significance, whereas A-movement did not. Work on scrambling has shown that A-movement can have semantic significance (cf. e.g. Mahajan 1990). As noted in ch. 1, 2.2, raising to Case can also be assigned semantic significance in that it allows to express the generalization that QP arguments take scope over the predicate that they are arguments of.

Thus there seems to be less of a principled distinction between these A and A' types of movement. This paves the way for the assumption, that I have made here, that CQPs are assigned scope in Spec of AgrXP positions.

The adoption of a Shortest Move Requirement such as Ferguson&Groat's (cf. section 1.1) makes the distinction between A and A' positions largely unnecessary.

In traditional terms, however, the scope positions postulated by the TLS theory--the specifier of RefP, DistP, and ShareP--have properties that are typically associated with A'-positions. First, these scope positions are not related to Case assignment. Second, as will be argued in chs. 3 and 5, movement to Spec,DistP sometimes displays effects comparable to parasitic licensing. There are thus similarities between the LF-chains of GQPs, DQPs and NQPs: the latter, as shown by Longobardi 1991, have properties of the paradigmatic type of A'-movement, Wh-movement. (I'll return to a discussion of these issue in the next chapter.)

Given that I rely on Shortest Move Requirement, the issue of the status of these positions is not crucial. I will not attempt to reach a conclusion in this regard.

2.8 *Scope assignment*

Relative scope is represented in our theory by a straightforward implementation of the following principle:

(62) **Representation of relative scope (Scope Principle)**
Given a sentence s containing QP1 and QP2, QP1 is assigned scope over QP2 iff there is a well formed LF L for s where the scope position of QP1 c-commands the scope position of QP2.

The TLS theory presented here, as noted, rejects the Uniformity of Quantifier Scope Assignment Hypothesis. The main consequence is that it derives symmetric scope relations only with certain choices of QP-types.

The derivation of inverse scope (over a subject) in the TLS theory takes place (other than when a GQP moves to Spec,RefP, which is higher than the standard subject position in English) via a process analogous to reconstruction. This is because the subject position is structurally higher than scope positions such as Spec,DistP or Spec,NegP, where the object QP may have moved.

In principle, reconstruction can be implemented either by 'undoing' movement (in a Copy-and-Delete theory of movement, by deleting all but the lowest, or an intermediate link in a chain), or by creating a new link which is distinct from the head of the chain: the latter is Lowering, the well known proposal in May (1985), reviewed in ch. 1, 3.1.

Let's consider Lowering first. Recall that this is the solution that May provides to account for the *de dicto* interpretation of the subject QP in (63a); the LF after Quantifier-Lowering is given in (63b):

(63) a. A hyppogriph is likely to be apprehended
b. e_2 is likely [a hippogryph [e_2 to be apprehended]]]

As May notes (cf. May 1985:102) "in this structure [i.e. (63b); FB] the status of the lower trace will be changed after lowering. No longer will it be an anaphor, an A-bound trace; instead, it will be a variable, since its most local binder is an A'-binding operator. At LF, then, its status [...] is without flaw."

Lowering can be invoked to handle scope assignment with subject QPs. Recall the hierarchy of scope positions introduced in (52). For example: given that the scope position of a subject DQP is Spec,DistP (below AgrSP), a DQP that has moved to Spec,AgrSP needs to be lowered into its scope position. The same applies to a subject NQP, whose scope position, Spec,NegP is also lower than its Case position.

Lowering, as noted, can also be applied to derive inverse scope construals. Consider a sentence like *Some student read each book*, under the O>S construal. To take narrow scope (in Spec,ShareP) with respect to the DQP (in Spec,DistP), the subject indefinite *some student* can to be lowered from its Case position [= Spec,AgrSP] (cf. the diagram given below in (61)).

The adoption of Ferguson&Groat's Shortest Move Requirement (SMR) is, however, incompatible with Lowering: for example, a subject QP with feature δ which is moving towards Spec,AgrSP could not skip over a intermediate position where δ can be checked.

The alternative to Lowering is plain reconstruction into a lower link of the chain. We must assume, then, that a subject DQP transits through Spec,DistP on its way to Spec,AgrSP, and thus can be reconstructed into Spec,DistP in LF. Similarly for a subject GQP with the feature [+group referent] (which is checked in Spec,ShareP), or a subject NQP (with the feature [+negative], checked in Spec,NegP).

There is a potential difficulty that arises with plain reconstruction, in a framework that implements the traditional distinction between A and A'-positions. If it is assumed that Spec,DistP/RefP/ShareP are A'-positions, moving for example from Spec,DistP on to Spec,AgrSP (an A-position) would result in 'improper movement'. This problem arises equally with NQPs, and has been discussed in the literature on LF-movement of NQPs, cf. especially Haegemann (1994). A number of suggestions have been proposed to handle this problem.[13]

This problem does not, however, arise if the traditional distinction between A and A' positions is dispensed with in the relevant respect, as by the adoption of SMR. Positions are then distinguished simply in terms of the type of features checked in them. This is implicit in Ferguson&Groat's SMR proposal (cf. section 1.1).

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[13] One solution, proposed by Moritz&Valois 1994 for subject NQPs (in particular, French *personne* 'nobody/anybody') is to assume that Spec,AgrSP is not marked for the A-A' distinction, showing properties of both A- and A'-positions.

Other solutions compatible with a derivational model are discussed in Haegeman 1994. They include adopting Grimshaw's (1991) notion of Extended Projection, whereby AgrSP (and CP) count as 'extended projections' of functional projections like NegP, etc.

This matter is, to some extent, a technical point. There are two alternatives: either the A/A' distinction is eliminated (e.g. via SMR) or minimized, and reconstruction is employed; or a more traditional Minimality principle, one that assumes the traditional A/A' distinction is adopted, in which case Lowering can be used instead of reconstruction. I have opted for the former alternative here.

From now on, I will employ the term reconstruction to refer to an appropriate mechanism, along the lines discussed in the previous paragraph, to handle cases where the scope position of a QP is hierarchically lower than its position at Spell-out.

More importantly, reconstruction is constrained by the following general principle (cf. Szabolcsi 1995a):

(64) **Availability of reconstruction**
A QP may only lower/reconstruct to a scope position where its semantic and morphological features are checked.

In other words, reconstruction can only undo movement that is not semantically relevant or inconsistent with the QP's featural specification. From the assumption that scope positions like Spec of RefP, DistP, and ShareP have distinct semantic feature associated with them, it follows that a QP in such positions cannot undergo reconstruction. Since however Spec,AgrXP, the scope position of CQPs, does not have a semantic feature attached to it, I assume that reconstruction (e.g. of a subject CQP) into its VP-internal thematic position is possible.

This allows for the derivation of the inverse scope reading of sentences like:

(65) a. More than one student read every/each book.
ok: 'for every book x, x was read by more than one student'
b. [*AgrSP* t_1 [*DistP* every $book_2$ [*VP* more than one $student_1$ [*V'* read t_2]]]]

The sentence in (65a), under the indicated reading, receives an LF representation like (65b) (details irrelevant to the point made here omitted). Reconstruction of the subject CQP into its VP-internal thematic position is required to derive inverse scope construals as the one above, given that CQPs do not have access to Spec,ShareP.

2.9 Accounting for basic scope interactions in SVO contexts

In this section I show how the TLS approach can provide an account of the basic scope interactions between subject and object QPs in simplex SVO sentences when these QPs are drawn from a variety of types. I also return to the first two observations made in section 2; the third observation in (7), that object DQPs do not take scope over negative (or downward-entailing) subject QPs will have to wait until ch. 4.

As already noted, the observation that object CQPs do not take inverse scope over subject GQPs is accounted for by means of two claims: (i) the scope position of an object CQP is identified with Spec,AgrOP; (ii) subject GQPs do not lower below Spec,ShareP, since this is the lowest scope position where they can be licensed as group-denoters (reconstruction must respect the semantic features of the QP). It follows that an object CQP cannot be assigned scope over a subject GQP, by the scope principle given in section 2.8.

Similarly, an object CQP cannot take inverse scope over a subject DQP. No inverse scope reading can be assigned to sentences like the following, as can be verified by applying the same tests discussed in connection with the examples in (8).

(66) Every student read more than five books
 * 'for more than five x, x a book, every student read x'

The lack of this reading follows since the scope position of the subject DQP, Spec,DistP, asymmetrically c-commands Spec,AgrOP.

Reconstruction into thematic position is, however, an option with CQPs (cf. 2.8). This allows the derivation of inverse scope for object CQPs when their subject is also a CQP:

(67) At least one student read more than five books
 ? 'for more than five x, x a book, x was read by at least one student'

This prediction appears to be borne out: many speakers find this type of construal marginally possible; at least more so than in the examples in (8).

Coming now to object NQPs, it has been observed that these also fail to take inverse scope over subjects. Consider the following examples:

(68) a. Some student read no books
 * 'for no x's, x a book, there is some student who read x'
 b. ? Every student read no books
 * 'for no x's, x a book, it is the case that every student read x'

(I'll return in ch. 4 to discussing the deviance of (68b)). In our theory, the lack of inverse scope on the part of the NQP is because the scope position of NQPs, Spec,NegP, is hierarchically lower than that of DQPs (Spec,DistP) and of the scope positions available to GQPs, i.e. Spec,RefP and Spec,ShareP.

NQPs do not take inverse scope over CQP subjects either:

(69) More than one student read no books
 * 'there are no books that were read by more than one student'

So far, nothing in our theory accounts for the lack of this construal (since CQPs are allowed to reconstruct VP-internally). There are however reasons to assume that reconstruction of a QP in the scope of negation is impossible, except in a few special cases. This suggests the possibility that this phenomenon might be excluded on ground independent of the theory presented here. I review the facts below.

Reconstruction of a subject QP under the scope of clausal negation or of a NQP is only possible in a very restricted type of contexts. The phenomenon is discussed in Uribe-Echevarria 1994. Her findings are that reconstructing a subject QP under the scope of negation is possible only when

(i) the QP is an indefinite introduced by *a* [14]; (ii) the verb is a member of a class of 'light' predicates which express existence, coming into existence, availability, coming into availability. The examples below illustrate: reconstruction is only possible in the context in (70a), as confirmed by the fact that a negative polarity item contained inside the subject QP can be licensed (cf. 70b). Reconstruction is neither possible with determiners like *many* (as in 70c; cf. the ungrammaticality of (70d)), nor with (70e,f), featuring non-light verbs.

(70) a. A doctor wasn't available
ok 'No doctor was available'
b. A doctor who knew anything about acupuncture was not available.
c. Many doctors weren't available
* 'Not many doctors were available'
d. Many doctors who knew anything about acupuncture were not available
e. A doctor didn't know what to do
* 'No doctor knew what to do'
f. A doctor didn't come
* 'No doctor came'

Uribe-Echevarria proposes to account for the restrictions in (i-ii) by adapting Szabolcsi's (1986) analysis of a class of light verbs in Hungarian which corresponds to the class in (ii) and displays definiteness effect. Szabolcsi calls such verbs 'bleached' predicates. These verbs have difficulty in assigning argument theta-role, and need to be substantiated with some lexical content. An indefinite can substantiate a bleached predicate by a process of 'Complex Predicate Formation'. This process requires sisterhood (at LF) between the verb and the indefinite, and is analogized to the operation (argued by Chomsky 1992) whereby constituent parts of idioms are recomposed in LF (as in *Several pictures were taken*).

Complex predicate formation, argues Uribe-Echevarria, is not possible with DPs, but only with indefinite of the form *a* N, because *a* is not a true Determiner. Thus the restriction in (i) is also accounted for.

Let's assume that Uribe-Echevarria's account is on the right track. This provides a means to exclude reconstruction in the scope of negation except in the cases considered above. It should be noted that in her account, reconstruction and complex predicate formation are separate processes: the former is simply a precondition for the latter.

I assume that complex predicate formation is only required when reconstructing in the scope of negation. When negation is not present, I assume that reconstruction in VP internal position is possible insofar as the Principle of Reconstruction is not violated. (This, as noted in section 2., amounts to allowing only CQPs to reconstruct VP-internally). I am not able at present to offer an explanation for why reconstruction under negation is more restricted than reconstruction to a VP-

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[14] Bare plurals also show the effect:

(xiv) a. A fireman wasn't available
b. Firemen weren't available.

internal position when there is no negation.

Let's consider now the second generalization of section 2: the fact that inverse scope with GQPs is dissociated from distributivity, and more generally (per section 2.4.1, where the distribution of *a different* N was discussed) that their distributive force is weaker than that of DQPs. Our theory accounts for these facts directly: distributivity is treated as a semantic feature that is morphologically associated with singular QPs like those built with *every* and *each* (cf. section 2.3.2). Only DQPs, therefore, have access to Spec,DistP, where the distributive-universal Operator can apply to the members of the set variable that DQPs contribute. GQPs do not have access to DistP, since they do not possess features that can be discharged in such a position. Ch. 4 will discuss the availability of distributive readings with GQPs (which are anyway very restricted). I will argue that they arise via separate syntactic processes than the distributive readings of DQPs.

Consider, finally, the fact (also mentioned in section 2) that unlike DQPs, object GQPs can freely take scope over clausal negation or a NQP in subject position. These construal are accounted for by moving the GQP to Spec,RefP, where it takes inverse scope over the negation/NQP.

It should be observed, at this point, that the object GQPs in (38a,b) also allow for interpretations where they are narrow scope with respect to negation. To account for this type of readings, which actually not all GQPs display, I propose that (some of them) support an alternative interpretation, as Generalized Quantifiers. Under this reading, GQPs are interpreted like CQPs are. I return to this point in section 4.4.

As indicated above, I postpone to ch. 4 giving a full account of the impossibility of inverse scope over a subject NQP (and decreasing CQP) by object DQPs. I anticipate just a few poins here. Note first that DQPs cannot avail themselves of the process by which GQPs gain inverse scope in (38a,b): their distributive/universal features cannot be discharged in RefP. Thus DQPs do not take inverse distributive scope over subject NQPs.

Our theory claims that the set variable introduced by an object DQP can be bound by a negative Operator. Since in a sentence like (37a), repeated below:

(37a) No students read every book
* 'for every book x, no students read x'

the negative Operator in Neg°, activated by the subject NQP, is a closer binder than the existential Operator in Ref°, the only reading derived for (37a) is the following: 'there is no set X, X containing all the books, such that for y a student, y read X'; which represents the correct truth conditions for the sentence. Since negation (in NegP) binds the (set variable of the) DQP, it follows that a DQP must take scope under it.

In the following sections, I will comment on the hypotheses assumed in this overview of the TLS approach, and provide justification for the claims. I begin by defending the typology of QP-types.

3 QP types: (further) justification from semantic and syntactic data

In this section, I return to the typology of QP-types that was briefly introduced in section 1.1 and has been assumed so far, presenting arguments to justify (i) the distinction between the QP types, i.e. DQPS, GQPs and CQPs, and (ii) the semantic features that have been associated to the types and their sub-types. Some of the arguments (or their essential ingredients) have already been introduced in section 2; they are repeated here for completeness.

As we have seen, some of the most compelling reasons for this typology have to do with scope behavior. But there are also arguments of different kinds.

The semantic characterization of the types, and some of the arguments given to support it, are taken from the work of Szabolcsi (1995a). I follow here her views, adapting them to the TLS framework proposed.

In characterizing the types, I draw from notions of DRT (Discourse Representation Theory; cf. e.g. Kamp&Reyle 1993). Although the classification of QP types in 1.1 is different from the standard DRT account (cf. e.g. Roberts 1987, Kamp&Reyle 1993), some basic assumptions are common to both approaches. These can be summarized as follows (cf. Szabolcsi 1995a):

(i) QPs either introduce a discourse referent (=a variable), or are interpreted as Generalized Quantifiers;

(ii) a discourse referent can be dissociated from the distributive Operator that applies to it.

Noting in fact a convergence between the approach developed here and DRT, Szabolcsi 1995a suggests that the "LF [structures proposed by B&S 1995a,b and re-proposed here; FB], especially in the light of [...] Hungarian data, can be quite directly mapped onto (somewhat modified) Kamp&Reyle (1993) style Discourse Representations" (1995a:sect.1).

The first two groups of QP-types (WhQPs and NQPs) need no motivation here; both WhQPs and NQPs have distinctive semantic and syntactic properties that justify classifying them as distinct QP-types. The three-way distinction among the remaining types (DQPs, GQPs, and CQPs) is on the other hand, a novel one, and requires justification.

3.1 Differences between GQPs and DQPs

3.1.1 Distributive properties

I begin by commenting on the semantic characterization of GQPs. The first claim is that GQPs do not possess a [+distributive] feature, which is instead possessed by DQPs. This establishes a principled distinction between DQPs and GQPs. Though both GQPs and DQPs introduce discourse referents, and though these discourse referents can both be associated with Existential Operators, DQPs are also related to the Distributive Operator, whereas GQPs are not.

As in standard DRT treatments, GQPs have been characterized as QPs that introduce a group variable. Since they contribute group individuals, GQPs are neutral as to the distinction between collective and distributive predication. That depends on the nature of the predicate. We expect, then, that GQPs will always support collective interpretations, and that they will be compatible with distributive ones as well. This is the case, as the following examples illustrate:

(71) a. Ten/The soldiers surrounded the house.
b. Ten/The students caught the flu.

Though compatible with distributive predication, GQPs do not possess a distributive feature. The differences between DQPs and GQPs with respect to distributivity are highlighted by a battery of tests.

First, DQPs are incompatible with collective predication, whereas GQPs support it. Consider predicates whose semantics requires that one of their arguments denote a collective:

(72) a. Ten soldiers surrounded the house
b. * Every/each soldier surrounded the house

(73) a. Jane compared the men/ten men
b. * Jane compared every/each man

The obligatorily collective reading for one of the arguments of these verbs is compatible with GQPs but not with DQPs, as the latter must be construed distributively.

Second, DQPs but not GQPs license QPs like *a different* N in their scope (at LF).The data has already been reviewed in section 1.5.1. In fact, the distribution of *a different* N (in its distributive interpretation) distinguishes sharply between DQPs and non-DQPs (including GQPs):

(74) a. Every student read a different book
b. Each student read a different book
c. * Five students read a different book
d * The students read a different book
e. * More than five students read a different book
f. * No students read a different book
g. * Which students read a different book?

There are further differences between GQPs and DQPs that are related to a distributive feature. These manifests in their differential behavior when interacting with negation and NQPs. These will be discussed in ch. 4.

Ch. 4, section 3 will also discuss at length the question of distributive readings with GQPs. The distribution of such readings with GQPs is very restricted when compared to DQPs. This supports the hypothesis that distributive readings with GQPs arise via distinct syntactic mechanisms.

3.1.2 Type of discourse referent

Following Szabolcsi 1995a, I have assumed that DQPs (like GQPs) provide a discourse referent, albeit of a somewhat different kind: whereas GQPs introduce an individual (group) variable, DQPs introduce a set variable.

Formally, the difference is one of semantic type: group individuals are ‘entities’,, sets are functions from entities to truth values. In some cases, these two objects may coincide extensionally: so the set introduced by *every student* can be interpreted as the same object as the group introduced by *the students*.

It becomes however necessary to draw a principled distinction when we consider more complex cases: a DQP can introduce a set of groups, which is impossible for GQPs. These can only introduce individual groups. A set of groups is for example introduced by the DQP in (75a):

(75) a. Every two students will choose a research project.
b. The two students will choose a research project

But plain GQPs cannot do so: (75b) cannot convey the same meaning as (75a)[15].

The most important reasons for assigning DQP a distinct type of variable reside however in the fact that such variables can be bound by a variety of Operators (in addition to the existential Operator), whereas group variables can only be bound by existential Operators. In particular, in ch. 4 it will be shown that the set variable of DQPs can be bound by c-commanding negation. In ch. 5 I will argue that the WhQP/DQP interactions that produce pair-list readings arise by the Question Operator binding the variable introduced by the DQP.

Semantically, pair-list readings will be analyzed using (a variant of) Groenendijk&Stockhof's (1984) Domain Restriction schema. This schema requires the QP that supports pair-list to contribute a set to the interpretation of the sentence. As is well-known, definite GQPs do not support pair-list readings. Indefinite GQPs have been claimed to support 'Choice' readings, but, as argued by Szabolcsi 1994, 1995b, these should be distinguished as a separate type of reading.

Since DQPs do not introduce individual (group) referents, we should expect that collective interpretations are not available to them, and that DQPs display only a distributive interpretation. This has already been shown in the previous subsection (4.1), where it was argued that DQPs do not support collective predication.

3.2 Differences between CQPs and GQPs

This subsection focuses on the differences between CQPs and GQPs, and argues for the claim that CQPs do not introduce discourse referents.

In the characterization offered in section 2, CQPs do not introduce a discourse referent (whether an individual or set), and are interpreted as generalized quantifiers. As suggested by Szabolcsi 1995a, they are COUNTING OPERATORS that apply to the property denoted by the rest of the clause. This treatment goes along with the claim that these QPs do not undergo movement at LF (other than for reasons independent of the licensing of their quantificational properties, such as movement for Case/Agreement). They are interpreted *in situ*.

CQPs are neutral with respect to the collective/individual distinction: they are compatible with either type of predication. Szabolcsi's (1994) analysis is that their semantic function is to count atomic members in their restrictor set. This has been sometimes taken as an indication that they are purely distributive quantifiers, but actually they don't enforce distributive predication. They are acceptable with collective-only predicates:

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[15] These data are common in many languages; in the Bantu language KiLega, to be considered in section 5.2, *na* XP means 'every XP' if XP is singular, 'every group of XPs' if XP is plural.

(76) a. More than twenty soldiers surrounded the house.
b. Jane compared more than twenty men.

In this respect thus, they resemble more closely GQPs than DQPs (cf. section 4.1).

There are however, a number of differences between CQPs and GQPs. Leaving aside for now the scope properties that will be considered in the next section, I review here anaphora and presuppositionality properties, as well as other syntactic tests.

A first set of differences concerns presuppositionality. Let's focus on VP-internal CQPs.[16] It is well known that VP-internal GQPs can receive either a specific or nonspecific reading: they can be interpreted as introducing a subgroup of a group of individuals that exist in the situation (cf. Enç 1991). CQPs, on the other hand, typically resist specific readings when they are VP-internal arguments.[17]

With non-increasing VP-internal CQPs, our intuitions about specificity are fairly clear. Consider monotone-decreasing QPs such as *few books*:

(77) John read few books last week.

In uttering (77), a speaker might have considered the entire set of books that John read last week, and determined that they were few in number, but the CQP does not actually refer to any particular set of books; if it refers to anything, it is to the cardinality of the set of books that John read last week.

The intuition is perhaps more subtle with monotone-increasing QPs such as *more than twenty books*, but still there; thus, a sentence such as (78a) is most naturally construed as (78b) rather than (78c):

(78) a. John read more than twenty books last week.
b. The number of books read by John last week is greater than twenty.
c. There is a particular set of books, numbering more than twenty, and John read them last week.

There are several tests which support of the claim that *twenty books* is never used to truly introduce a discourse referent (=a plural individual containing twenty books that exist in the situation).

First, nonrestrictive relative clauses can only be predicated of a QP that introduces a group referent. These relative clauses can be predicated of names and GQPs (including definites and simple indefinites), but they cannot be predicated of CQPs:

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16 The discussion that follows is taken from B&S 1995a.

17 If specific readings are possible at all, they are limited to monotone increasing CQPs; it appears, however, that such readings require special intonation. For this reason, I do not consider that to be a counter-example to the claim.

(79) a. Bill and Ted, a relative of whom I saw yesterday, were arrested last week.
b. Three students, a relative of whom I saw yesterday, were arrested last week.
c. ? More than three students, a relative of whom I saw yesterday, were arrested last week.

This difference is explained if we assume that CQPs do not introduce a discourse referent in the form of a plural individual. Rather, they operate in the mode of generalized quantifiers that take the property corresponding to the interpretation of the rest of the sentence as their nuclear scope.

A second test involves the so-called MAXIMAL REFERENCE property of CQPs (cf. Kadmon 1987, Kamp&Reyle 1993). This test hinges on the possibility of coreference between a pronoun and an antecedent QP. Consider (80):

(80) a. Three people came to the office today. They (all) wanted to sell encyclopedias.
b. More than three people came to the office today. They (all) wanted to sell encyclopedias.
c. Few people came to the office today. But they (all) wanted to sell encyclopedias.

Whereas (80b) and (80c) imply that all the people who came to the office today wanted to sell encyclopedias, (80a) allows for the possibility that other people, who didn't want to sell encyclopedias, also came to the office today. In other words, when the antecedent of *they* is a GQP like *three people*, it refers to a group which can be a proper subset of the set of people who came to the office today, but when the apparent antecedent of *they* is a CQP like *more than three people*, the pronoun must refer maximally to the entire set of people who have this property.

The 'maximal reference' effect can be explained in terms of the assumption that CQPs do not introduce a plural group referent that can be picked up by the pronoun. The pronoun can only construct an antecedent for itself using the restrictor *people* and the property *came to the office today*. Analogous to the translation of (78a) as (78b), the proper translation of (80b) is (81):

(81) The number of people who came to the office today is more than three. They (the set of people who came to the office today) wanted to sell encyclopedias.

Thus the maximal reference effect follows from the fact that CQPs count individuals with a property; they do not truly introduce a group.

Continuing our discussion of differences between CQPs and GQPs, as given in B&S 1995a, a third argument that a pronoun cannot be construed as coreferring with a CQP is provided by the unavailability of a strict identity construal under VP-deletion. As is well known, a pronoun occurring in the antecedent VP can be understood in two ways:

(82) John_i believed he_i was clever, and Sam did too.

On the 'strict identity' construal, the denotation of the pronoun remains constant (Sam believed John was clever). On the 'sloppy identity' construal, the pronoun behaves like a bound variable; it takes on a new antecedent in the reconstructed VP (*Sam_j believed that he_j was clever*). Reinhart

(1983) has suggested that the strict identity construal involves coreference, whereas the sloppy construal involves variable binding. Now if pronouns cannot truly corefer with CQP antecedents, then they should not allow a strict identity construal under VP deletion. This seems to be correct; there is a clear contrast between CQPs (27b,c) and GQPs (27a), which allow either a strict or sloppy construal:

(83) a. Ten students believed they were clever, and Bob did too.
b. More than ten students believed they were clever, and Bob did too.
c. Few students believed they were clever, but Bob did.

Thus, in a variety of ways, the interpretation of pronouns supports the claim that CQPs do not introduce group referents into the discourse, as GQPs do, and are thus crucially different from them.

3.3 Differences between CQPs and DQPs

The purpose of this subsection is to illustrate the distinction between DQPs and CQPs. The difference relates to the fact that DQPs, but not CQPs, introduce a set variable.

This is, mostly, where the proposal presented here differs from standard assumptions in DRT. In DRT, distributive quantifiers like *every, each* are grouped together with CQPs. Both types are distinguished from GQPs in that they do not introduce discourse referents. Rather, they are 'pure' quantifiers (accordingly, they are interpreted as generalized quantifiers). Evidence for the DRT account is provided by data on pronominal anaphora. These data are well-known and point to similarities between DQPs and CQPs. I return below (3.3.3) to how to re-interpret these facts in a way consistent with the alternative analysis developed here.

If both DQPs and GQPs introduce variables, we can assume as a basic generalization that only (non-negative) QPs that contribute a discourse referent can avail themselves of movement in LF.

A first difference between DQPs and CQPs refers to obligatory distributivity: this has already been reviewed in section 3.2: whereas DQPs are incompatible with collective predicates (such as *surround, ...*) CQPs tolerate them. Furthermore, we have also seen that whereas DQPs license *a different* N, CQPs do not.

Two other types of considerations indicate that, despite these similarities, DQPs belong to an altogether different type than CQPs. I don't provide the actual arguments here; rather, I refer to the parts of this work where they are given.

First and foremost, their scope behavior is completely different. The relevant scope facts roughly fall into three categories: (i) facts about inverse scope, (ii) facts about *de re* interpretation, and (iii) binding facts relating to scope. The evidence in (i) and (iii) has been already reviewed in section 1; (ii) will be discussed shortly in the next subsection.

A second type of evidence will also be considered later (in chs. 4 and 5): there are circumstances where the set variable introduced by *every* N can become bound by operators other than Dist, namely negation and question. This treatment presupposes separating the set variable from distributive operator. Significantly, no similar phenomena are observed with CQPs: the latter do not enter in this type of relation with negation and question. In particular, concerning interactions with WhQPs, I will argue that pair-list readings with DQPs arise when their set variable is bound by the Question Operator; it is well known that CQPs do not support pair-list interpretations, even when they are subjects of a (matrix) Wh-question.

Finally, there is a third type of evidence to support the assumption that DQPs, unlike CQPs, introduce a discourse referent. The relevant facts pertain to anaphora, and come from Hungarian. These will be reviewed in section 6.

3.3.1 'De re' readings

De re construals offer another type of evidence for the TLS theory presented here. In particular, they provide an argument for the distinction between DQPs and CQPs. Consider the following sentences:

(84) a. Some man believed that every spy was watching him.
b. Some man believed that two spies were watching him.
c. Some man believed that fewer than three spies were watching him.

The significance of this type of examples has originally been pointed out by Farkas (1994, 1995), who actually argues for a non-scopal theory of the DE DICTO/DE RE distinction. Farkas 1995 contains a discussion of factors that enter into judgements of relative scope. She explains that QPs contribute both a DESCRIPTIVE CONTENT (DC) and a VARIABLE to the interpretation of the sentence. The DC consists of the 'description' provided by the N(ominal) predicate which is a subconstituent of the QP. So in a sentence like:

(85) John wants a unicorn for the stables of his new villa

the description 'unicorn' can be interpreted either as the speaker's description of the creature that John is seeking, or as John's description of what he is seeking. In the former case the DC takes wide scope over the intensional verb, in the latter, it takes narrow scope.

Leaving now aside the scope of the DC, let's focus on the fact that the variable introduced by the GQP *a unicorn* also displays a scopal ambiguity: it can be understood as part of the world of John's desires, in which case it is narrow scope with respect to the intensional verb, or as part of the 'real' world, according to the speaker; then it is wide scope.

The sentences in (84) present an interpretive contrast. In (84a,b) the variables introduced by the DQP *every spy* (i.e. the set of all spies in the situation), and the variable of the GQP *two spies* (= a group of two spies) can be either part of some man's belief world, or part of the real world of the speaker.

Things are different with (84c). We cannot interpret the sentence so as to convey the proposition that there are one or two spies in the real world such that some man believed that these individuals were watching him. Thus, *fewer than three spies* does not appear to have a *de re* interpretation.[18]

[18] It is less clear whether the same applies to the DC of the QP *fewer than three spies*. The sentence (84c) may attributes belief in the existence of spies strictly to the man. In addition, it might be possible to use this sentence to convey the inference that the speaker believes the people in question are spies. If this is correct, then we should conclude that the

For our discussion here, the significance of (84) consists in showing that although both DQPs and CQPs have been claimed to be purely 'quantificational,' and thus distinct from GQPs, our intuitions on the availability of *de re* readings distinguish DQPs from CQPs. Unlike both GQPs and DQPs, CQPs do not introduce a discourse variable. The difference we intuitively perceive on the basis of our *de re* judgments hinges on the fact that the scope of CQPs is local to their clause.

Examples like (84a) are consistent with the hypothesis that the scope of the set variable introduced by a DQP is not limited to the clause where the DQP occurs. Like the (group) variable introduced by GQPs, it has potentially unbounded scope. (I'll propose a characterization of the constraints on the upward scope of GQPs in ch. 3; such characterization extends to the scope of the set variable of DQPs)[19].

Claiming that the set variable of DQPs can scope out is not necessarily in conflict with the standard view that the scope of DQPs occurring in *that*-clauses (as in (84a)) is clausebounded. Farkas correctly observes that there is no distributivity variation induced on *some man*. We cannot construe (84a) so that men vary with our choice of individual spies. This is not a paradox for our scopal theory; it is only a puzzle for the traditional LF theory (which is what Farkas has in mind).

The DQP *every spy* both introduces a set variable and is associated to a distributive operator. Our account separates the two, by assuming that the Operator resides in Dist°, and is activated as the DQP moves to Spec,DistP. Thus we can resolve the paradox by saying that whereas the set variable is free to scope out, the distributor is bound to the lower clause. This is because the distributor is tied to the head Dist°; and head movement is local to the clause.

In our theory, the upward scope of the set variable introduced by DQPs is accounted via the assumption that the set variable can be bound by an existential Operator in Spec,RefP. This Operator can scope (unboundedly) upward, moving successive cyclically through the RefP projection of higher clauses, as required by its interpretation (i.e. depending on its relative *de re* scope).

Since the set variable is a restricted variable, this account does not incur a problem pointed out by Abusch 1994, as noted by Szabolcsi (1995a:sect. 6). Consider a sentence like (86a); as suggested in the previous paragraph, assume the existential (closure) Operator is outside the clause that contains the DC *friend of mine*, as in the logical translation in (86b), where *x* is an unrestricted variable (as usual in classic logic). This sentence incorrectly turns out to be true whenever we choose an x which is not a friend of mine in the model.

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scope of the DC is always unbounded (as proposed by Farkas 1995), and that only the scope of QPs (and/or the variable introduced by QPs) is accounted for by LF theories of scope.

19 Farkas (1995) does not distinguish set variable from distributive operator. She takes the variable associated with DQPs to be a (first-order) variable ranging over atomic individuals in the set over which the distributive operator ranges. As noted, she also doesn't for the most part consider the behavior of CQPs. Therefore, she concludes that (i) DCs generally have unbounded scope; (ii) the variable introduced by GQPs has unbounded scope; (iii) the variable of DQPs has closebounded scope.

Accordingly, she takes sentences like (84a) to present LF theories of scope with a genuine paradox, as discussed below in this section: although the DQP *every spy* can be *de re* (=wide scope) over *some man believed ...*, men cannot co-vary distributively with spies.

(86) a. If a cat likes a friend of mine, I always give it to him.

b. $\exists x\, [\forall y[[\text{cat}(y) \wedge \text{friend-of-mine}(x) \wedge \text{like}\,(y,x)] \rightarrow \text{give}(I,y,x)]]$

Abusch proposes a mechanism to percolate the DC up to the existential quantifier. This does not seem necessary since (following Szabolcsi 1995a) it is assumed here that the set variable is a restricted variable.

3.3.2 Anaphora facts

I return now to the anaphora facts that have been taken to support the DRT classification of both DQPs and GQPs as 'quantifiers'. These facts center around the notion of coreference. Let's begin from the often quoted fact that, whereas both DQPs, CQPs and GQPs can bind a singular pronoun (cf. (87)), GQPs can license a coreferent pronoun in the next clause, which neither DQPs nor CQPs do (88):

(87) a. Someone said that he was happy.

b. Everyone said that he was happy.

c. More than one student said that he was happy

(88) a. Someone was happy. But he had no reason to.

b. * Everyone was happy. But he had no reason to.

c. * More than one student was happy. But he had no reason to.

However, both DQPs and CQPs can antecede a plural (collective) subject pronoun across a clause boundary (i.e. we can salvage (88b,c) by substituting *they* for *he*). In this case the pronoun can build an antecedent for itself using the restrictor (PERSON(x)) and the nuclear scope property (HAPPY(x)) of the QP.

So, a more crucial test to show that DQPs and CQPs are distinct semantically from GQPs, as remarked by Szabolcsi (1995a), is Kamp&Reyle's observation that when a pronoun occurs inside a VP, it cannot use the same VP to build an antecedent for itself. Pronouns cannot corefer to a quantified set that they help to define.

(89) a. [Five men]$_i$ hired [a secretary that they$_i$ liked]
ok *they* = the five men as a collective

b. [Every man]$_i$ hired [a secretary that they$_i$ liked]
?(?) *they* = the collective of all men

c. [More than five men]$_i$ hired [a secretary that they$_i$ liked]
?(?) *they* = the collective of the more than five men

Kamp&Reyle point out that *they* in (89a) can refer to the group of five men (the men hired a secretary that they as a group liked), whereas in (89b,c), the pronoun *they* must be construed as a bound variable. Accordingly, the predicate in the relative clause must be construed distributively.

A suggestion to account for these data without giving up the assumption that DQPs introduce a discourse referent is offered by Szabolcsi 1995a. This consists in assuming that "coreference in the strict sense [as in the above examples; FB] involves a relation between a pronoun and an expression denoting a singular or plural individual" (Szabolcsi 1995:sect.8.3). Hence it is only available to GQPs, and not to DQPs as the latter introduce a different type of variable, namely a set variable, and not an individual variable.

Szabolcsi's proposal (which is worked out in her 1995 paper) thus allows to modify Kamp&Reyle's DRS's in a way that makes them compatible with the TLS approach presented here.

Data from Hungarian (cf. sect. 5.4) will provide support for this conclusion, since in this language it is possible to find divergent patterns of anaphora with DQPs and CQPs.

3.4 Presuppositionality and the interpretation(s) of GQPs

As observed in section 1.1, judgements about existence presuppositions are often helpful in assessing judgements about relative scope of QPs (along with judgements about distributivity and interactions between Operators like negation and others). This is especially relevant when we assess the scope of indefinites with respect to intensional operators as well as negation.

In this section, I consider the question of how presuppositions of existence can be systematically associated with QPs in a TLS approach. Following a suggestion by Szabolcsi (p.c.), I propose that QPs that introduce a discourse referent which is bound by an existential Operator presuppose the existence of their discourse referent. In particular, indefinite GQPs in Spec,ShareP or in Spec,RefP presuppose the existence of their group (i.e. of a witness set; recall that a witness set for a GQP like *two men* is a set that contains at least two men and no non-men). It follows that any QP whose scope position in LF is higher than NegP presupposes the existence of its discourse referent. Any indefinite QP that scopes below NegP will receive only a 'cardinal' interpretation.

This proposal thus provides an elaboration of, and somewhat re-interprets, Diesing's (1992) original proposal that QPs that are interpreted outside VP receive a 'presuppositional' interpretation.[20]

To illustrate, consider the interaction of GQPs and negation.

(90) John didn't talk with a professor

We can evaluate the variable introduced by the GQP in two ways. We can choose an individual with respect to the speaker's world, current situation, and assignment function to variables. The sentence is true if the model does not contain any event of talking such that John is the agent and the theme is the individual we chose as the interpretation of the variable of *a professor*. This is the reading where the GQP is wide scope with respect to negation. The choice of variable for the GQP is unaffected by negation.

Alternatively, we can evaluate the sentence so that with respect to the speaker's world and

[20] Note however that the notion of presuppositionality employed here is different from Diesing's. For Diesing a QP is 'presuppositional' if it presupposes that its restrictor set is non-empty. I assume that a 'presuppositional' QP presupposes the existence of its witness set.

current situation, the sentence is true iff we cannot find any event of talking where John is the agent and there is no individual we can assign to the variable as the theme in the event. This is the reading where the indefinite GQP is narrow scope to negation. Here the choice of the variable for the indefinite is restricted (negatively) by the choice of event.

Consider a GQP which is assigned wide scope over negation. As informally described above, its variable is assigned prior to evaluating the predicate, i.e., prior to assigning an interpretation to the event. Thus a GQP which is in ShareP (or RefP) at LF, i.e., wide scope over clausal negation, contributes a group (corresponding to its witness set) to the interpretation of the sentence.

A GQP that scopes under negation, on the other hand, does not introduce a group individual. I propose that such a narrow scope GQP is interpreted as a Generalized Quantifier. I assume that certain GQPs are ambiguous between a reading where they contribute a group the interpretation of their sentence, a reading where they are interpreted as Generalized Quantifiers. This ambiguity is displayed only by a proper subset of GQPs. It is restricted to bare-numeral QPs (like *one man, two men, three men, ...*) and to QPs built with the indefinite determiners *a*, or *sm* (=*some* unstressed). GQPs built with *some* (bearing stress), *a certain, several, ...*, definite and partitive GQPs (e.g., *one of the men, ...*) appear to always be construed as introducing a group, i.e., as 'presuppositional' (under neutral intonation). As seen in 3.2.1, GQPs like *a different* N also have special LF licensing requirements: in their distributee reading, they need to be licensed in Spec,ShareP, i.e., above negation.

CQPs, unless construed as partitives (e.g. *more than five of the students*) resist presuppositional interpretations and, at least under neutral intonation, take narrow scope with respect to c-commanding negation. This is accounted for by precluding access to ShareP (or RefP) to CQPs. Consider:

(91) a. John didn't read few books
b. John didn't read more books than magazines
c. John didn't read more than five books
d. Some student read more than five books [=(8b)]

Neither (91a) nor (91b) appear to support construals where the CQP is wide scope to the negation. Judgements are more difficult with (91c), with a monotone increasing CQP, as mentioned in Note 8. The availability of a wide scope reading for the object CQP in (91c) is related to that of the same construal for (8b), repeated as (91d): this is the example discussed in section 1.1 where it was argued that it lacks an object wide scope.

A clarification is needed at this point with respect to our characterization of the logical function of GQPs in Spec,ShareP. Our characterization seems to imply that distributees, which occur in Spec of ShareP, always introduce a group, i.e., have a 'presuppositional' interpretation. But unlike a GQP that has wide scope over negation, it does not seem that a distributee GQP necessarily carries an existential presupposition. If there are no more than three books altogether in the model, sentences like (92a) (in one of its readings), and (92b) appear to be false, rather than infelicitous. These seem to contrast with (92b,c) which are infelicitous if there are no books:

(92) a. Every student read five books.
b. Every student read at least five books.
c. Every student read a certain book.
d. Every student read one of the books.

The difficulty relating to (92b) can be solved as follows. There is an alternative derivation for this sentence in our theory where the indefinite *five books* does not move to Spec,ShareP (thereby acquiring a presuppositional interpretation). The indefinite *five books* may alternatively be interpreted in its Case position (thus receiving a CQP-like interpretation) and an existential quantifier over the event argument may occur in Spec,ShareP. This type of LF can accommodate the reading of (92a) where there is no presupposition that at least a group of five books exists in the situation. Under this reading, the object GQP in (92a) is interpreted like the CQP in (92b). On the other hand, (92a,b) require, for their felicity, that for each student, there be some event of reading (where the student is the agent). Hence at least 'some event' must be presupposed. There seems to be no difficulty with this assumption, as there was with the assumption that the GQP distributee be presupposed.

A consequence of our analysis is that whenever we have a DQP in Spec,DistP in LF, an existential quantifier over events will be in Spec,ShareP (possibly in a addition to a GQP functioning as the distributee). As noted in B&S (1995b:sect.2), "the event quantifier is always forced to move to Spec of ShareP, since it is virtually impossible to construe a DQP as taking distributive scope over an overt indefinite with a collective (nondistributive) event construal".

To summarize our discussion of the scope of indefinites: there are three ways to assign scope to a GQP clause internally. All are in principle available to GQPs occurring as a VP-internal arguments. Consider the examples below as an illustration:

(93) a. Every student here fears a professor, who assigns difficult phonology problems [ok: *a certain* > *every*]
b. Every student didn't read one of his books [ok: *every* > *one of his* > *neg*]
c. I couldn't find a doctor in the whole town [ok: *neg* > *a*]

First, the GQP can be assigned wide-scope with respect to distributive quantifiers like *each, every*. In this interpretation, GQPs function as the topic/subject of the proposition which interpret the rest of the clause. At LF, their scope position is assigned as Spec of RefP. Thus we say that GQPs check a 'subject of predication' feature when in Spec,RefP.

Next, an indefinite GQP may simply introduce a group into the interpretation of the clause, even though the choice of its group variable may depend on the choice of individuals or worlds/situations in the domain of a higher quantifier. Such indefinites occur in Spec of ShareP, where their semantic feature is [+group referent].

Finally, sometimes GQPs may not contribute a group to the interpretation of the sentence. Since this interpretation is similar to that of a CQP, I assume that such a GQP is likewise interpreted in Spec,AgrOP. One such case is when a GQP remains in the scope of negation; but this interpretation of GQPs is also available in the absence of negation. CQPs do not introduce a group referent, but rather perform a counting operation.

4 Motivation from cross-linguistic data

As seen in section 1, the theory of scope presented in this chapter assumes that licensing of a QP at LF is driven by the need to satisfy morphological features associated with its QP-type. Second, a TLS approach implies that LF movement of QPs is much more on a par with overt movement than under the traditional QR hypothesis. Together, these assumptions take away much of the force of Hornstein's objection (cf. ch.1, 3.3.1.1) that quantifier movement cannot be morphologically motivated.

In ch. 3 I will list arguments that indicate that Subjacency effects are displayed by both DQPs and GQPs. This further reduces the differences between overt and covert movement that motivate both Hornstein's and Brody's (1993) rejection of the QR hypothesis.

In this section, I consider evidence for the TLS approach from cross-linguistic data. When we look even superficially at a cross-section of languages, we find evidence suggesting (i) that the features invoked in section 2 do surface morphologically in various forms; and (ii) that the type of LF movement proposed is realized in the overt syntax of some languages.

Both of these observations provide counterarguments to the objections of Hornstein and Brody. In particular, as regards the observation in (ii), if all movement is morphologically driven, and if overt QP movement in these languages can be shown to work as predicted by the theory sketched here, then our 'semantic' features must have 'morphological' bearing.

Even though I will not be able to develop here full analyses of the relevant facts, those that I'll present in this section are sufficient to suggest that the proposal finds independent support.

The outline of this section is as follows: in 4.1 I consider morphological markings of distributivity from various languages; in 4.2 overt movement of DQPs in the Bantu language KiLega; and in 4.3 morphological markings on GQPs. Finally, section 5 is devoted to one particular language, Hungarian, summarizing the analysis of QP movement in Szabolcsi 1995. This analysis explicitely implements a number of assumptions of the TLS theory given in sect. 2.

4.1 Distributive markings

Let's consider first DQPs. A number of languages have distributive markings: these can be verbal affixes, scope markers and particles, or nominal affixes. Some of this evidence is included in Gil's (1982) and is reviewed below.

Pending further research, the existence of distributor verbal affixes in a number of languages is consistent with the hypothesis that there exist functional projections whose heads can be assimilated to Dist. If these functional categories are available in some languages, the null hypothesis is that they are, in principle, available in all languages. Similarly, the existence of morphological distributor markings on DPs suggest that these features should be checkable in appropriate functional projections.

Distributor-markings taking the form of verbal affixes are found, for example, in Maricopa, Georgian, and Batak. In Batak distributive predication is marked by the prefix *marsi-*.

(94)	Marsi-boan	tas	na	tolu	be	dua	ama-ama	
	dist-carry	suitcases	link	three	dist	two	men	

'Two men carried three suitcases each' [Batak, Gil's (2c), p.21]

In Maricopa the distributive infix is *-xper-*, which is found with both intransitive (95a,b) and transitive (95c) constructions.

(95) a. Mxaynʸiš aŝuuvar-xper-k
boy-dem-nom 3-sang-pl-dist-realis
'The boys each sang' [Maricopa, Gil's (31d), p.364]

b. Mxaaš aŝuuvar-xper-k
boys-nom 3-sang-pl-dist-realis
'Some/the boys each sang' [Maricopa, Gil's (24a), p.358]

c. 'iipat-sh qwaaq ttuupooy-xper-k
men-nom deer kill-pl:sbj-pl-obj-dist-realis
'The men each killed a deer' [Maricopa, Munro, p.c.]

Geargian marks distributivity by reduplication of the verbal stem:

(96) Adamianebi gamald-gamaldnen
men-nom became:tall-dist-3pl
'The men became tall in stages' or
'The men each became tall' [Georgian, Gil's (34b), p.292]

4.2 Movement of distributor phrases

There is also evidence that DQPs undergo overt syntactic movement, and that this movement is driven by features related to distributivity. These facts, as noted, are indirect evidence for the feature-driven approach proposed here: if there is overt movement that matches the covert movement postulated in section 2, there must be features driving both. Two especially interesting languages are KiLega, studied by Kinyalolo (1990) and Hungarian (recently analyzed in the framework presented here by Szabolcsi 1995). I briefly consider the KiLega facts here[21].

KiLega has two kinds of universal QPs: distributive ones, built by the quantifier *na* + XP 'every XP', and universal non-distributive ones, of the form XP + *-sanyà* 'all the XP'. The use of these universal terms is matched by distinct word orders. Distributive quantifiers of the *na* XP type must occur at the front of the sentence. This is shown by contrasts such as in (97). The Infl+V occurs in second position.

[21] Many thanks to Kinyalolo (p.c.) for discussion of the data in this section.

(97) a. na mwăna n' u-bá-ku-yan-á ná-gé

na	mwăna n'	u-bá-ku-yan-á	ná-gé
Q	1child	1Opagr-2sbjagr-prog-play-fv	with-agr

'They play/joke with every child'

b. *

pro	u-bá-ku-yan-á	ná	na	mwăna
	2sbjagr-prog-play-fv	with	Q	1child

On the other hand, universal (non-distributive) DPs of the second type, like *bantu básanyá* 'all the persons' in the example below, are not fronted:

(98)

pro	kú-(li)	kitábu	kímozi
	17agr-(be)	7book	7agr-one
	ki-t-á-sóm-in-é	bantu	bá-sanyá
	7 Opagr-neg-A-read-perf-fv	2person	2agr-all

'there is one book which all the persons didn't read'

That a distributivity feature is at the basis of the the difference between these two types of universal terms is shown by the fact that only XP + *-sanyà* universals can receive collective interpretations. Kinyalolo (p.c.) informs me that whereas *na* + XPs cannot occur as subjects of collective predicates like 'surround,' XP *-sanya* can. KiLega thus presents evidence that it is the distributive feature of *na* that drives the movement of the XP.

As regards the functional position of the distributive type, Kinyalolo (1990) argues that *na* XPs move to Spec,CP, based on agreement and word order facts: both Wh and *na* XPs trigger the same agreement markers (*u-* in (97)), and when there is a lexical subject (distinct from XP or Wh), force VSO order. This latter fact is illustrated by examples like:

(99) a.

na	búsí	na	bú-ku-sés-a	Bulambo	tutí
Q	14day		14objagr-prog-cut-fv	B	13tree

'Every day Bulambo cuts trees'

b. *?

na	búsí	na	Bulambo	á-ku-sés-a	tutí
Q	14day		B	1sbjagr-prog-cut-fv	13tree

c. *

Bulambo	á-ku-sés-a	tutí	na	búsí
B	1sbjagr-prog-cut-fv	13tree	Q	14day

These observations suggest that DQPs in KiLega are like WhQPs in that they must move to a high clausal position and trigger verb raising. However, there is some evidence that the position of *na* XPs is not identical to that of WhQPs. As Kinyalolo (p.c.) points out, there are some differences between Wh and *na* XPs with respect to negation. While the agreement marker triggered on C by a Wh-operator in Spec,CP occurs to the left of the negative marker *ta*, this is impossible with *na* XP. There seems to be a constraint to the effect that *na* XPs cannot immediately precede clausal negation.

(100) a. năzí u-tá-ku-ténd-ág-á na Lusángé?
1who 1Opagr-neg-prog-speak-hab-fv with L
'Who does not usually speak with Lusange?'
b.* na mwăna n' ú-ta-ku-lí-ág-á mupunga
Q 1child 1Opagr-neg-prog-eat-hab-fv 3rice
[if well formed, would have an interpretation along the lines of '(not) every child (not) eats rice']

These restrictions are consistent with the hypothesis that in KiLega the positions of *na* XPs and WhQPs are actually distinct. This is especially significant for our proposal; as will be shown in ch. 4, there are special co-occurrence and scopal restrictions between negation and DQPs which I interpret both as evidence for the existence of DistP and for its location.

4.3 Morphological markings on GQPs

Let's now consider GQPs. GQPs that functions as distributees are morphologically marked in several languages. Gil (1982) and Choe (1987) provide examples. As observed by Gil, there are languages (e.g., Tagalog, Georgian, Rumanian and Turkish) where distributivity is marked simultaneously on both the key (the distributor) and the share (the distributee) QP. The following examples are from Gil, and illustrate Tagalog (101a) and Georgian (101b), respectively. In these languages, both distributor and distributee are marked; both sentences have the same readings, given below example (101b):

(101) a. Dinala ng tigdalawang lalaki ang tigtaltlong maleta
carried-PT dir dist-two-link man top dist-three-link suitcase
b. Or-orma k'acma sam-sami čanta c'aiγo
two-dist-erg man-erg three-dist-nom suitcase-nom carried
ok: 'sets of two men each carried sets of three suitcases' or 'sets of three suitcases were each carried by sets of two men'

In addition, there are languages where the morphological marking of distributivity is not on the key argument, but only on the share (cf. Gil 1991 and Choe 1987).

Hungarian presents evidence of movement to RefP as well as to a position that may be identified with ShareP. The Hungarian data will be considered in the next section.

5 A Case Study in Target Landing Sites: Hungarian

Hungarian, a known 'LF-language', provides powerful evidence for the theory presented here. I summarize here some of the conclusions reached in Szabolcsi 1994b and especially, 1995.

In Hungarian, scope ambiguity is minimized; when sentences displaying special intonation are factored out, sentences are scopally unambiguous. Scope can be read off the left to right order of constituents.

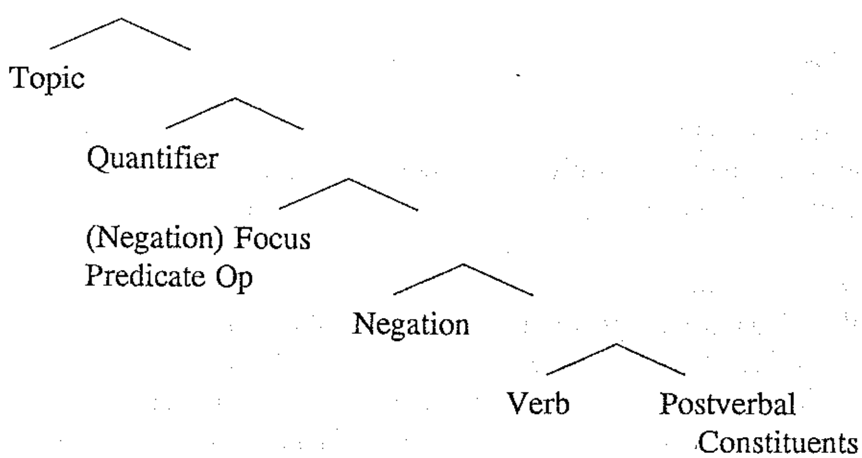
5.1 Syntactic scope positions in Hungarian

Not any sequencing of QPs that corresponds to a (semantically or pragmatically) coherent scoping is attested, however. Rather, there are specific restrictions on (i) the admissible sequences; (ii) the syntactic phenomena that are compatible with given sequences; (iii) the semantic interpretation of QPs in given sequences (i.e., whether they support a collective, distributive, cardinal vs. 'specific' interpretation, etc.). These restrictions indicate that the scopal sequencing is syntactically encoded in the functional structure of the clause. The following generalizations are claimed to hold:

(102) a. There is a fixed hierarchy of syntactic positions (some of which can be filled multiply);
b. Each position has a unique and invariant logical function which QPs fulfill when in that position;
c. Access to each positions is selectively available to QP-types. Some QP types can only access one position; others can occur in more than one, but their interpretation is different in each accessible position.

I illustrate each point in turn, starting with (102a). Szabolcsi, based on work by Kiss (1987) and others presents the following phrase structure hierarchy (positions irrelevant to the present concerns omitted, such as the Left Dislocation position)[22]:

(103) **Hierarchy of scope positions in Hungarian** (Kiss 1987, Szabolcsi 1995)



There are a number of diagnostics to identify each position in the hierarchy given in (103). Szabolcsi (1995) offers the following summary:

[22] There is a further position that is not represented in the diagram, that of WhQPs. Standardly, this position is identified with the focus position. Szabolcsi 1994c, however, argues that WhQPs are in Spec,CP in Hungarian.

(104) **Tests for syntactic position in Hungarian**

a. Topics, but not Quantifiers, can be followed by sentential adverbial like *tegnap* 'yesterday';

b. When a 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 (i.e. the finite V moves into the head of the functional projection whose specifier position Focus or Predicate Operator occupies);

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 (cf. Szabolcsi 1994b).

These tests support the labelling given to QPs in the examples below. They will henceforth be applied without explicit discussion.

Szabolcsi 1995 argues that the positions listed in (103) correspond to the specifier position of the functional categories listed in (103). Szabolcsi's findings support the following equivalences:

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

The data collected by Szabolcsi provide important evidence not only for the scopal hierarchy proposed in section 2, but for the logico-semantic characterzation of the positions. The analysis shows that the same QPs in different positions take part in different syntactic and semantic processes. This substantiates the claims in (102b,c). Szabolcsi comments, "the extent to which Hungarian surface structure reveals the syntax of scope is even greater than has been thought."

Top(ic) is the position where names, definites, and those indefinites that take widest scope in their own clause are placed. This position is not accessible to indefinites that are not specific.

5.2 Distributive QPs in Hungarian

QPs occurring in the Q(uantifier) position are obligatorily distributive. This warrants identifying this position with Spec,DistP. First, *minden N* 'every N' and *valamennyi N* 'each N' can only occur in this position. Second, QPs that can occur in other positions show a systematic difference in interpretation: when in Q(uantifier), they only display distributive construals. To illustrate, compare the interpretation of *több, mint hat fiú* 'more than six boys' as it occurs in Q and in Pred(icate) Op(erator).

(106) a. [$_Q$ Több, mint hat fiú] fel-emelte az asztalt
more than six boy lifted up the table
'Each of more than six boys lifted up the table' [*collective interpretation]

b. [$_{Pred\ Op}$ Több, mint hat fiú] emelte fel az asztalt
more than six boy lifted up the table

'It took more than six boys to lift up the table' [ok: collective interpretation]

The DistP-like status of the Q position is further confirmed by data from non-distributive predicates: predicates that denote 'once-only' events, which cannot be predicated distributively over each individual; and predicates that have obligatorily collective readings. Szabolcsi (1995) shows that subjects of such predicates are not felicitous in Q.

Every/each QPs are barred from occurring in Foc(us). Bare numeral indefinites that occur in Foc receive an EXHAUSTIVE FOCUS interpretation (cf. example (108a) and translation below). When c-commanded by a distributive QP they take on (additionally) the role of distributed share:

(107) Mindenki két könyvet vihetett magával
everyone two book.acc take-might self-with
'Everyone was allowed to take along two books (and nothing else)'

The Foc position corresponds to a presuppositional interpretation of the QP: it is presupposed that there exist a unique individual (atomic or plural), and its identity is asserted. Though it has been previously claimed in the literature on Focus in Hungarian (e.g., Horvath 1981, Kiss 1987) that modified numeral QPs can also occur in Foc, Szabolcsi argues that these do not have access to Foc,[23] but are placed instead in a (lower) Pred(icate) Op(erator) position.

5.3 Counting QPs in Hungarian

Modified numeral QPs in fact show a different behavior. First, unlike GQPs in Foc, they don't support constituent negation readings; second, when focussed, they receive a non-exhaustive interpretation. Consider:

(108) a. [$_{Foc}$ Hat fiút] láttam
six boy.acc see.past.1sg
'It was six boys that I saw (and I didn't see anyone else)'
b. [$_{PredOp}$ Hatnál kevesebb fiút] láttam
six-than fewer boy.acc see.past.1sg
'I saw fewer than six boys (possibly among other things I saw)'

The semantic function of QPs in the PredOp position is parallel to that of QPs in AgrOP/AgrIOP in the analysis given in sections 2 and 3. This is established by the discussion in the next paragraph. (The PredOp position is however not related to Case assignement in Hungarian. Another difference is that the position of negation is to the right of it. In Hungarian,

23 Unless when their numeral part receives a highly contrastive interpretation, in which case Szabolcsi proposes they are pied-piped along with the numeral (cf. Szabolcsi 1994b).

QPs in PredOp appear to be free to scope over negation.[24] This is generally impossible in English, unless special intonational contours are employed, as noted. These differences do not affect the basic parallelism in the mapping of logical functions into syntactic structure, as argued by Szabolcsi.)

Although both the Top and PredOp positions are compatible with collective interpretations, Szabolcsi argues for a basic distinction between the semantic status of QPs in these positions. This in turn supports the hypothesis that QPs in Top (=RefP) introduce a discourse referent. QPs in PredOp do not contribute entities to the interpretation of the sentence: rather, they perform cardinality operations on the property denoted by the predicate. They are predicate operators.

Arguing for a distinction between QPs in Top vs. PredOp are patterns of anaphora. The crucial test case, Szabolcsi points out, is when the QP antecedes a pronominal inside the VP. Unlike with cross-sentential anaphora (*Many boys came. They were curious*), in this configuration the pronoun cannot use the restrictor (*boy*) and the predicate (*came*) to build an antecedent for itself (= the x's that are boys and came). It can only corefer with an introduced discourse referent.

(109) a. [$_{Top}$ Két ügyvéd] olyan tikárnőt vett fel, akivel előbb
two lawyer a secretary hired that
(I) elbeszélget-ett
he had interviewed (each lawyer individually)
(II) elbeszélget-tek
they had interviewed (the two lawyers collectively)
b. [$_{PredOp}$ Hatnál kevesebb ügyvéd] vett fel olyan tikárnőt, akivel előbb
less than six lawyer hired a secretary, that
(I) elbeszélget-ett
he had interviewed (each lawyer indvidually)
(II) elbeszélget-tek
* they had interviewed (the lawyers collectively)

This contrast is accounted for under the hypothesis that QPs in Top introduce a discourse referent for the pronoun to corefer to, but QPs in PredOp do not do so. Accordingly, only the bound variable reading is available with the latter. QPs in Q behave like those in PredOp, owing to their obligatory distributive interpretation.

Szabolcsi's findings thus support not only the structural hierarchy of positions given in (103), which corresponds to the hierarchy of scope positions proposed in (66), but a characterization of their semantic functions. Based on these observations, Szabolcsi proposes that the following semantic functions are associated with QPs in the Top (=Spec,RefP), Foc (=Spec,ShareP), and PredOp (≈ Spec,AgrXP / VP-internal position). This characterization has been adopted in the TLS

24 As noted in Szabolcsi 1995a, no Weak Island effects result from constructions like:

(xxiv) [$_{Foc}$ Hatnál több / kevés könyvet] nem adtam vissza
more than six / few book Neg have returned
'The books that I haven't returned are more than six / few'

theory proposed here.

(110) **Semantic interpretation for DPs in Top and PredOp** (Szabolcsi 1995)

a. QPs that occur either in Top or Foc contribute an individual to the interpretation of the sentence, i.e. an atomic or plural individual (the atoms of) which correspond(s) to the element(s) of a witness set of the DP. Predication is applied to this individual. Predication may be distributive or collective, depending on the nature of the predicate.

b. A QP in PredOp does not contribute an entity to the interpretation of the sentence to which the predication can be applied. It is instead a counting operator on the property denoted by the rest of the sentence. If the predicate is distributive and thus denotes a set, the DP counts its elements. If the predicate is collective and thus denotes a plural individual, the DP counts its atoms.

Szabolcsi suggests that discourse referents are not just plain variables that occur as arguments of a predicate formed from their restrictor set, as in DRT. Rather, they are restricted variables (from the start), ranging over plural individuals formed from witness sets of the corresponding generalized quantifier.

This corresponds to the characterization given in section 2 for GQPs, which have access to Spec of RefP and ShareP, corresponding to Hungarian Top and Foc, respectively.

With a CQP, as proposed in section 2, no group variable is being introduced. Instead, the CQP is interpreted *in situ* as a generalized quantifier. This corresponds quite closely to Szabolcsi's suggestion (in 110b) that the QP is "a counting operator on the property denoted by the rest of the sentence."

5.4 Evidence that DQPs introduce discourse referents

An issue that Hungarian syntax is able to clarify is the logical function associated with the Q (=Spec,DistP) position. This is where Szabolcsi's account, and the one presented in this thesis, diverge from current DRT treatments. As noted in section 3, DQPs behave, with respect to pronominal anaphora, much like CQPs. DRT accordingly draws a basic distinction between GQPs (which introduce discourse referents), and Generalized Quantifiers, including both CQPs and DQPs (cf. Roberts 1987, Kamp&Reyle 1993, etc.). The same distinction is often adopted in the semantics literature via the assumption that all DP's that are either proportional or obligatorily distributive are 'quantificational' (cf. also Partee 1995).

In section 1, a number of syntactic facts have been presented to support the need for a sharp distinction between DQPs and CQPs, whose scope properties are so different. Hungarian data, as observed by Szabolcsi, are helpful in developing a semantic argument for this distinction.

The distinction between GQPs and CQPs, as observed in section 3, manifests in the so-called maximal reference effect: recall (from section 3.3) that GQPs do not display the effect, whereas CQPs do. In English, all DQPs are also universal QPs; hence no maximal reference effects can be tested on these (since the set introduced by a universal is unique and already 'maximal'). But in Hungarian, as observed, QPs like *many men* and *more than five men* can also occur in Spec,DistP.

When testing for maximal reference effects, the results indicate that QPs in Spec,DistP do not show the effect. Sentence (111a) allows the continuation in (111c), whereas (111b) does not.

(111) a. [$_{Q}$ Több, mint hat diákunk] megbukott.
'More than six students of ours flunked'
c. ok: You are wrong, in fact they passed.
b. [$_{PredOp}$ Több, mint hat diákunk] bukott meg.
'More than six students of ours flunked'
c. * : You are wrong, in fact they passed.

This supports the hypothesis that QPs in Q/DistP behave like GQPs in that they introduce a group referent which can antecede a pronoun voiding the maximal reference effect, whereas QPs in PredOp (=CQPs), not introducing a group referent, force the pronoun to 'build' a referent by using the restrictor and nuclear scope properties of the CQPs, thus referring maximally to all the individuals with these properties.

Szabolcsi also reports that whereas sentences like (111a) are understood by speakers to be 'about' a certain set of students, sentences like (111b) are not.

Szabolcsi's proposal for the semantic interpretation of Qps in Spec,DistP in Hungarian is as follows:

(112) **Semantic interpretation for DP in Q in Hungarian** (Szabolcsi 1995)
DP in Q contributes a set to the interpretation of the sentence, i.e., a witness set. The predicate applies to this set mediated by a distributive operator.

Under this view, DP's in Spec,DistP and DP's in Spec,RefP (or Spec,ShareP) do not differ substantially in their semantic interpretation. They all introduce discourse referents; these referents are restricted variables. What the variables range over is, however, different. In the former case, it is individuals (albeit possibly plural ones); in the latter, sets.

CHAPTER 3

QP MOVEMENT IN LF

0 Outline of the chapter

This chapter has two parts. In section 1, I consider the issue of whether the types of QP movements that are assumed in the TLS theory of chapter 2 display Subjacency effects. In section 2, I turn to further issues concerning the hypothesis that QPs move at LF to non-Case-related positions. This part includes a discussion of some differences between the present approach and the one developed in Hornstein 1994 (cf. ch. 1, 3.3).

1 QP movement and locality conditions (Subjacency)

The TLS approach makes the claim that QP-movement in LF is similar to overt syntactic movement. LF movement is characterized as both feature-driven and landing-site selective. The cross-linguistic data considered in the previous chapter, and in particular, Szabolcsi's (1995a) analysis of QP-movement in Hungarian, provide support for this view.

It appears that the TLS theory is compatible with some version of Greed. The indeterminacy and 'optionality' of movement which are characteristic of the QR approach are virtually eliminated (or at least brought to a 'controllable' level). This is a consequence of the claim that scope positions have individual semantic functions associated with them, ultimately rooted in the morphological properties of QP-types. Scope itself is merely a side effect of types of movement that have independent driving force.

The LF movement undergone by GQPs, is, in this respect, comparable with the movement of WhQPs. The latter move overtly through Spec,CP positions till they land in one where they check their [+Wh] features. I have argued that GQPs may move to Spec,ShareP where they are associated with the feature [+group referent], or they can move to Spec,RefP, where they check the feature [+subject of predication]. Both of these movements are assumed to be successive cyclic. GQPs go through Spec,RefP/ShareP positions till they land in a position where they can check their features.

I will not be directly concerned in this thesis with how and whether Wh-in-situ move in LF. Descriptively, note that Wh-in-situ elements present a comparable behavior. Consider (1a):

(1) Who remembers where we bought which book?
ok: 'for which x, x remembers which place y, book z, are such that we bought z at y'
ok: 'for which person x, book z, x remembers which place y is such that we bought z at y'

As noted by Kuno&Robinson (1972) and Baker (1970), and represented by the logical translations given for the above examples, the Wh-in-situ can either combine with the intermediate or the matrix Wh.[1].

Now, iff QP-movement has the same cyclic application, mode of operation (substitution), morphological driving force, and selective landing as any other types of movement, it must also be subject to the same locality conditions.

I now consider precisely this issue. The aim of this section is to show that QP-movement is sensitive to the same locality conditions as overt movement, such as Wh-movement and NP-movement. (I refer descriptively to these locality conditions as 'Subjacency'). This is not only an attractive scenario, it is what is expected, indeed required, by theories of LF. As Brody (1993:44) points out, "the assumption that only certain instances of move-α obey Subjacency (either as a constraint on the rule or as a constraint on the output representation/chain) is conceptually problematic. The assumption undesirably weakens the cluster of properties argument for move-α since there is no available explanation of why overt move-α should differ in this way from its LF counterpart." [2]

The structure of this first section is as follows. First, I consider evidence (from the literature) that covert Wh-movement and especially, movement of NQPs, displays Subjacency effects. This will be done in section 1.1. The core argument of this section is that if the TLS theory of section 2 is on the right track, we should expect QPs that undergo movement in LF (i.e. GQPs and DQPs) to also display similar Subjacency effects. Section 1.2 provides evidence that DQPs are constrained in their scope by Subjacency. Lastly, in section 1.3, I argue that Subjacency effects are also displayed by GQPs.

The account of QP-movement that I provide here makes two auxiliary assumptions. First, that QP-movement may avail itself of Pied-Piping. Second, that distinct QP-types do not have identical sensitivity to islands: they all obey a number of the same 'core' constraints, such as Complex NP, Sentential Adjunct, Coordinate Structure, etc.; but there is a limited amount of variability

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1 For a differing view, see Mahajan (1990), who observes that sentences like the following only allow a reading where *what* is paired with *where*, lacking the interpretation where *what* is paired with *who*:

(i) Who thinks that Bill wonders where John bought what?

2 Reinhart (199x) has argued that 'QR' obeys Subjacency based on data involving ellipsis. Her account has been somewhat controversial, however (cf. Hornstein 1994, Brody 1993).

concerning other constraints, such as Specificity Condition, Subject Condition, and others.

Both of these assumptions have independent motivation. Sensitivity of Wh-in-situ to movement constraints appears to be parametrized across languages (cf. Brody 1993). NQPs, as noted by Longobardi (1991), Moritz&Valois (1994), are able to extend their scope across boundaries that primary WhQPs do not cross. NQPs show (i) lack of sensitivity to the Subject Condition; and (ii) their scope can cross multiple embedding of DPs. (i) is illustrated by (?), from Italian; (ii) by (3), from Moritz&Valois (1994), who observe the effect for French *personne* ('nobody/anybody):

(2) a. Non credo che la presenza di nessuno [Italian]
(I) don't believe that the presence of no one
lo spaventerebbe
him would-scare
ok: 'No person x is such that I believe that x's presence would scare him'
b. *Di chi lo spaventerebbe la presenza *t* ?
of who him would-scare the presence

(3) a. *De qui as-tu sorti [$_{PP}$ avec [$_{DP}$ l'amie [$_{PP}$ *t*]]] [French]
of who have-you gone-out with the friend
b. Louise [$_{NegP}$ n'est sortie [$_{PP}$ avec [$_{DP}$ l'ami
Louise neg has gone-out with the friend
[$_{PP}$ de personne]]]
of nobody
ok: 'for no person x, Louise has gone out with the friend of x'

Various solutions have been suggested to handle this type of violations. These range from percolation to pied-piping, and have been proposed, among others, in Longobardi 1991, Fiengo et al 1988, Moritz&Valois 1994. I consider here the solution of Moritz&Valois (1994). They derive the contrast in (3) by assuming that *personne* first moves to the Spec of DP, thereby marking the whole DP as [+neg]; then the entire DP moves to Spec,PP, marks the PP as [+neg], and finally the whole PP can move to Spec,NegP, where the negative features of *personne* can be checked at the clausal level, making the sentence as a whole negative.

1.1 Subjacency effects with Wh-in-situ and NQPs

The claim that LF-movement is not subject to Subjacency (and/or other constraints, such as ECP, or whatever takes its place in a Minimalist framework) dates back to Huang's (1982) analysis of Wh-in-situ in Chinese.

Wh-in-situ is assumed to be unaffected by Subjacency on the basis of data like in (4). Under the standard analysis, the element *in situ* must move to the element in CP in order to license multiple interrogation. Indeed such interpretations are available across islands. The following sentences simulate the original Chinese data (aside from differences irrelevant to the point being made here):

(4) a. *Who likes professors who teach which subjects* [Chinese] [*Wh-Island*]
ok: 'Which person x, subject y, are such that x likes professors who teach y'
b. *Who supports the claim that Bill offended whom* [Chinese] [*Complex NP*]
ok: 'Which persons x, y are such that x supports the claim that Bill offended y'
c. *Who would be happy if who spoke at the conference* [Chinese] [*Sentential Adjunct*]
ok: 'Which persons x, y are such that x would be happy if y spoke at the conference'

Yet, other instances of covert movement have been shown to be sensitive to the usual movement/chain constraints. Case in point is the scope of NQPs. Kayne 1981 has first pointed to ECP-type asymmetries in the distribution of French *personne* 'nobody/anybody':

(5) a. ? Je n'ai exigé qu' ils arrêtent personne [French]
I neg-have demanded that they arrest no one
ok: 'for no person x, I have demanded that they arrest x'
b. * Je n'ai exigé que personne soit arrêté [French]
I neg-have demanded that no one be arrested

Longobardi 1991 provides an additional battery of cases indicating that the scope of the Italian NQPs *nessuno* 'nobody/anybody' and *niente* 'nothing/anything' (i) extends to superordinate (unboundedly distant) negation *non* (cf. (6a,b), as well as (?a)) and (ii) obeys islands (Complex NP, Sentential Subject, Sentential Adjunct: cf. (7a,b,c)):

(6) a. Non approverei che tu gli consentissi [Italian]
Neg (I) would approve that you to-him permitted
di vedere nessuno
to see noone
ok: 'for no person x, I would approve that you allowed him to see x'

b. Non credo che sia possibile che [Italian]
Neg (I) believe that (it) be possible that
ci consenta di fare niente.
(s/he) to-us would consent to do nothing
ok: 'There isn't any thing x such that I believe it would be possible for her/him to consent us to do x'

(7) a. * Non approverei la tua proposta di vedere
Neg (I) would approve your proposal to see
nessuno
noone [Italian]

b. * Chiamare nessuno sarà possibile [Italian]
to-call noone will-be possible

c. * Non fa il suo dovere per aiutare
Neg (s/he) does his/her duty to help
nessuno
no one [Italian]

Furthermore, Longobardi observed that Italian NQPs show effects comparable to parasitic gap licensing. The acceptability of (8a,b) constrast with the deviance of (6d,e): whereas an NQP is not licensed across a sentential subject/adjunct, the addition of an NQPs in the matrix accomplishes a kind of parasitic licensing.

(8) a. ? Chiamare nessuno servirà a niente, ormai [Italian]
to call noone will serve to-nothing now
ok: 'To call nobody will do any good, now'

b. Non fa niente per aiutare nessuno [Italian]
Neg (s/he) does nothing to help noone
ok: 'He doesn't do anything to help anyone'

Brody 1993, noting that these data would be highly peculiar if they were only available with some Romance NQPs, proposes an interesting solution to the Wh-in-situ data that were found to be problematic at the outset. His proposal makes use of Kayne's (1983) observation that Superiority violations can be salvaged by the addition of another Wh-in-situ under appropriate structural conditions:

(9) a. * I'd like to know where who hid it
b. ? I'd like to know where who hid what
c. * I'd like to know where who said (that) what was hid

Licensing of Wh-in-situ elements that violate Superiority (as in 9a) is accomplished (in 9b) if we assume that the added WhQP takes on the same structural role that the primary gap fulfills in licensing a secondary gap in parasitic gap (PG) constructions:

(10) a. A man that anyone who talks to *e* admires *t*
b. * A man that anyone who talks to *e* realizes (that) *t* is brilliant.

Kayne suggests that (9b) corresponds to (10a) in that both are instances of the same logic of parasitic gap (PG) licensing: a secondary (parasitic) chain is licensed across an island by entering in an appropriate structural relation with a 'primary' chain. Brody extends this principle to the problematic Wh-in-situ in (4).

Brody's proposal is that island-escaping Wh-in-situ are like PG's: they are licensed across an island by entering into a parasitic chain. Thus they 'escape' the island; but crucially, they are sensitive to further islands. Another observation of Kayne's is at the roots of this claim.

Kayne also points out that although a PG can occur inside an island β, it is still sensitive to the presence of another island δ contained inside β. The same carries over to parasitic licensing of Superiority-violating WhQPs. We get an inkling of this by considering the parallelism between (9c) and (10b).

Thus, Brody shows that although Wh-in-situ can escape one island, it cannot be embedded inside another island. He presents examples like the following to substantiate his claim:

(11) a. Who wanted to propose to leave without waiting for who?
ok: 'Which persons x,y are such that x wanted to propose to leave without waiting for y'
b. Who was against proposals to leave without waiting for who?
* 'Which persons x,y are such that x was against proposals to leave without waiting for y' [*Sentential Adjunct inside Complex NP*]

(12) a. Who left without denying that Mary wanted to meet whom?
ok: 'Which persons x,y are such that x left without denying that Mary wanted to meet y'
b. Who left withouth denying the fact that Mary met whom?
* 'Which persons x,y are such that x left without denying the fact that Mary met y' [*Complex NP inside Sentential Adjunct*]

(13) a. Who was against proposals to tell Mary to try to discuss this with whom?
ok: 'Which persons x,y are such that x was against proposals to try to discuss this with y'
b. Who was against proposal to find a topic to discuss this with whom?
* 'Which persons x,y are such that x was against proposals to find a topic to discuss with y' [*Complex NP inside Complex NP*]

Furthermore, Brody notes, data presented by Longobardi shows that secondary (=parasitic) NQP chains behave much like Wh-in-situ with respect to island sensitivity:

(14) a. * Partire per incontrare nessuno servirà a niente
to leave to meet noone will-serve to nothing [Italian]
b. * Non fa niente per scoprire la verità
Neg (s/he) does nothing to find the truth
indagando su nessuno
investigating on nobody

Brody's result is significant because it indicates that, at least as far as WhQPs and NQPs are concerned, LF movement is not *in principle* different from overt movement. All movement (or, every chain) is subject to the same structural constraints (say, Subjacency), whether it is an '(overtly) syntactic' movement/chain, or a covert (scope) CHAIN.

Brody's account serves here to show that the lack of Subjacency effects with WhQPs-in-situ is only apparent. Although Subjacency-type effects might not be obvious at first with covert scope relations, they eventually show up if one looks for them in the right places. We'll see examples of this logic in the next subsections, especially 1.3.

1.2 DQP scope and Subjacency

In this section I provide evidence for the claim that the structural conditions governing the scope of DQPs resemble those on NQPs, and in particular that DQPs show Subjacency effects.

This claim is broken down into several component-claims. First, it will be shown that DQPs are not strictly clause-bounded; some successive cyclic movement is possible. Second, using arguments from the literature, it is shown that DQPs observe island constraints. Finally, when embedded inside a DP, DQPs can often extend their scope across the DP boundary, seeming making use of the same mechanism of LF pied-piping that NQPs use.

1.2.1 Successive cyclic movement

Concerning the first (sub)claim, there is an obvious conditional relation between successive cyclic movement of DQPs and Subjacency effects. For example, Brody 1993 expresses skepticism as to the latter on grounds that since QR (here, DQP movement) is supposed to be strictly clause-bounded, Subjacency effects cannot really manifest.

In the terms of the TLS approach defended here, the traditional notion of 'QR' covers DQP and GQP movement. The more delicate issue of the two is to show that DQP movement is not bounded to the clause where it originates thematically. GQPs are clearly not clause-bounded in their scope. This has never been questioned in the literature on the scope of (in)definites (cf. Fodor&Sag 1982, Ludlow&Neale 1992, Abusch 1994).

There are a number of observations that suggest that DQP scope is in principle not clause-bounded, though specific factors conspire to obscure this in most cases.

First, judgements of relative scope point to a difference between DQPs embedded in *that*-complements and in non-finite clauses. This has been repeatedly observed in the literature (cf. Fodor&Sag 1982, May 1985, Larson&May 1990, Ruys 1993, etc.). Second, Moltmann&Szabolcsi (1993) present striking evidence that DQPs embedded in *Wh*-complements can scope out to the matrix clause. I consider these cases in turn.

Speakers generally agree that an *every*-QP in a non-finite clause can take superordinate scope, and that this construal is unavailable with finite *that*-complements. The contrast in (15a,b) exemplifies:

(15) a. This producer believes that every actor in our company is too fat to appear in public.
  * 'for every actor x, this producer believes x to be too fat to appear in public'
b. This producer believes every actor in our company to be too fat to appear in public.
  ? 'for each actor x, this producer believes x to be too fat to appear in public'

Ruys (1993:22) provides the following examples from Dutch to illustrate the same point: in (16b) the scoping *every*>*a* is felt to be more available than in (16a). Thus there can be many doctors in the situation described by (16b), but not necessarily more than one in (16a).

(16) a. Er heeft een arts beloofd dat hiy iedere soldaat zou genezen
'A doctor has promised that he would cure every soldier'
b. Er heeft een arts beloofd om iedere soldaat te genezen
'A doctor has promised to cure every soldier'

Some authors (e.g. Fodor&Sag 1982, Ruys 1993) actually claim that DQPs inside *that*-complements can extend their scope to the matrix clause. Typically, however, these claims are made in connection with DQPs built with *each*, rather than with *every*.[3] These judgments are delicate.

I maintain that the contrast between finite and non-finite clauses[4] is sufficient to demonstrate that the scope of DQPs is not bound to their clause. The next question, however, is why this should be harder (or impossible) with *that*-complements. I suggest that this is a 'Specificity

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3 Fodor&Sag (1982) take the view that sometimes DQPs can take scope over the matrix predicate from inside a *that*-complement. They however explicitly suggest that this is a distinctive property of the quantifier *each*; *every* does not show the same effect. They claim that (iii.a) has a reading where the producer does not just have one belief about all the actors, but rather distinct beliefs about (each) individual actor. They go on to contrast (iii.a) with (iii.b), where the reading seems unavailable, pointing to an observation of Kroch (1976): *each*, unlike *every*, occurs most naturally only where there is a potential scope ambiguity to be resolved. Thus *each person lifted a rock* is more natural a sentence than *each man was hungry*.

(iii) a. This producer believes that each actor in our company is too fat to appear in public.
? 'for every actor x, this producer believes x to be too fat to appear in public'
b. This producer believes that each actor in our company speaks two languages.
* 'for each actor x, this producer believes x to speak two languages'

Ruys (1993) also assumes that *each*-QPs are not sensitive to *that*-clause boundaries. He observes that their scope appears to be sensitive to non-bridge verbs. So, cases of extra-clausal scope like (iii.a) are said to contrast with examples like (iii') below, where it is definitely not possible to scope *each actor* over *believes*:

(iii') This producer hissed that each actor in our company was too fat to appear in public
* 'for each actor x, this producer hissed that x was too fat to appear in public'

Ruys adds that sensitivity to non-bridge verbs can be interpreted as evidence for Subjacency effects, if we take Stowell's (1981) analysis where non-bridge verbs are analogized to adjunct island effects.

4 DQPs that are subjects-of-ECM complements clearly display matrix scope; however, it can be argued (cf. ch.1, 3.3) that these subjects undergo movement to Spec,AgrOP of the superordinate clause for Case, hence that this extraclausal scope does not argue for successive cyclicity of DQP movement.

Condition' effect, caused by the definiteness of the complementizer *that*.[5] I return to this point below.

The possibility of extraclausal scope from within non-finite clauses is not the only evidence that DQPs can scope out of their own clauses. *Wh*-complements provide compelling evidence. Consider examples such as (17) below, taken from Moltmann&Szabolcsi 1994:

(17) a. Some librarian (or other) found out which book every/each student needed
   ok: 'for every student x, there is more than one librarian who found out which book x needed'
 b. Some professor (or other) is as tall as every student is.
   ok: 'for every student x, there is a professor who is as tall as x is'
 c. Some student read what every professor wrote
   ok: 'for every professor x, there is some student who read what x wrote'

These examples show that a DQP is not forced to check its distributivity in its own clause, but has the option of being distributive with respect to a superordinate clause. The fact that the subject of the matrix clause in the above example can become referentially dependent on the lower DQPs support this claim (the subject can co-vary in its interpretation with the choice of individuals in the domain of the DQP).

I will return to an analysis of these cases in ch. 5. There I argue that the extraclausal scope of the DQP takes place by pied-piping the *Wh*-clause (as part of the restrictor of the DQP). This pied-piping mechanism allows the DQP to by-pass island violations in other clear cases of superordinate scope, as in the following example:

(18) A nurse came in after every patient left
   ok: 'for every patient x, a possibly different nurse y came in following the time when x left'

Pied-piping of the embedded clause containing the DQP, as will be suggested in ch. 5, is made possible by the fact that the pied-piped clause is a *Wh*-clause; *that*-clauses cannot be pied-piped by WhQPs. As suggested by the translation, these 'nurse' sentences appear to be cases of scopal extraction from *Wh*-complements, assuming the presence of a covert *when* complement of the temporal preposition.

In conclusion, there is clear evidence that DQPs are not bound to be distributive within their

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5 Observe, in passing, that assuming that DQPs do not scope out of *that*-complements does not create a problem in accounting for pair-list readings in cases like:

(?i) Who do you think that everyone saw at the rally?
   ok: 'for every person x, who do you think that x saw at the rally?'

As will be seen in ch. 5, the account of pair-list reading that I propose does not involve raising *everyone* to CP of the matrix, but rather, reconstructing the Wh-phrase in the scope of the quantifier. May's (1985) account, on the other hand, requires the DQP to move successive cyclically to the matrix IP, crossing over the complementizer *that*.

own clause. At the same time, as indicated by their differential sensitivity to *that*-complement boundaries, as well as by their more extensive use of pied-piping, their movement operates somewhat differently from *Wh*-movement in the overt syntax of Romance and Germanic.

1.2.2 Island sensitivity

Ruys (1993) lists number of examples (in part gleaned from previous literature, especially Fodor&Sag 1982) showing the sensitivity of the scope of *every, each* to the usual island constraints. Some of these examples are presented below. They illustrate Complex NP, Sentential Adjunct, and Coordinate Structure Constraint, respectively. (Note that the Sentential Adjunct violation example does not involve a (covert or overt) *Wh*-clause):

(19) a. John reported [a plan to invite every student to the Dean]
 * 'for every student x, John reported a plan to invite x to the Dean'
 b. John overheard [the rumor that every student had been called before the Dean]
 * 'for every student x, John overheard the rumor that x had been called before the Dean'

(20) If each friend of mine from Texas had died in the fire, I would have inherited a fortune
 * 'for each friend x, I would have inherited a fortune if x had died in the fire'

(21) a. The dance instructor and every student waltzed around the room twice
 * 'for every student x, the dance instructor and x waltzed (together) twice around the room'
 b. John kissed every girl and bought a flower
 * 'for every girl x, John both kissed x and bought a flower'

On the basis of these examples, let's conclude that DQPs observe island constraints.

1.2.3 Differences between DQP-movement and Wh-movement

Let's consider now some differences between Wh-movement and the LF-movement of DQPs (and NQPs). It has already been observed that DQPs show sensitivity to *that*-clause boundaries. I have suggested that this may be a 'Specificity Condition' effect.

DQPs show strong sensitivity to the boundary of a DP which introduces a referent which is unique in the situation. DQPs embedded inside a demonstrative DP, or inside definite DPs, do not scope out. The effect has been documented in Fiengo&Higginbotham (1981) and dubbed 'Specificity Condition.'

(22) a. This/the picture of every boy is faded
 * 'for every boy x, this picture of x is faded'
 b. John's picture of every boy can be found in this cabinet
 * 'for every boy x, John's picture of x can be found in this cabinet'

This constraint is not well understood, since there are known exceptions to it (kin terms, inalienable possession).[6]

Aside from Specificity Condition effects, one observes a considerable lack of sensitivity to DP-islands in general on the part of both DQPs and NQPs (as seen in section 1). With non-specific DPs, DQPs and NQPs can scope out of subjects (in apparent violation of the Subject Condition)[7], as well as out of DPs embedded inside other PPs/DPs.

We have already seen examples with NQPs in (2)-(3); the following illustrate DQPs. (As noted, there are no Specificity Conditions with kinship terms, thus we don't expect the DP *the mother of*... to block DQP extraction in (23a)):

(23) a. John went out [with a friend of the mother of every student]
ok: 'for every student x, John went out with a friend of x's mother'
b. A representative of every firm hates it
ok: 'for every firm x, a representative of x hates x'

As briefly discussed in section 1, this lack of sensitivity to DP-internal adjunct islands can be accounted for in terms of the hypothesis that DQPs and NQPs can avail themselves of LF pied-piping. An argument in this direction is the fact that DQPs can be embedded unboundedly deep inside DPs/PPs. Given that DQP scope is otherwise sensitive to islands, a recursive pied-piping hypothesis such as Moritz&Valois' seems appropriate to handle these cases.

As to the apparent violations of the Subject Condition, note that these are Subjacency-type violations only under the assumption that in these cases the DQP moves to a scope position

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[6] WhQPs also show this kind of sensitivity:

(vii) a. * Who did you meet this/the friend of?
b. * Who did you see John's portrait of?
c. * Who saw this friend of whom?
d. * Who saw John's pictures by whom?

However, it is less clear that with WhQPs 'specificity/definiteness' is at the root of the constraint, since WhQPs that are internal complements of indefinite DPs don't undergo extraction either, in a number of cases.

As remarked in connection with Inverse Linking, DQPs can typically scope out of indefinite DPs (cf. vii'.c). Extraction of Wh-elements out of indefinite DPs seems dependent on the lexical choice of DP: it is possible with *picture, portrait, description*, etc., (cf. vii'.a) but not generally with other types of DPs (cf. vii'.b). In addition, WhQPs generally don't extract from DP-internal adjuncts (vii'.d), whereas DQPs scope out of this position more easily (vii'.e).

(vii') a. Who did you see a picture of?
b. * Who did you return a/one gift of ?
c. Mary will return one gift of every guest
ok 'for every guest x, Mary will return one gift of x'
d. * Who did you believe at least one argument against?
e. John believes at least one argument against every proposal
ok 'for every proposal x, John believes at least one argument against x'

[7] Moritz&Valois 1994 report that French *personne* is sensitive to the Subject Condition. However, similar effects seem completely absent for Italian *nessuno, niente* (cf. Longobardi 1991); and it is fair to say that many Spanish speakers have similar judgments for *nadie*.

adjoined to IP. Under our analysis, their scope position is clause-internal. Hence we don't actually expect Subject-Condition effects to show up with DQPs (or with NQPs that don't have scope in the superordinate clause).

1.3 GQP scope and Subjacency

GQPs present a special challenge to the claim that scope relations are move-α/chain type relations. This, as noted in the previous section, does not come from clause-boundedness considerations. The problem is that it is fairly easy to produce examples of blatant violations of (strong) island on the part of GQPs.

These facts were first systematically observed in Fodor&Sag 1982. Their solution was to factor out these problematic cases as what they call 'referential' uses of indefinites. Fodor&Sag propose that (certain) indefinite DP's are ambiguous between a 'referential' and a 'quantificational' reading. When 'referential,' indefinite GQPs behave like names or demonstratives. If so, the island-escaping behavior of certain indefinites can be factored out as deriving from their 'referential' interpretation; we can thus maintain that 'quantificational' indefinites obey islands.

Fodor&Sag's proposal has been objected to (cf. Farkas 1981, Abusch 1994) on grounds that island-escaping indefinites still show 'quantificational' properties, namely can be caught in the scope of higher quantifiers. Abusch (1994) points out that the following 'intermediate' scope reading is available with the example in (24):

(24) Each author in this room despises every publisher who whould not publish a book that was deemed pornographic
ok 'for every author x, there is a book y (which was deemed pornographic), such that for every publisher z, if z would not publish y, x despises z'

Fodor&Sag's notion of 'referential' indefinites appears to be problematic. In the following, I'll present a reformulation of their distinction between island-escaping and island-observing indefinites which does not suffer from the difficulties pointed out by Farkas and Abusch, and still allows us to maintain that a class of indefinites avails itself of movement (in LF).

This section presents a discussion of the scope of GQPs, which is laid out as follows. First, I review the problematic cases of island-escaping behavior (section 1.3.1). Next, as the core claim of this section, I suggest that though some indefinites are indeed insensitive to Subjacency, others do obey syntactic islands as regards their scope interpretation (section 1.3.2). This is sufficient to establish that GQPs display Subjacency effects. I will then make a proposal towards accounting for the island-observing behavior (section 1.3.3) as well as for the residual cases of non-sensitivity to islands (section 1.3.4).

It should be clarified what scope relations we are focussing on, when discussing the scope of indefinites. Farkas (1995) distinguishes the scope of the descriptive content (DC) of a GQP from the scope of its group variable. She proposes that the scope of the DC is always free. So, I will be concerned here only with the scope of the variable. Farkas assumes this is also free with GQPs; I intend to show that Subjacency constrains its scope.

A further clarification is in order. In evaluating the upward scope of GQPs, I do not assume (as Ruys 1993 does) that distribution over a higher indefinite is a condition to assert that the GQP is taking scope over the indefinite. As discussed in ch. 2, the upward scope of GQPs does not support distributivity. (Distributive scope is possible with GQPs only clause internally, and in a limited range of configurations, as I will discuss in ch. 4, section 3: it is typically unavailable when the distributee is not within the c-command domain of the distributor GQP at Spell-out).

Thus I will assume as a criterion to evaluate GQP scope that a GQP α scopes over a domain β iff the assignment of a discourse referent for α is made independently of the assignment(s) for the scopal elements contained in β.

1.3.1 Island-escaping behavior of GQPs

Let's begin by reviewing the problematic cases, where GQPs escape islands. Undeniably, the scope of definite GQPs is not constrained by islands. In addition, some indefinite GQPs seem also to ignore island conditions. The examples below compare DQPs (that are generally island-observing) and GQPs (in their island-escaping behavior), and illustrate Complex NP, Adjunct island, and Coordinate Structure Constraint:

(25) a. John overheard [the rumor that each of my students had been called before the Dean] (Fodor&Sag 1982) [* each > overheard the rumor that...]

b. John overheard [the rumor that a student of mine had been called before the Dean] (Fodor&Sag 1982) [ok: a > overheard the rumor that...]

(26) a. John will become unhappy [if each of his girlfriends should leave him] (Ruys 1993) [*each > will become...]

b. John will become unhappy [if three girlfriends of his should leave him] (Ruys 1993) [ok: three > will become...]

(27) a. Some girl [loves every boy] and [wants to be a football star] (Ruys 1993) [* every > some]

b. Every boy [loves a film star I know] and [wants to be a football star] [8] (Ruys 1993) [ok: a > every]

These observations have discouraged some researchers from pursuing a movement analysis for the scope of GQPs. Ruys (1993) is representative of this position. In the face of such evidence as given above, he feels compelled to conclude that indefinites do not move, but accrue their distinctive scopal properties through indexation. Ruys' solution is to exclude indefinites from the purview of QR; indefinites do not move at LF, nor enter into scope chains, but are interpreted *in situ*. They are assigned scope via a sophisticated indexing mechanism: they can be indexed as either scope dependent or independent from given (c-commanding) operators.

In most cases, the examples given by Ruys and Fodor&Sag involve a subclass of indefinites that we may characterize as D-linked: *a student of mine, two of the men*, etc. D-linked GQPs seem

[8] Ruys (1993:103) notes that "for *every boy* in [(a)] to take scope over the subject and for *a film star I know* in [(b)] to fall outside the scope of the subject, these NPs should not be scopally restricted to the conjoined VPs that contain them".

indeed to be a special case: intuitively, the addition of a definite element makes them referentially 'anchored' to the real world, i.e., the world of the speaker. Hence it seems always possible to give them widest scope (as Farkas points out, our intuitions of 'widest scope' related to the fact that the QP is interpreted relative to the speaker's coordinates). I will propose that there is some special mechanism available to these GQPs that allows them to by-pass islands. I return to this in section 1.3.3.

1.3.2 Island-observing GQPs

Plain, non-D-linked GQPs are constrained in their scope by syntactic islands. The effect has remained unnoticed because it can only be observed in certain contexts. Broadly, the cases where Subjacency effects show up as expected are when the mood of the clause containing the indefinite is 'licensed' by a superordinate operator. A good such test environment is given by subjunctive clauses. As contemporary English lacks subjunctive constructions for the most part, I will focus on examples from Romance (Italian).

The observations are as follows. A GQP can freely scope-out of a clause that has indicative mood. Islands appear to have no effect in this case. But when the mood is subjunctive, syntactic islands hold. Clear Subjacency effects become observable when we embed the subjunctive clause containing the GQP inside a syntactic island.

In the following examples, the note in brackets below the gloss summarizes the configuration, and indicates whether scoping the GQP out of the island, and possibly achieving matrix scope (MS) is possible (ok or ?) or impossible (??/*). In the glosses, 'sub' stands for subjunctive; 'ind' for indicative, and 'inf' for infinitive.[9]

Let's consider Italian data. The first set of examples given below show that GQPs can scope out of a subjunctive as well as out of an indicative clause, if there are no islands (28a,b):

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9 It might be objected that the judgments are otherwise than reported when *a certain/a particular/a given professor* are substituted for plain *a professor* in the examples. Two things can be said in this respect. First, the addition of modifiers may bring about D-Linking (this might be plausibly the case with a literal use of *a given*). Second, it is unclear that the addition of modifiers like *certain/particular* actually licenses widest scope for the indefinite. The implication is simply one of unicity. This may sometimes interfere with our scopal intuitions.

Surely the addition of a relative clause with a realis mood allows (indeed, forces in many cases) the indefinite that heads it to be widest scope (cf. Stowell 1993, Brugger&D'Angelo 1994). This effect is expected under the account that I will propose later in this subsection.

(28) a. Suppongo che Maria conosca due professori.
I suppose(ind) that M knows(sub) two professors
[no island. **ok** MS]

b. Gianni vuole che io creda che Maria conosce due
G wants(ind) that I believe(sub) that M knows(ind) two
professori
professors
[no island. **ok** MS]

However, when we embed a subjunctive clause containing a plain indefinite inside an island, clear Subjacency effects are observed. The next three sets of examples illustrate the Sentential Adjunct island, the Complex NP island, and the Coordinate Structure Constraint, respectively:

(29) a. Credo che se Maria volesse parlare a un professore, dovrebbe
I believe(ind) that if M wanted(sub) to talk to a professor, she should
fissare un appuntamento molto in anticipo
make an appointment well in advance
[sub inside Sentential Adjunct. * MS]

b. Suppongo che Mario creda che Maria si comporterà bene,
I suppose(ind) that M believes(sub) that M will behave(ind) well
dopo che avrà parlato a un professore.
after she has talked(ind) to a professor
[ind inside Sent. Adjunct, inside sub. **ok** MS]

(30) a. Non penso che Mario accetti la proposta che Gianni
I don't think(ind) that M would accept(sub) the proposal that G
ne parli con un professore
of it talk(sub) with a professor
[sub inside Complex NP inside sub. **??** MS or scope out of the island]

b. Suppongo che Mario abbia accettato il fatto che Gianni ne
I suppose(ind) that M has(sub) accepted the fact that G of it
aveva parlato con un professore.
had talked(ind) with a professor
[ind inside Complex NP inside sub. **ok** MS]

(31) a. Credo che Maria ne possa parlare a un professore
I believe(ind) that M of it could(sub) talk with a professor
e ne voglia valutare le conseguenze
and of it want(sub) evaluate the consequences
[sub + Coordinate Structure. ?? MS]

b. Credo che Maria sappia che Gianni ne ha parlato
I think(ind) that M knows(sub) that G of it has talked(ind)
con un professore e ha sistemato le cose.
with a professor and has fixed(ind) the things
[ind + Coordinate Structure. ok MS]

The judgments reported can be sharpened by testing with pronouns. Only the sentences where scope-out of *a professor* is possible, naturally support a continuation like *(and) she teaches linguistics at Yale*, with inter-clausal anaphoric dependence.[10] This test is justified by the assumption that a matrix-wide scope GQP moves up to Spec,RefP of the matrix, from where it can c-command (=antecede) a pronominal subject of a coordinate sentence.

These data falsify the hypothesis that indefinites are upward free in their scope (contra claims by Ruys 1993, Farkas 1995). If they were, we wouldn't have any one of these effects.

To sum up thus far: We have shown that (i) indefinite GQPs are not upward free in their scope; (ii) their scope is constrained by syntactic islands (Subjacency). This in turn strongly suggests that (iii) their scope relations should be represented by movement/chain relations, legitimizing the claim that GQPs can move in LF to target landing sites.

Similar data can be obtained for English. The following illustrate Complex NP and Sentential Adjunct Islands. In none of these cases it seems possible to construe the underlined indefinite as taking scope outside the island that contains it:

(32) a. John wants Bill to consider [the proposal that Mary talk to a psychiatrist about her problem]
b. Mary's request [that John discuss his problem with a psychiatrist] surprised Bill
c. John believes that [if Mary wanted to talk to a psychiatrist], she should make an appointment in advance

(32a,b) are actual examples of English subjunctives, whereas (32c) is an example of 'hypothetical' past that conveys irrealis. Since the subjunctive data in Romance appears to be simpler to discuss and use to illustrate the point of this section, I will limit myself to Romance subjunctive data in the following.

[10] Unfortunately, the effects can sometimes be obscured by modal subordination (cf. Roberts 1987), and more generally, by the so-called 'presupposition accommodation'. The reader should control for these interferences.

1.3.3 A proposal for the island-observing behavior of GQPs

I will now offer an account for these facts. The proposal makes use of Stowell's (1993, 1994) syntactic theory of tense and of Brugger&D'Angelo's (1994) like-minded treatment of mood in Italian.

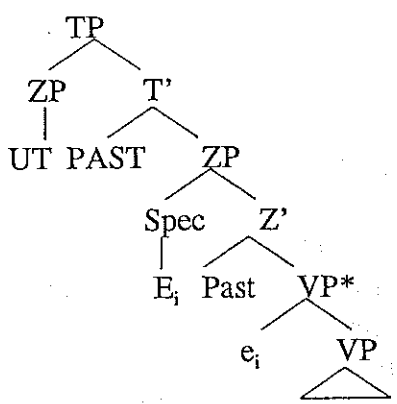
1.3.3.1 Stowell's Theory of Tense

Elaborating on Zagona (1990), Stowell (1993) proposes that semantic tense project as a syntactic TP taking two temporal 'ZP' arguments: a Reference Time (RT) ZP as subject, and a ZP projection containing the event time (ET) as its complement. The head Z° of the complement ZP contains the morphological realization of tense, and binds the event argument (theta marked by V) which resides in the highest VP-shell. (Analogously, the head of DP, D, binds the individual variable theta marked by the head of its complement, NP. *The man* translates in logical form as 'the individual x such that man(x)').

In matrix clauses, RT is a pronominal element deictic to Utterance time (UT); in embedded clauses its a controlled pronominal whose value is determined by the superordinate ET.

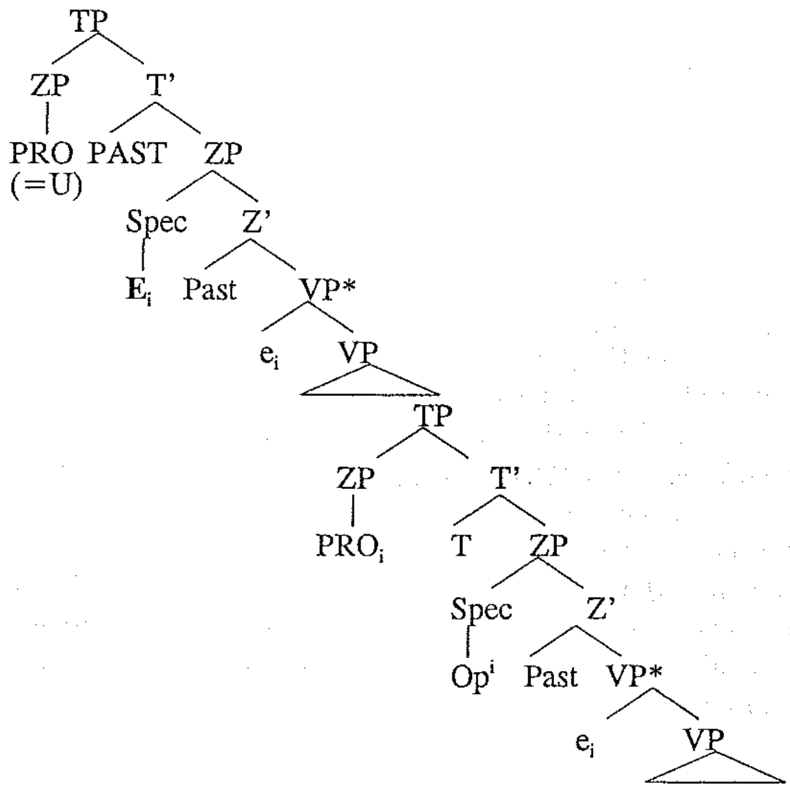
The following is the representation of a simple clause in the past tense (as in *John was sick*). This tense introduces an existential operator (E) binding the event argument. Semantic tense is indicated with upper-case; morphological tense in lower-case:

(33)



The following represents a past clause embedded under a matrix clause in the past ('past under past', as in *John said that Mary was pregnant.*

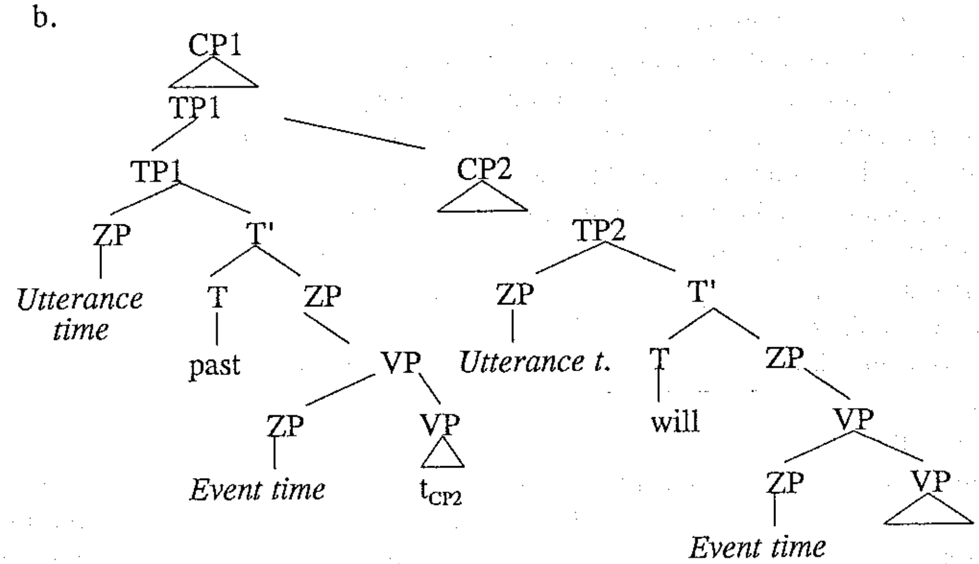
(34)



Morphological past tense is characterized by Stowell as a 'past polarity item': i.e. it is only licensed in the scope of semantic past (PAST). This offers an account of the well known sequence of tense effect whereby a past under past can be interpreted either with a shifted reading or with simultaneous reading. In the shifted reading, the ET of the embedded clause (the event time of Mary's pregnancy) is prior to the ET of the matrix (the event time of John's saying); in the simultaneous reading, the two event times overlap. The difference in temporal interpretation is traced to whether the T° of the embedded clause contains a (semantic) PAST or not. In the former case, the morphological past of the embedded clause is licensed by the presence of a PAST in the embedded clause, producing the shifted reading; in the latter, it is licensed by the PAST of the matrix, producing the simultaneous-past reading.

An application of this theory that illustrates the effect of tense on the licensing of Negative Polarity Items (NPIs) is given by Uribe-Echevarria (1994). Applying observations in Ogihara (1989), she suggests that English *would* is a polarity tense whose RT must be bound by the [+past] ET of a superordinate clause; *will*, on the other hand, is an anti-polarity item, which cannot be licensed in the scope of a [+past] ET. Accordingly, Uribe-Echevarria proposes the following LF (35b) for a sentence like (35a):

(35) a. Peter said that Mary will come
b.



Uribe-Echevarria applies this theory to solving certain problems in the licensing of NPIs. One example she considers is the contrast between (36a-b) below:

(36) a. [That anybody would leave the company] wasn't mentioned in the meeting.
b. * [That anybody will leave the company] wasn't mentioned in the meeting.

The ungrammaticality of example (36b) cannot be explained, as Uribe-Echevarria notes, in terms of Surface Structure licensing (e.g, licensing by a [+Neg]CP, cf. Laka 1990): there are no relevant S-Structure differences. The contrast is however predicted if we assume that the anti-polarity requirement on *will* prevents reconstruction of the embedded subject clause in the complement of the (passive) matrix verbs: recall that *will* must be licensed by a superordinate [-past] at LF.

1.3.3.2 LF Licensing of Subjunctive Mood (Brugger&D'Angelo 1994)

The licensing condition on subjunctive-indicative can be formulated using the same logic, as proposed by Brugger&D'Angelo 1994. In Romance (as well as in other languages that employ this mood, e.g. Balkan languages), subjunctive is associated with 'irrealis': it typically occurs in intensional contexts. Verbs that create strong intensional contexts, such as verbs of volition (corresponding to *want, wish, ...*), directives (*order, ask, ...*), permissives (*allow, ...*), factive-emotives (*regret, ...*) or adversative predicates (*doubt, deny, ...*), require their complement to be in the subjunctive (cf. Farkas 1992). Indicative occurs in matrix contexts and in the complements of declaratives (the equivalents of *say, assert, ...*) and verbs of knowing. (When these verbs are negated, however, their complements are typically in the subjunctive). Indicative is thus the mood of 'realis'.

Brugger&D'Angelo assume that subjunctive is an 'intensional polarity item', which must be licensed in the scope of (certain) intensional operators. They also assume that indicative is (at least for many speakers) an anti-intensional polarity item, which cannot be licensed when in the scope of certain intensional operators.

Assume that the licensing conditions given by Brugger&D'Angelo are roughly correct. Let's then first address the question of why subjunctive highlights GQP sensitivity to islands; next I will propose an explanation for how the violation comes about.

Subjunctive does not create, nor contributes to, the Subjacency effects. It simply allows us to see them. The data reviewed above show that neither subjunctive nor (as sometimes believed) indicative tenses are islands. Indicative, rather, pre-empties the possibility of island effects.

In terms of a scopal approach to tense/mood of the type proposed by Brugger&D'Angelo, indicative (realis) must, or at least as the option, to 'scope out' to the matrix tense, pied-piping the rest of the clause. Subjunctive, on the other hand, must remain within the c-command domain of its superordinate (intensional) trigger, in order to conform to 'polarity' requirements on its semantic licensing.

An illustration of the same mechanism in the domain of tense is offered by Stowell's (1993) account of 'present under past', as in a sentence like *John said that Mary is pregnant*. As is well known, this temporal sequence produces a so-called 'double access' interpretation, where the time interval of Mary's pregnancy is interpreted as including both the time of John's saying and the utterance time. Recall that the meaning of semantic PRES is the relation 'RT overlaps with ET'. The double-access reading accordingly requires that the entire TP complex of the embedded clause be in LF in a position which is higher than the event time of the matrix, so that the embedded RT be outside the scope of the matrix ET and thus be interpreted as utterance time. This amount to scoping the embedded clause out to matrix scope. By so doing, we obtain that utterance time overlaps with the event-time of Mary's pregnancy.

The double-access reading also requires that the embedded ET (the time of Mary's pregnancy) overlap with the time of John's saying, i.e. with the matrix ET. Thus the embedded clause must simultaneously be interpreted in its original and in its 'scoped out' positions. This is executed by assuming that both the moved clause and its trace are interpreted in logical form. Thus we have that 'Mary is pregnant (now) and John said that Mary was pregnant (then)', which is the correct meaning of the sentence.

Brugger&D'Angelo propose that a similar mechanism is at work when indicative mood is embedded under subjunctive mood. They present strong motivation for their scopal approach by investigating the effects of mood on the scope of indefinites. Their data are thus of direct relevance to the discussion here.

Consider the following examples, again from Italian:

(37) Gina desidera che ogni studente creda
Gina wants(ind) that every student believe(sub)
a. che Pina ha baciato un ragazzo diverso
that Pina has(ind) kissed a boy different
b. che Pina abbia baciato un ragazzo diverso
that Pina has(sub) kissed a boy different

In (37a), for many speakers no distributive (narrow scope) construal of *a different boy* (with respect to *every student*) is possible, but only a wide scope anaphoric reading ('different from a previously mentioned boy'). This lack of scopal ambiguity is rather unusual for a GQP in the scope of a DQP. The effect can be derived from two assumptions: (i) indicative resists being in the scope of *want* (which selects obligatorily for subjunctive mood in its complement); and (ii) indicative pied-pipes the whole complement clause, including the indefinite GQP *a boy*, to matrix scope, outside of the intensional context created by *wants*. A distributive construal for *a boy* (where for every student there is a distinct boy) is only possible when the mood of the most embedded clause is subjunctive, as in (37b). The distributive/anaphoric ambiguity of the indefinite resurfaces in this case.

As a further illustration of the interaction of mood and GQP-scope, Brugger&D'Angelo consider the scopal interpretation of a GQP heading a relative clause. If the relative clause is in the subjunctive mood, the scope of the GQP is upwardly bound to the position of the intensional operator that licenses subjunctive mood. Thus the GQP can only be interpreted as narrow scope with respect to a DQP which is higher than the intensional verb. This in fact is the only interpretation of the mono-clausal sentence (38a) below.

(38) Ogni ragazza$_i$ vuole un amico$_j$
every girl wants:ind a friend
a. che$_j$ sappia cucinare
that know:sub to cook [unambiguous: *every* > *want* > *a*]
b. che$_j$ sa cucinare
that know:ind to-cook [either *a* > *every* or *every* > *a*, but not *want* > *a*]

In (38a), not only is the scoping *a* > *every* excluded, but the GQP must receive a *de dicto* interpretation (with respect to *want*). On the other hand, in (38b), where the relative contains indicative, the *de dicto* interpretation of the GQP is excluded, though the GQP may be wide or narrow scope with respect to the DQP. Italian thus enforces a very simple and strict system in this respect.

1.3.3.3 Subjacency effects with subjunctive mood

Returning now to our discussion of islands effects with GQPs, we are in a position to better understand how these would be obscured by the mood of the clause that contains the GQP. If the clause should scope out, it would pied-pipe the indefinite GQP and take it out of the island. At that point the GQP would be free to take matrix scope. It wouldn't do so because it is necessarily 'referential', but rather because it has been able to 'ride' on the scope of the clause that contains it. The clause itself (i.e. the CP), being part of the subjacency effect, is not constrained by the island, which it helps to create, and thus free to move out. According to this logic, we should expect island violations to occur, unless the mood (or tense) of the clause containing the indefinite is such that it must 'stay put' in LF. This is the case of subjunctive mood, which is licensed by a superordinate intensional operator and thus upwardly bound in its scope.

Let's see in concrete how the island-escaping behavior of GQP comes about in an example (39a) parallel to the Fodor&Sag ones. First, the indicative mood of the clause containing the underlined indefinite GQP scopes out (cf. 39b), pied-piping the rest of the clause. Let's assume that it moves to the Spec of a functional category between TP and RefP, which, following some recent proposals, we could refer to as MoodP. Next, the indefinite, now outside of the island, can move at least to Spec,RefP of its own clause (or perhaps of the matrix clause), gaining widest scope (39c).

(39) a. John requested that no one spread [the rumor [that Sue talked about it with a professor]]
b. [that Sue talked about it with a prof.]$_i$ [John requested that no one spread the rumor t_i]
c. [[a prof.]$_k$ [that Sue talked about it with t_k]$_i$ [John requested that no one spread the rumor t_i]

But in (32a), from above, the subjunctive clause containing the GQP must remain *in situ*; if the GQP scoped out to the matrix, it would have to do it 'on its own', crossing over the island. The lack of 'scope-out' reading shows that islands constrain the scope of indefinites as they do with other QP types. [11]

(32a) John wants Bill to consider [the proposal that Mary talk to a psychiatrist about her problem]

Although this is not represented in (39b,c), we are assuming that the trace left by the LF movement of the indicative clause is essentially a full copy, which is interpretable in logical form. Accordingly movement does not destroy any temporal or other dependency between the material contained in the clause that has moved and the material contained in the superordinate clauses.

This account is independently supported by the availability of convergent data using NPI's. NPIs can sometimes be licensed across an island by superordinate negation. An (embedded) realis clause containing a NPI that is licensed by a superordinate negation should not be able to scope out, lest the NPI finds itself outside the c-command domain of its licensor. Thus, an indefinite co-argument of the NPI would become sensitive to the presence of an island occurring above its clause (Anna Szabolcsi, p.c). This prediction seems to be borne out:

(40) a. Many employees didn't think [that [showing any (of the) papers to an executive] would damage Mary]
?* 'there is some executive x, such that many employees didn't think that showing any papers to x woud damage Mary'
b. John didn't think that [any professor who had reviewed a book about linguistic] could be the proponent of this theory

[11] Note that the impossibility of QP-types other than indefinites to escape islands is predicted under this theory. A QP like *every/each student* cannot take distributive scope outside an island that contains it (as noted in exx (25)-(27)) even though its clause might scope out to the matrix, because: (i) FP/MoodP is higher than DistP, precluding further movement to Spec,DistP of the matrix clause; (ii) movement to Spec,DistP of the moved clause would not structurally assign the QP matrix distributive scope; and (iii) movement to Spec,RefP would not assign it matrix distributive scope (cf. Ch. 2, 3.3.1) either.

?* 'there is a book x, such that John didn't think that any prof who had reviewed x, could be the proponent of this theory'

In none of the examples listed above can the underlined GQP be naturally interpreted as taking widest scope over the whole sentence. The islands (Sentential Subject, Complex NP) block the wide scope of the GQP. When no islands are present, a GQP can scope out, however. Consider the following example:

(41) John didn't believe that I showed any paper to a professor
ok 'for some professor x, John didn't believe that I showed any papers to x'

1.3.4 D-Linked GQPs

I consider now how to account for the island-escaping behavior of GQPs. As observed in 1.3.1, this behavior correlates with D-linking. Given that Fodor&Sag's 'referential' indefinite proposal suffers from the difficulties pointed out by Abusch and Farkas, I consider an alternative solution.

The proposal is that D-linked GQPs and definite GQPs (*the students*, *these students*, ...) do not need to move to be licensed via Spec,Head agreement with an existential Operator in Ref°. Rather, their scopal properties can be licensed by binding from an existential Operator generated in Ref°. This Operator introduces a restricted variable co-extensional with the D-linked GQPs discourse referent.

Semantically, this amounts to existentially closing the DQPs variable from a distance. It is logically equivalent to moving the variable up. Syntactically, however, this overcomes the problem of island-violations. The use of restricted variables overcomes the problem pointed out by Abusch (1992) and discussed in ch.. 2, 3.3.1.

To illustrate: (42b), containing a D-linked GQP, allows scope-out even though the GQP is contained in an irrealis clause inside a syntactic island; thus (42b) constrasts minimally with (42a) [=(32b)], with a non-D-linked GQP, which as seen, cannot be scoped out. (42b), under the proposal presented here, is assigned the LF in (42c), where the GQP is interpreted *in situ*, and its scope coincides with that of the existential operator that binds it:

(42) a. Mary's request [that John discuss his problem with a psychiatrist] surprised Bill
b. Mary's request [that John discuss his problem with one of the psychiatrists] surprised Bill
c. [*RefP* $\exists$x [Mary's request [*CP* that John discuss his problem with one of the psychiatrists$_x$] surprised Bill]][x a restricted variable over psychiatrists in the situation]

In Heim's (1982) File-Change semantics, definite DP's are subject to the Familiarity condition: their discourse referent must be 'known' in the discourse. D-linked indefinites are 'specific' in Enç's (1991) sense: their referent must be a subset of a familiar referent. (The use of presupposition accommodation may be invoked here). Existentially closing these GQPs from a distance gives syntactic form to the claim that they don't introduce a new discourse referent (like indefinite GQPs that move successive cyclically to their scope positions do), but are linked by binding to a discourse referent which is already part of the LF representation.

In view of this proposal, then, the claim made in section 2, to the effect that all GQPs move to Spec,RefP (or Spec,ShareP) for licensing should be amended to provide for D-linked/definite GQPs to be existentially closed from a distance.

2 Other issues with LF-movement

In the previous section, I have argued against a common objection to the hypothesis that QPs move in LF to their scope positions: namely that this type of movement does not show the usual Subjacency/Island effects. The purpose of this section is to consider other objections to QP-movement in LF. Some of these objections have been voiced by Lasnik (1993a) and Hornstein (1994). Although these criticisms have been levelled against theories employing QR, they extend to a TLS theory as developed in ch. 2.

This section is structured as follows. I discuss counterarguments to QR from Binding facts and Parasitic Gap licensing in section 2.1. In section 2.2 I consider the treatment of ACD's. Finally, in section 2.3 I discuss the scope of ECM subjects.

2.1 Objections to the QR hypothesis

In ch.1, section 3.1, I reviewed Hornstein's objections to a QR account. The first two concerned (i) its lack of 'morphological' motivation, and (ii) its mode of operation, i.e. free adjunction. Both of these criticims do not apply to the approach developed here: (i) has been discussed in ch. 2, especially section 6; (ii) doesn't hold since there is no free adjunction in the TLS theory of ch. 2.

Two remaining issues were listed by Hornstein: (iii) QR doesn't 'rescue' Principle C violations at S-Structure; and (iv) QR doesn't license parasitic gaps. Unlike (i,ii), these criticisms appear to apply just as much to the target landing sites approach developed here. In this section, I address these two issues.

2.1.1 S-Structure Principle C violations

Chomsky 1981 observed that QR does not rescue Principle C violations like (43a). If QR and pied-piping of the relative were to apply as proposed by May for ACDs, we would have a structure like (43b) at LF, where the R-expression is taken out of the domain of the pronoun, and no Principle C violation obtains:

(43) a. * He$_1$ liked every book that John$_1$ read
b. [*IP* every book that John$_1$ read]$_2$ [*IP* he$_1$ liked t$_2$]

This is quoted by Hornstein as a counterargument to incorporating the QR hypothesis into a Minimalist theory, since within this approach Binding principles cannot refer to a level like S-structure, but should be statable entirely in LF. Lasnik (1993a:29), also noting the problem, points out that the data are incompatible with May's definition of QR, which involves pied-piping of the restrictor (as required to account for ACDs, for example).

Abandoning pied-piping is sufficient to solve the problem, since the lack of Principle C effect (after QR) depends on *John* being raised, as part of the quantifier's restriction, outside of the c-command domain of the pronoun *he*. Thus (43) is really a counterargument to LF pied-piping. I consider here this issue.

Though a theory of LF-pied-piping is still wanting, eliminating this mechanism altogether appears unjustified. Two types of considerations support pied piping: (i) Subjacency effects with LF-movement require pied-piping; (ii) despite Hornstein's argument (based on (43)), a number of (other) Binding facts argue for pied piping.

As regards (i), a number of facts have been pointed out in section 1 which couldn't be stated without pied-piping. This mechanism is required by the interactions of tense and scope reviewed in section 1.3.3, as well as in ch. 1, 2.8; other motivation for pied-piping (from Binding facts) will be provided in ch. 5, as part of the discussion of extraclausal DQP scope. In sum, as pointed out by Brody 1993, and confirmed by the discussion of subjacency effects with LF movement, pied-piping cannot be eliminated if LF movement is subject to Subjacency. Generally, pied-piping is a crucial ingredient of the hypothesis that QP undergo movement in LF.

Coming now to (ii), to assess the significance of examples like (43), it should be borne in mind that there are other (well known) facts about the interaction of QP movement and Principle C in particular that argue in the opposite direction. Some of these facts were considered in ch. 1, section 2.6. For example, the lack of wide scope construal for (43a), repeated here as (44a), can be directly accounted for by assuming that the relative clause is pied-piped along with the quantifier, resulting in the interpretation (44c). This structure is excluded because the pronoun cannot be bound.

(44) a. Some musician$_1$ will play every piece that he$_1$ knows
b. [*RefP* some musician$_1$ [*DistP* [every piece that he$_1$ knows]$_2$ ... [*VP* t_1 will play t_2]]]
c. * [*AgrSP* t_1 [*DistP* [every piece that he$_1$ knows]$_2$ [*ShareP* [some musician]$_1$ [*VP* t_1 will play t_2]]]]

The facts presented in ch. 1, 2.7, relative to NPI licensing, similarly argue for pied piping. The lack of wide scope 'specific' reading for the example repeated below as (45a) can be derived by assuming that the NPI in the relative clause is pied-piped along to Spec,ShareP (or Spec,RefP), where it would be outside the c-command domain of its licensor, negation. Thus (45a) is correctly predicted to have only a non-specific reading (corresponding to the paraphrase '...didn't want *any* assistant who ...') which is licensed by moving the indefinite + relative clause to Spec,AgrOP (for Case/Agreement).

(45) a. Several professors didn't want an assistant [who understood a lot about computers]
b. Several professors didn't want an assistant [who understood anything about computers]

Returning to a discussion of (43), this example is actually not problematic for the TLS theory presented here (though it is for the QR hypothesis). This is because DQP arguments like the direct object in (43a) do not raise to IP, but to Spec,DistP, which is below the subject position; thus even assuming pied-piping of the relative, movement to DistP does not rescue (43a). Our theory assigns (43a) an LF representation not like (43b), but like (43b'), where the Principle C effect is not rescued:

(43b') * [*AgrSP* he$_1$ [*DistP* [every book that John$_1$ read]$_2$ [... [*VP* t$_1$ liked t$_2$]]]]

Furthermore, the DistP analysis appears to make the correct prediction with examples that are similar to (43a), except that the pronoun is in object, rather than subject position. Consider:

(46) a. ? Mary always introduces him$_1$ to every linguist/two linguists that John$_1$ admires
b. ? Mary always seats him$_1$ near every linguist/two linguists that John$_1$ admires

(46a,b) differ from (43a) in that the pronoun, being an object, is lower than the landing site of the QP at LF (=Spec,DistP if the indirect object is a DQP; Spec,ShareP/RefP if it is a GQP). Sentences like (46a,b) are perceived to be considerably better than (43a). Thus it appears that in some cases, an S-structure Principle C effect must, in fact, be rescued in LF. The improved status of these examples cannot be explained if QPs like *every linguist that John admires* are not raised in LF. The pronoun in (46a) is a direct object, hence it is in a position wher it can bind the prepositional indirect object (as shown by Barss&Lasnik 1986).

These examples not only argue for moving QP + relative in LF (i.e. for pied-piping), they actually argue for moving them higher than the QPs Case position. (46a) may be accounted for by Case-raising if we assume that indirect objects move to Spec,AgrIOP by LF (cf. ch.3), a position which is slightly higher than AgrOP. But raising to Case cannot account for (46b), containing an adjunct which cannot be re-analyzed as an object (as pointed out by Lasnik 1993a, these PP's do not undergo reanalysis, as shown by their not supporting pseudo-passives).

The problem discussed in connection with (43a) would, however, represents itself--under the TLS approach developed here--with a different choice of QP: given that GQPs can move to RefP (which is higher than AgrSP), sentences like the following incur the same difficulty as (43a) above:

(47) a. * He$_1$ liked two/two of the/the two books that John$_1$ read
b. [*RefP* [two books that John$_1$ read]$_2$ [*AgrSP* he$_1$ [... [*VP* t$_1$ liked t$_2$]]]]

If we allow the GQP to move to RefP and pied-pipe the relative, the Principle C violation is rescued by the derivation, contrary to the fact that the sentence is ungrammatical.

Even this type of examples are not problematic for our theory. Recall from section 1.3.4, that it has been proposed that D-linked GQPs can be licensed via existential closure, i.e. without requiring movement to Spec,ShareP or Spec,RefP. GQPs that embed a relative that contains realis tense and a pronoun co-indexed with the subject, like in (47a), are D-linked. Thus our theory would not derive an LF representation like (47b), but rather one like (47b'):

(47b') [*RefP* $\exists X_2$ [*AgrSP* he$_1$ [...[two books that John$_1$ read]$_2$ [*VP* t$_1$ liked t$_2$]]]]

It does seem possible to construct examples where the GQP heading the relative is not D-linked, by the use of irrealis in the relative clause, as in:

(48) * He will like two books that John might read

but then movement of the GQP + relative to Spec,RefP would be blocked, since the GQP no longer receives a 'specific' interpretation ('subject of predication'). The GQP would be interpreted in its Case position. So the Principle C violation would not be rescued by LF movement.

2.1.1.1 Kiss' (1994) proposal

I note that there is also another solution to the problem in (47a), which allows me to present a proposal by Kiss (1994) which is related to the TLS approach. Kiss argues for the existence of a RefP-like projection whose Spec position is not only accessible in LF by certain QPs, but is the S-Structure position for subjects with a 'specific' interpretation: more exactly, for subjects that have the feature [+subject of predication].

The subject pronoun in (47a) fulfills the role of subject of predication. Thus, under Kiss' proposal, its position (Spec of RefP) would be high enough to c-command an object GQP that were also raised up to Spec,RefP. Accordingly, under Kiss' analysis Principle C effects like in (47a) could not be rescued at LF.

Note also that if pronominal subjects like that of (47a), which are not bound, and refer to a unique individual in the situation, could be raised in LF to Spec,RefP, this would suffice to ensure that Principle C effect remain in LF. Developing an LF treatment of pronominals in terms of the TLS theory presented here is, however, beyond the scope of the present work. I will therefore not pursue this suggestion further. I give instead a brief sketch of Kiss' proposal below.

Kiss proposes that Kratzer's (1989) and Diesing's (1992) distinction between a VP-internal and VP-external position for subjects at LF should be reinterpreted, both syntactically and semantically.

Syntactically, it should be recast as a distinction between clause-internal subjects in Spec,AgrSP and subject in a higher position which she identifies with B&S' (1994) Spec,RefP. In Kiss' terms, this amounts to a distinction between a position internal vs. external to the Pred(ication) Phrase, which she assimilates to the full functional complex of the clause. An NP in Spec,RefP, then, function as subject of predication by c-commanding the full clausal projection.

Kiss also argues that the semantic interpretation of Kratzer and Diesing's distinction be reformulated. As is well known, the two subject positions assumed by Kratzer and Diesing correlate with a semantic distinction. Bare plurals receive a generic interpretation in VP-external position, whereas when VP-internal, they receive an existential interpretation. Subject QPs receive a presuppositional or proportional interpretation outside VP, and a cardinal interpretation in VP-internal position. Semantically, Kiss argues that this distinction be recast as a distinction between [+specific] and [-specific] arguments. Kiss does not limit access to the two positions to subjects; in LF, other arguments of the V can move there. Furthermore, Kiss also proposes that Spec,RefP is accessible by non-subjects (at S-structure) when these are topicalized.

Though developed independently of the present account (and of B&S's), Kiss's proposal thus converges considerably with the one presented here. I review below some of the evidence that she presents for her proposal as regards the syntax of English.

As is known from Diesing (1992), in languages with flexible word order such as German, different positions for subjects are observable at S-structure in certain embedded contexts. Sentence adverbials like *ja doch* ('indeed') serve as diagnostic of the subject position. It can be observed that the subject of an individual level (IL) predicate like *kennen* ('know') precedes the adverbial, whereas subjects of stage level (SL) predicates like *geboren werden* ('be born') follow it.

Kiss finds that in English, the subjects of IL verbs like *know* also show special properties, which can be related to a difference in surface position. Some of the relevant facts are as follows. First, subjects of *know* can be separated fomr the verb by a sentence level adverbial like *in most cases, luckily, ...* ; subjects of SL *be born* cannot:

[Kiss' ex. [21]]

(49) a. Boys in most cases know the novels of Karl May
b. * Boys in most cases have been born
c. In most cases, boys have been born

This distributional evidence suggests that the subject of *know* in (49a) occurs in a position higher than Spec,IP (AgrSP), which Kiss assumes is the position of the subject of *be born* in (49c). Kiss proposes that the subject of *know* moves through Spec,IP to check Case/Agreement, before landing in Spec,RefP; she also assumes that bare plurals with a generic interpretation are names of 'kinds' (cf. Carlsson 1977, 1978), and therefore are singular and [+specific] NPs: as such, *boys* in (49a) must land in Spec,RefP for reasons of semantic interpretation.[12]

Kiss' proposal also derives Guéron's (1980) distinction betwen 'predicational' and 'presentational' sentences. [-specific] subjects allow PP extraposition, whereas [+specific] do not.

[Kiss' ex. [28]]

(50) a. * A man hit Bill with green eyes
b. A man appeared with green eyes

Kiss proposes that these facts fall out of Rochemont&Culicover's (1990) Complement Condition, which constrains an extraposed clause (which is base-generated adjoined to VP) to be associated with a position that governs it: an NP in Spec,IP would govern the extraposed clause, but one in Spec,RefP would not.

2.1.2 Parasitic Gap licensing

The last objection listed by Hornstein concerns the fact that QR does not appear to license parasitic gaps (PG's). Hornstein illustrates with examples like (51a):

(51) a. * John reviewed each/every book [after reading PG]
b. * John reviewed no book after reading PG

This appears to be a non-issue. Though it is usually acknowledged that NQP movement does

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12 Note that our assumption that only group-denoting QPs (GQPs) have access to Spec,RefP in not inconsistent with Kiss' analysis: the bare plural (not a GQP in our terms) is assumed to move in the syntax; our restriction to GQPs holds strictly for LF movement (in English).

license PG's (cf. Longobardi 1991), a NQP can only license the parasitic chain of another NQP, not a parasitic Wh-chain. (51b) is not any better than (51a).

On the other hand, examples similar to those proposed by Longobardi seem to be available with DQPs as well. Consider:

(52) a. * John discussed a different solution to help every student in the school
b. John discussed with every teacher a different solution to help every student in the school

In (52a), *a different solution* cannot be licensed owing to the Sentential Adjunct that blocks the movement of the DQP (recall from ch. 2, sect. 3, that we assume that this type of QPs must be licensed in Spec,ShareP once a DQPs has moved to the adjacent Spec,DistP). Though the judgement is admittedly subtle, the sentence in (52b) seems to marginally support a reading where solutions co-vary not just with teachers, but with pairs <teacher x, student y>. This suggests that the two DQP chains are composed in LF, and thus that the lower chain is parasitic on the matrix chain.

This hypothesis of parasitic licensing in (52b) finds support in the fact that the possibility of the parasitic reading appears to be blocked in non-subjacent contexts, such as:[13]

(53) John discussed with every teacher a different solution [to accomplish the task [before admitting every new student to the school]]

The sentence in (53) does not support a reading where solutions co-vary with pairs <teacher x, student y>. This matches the impossibility of PG licensing by WhQPs and NQPs in contexts like:

(54) a. * The man that I have hired [to solve the problem [before having to pay __]]
b. * Non ho fatto niente per ottenere dei vantaggi [Italian]
Neg (I) have done nothing to obtain some advantages
prima di incontrare nessuno
before meeting noboby

Finally, in ch. 5 it will be shown that DQPs can be licensed by Wh-chains, and in particular, that DQP-chains can 'compose' with Wh-chains. This situation will arise in the case of pair-list readings in matrix interrogatives containing the quantifier *each*.

2.2 *ACDs*

Though I do not concentrate on ACDs in the present work, I offer below some comments on what the TLS theory may contribute to the clarification of this complex phenomenon. In particular, I suggest that some of the cases that are problematic for a Case approach receive an account under the TLS approach.

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13 I wish to thank Pino Longobardi (p.c.) for helpful discussion of these examples.

In reviewing the applicability of our analysis to ACDs, I only consider those parts that are directly relevant to scope issues. In particular, I consider how the TLS approach stacks up to a Raising to Case approach as developed by Hornstein (and Lasnik 1993). In the discussion that follows, I assume the basic facts about ACDs presented in in ch.1, sections 2.5 and 3.3.2.2.

ACDs originally represented one of the strongest arguments for the QR theory (cf. ch. 1, section 3.1). As mentioned in ch. 1, 3.3, ACDs have been recently re-examined, by both Hornstein 1994 and Lasnik 1993a, and argued to be compatible with, indeed to support, a non-QR theory of LF movement: namely the hypothesis that ACDs can (at least in most cases) be licensed simply by movement to Spec,AgrOP. I will refer to their analysis as the 'Raising-to-Case' approach.

The analysis presented here subsumes the Raising-to-Case approach. Following Chomskly 1992, I assume all Case-bearing DPs move to Spec,AgrXP for Case/Agreement checking. In addition, I have proposed that DQPs and GQPs may move to higher target positions to check further quantificational features. The point where TLS and Raising-to-Case converge is the treatment of CQPs: their scope is a side-effect of movement to Case positions.

Any LF theory that incorporates the assumption that objects must move, by LF, to Spec,AgrOP, including our theory, can handle the cases where ADC is licensed by a non-quantificational object. Our TLS theory is not inconsistent with the Hornstein-Lasnik approach; it is simply a richer hypothesis.[14]

However, it must be shown that the present theory does not have the shortcomings that Hornstein and Lasnik attribute to a QR analysis. In particular, they point to the fact that subjects of *that*-complements do not host ACD sites (whereas ECM subjects do):

(55) a. ? I expect everyone you do __ to visit Mary
b. ?* I expect that everyone you do __ will visit Mary

As discussed in section 1, I do not assume that QP-movement is clausebounded. However, I have assumed that movement of a QP like *everyone* in (55b) across a *that*-complementizer is generally impossible (and suggested that this can be derived as a subcase of Fiengo&Higginbotham's Specificity Condition, assuming the complementizer *that* possesses a specificity feature comparable to that of demonstrative and definite articles). Thus it is possible to derive the contrast above.

The syntactic properties of ACDs are so varied, that it seems unlikely that any one view of the phenomenon could capture all of them. It is possible that more than one of the mechanisms proposed in the literature will be required to handle different aspects of ACDs. Such a point of view is expressed by Lasnik 1993a in his review of the phenomenon.

As Lasnik himself (1993a) points out, Case movement cannot handle *all* the cases of ACDs. There are residual ACDs which require more extensive movement to circumvent the Regress

[14] Another point raised by Hornstein, as regards which the TLS approach is neutral, is that covert Wh-movement does not license ACDs. As will be seen in ch. 4, I remain agnostic about whether or not Wh-in-situ moves to Wh-in-Comp. This issue is largely orthogonal to the concerns of this thesis. Alternative explanations for multiple Wh constructions (that do not require movement of the in-situ to CP) are compatible with the scope theory presented here.

Problem which is characteristic of this type of construction.

I would like to suggest that the TLS approach may provide a treatment of (at least some of) such 'residual' ACD cases. Lasnik 1993a observes that a Raising to Case approach can correctly predict the contrasts in (56), but it cannot account for the wider distribution of ACDs with quantificational NPs (and restrictive relatives) in (57). Let's consider the contrast in (56) first.

(56) a. ? Dulles talked about Philby, who Angleton did not
b. * Mary stood near Susan, who Emily did not

(57) ? Mary stood near everyone Emily did

As regards (56), Lasnik derives the contrast by assuming that reanalysis reconfigures the PP as a direct object of the predicate. Reanalysis correctly discriminates between (56a) and (56b). The availability of pseudopassive diagnoses whether reanalysis can take place. Raising for Case can apply in (56a), given the availability of pseudopassives as in (58a); but is blocked in (56b), as witness by the ungrammatical (58b).

(58) a. Philby was spoken to
b. * Susan was stood near (by Mary)

A difficulty for the Raising-to-Case approach is however presented by (57). Here ACD is licensed despite the unavailability of Raising-to-Case. The difference between (57) and (56b) is that the former contains a quantificational NP. Lasnik (1993a) suggests that these cases may (perhaps) be handled by LF-extraposition of the relative clause (adapting, limitedly to these cases, the proposal originally put forth in Baltin 1987).

The TLS approach provides an alternative account of examples like (57). In both (57) and (56b) there can't be any Raising-to-Case; however in the former case, containing a DQP, movement to Spec,DistP can license ACD. The contrast between (57) and (56b) is thus derived.

The TLS theory of ch. 2 makes a further crucial prediction which cannot be made by other approaches. Namely, that QP-movement is selectively available depending on QP-type. It is predicted that trading a CQP for the DQP in (57) would produce degradation. This is because CQPs are left *in situ* in LF. The prediction is borne out; consider the example below:

(59) a. * Mary stood near more than one person (that) Bill did
b. ?* Mary stood near at least two persons (that) Bill did
c. * Mary stood near few persons (that) Bill did

2.3 ECM subjects

Lastly, I consider evidence for the TLS approach from scope construals with ECM subjects. The TLS theory captures interactions of A-movement and scope in the same way as Hornstein's.

With GQPs and DQPs, a TLS theory extends upwardly the Case chains. Thus, Hornstein's treatment of the scopal properties of ECM subjects extends straightforwardly to our proposal. To illustrate: just like Hornstein's theory, the TLS approach accounts for the fact that whereas the matrix subject in (60a) cannot be in the scope of the subject of the embedded, this is possible in (60b), the ECM construction.

(60) a. A different student expected that every professor would attend the conference.
b. A different student expected every professor to attend the conference.

The impossibility of *every > a different* scoping in (60a) is confirmed by the fact that the matrix subject can only be interpreted deictically with reference to a previously mentioned student. No distributive construal is possible. This is accounted for by two assumptions of the TLS approach: (i) an ECM subject moves to Spec,AgrOP of the matrix (as in Hornstein's account); (ii) *that*-complement are barriers to the scope of DQPs.

However, there are some additional predictions that can be made by our account, which seem correct. These predictions cannot be stated (without introducing further assumptions) in Hornstein's theory. Consider:

(61) Someone expected every horse to win a different race

The sentence in (61), contrary to Hornstein's prediction, does not (naturally) allow *every professor* to take scope over *some student* (at least if *a different conference* is interpreted distributively). This effect is derived under our theory, providing justification for the account. Crucially, on our account distributivity requires syntactic licensing as a relation between a distributor and a distributee; it is not simply a manifestation of scope (as independently driven, either by QR or by A-movement). This point will be further elaborated in ch. 4.

Therefore the TLS theory predicts that distributivity cannot be licensed in both of the clauses in (61) at the same time. A sentence like (61) seems to provide a configuration where this prediction can be checked.

As noted in ch. 2, section 2, *a different race* has a 'distributee' feature that needs to be licensed in the scope of a DQP; the presence of this morphological requirement on the part of *a different* rules out an alternative derivation: namely the possibility that *every horse* moves on to Spec,DistP of the matrix taking *someone* as distributee. This forces *every horse* to reconstruct to the embedded Spec,DistP, where it can license *a different* N in the Spec position of its (selected) ShareP.

CHAPTER 4

DISTRIBUTIVITY AND NEGATION

0 Outline of the chapter

This chapter develops a syntactic account of distributivity. Section 1 introduces the basic hypothesis in the treatment of distributivity with DQPs, and offers a characterization of the syntactic conditions under which distributive readings are supported. An initial set of facts concerning the interaction of DQPs and negation is presented in section 2. These facts provide support for the treatment proposed. Most of this material is taken from B&S 1995a,b.

In section 3 I present a syntactic treatment of distributivity with GQPs: this type of distributive readings are found to have different locality conditions from distributivity with DQPs, and to result from an altogether distinct mechanism at LF. This section is based on Beghelli 1995b.

A further set of facts concerning the interaction of negation and distributivity is considered in section 4, drawing from B&S 1995b. In certain syntactic configurations, *every* N is found to display the pattern of distributivity which is proper of GQPs. An account of these facts is provided, following Beghelli 1995b and B&S 1995a, and some differences between *every* and *each* are discussed.

1 The Syntax of Distributivity

1.1 Licensing of distributivity in DistP

In this section, I elaborate the outline of the syntactic licensing of distributivity with DQPs given in ch. 2, section 2 (especially 2.4.2).

Before considering distributivity with DQPs, it may be useful to review some background about distributivity, without reference to any QP-type in particular: distributive readings are not only possible with DQPs.

Following an insight of Choe (1987), distributivity is seen as a binary relation, requiring both a DISTRIBUTOR and a DISTRIBUTEE. Choe refers to these as the KEY and SHARE of distribution, respectively.

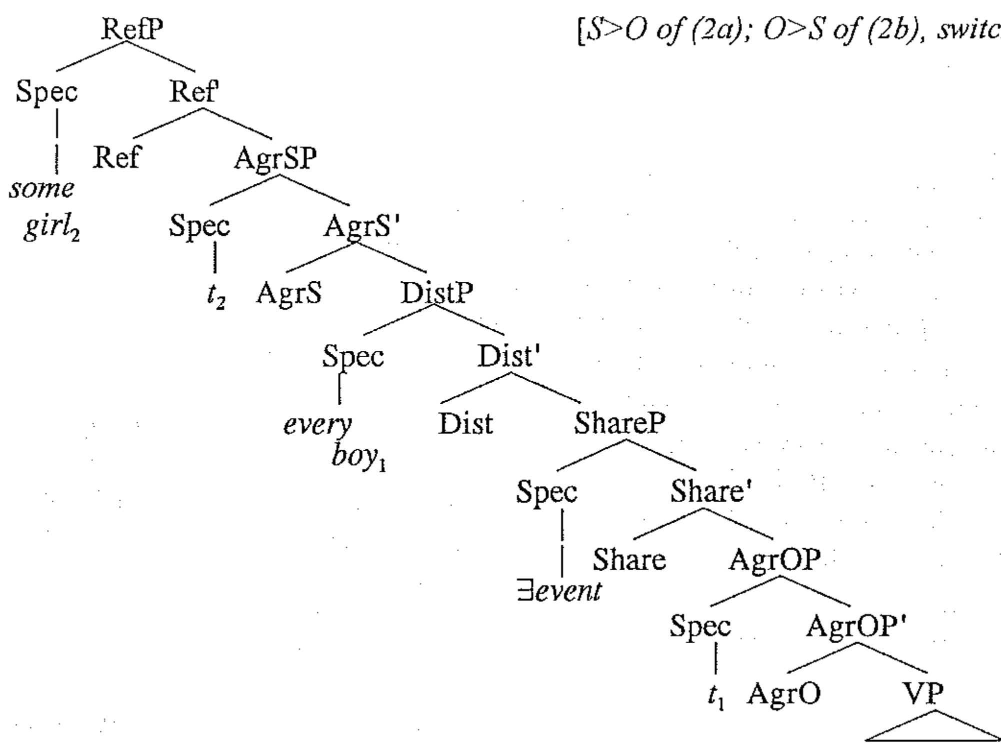
Thus, the notion of distributivity employed here differs in some ways from its usage in logic and/or semantics (as mentioned in ch. 2); in particular, I only consider as 'distributive' relations where the distributee co-varies depending on the distributor. I present below the following characterization:

(1) **Distributivity**
A QP α is said to be distributive (under a reading r of the sentence in which α occurs) if r entails that for at least two distinct members x, y of the set/group introduced by α, there are distinct events and/or groups introduced by another QP β, that are associated with x and y respectively.

I come now to a discussion of distributivity with DQPs. Recall the discussion of the classic scope ambiguity involving a DQP (*every book*) and a GQP (*some student*) given there. The sentences and their LF representations are repeated here for convenience.

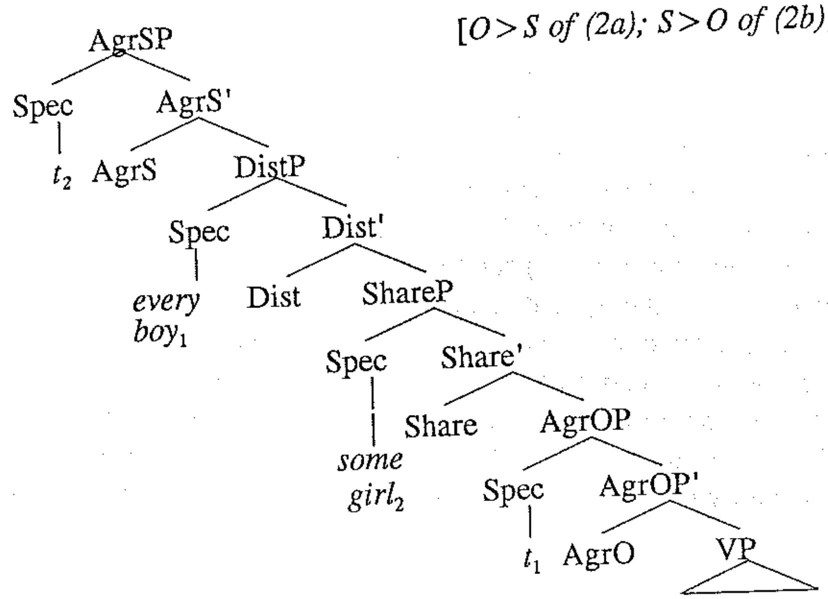
(2) a. Some girl kissed every boy
b. Every boy kissed some girl

(3) *[S>O of (2a); O>S of (2b), switching traces]*



In the LF representation in (3), both subject and object QPs move to their respective scope positions. The inverse scope derivation in (4) below involves the use of reconstruction (cf. ch.2, 2.2.2). The subject indefinite *some student* reconstructs into the Spec of ShareP position.

(4) [$O>S$ *of (2a);* $S>O$ *of (2b), switching traces*]



On either construal of these sentences, the DQP has the same (distributive) meaning; accordingly, it moves to Spec,DistP, no matter whether it is interpreted as narrow or wide scope with respect to the indefinite[1]. LF movement (and movement of DQPs in particular) is not optional. The difference between the narrow vs. wide scope interpretation of DQPs boils down to the interpretation of the indefinite.

The claim to be defended in this section is that this relation is syntactically encoded in the phrase structure of the clause, as follows:

(5) **Syntactic encoding of distributivity with DQPs**

a. Distributivity is projected as a syntactic head, Dist°;
b. Dist° enters into Spec-Head agreement with a DQP;
c. Dist° selects ShareP;
d. Spec,ShareP is accessible only to an existential quantifier over events and to a GQP with the feature [+group referent];
e. Dist° quantifies over the share term in Spec,ShareP.

For the distributive relation to hold, the head of DistP (which remains unpronounced) must enter into Spec-Head agreement with a DQP (the distributor). Only QPs that are morphologically singular (i.e. are endowed with a feature [+singular]) can enter into Spec-Head agreement with Dist°: these are DQPs, *every* N and *each* N.

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1 This statement needs to be qualified, in view of the account to be proposed in later sections. I will argue that *every* N doesn't <u>always</u> move to Spec,DistP, though *each* N does. In a restricted set of circumstances, the set variable introduced by *every* N can be bound by Ooperators like negation and question. The contexts where this happens are restricted, and there is a difference in the semantic properties of *every* N.

There are some differences between these two, which I assume are reflected in their feature specification. I postpone till section a discussion of these issue. For now, let's assume *every-* and *each-*QPs behave alike.

Dist selects ShareP, the projection that hosts the share of distribution, or distributee. The share is required to be, semantically, an existential quantifier over events plus, if available, an existential quantifier over groups. (Recall that we assume scope positions can be filled multiply--cf. ch. 2, sect. 2). Only GQPs, which introduce group referents, and an existential quantifier over the event argument (which we may assume to be a type of GQP) have access to Spec of ShareP. CQPs do not, since they don't introduce group referents.[2]

Both the Spec of DistP and the Spec of ShareP positions must be filled with the appropriate types of elements at LF for the distributivity relation to be satisfied.

Semantically, the notion of distributivity assumed here is a relation that matches individual members of the distributor set to individuals (events and groups) contributed by the distributee. To illustrate: the distributive reading of a sentence like (6a) below requires that all the students be individually associated with events of reading involving plural individuals consisting of two books.

(6) a. Every student read two books
b. [*AgrSP* t_1 [*DistP* every student_1 [*ShareP* $\exists e_3$, two books_2 [*VP* read_3]]]]

We are allowed to pick a different such plural individual for each different student (i.e., a different event and possibly a different WITNESS of *two books,* cf. ch. 2). This is represented in the LF (6b).

In intransitive sentences like (7a), the role of distributee is taken up by the existential quantifier over events, cf. (7b), since no indefinite GQP is available.

(7) a. Every student laughed
b. [*AgrSP* t_1 [*DistP* every student_1 [*ShareP* $\exists e_2$ [*VP* laugh_2]]]]

Finally, sentences like (7a,b)--as well as the reading of (6a) where the object GQP is interpreted as a Generalized Quantifier (i.e. like a CQP)--are associated to LFs like (7c), where the books/magazines counted by the CQP are distributed over individual students indirectly, by distributing over events of reading:

(8) a. Every/each student read at least five books
b. Every/each student read more books than magazines
c. [*AgrSP* t_1 [*DistP* every/each student_1 [*ShareP* $\exists e_3$ [*AgrOP* more than five books_2 [*VP* read_3 t_2]]]]]

A remark should be inserted at this point, concerning scope dependencies between two (or

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2 Some syntactic evidence for this claim will be provided in section 2.2.2.

more) plural terms. When two plural terms interact scopally, e.g., *five students read ten books*, it is often possible to construe this interaction as covering events of reading where any one student in a set of five read read any number of books insofar as the total of books read by the students (between them) comes up to twenty. The interpretation is that 'a total of five students read a total of twenty books'. These interpretations, called CUMULATIVE since Scha 1981, should be kept distinct from distributive dependencies as characterized above (cf. (1)). The term cumulative quantification typically applies to cases involving numerical determiners.

But similar construals are generally available with GQPs, including definite QPs; they are sometimes referred to as DEPENDENT PLURALS readings. Adopting terminology from Szabolcsi (1995b), I refer to cumulative dependencies between GQPs as DISTRIBUTED GROUP readings. I will not be interested in the LF representation of dependent plurals dependencies in this thesis. Since cumulative dependencies are typically available between two (or more) CQPs, I assume that the dependent plurals relation does not involve LF-movement for either plural NP involved (it is obtained *in-situ*).

To avoid the possibility of confusion between cumulative readings (including dependent plurals/distributed group readings) and distributive dependencies, which I discuss in detail in this chapter, I try whenever possible to give examples where the the distributee is a singular indefinite.

1.2 The pattern of Strong Distributivity (SD)

It has long been observed that the distributive dependency holding between a quantifier phrase built with *every* or *each* and a clausemate indefinite is not constrained by their relative position. This observation has provided, in fact, initial motivation for a movement (=QR) analysis of distributive dependencies. Distributivity does not only hold when the distributor quantifier, c-commands the indefinite, which takes the role of distributee, as in (9a), but also when the indefinite c-commands the quantifier (9b). In the latter case, the quantifier *every book* takes inverse (distributive) scope over the indefinite.

(9) a. Every student read some book
    b. Some student read every book

I call STRONG DISTRIBUTIVITY (henceforth abbreviated as SD) the syntactic relation licensing the distributive reading when the distributor is a QP built with *every/each* (=a DQP). I refer to the syntactic conditions on the appearance of SD as the PATTERN OF STRONG DISTRIBUTIVITY. This terminology is introduced to distinguish the syntactic pattern displayed by DQPs and the pattern displayed by GQPs when the latter receive distributive interpretations. Distributivity with GQPs will be the subject of section 3. I summarize below the pattern of SD:

(10) **The pattern of Strong Distributivity (SD)**
  a. Type of distributee. Distributivity is supported over any GQP;
  b. Position of the distributor. Distributivity is supported from any argument/adjunct position (when not within syntactic islands). Inverse distributive scope is always possible.

SD has a diagnostic associated with it: there is a type of QPs which (in one of its readings) can only be licensed, as distributee, in the scope of DQPs. These QPs have already been mentioned in ch. 2, 1.5: they are singular indefinites built with *a different, a distinct* (in their distributive reading, as opposed to their deictic reading). I assume that the (morphological) licensing conditions of *a different/distinct*-N require that these indefinites move in LF to the Spec,ShareP selected by the DQP. This is to say that they are marked as 'SD distributees'. The relevant data has already been introduced in ch. 2, 1.5, and is repeated here below.

The distribution of *a different* N (in its distributive interpretation) distinguishes sharply between DQPs and non-DQPs:

(11) a. Every student read a different book
b. Each student read a different book
c. * Five students read a different book
d. * The students read a different book
e. * More than five students read a different book
f. * No students read a different book
g. * Which students read a different book?

This provides empirical justification for our analysis, since I assume that neither GQPs, CQPs, WhQPs, or NQPs have access to Spec,DistP.

The following examples give further illustrations of the SD pattern for various choices of indefinites and relative positions of distributor and distributee. They show that when the distributor is a DQP, distributivity equally holds when the DQP and the indefinite (the distributee) are respectively in the positions of direct object-indirect object (12a); subject-indirect object (12b); and indirect object-direct object (12c). This is confirmed by the fact that *a different* N, in the relevant reading, is licensed as distributee in all the examples in (12).

(12) a. John gave every book to a different student/to two of these students/to five students.
b. A different student/two of the students/one student introduced John to every professor
c. John showed a different book/two of the books/six books to every student

2 DQPs and negation. Initial facts

2.1 Some puzzles with negation

Scope interactions between QPs are quite different from interactions between a QP and clausal negation. It is true that QPs that do not take inverse scope over clausemate QPs, i.e CQPs, also lack inverse scope over clausal negation (cf. the discussion in ch. 2, sect. 1). But it is striking to observe—in light of the foregoing discussion—that the scopal behavior of DQPs with respect to negation is very different from their behavior with respect to other (clausemate) QPs. The relevant observations can be summarized as follows:

(13) **Scope Interactions between DQPs and Clausal Negation**

a. DQPs do not take inverse scope over decreasing QP subjects.

b. DQPs do not take inverse scope over clausal negation, unless there is an indefinite GQP in the sentence, taking scope between the DQP and negation.

c. DQPs that c-command negation do not take it in their immediate scope, unless there is an indefinite GQP in the sentence, taking scope between DQP and negation (or unless special intonation is employed).

The statements in (13) are central to our rejection of the Uniformity of Quantifier Scope Hypothesis even for DQPs, which are the QPs which should most closely exemplify this principle. Some of the relevant data has already been introduced in ch. 2, section 1, and is repeated here for convenience.

Claim (13a) is illustrated by examples like the following (cf. ch. 2, section 1.6). These involve the quantifier *every*, and are repeated below:

(14) a. No students read every book
* 'for every book y, no students read y' = 'no book was read'

b. Few students read every book
* 'for every book y, a (possibly) different set of few students read y'

The inability of *every* N to take inverse scope over a decreasing QP is matched by its inability to scope over c-commanding clausal negation. As indicated in (13b), the effect can be observed quite clearly when no indefinite complicates the scope interaction. Thus (15a) only has the reading in (15c), not reading (15b).

(15) a. John didn't read every book (to Mary).

b. * 'for every book y, John didn't read y' (= 'John didn't read any books')

c. ok 'it is not the case that John read every book'

The examples provided so far feature the quantifier *every*. Sentences structurally parallel to the examples in (14) and (15a), but with *each* (16a,b) are usually somewhat degraded. For example, (16a) is considerably stranger than (15a), even though it should yield a comparable meaning. The examples in (16) can only acceptable in a restricted set of contexts, or when special intonation is employed:

(16) a. ? John didn't read each book.

b. ? No students read each book.

I take these data to indicate that *each*-QPs cannot be licensed when they are in the immediate scope of negation, or take negation in their immediate scope. The licensing conditions on *every*-QPs appear to be different, since these DQPs can be licensed in the immediate scope of negation. I'll return to accounting for these facts in section 2.2.3.

To continue with our review, let's consider the claim in (13c). The constraint which prevents *every* N from taking inverse scope over negation/NQPs is not limited to c-commanding negation. In fact, DQPs (both *each* and *every* now) do not seem to be able to take negation in their immediate scope, even when they c-command it.[3]

When no indefinite is present, and normal intonation is employed, sentences like (17) are deviant:

(17) a. ? Every student didn't come
b. ?* Each student didn't come

(18) a. ? Every student read no books
b. ?* Each student read no books

When confronted with sentences such as (17a,b), for example, speakers typically find that the sentence is a poor way to convey the proposition expressed by *no student came*. The effect seems to have cross-linguistic significance: it is also found in Romance, as shown by the Italian examples below (the interest of Italian is that it has close equivalents of both *every* and *each*):

(19) a. ?	Ogni/ciascuno	studente	non	è	venuto			[Italian]
	every/each	student	not	is	come			
b. ?	Ogni/ciascuno	studente	non	ha	letto	nessun	libro	
	every/each	student	neg	has	read	no/any	book	

The judgement on the (deviant) example in (17) may be obscured, for some speakers, by the interference of prosodic contours. The use of special intonation restores well-formedness to this type of examples. Three distinct contours may be employed.

(i) Heavy intonational stress is placed on negation (*didn't*); this produces an 'echo-negation' reading, whereby (17) is understood as a denial of a previous affirmative statement:

(17') A— Every student came.
B— No, every student DIDN'T come!
(='the proposition "every student came" is false')

(ii) A 'scooped intonation' pattern can be employed: low-high-low tone on *every* and final slight raise of the pitch at the end of the sentence. This yields a *not*>*every* scoping:

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[3] A caveat should be inserted at this point concerning the judgements reported. A number of sentences will be considered below where syntactic distributivity, as defined in (5), cannot be satisfied. These types of violations are usually very mild (when compared, e.g. to failures of Case assignment). In addition, they are typically salvageable by employing a marked intonation contour. 'Neutral' (=unmarked) intonation, in the declarative sentences considered here, is charcterized as a 'statement' type of intonation, with an even F1 contour, slightly raising till the main VP stress site (on the V in SV sentences, on the O in SVO), followed by a steady drop. Any deviation from this pattern is to be considered 'marked' or 'special' intonation.

(17") A— The event was a complete success. The whole student body attended!
B— Well, /every\ student didn't come/. John and Mary stayed home.
(='not every student came')

(iii) Finally, heavy stress can be placed on *every*, with the pitch dropping to a low for the rest of the sentence. This pattern is more marginal, and could be described as focus on the DQP: the scoping is *every>not.* The following context illustrates:

(17"') A— Ok, most students refused to come. But I heard that a few did show up.
B— No way; EVERY student didn't come!
(='no student came')

The behavior of DQPs with negation contrasts with that of GQPs: these are free to take immediate scope over, or be taken in the immediate scope of, NQPs and clausal negation (again, these data has already been introduced in ch. 2, sect. 1.6).

(20) a. Few students read two books
b. No students read two books
ok: 'there are two books, such that few/no students read them'

(21) a. John didn't read two books (to Mary)
ok: 'there are two books which John didn't read (to Mary)'
b. Two students didn't come

The data considered so far points to a near-total incompatibility between DQPs and negation. The only acceptable configuration in which negation and DQP can directly interact with each other is when *every* N, being c-commanded in the same clause by negation/NQP, is taken in their (immediate) scope (the relevant examples are (14) and (15)).

We come now to the last piece of the puzzle. It is not the case that DQPs cannot take scope over negation (as generally assumed in the literature, cf. the treatment of scope interactions between negation and DQPs by Aoun&Li and Hornstein, reviewed in ch. 1). The constraint, as it has been indicated here, only holds relative to the immediate scope of DQPs.

The presence of an indefinite in the same clause can allow a DQP to take scope over negation, given a certain scope construal. Consider first the case where a DQP c-commands negation: the contrast between (22a) and (22b) [=(17)] shows that the presence of the indefinite is crucial:

(22) a. Every/each student didn't read some book
ok: 'for every student x, there is some book y, such that it is not the case that x read y'
b. ? Every/each student didn't come

The correct descriptive generalization is that a DQP can scope over c-commanding clausal negation, provided the indefinite is construed as taking intermediate scope between the DQP and clausal negation. Note, crucially, that (22a) does not seem to convey another reading that is a logical possibility: it cannot be used to convey the proposition that no student read any books, corresponding to the scoping *every>not>some*. It is less clear whether the reading 'there is some book that every student didn't read', corresponding to the scoping *some>every>not* is actually available for (22a). I'll return to this in section 2.2.2.

I will refer to the action of the indefinite in these contexts as the INDEFINITE INTERVENTION EFFECT (IIE). The IIE is not only observable when the DQP c-commands negation, as in (22a). Crucially, the IIE is also found to apply when negation c-commands *each*-QPs; the IIE does not however seem to be applicable when negation c-commands *every*-QPs. The contrast below illustrates.

(23) a. Some student (or other) didn't read each book
ok/? 'for each book, there is some student who didn't read that book'
b. Some student (or other) didn't read every book
?* 'for every book, there is some student who didn't read that book'

These data (and generally those considered in this section) cannot be accounted for by any of the current theories of scope. The explanations proposed by Aoun&Li (1993a,b) and by Hornstein (1994) is that c-commanding negation blocks the movement of the (VP-internal) QP by causing a minimality violation (an MBR violation for Aoun&Li, a Relativized Minimality violation for Hornstein). Not only this account does not discriminate between DQPs and GQPs (the latter do not participate in the effect); it does not account for the IIE, nor for the fact that negation blocks the scope of DQPs even when it is c-commanded by them.

The data can, however, be accounted for by the theory of Strong Distributivity outlined in section 1. The account is presented in the next section.

2.2 *Accounting for the facts*

In a nutshell, DQPs and negation are--so to speak--not a happy couple because there is the potential for a binding conflict. The conflict, as will be shown, is over who binds the event argument. Let's begin with the cases where the DQP c-commands negation, since all DQPs (i.e., both *each* N and *every* N) behave similarly in this contexts. We'll then move on to the cases where negation c-commands, a situation that *each* N and *every* N do not tolerate in the same way, as seen in (23). The analysis follows the account in B&S (1995a,b).

2.2.1 *The treatment of negation*

The premise of the account is the treatment of negation. Usually, negation is represented as a propositional operator, modelled after the connective $\neg$ of classical logic. Let's adopt a different view, in keeping with the need to accommodate a basic desideratum of logical form, which is to include a representation of events. Consider negation as a (negative) quantifier over events.[4]

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[4] This is not to say that the sentential operator of logic, $\neg$, is not represented in natural language. Sentence level negation does seem to be available in natural language, for example in (emphatic) denials, as in *(No,) John DIDN'T read your paper* (=it is not the case that John read your paper). But these usages appear to require stressing the negation word. The claim

Clausal negation (*not* in its usual affixal form, i.e. the clitic *-n't*) is interpreted as 'for no events...'. A negative statement like *John didn't come* receives a logical translation like 'there is no event of coming of which John was the agent' (cf. Krifka 1991, Schein 1994).

Syntactically, we can execute this by assuming that the event argument is generated inside VP (or VP*)[5] as a quantified argument. Normal affirmative clauses contain an existentially quantified event argument (*∃e*) which raises to Spec,ShareP. In a negative clause, the event argument is bound by negation. We can represent this by assuming that a negative quantifier over events (*No:e*) in inserted in the event position, and that this negative QP raises to Spec,NegP.[6]

(24) a. John came
[*AgrSP* John [*ShareP* ∃*event*$_k$ [*VP** t_k [*VP* read$_k$]]]]
'John is such that there is an event of coming, of which he is the agent'
b. John didn't come
[*AgrSP* John [*NegP* NO *event*$_k$ [*VP** t_k [*VP* read$_k$]]]]
'John is such that there are no events of coming of which he is the agent'

2.2.2 DQPs c-commanding negation

On this approach, the deviance of sentences like *every/each student didn't come* (listed above as (17)) follows directly from our syntactic representation of (strong) distributivity. Recall that SD is only satisfied when both distributor and distributee are in their respective positions, Spec of DistP and Spec of ShareP. (17) is deviant because syntactic distributivity cannot be satisfied: there is no distributee argument to fill Spec of ShareP. Given that there is no indefinite to fill the role of distributee, only the event argument can fill such role. But the event argument, being negatively quantified, has raised to Spec,NegP; thus it cannot occur in the (higher) Spec,ShareP.

The impasse in (17), repeated as (25a), can accordingly be represented as in the LF diagram in (25b) (irrelevant details aside):

(25) a. ? Every/each student didn't come
b. ? [*AgrSP* John [*DistP* every book$_i$ [*ShareP* _*_ [*NegP* NO *event*$_k$ [Neg [*VP** t_k [*VP* read$_k$ t_i]]]]]]]

With special intonation (17/25a) can become well-formed presumably because intonation signals that the constituents are in different syntactic positions. The DQP and negation would, in other words, not be in the same positions as in the representation (25b) given above for (17). I do

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made in this section is that normal, intonationally neutral, uses of clausal negation do not involve a sentence level operator.

5 I leave it as an open question whether all verbs, not just so-called eventive but also stative ones, have an event argument in their syntactic representation. Cf. Kratzer 1989.

6 Alternatively, one might assume that the event argument remains *in situ*, and that an appropriate binder, existential with affirmative clauses, or negative when the clause is negative, is inserted in Spec,ShareP or in Spec,NegP, respectively.

not develop an account of the effects of intonation on LF structure here. The reader is referred to B&S (1995a) for further discussion.

Aside from intonation, the intervention of an indefinite provides a way out of the impasse in (25b) by supplying a distributee. We predict (correctly) that a sentence like (22), repeated below, will have a scopal reading *DQP>some>neg*, with the indefinite in Spec of ShareP, but no *DQP>neg>some* reading: leaving the indefinite below NegP does not offer a way for SD to be satisfied at LF.

(22) Every/each student didn't read some book

It was mentioned in section 2.1 that it is unclear whether the scoping *some>DQP>neg* is an available reading of the sentence under neutral intonation (though the reading is certainly available if we employ either one of the three intonations presented in 2.1). Using a different angle seems to shed some light on the issue. The indefinite *one professor* in sentences like (22) does not seem to support cross-sentential anaphora:

(26) ?(?) Every/each student didn't talk to one professor$_i$. He$_i$ was on vacation.

This suggest that (22) can only convey the scoping *some>DQP>not* as a subcase of the scoping *DQP>some>not*, i.e., when we assume that the shares are all identical. Thus the reading *some>DQP>not* appears not be be conveyed directly, but only by way of implication. Our analysis predicts that (22), under the scoping *some>DQP>not* incurs a (mild) violation of distributivity, at least under normal intonation.

There is a theoretically significant fact that can be mentioned in connection with the discussion of the 'Indefinite Intervention Effect' (IIE), whose operation salvages the potential binding conflict between DQP and negation in sentences like (22). This fact provides motivation for both the account of the scope of CQPs and for the specific treatment of SD reviewed in section 1. We have assumed that in SD, distributee arguments have a designated position in Spec,ShareP, which is accessible only to GQPs. This analysis predicts that substituting a CQP for the GQP in (22) should cause degradation. This prediction is borne out:

(27) a. ? Every student didn't read at least five books
     b. ? Every student didn't read more books than magazines

As proposed in 1.1, CQPs cannot fulfill the role of distributees with DQPs, since this would require them to move Spec,ShareP; but CQPs do not have access to ShareP, because they take scope in their Case position, Spec of AgrXP. Therefore, they can fill the role of distributee only indirectly, by taking scope under the existentially quantified event argument in Spec of ShareP. The deviance of (27) comes from the fact that the event argument is prevented from occurring in Spec,ShareP by negation; since the CQP cannot move there itself, the SD relation cannot be satisfied.

Let's consider now the cases where negation c-commands the DQP. As observed, this configuration is not licensed with *each* N, but seems fine with *every* N. We need, accordingly, to clarify our assumptions concerning the difference between these two distributive quantifiers.

2.2.3 *Each vs. Every (and All)*

In ch. 2, I characterized DQPs (= *every*-QPs and *each*-QPs) as QPs that introduce a set variable. Let's first review the motivation for this hypothesis, as detailed in further sections of ch. 2.

In standard DRT treatments, DQPs and CQPs are grouped together owing to their sharing the same behavior with respect to certain anaphora facts. Thus, both CQPs and DQPs are interpreted as generalized quantifiers. They do not introduce discourse referents (=variables); only GQPs do. On the other hand, we have observed a number of properties that distinguish DQPs from CQPs and point to similarities between DQPs and GQPs.

First, in ch. 2, sect. 5.4 it has been observed that there are anaphora facts indicating that DQPs behave like GQPs, and unlike CQPs: in a language like Hungarian where non-universal DQPs exist, it can be observed that these DQPs do not show the Maximal Reference Effect presented in ch. 2, 3.2. This is direct evidence that DQPs introduce a discourse referent, rather than being pure quantifiers.

Second, scope facts reviewed in ch. 2, sect. 1, show a sharp differences between CQPs and DQPs. The former (i) do not show inverse scope (4.1) nor inverse linking (4.3), and (ii) do not support extraclausal *de re* readings (4.2). The availability of both inverse scope and of *de re* scope on the part of DQPs again highlights common properties with GQPs. These properties would be indeed puzzling if DQPs did not introduce a discourse referent.

The conclusion that I have reached (following essentially Szabolcsi 1995a) is that DQPs do introduce a discourse referent in the form of a set variable; in addition, they have distributive properties that distinguish them from GQPs.

As regards these distributive properties, I have suggested in ch. 2 that *every*- and *each*-QPs target Spec,DistP in order to check somewhat different featural specifications. Elaborating on B&S 1995b, let's draw a distinction in the following terms: both *each* and *every* have a universal meaning;[7] in addition, they are both endowed with a [+singular] feature. This morphological feature is associated with NP's that manifest singular number agreement on the verb and bind singular pronouns, despite their being semantically plural.

It appears that a characteristic morphological property of QPs that support the SD pattern (in languages where QPs can be marked for either singular or plural) is that they show singular agreement although they 'talk about' a plural set. I assume that this combination of morphological singularity with semantic plurality is a necessary, but not sufficient conditions for QPs to enter in Spec-Head agreement with the distributive Operator in Dist°. In other words, I assume that this feature simply <u>allows</u> the distributive Operator in Dist° to apply to atomic members of the set variable introduced by DQPs, but it is not in itself responsible for <u>driving</u> DQPs to move to

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[7] *Each* has wider distribution than *every*: both are used as determiners, but unlike *every*, *each* has two other uses. Descriptively, at least, we can distinguish its use as an adverbial ('floated'-*each*) and as a post-nominal modifier, so-called 'binominal'-*each* (cf. Safir&Stowell 198x, Sutton 1994). In all of these uses, *each* appears to have a universal meaning in addition to its distributive meaning. Thus, *each* cannot often occur in the contexts where the adverb *individually* (which does not imply universality) occurs.

Spec,DistP and enter into Spec-Head agreement with Dist°.

I introduce at this point a further assumption, namely that there is a feature [+distributive], which must be checked off by Spec-Head agreement with Dist°. I assign the feature [+distributive] only to *each*; *every* is underspecified for [distributive]. Thus, *every*-QPs are marked as [+singular, 0distributive]. This means that *each*-QPs must be licensed in Spec,DistP, and are predicted to always support SD; but *every*-QPs don't have to move to Spec,DistP, though they may do so.

The hypothesis that *every*-QPs do not necessarily have to move to Spec,DistP is supported by facts to be presented later in this chapter and in the next; namely, by the observation that when in the scope of the Negative or Question Operator, *every*-QPs do not support SD.

Negative and Question Operators can bind the set variable introduced by DQPs; when this happens, I assume that *every*-QPs do not move to Spec,DistP. They only do so when the closer binder is the Existential Operator in Ref°; I take this to be their 'default' binder.

I assume that the underspecified [distributive] feature of *every*-QPs becomes 'activated' when the set variable is bound by an Existential Operator, whose site is Ref°. It is assumed that the closest (c-commanding) binder will bind.

Given the assumption that a [+distributive] feature on a determiner can only be checked under Spec-Head agreement with the Operator in Dist°, we have that *each*-QPs must move to Spec,DistP (which in turn entails that an existential must move to Spec,ShareP to serve as *each* N's distributee), whereas *every*-QPs move to Spec,DistP only when their set variable is not bound by Negation or Question because the Existential Operator is the closest binder.

When in Spec,DistP, *every* N is indistinguishable from *each* N. However, their featural distinction accounts for systematic differences in the behavior of these two quantifiers, as we shall see repeatedly in this and the next chapter.

The [+singular, 0distributive] features of *every*-QPs, which allow them to access Spec,DistP, distinguish them from *all (of the)*-QPs. The latter belong with GQPs proper: they are not morphologically singular, and (I assume) they introduce a group (=individual) variable, not a set variable. Two tests crucially distinguish between *every* and *all*: (i) *all* does not license *a different* N; (ii) *all* does not license inverse distributive scope (i.e., does not support SD):

(28) a. ?? All the students read a different book
b. * A different student read all the books
c. Every student read a different book
d. A different student read every book

(29) a. Some student read all the books
?* 'for every book x, there is a possibly different student who read x'
b. Some student read every book
ok 'for every book x, there is a possibly different student who read x'

The behavior of *each* N in the data considered above (section 2.1) follows from this account. Whether negation c-commands or is c-commanded by *each* N does not make a difference: *each*-QPs manage to conflict with negation from either position, because in LF *each* N must be in Spec-

Head agreement with Dist°. Sentences containing both *each* and negation will be degraded unless there is an indefinite QP that can fulfill the role of distributee (i.e. produce an IIE effect). Thus the distribution of *each* N strictly follows that of the SD configuration.

The difference between *each* and *every* shows up when negation c-commands the DQP. There is no difference when the DQP c-commands negation, because negation cannot bind *every* N unless it c-commands it, and subject QPs do not reconstruct in the scope of negation in LF (cf. ch.2, section 2.) The relevant examples are repeated below:

(30) a. John didn't read every book
b. ?? John didn't read each book

Since the presence of negation prevents the event argument from being the distributee, SD cannot be licensed in (30), and so *each* is out. But *every* may be licensed outside of Spec,DistP if its set variable is bound by Negation. The claim is therefore that in (30a) *every book* does not move to Spec,DistP because it is bound by negation.

Licensing outside of Spec,DistP has certain consequences: the main one is that *every* N no longer supports the pattern of SD. To evaluate the purport of this claim, and to explore the consequences and motivation for the approach outlined in this section, it is necessary to first consider another type of syntactic configuration where distributivity can be realized: this is the configuration where GQPs acquire distributive readings. This is the subject of section 3. In section 4, I return to providing an account of the data presented in section 2.1.

Before leaving this section I list the licensing conditions for both *each* and *every* N.

(31) **Licensing of *each* N**

a. QPs whose determiner is *each* are endowed with the features [+singular, +distributive]. Since the second feature can only be discharged in Spec,DistP, *each*-QPs must move there in LF.
b. Therefore, *each*-QPs always support SD.
c. Semantically, the set variable introduced by QPs headed by *each* must be bound by an existential (or, as we shall see in ch. 5, by the Question) Operator.

(32) **Licensing of *every* N**

a. QPs built with *every* are endowed with the features [+singular, 0distributive] (i.e. their are underspecified for [distributive]). These features may, but don't have to, be discharged in Spec,DistP.
b. *Every*-QPs must move to Spec,DistP only when the closest binder of their set variable is an Existential Operator in RefP. When in Spec,DistP in LF, *every*-QPs activate the distributive Operator in Dist°, and support SD.
c. When the closer binder is a Negative or Question Operator, QPs headed by *every* do not move to Spec,DistP.

3 Distributivity with GQPs

In this section, I consider distributive readings with GQPs, and develop a comparison with the pattern of distributivity displayed by DQPs. Since here I only consider situations where *every*- or *each*-QPs have their set variable bound by the Existential Operator (thus excluding negative clauses and (constituent) questions), there is no difference between *each* and *every*. Thus, leaving aside for now the differences discussed in the previous section, I will talk about DQPs as a uniform class of QPs that check their features in Spec,DistP and support SD.

The focus of this section is on distributivity as a syntactic dependency between two terms, the distributor and the distributee. Distributive readings with DQPs and GQPs are found to conform to distinct patterns. The former type of distributivity, as noted in section 1.2, is referred to as STRONG DISTRIBUTIVITY (SD). The weaker type, that of GQPs, I refer to as PSEUDO-DISTRIBUTIVITY.

3.1 The pattern of Pseudo-Distributivity (PD)[8]

I have claimed that GQPs introduce a discourse referent, in the form of a group variable. This accounts directly for their group reading. It is a common-place observation, however, that in addition GQPs support distributive readings. It has has often assumed that distributive readings are in free variation with group readings. This at least is the view in the standard generative literature on LF movement (based on May 1985). There has not been extensive and systematic investigation—to my knowledge—of the syntactic conditions under which these distributive readings are possible.

In this section, I consider precisely this question. I show that with GQPs, the syntactic configurations supporting distributive readings are more restricted than with DQPs. I begin by presenting the basic descriptive generalization on the availability of distributive readings with GQPs. After that, I propose an account (in section 3.2). My general conclusions will be that:

(33) a. Distributive readings with GQPs are not licensed in the same set of configurations that license SD: i.e. their distributivity pattern is distinct from the SD pattern;
b. Distributivity with GQPs does not involve movement to Spec,DistP, but receive an altogether different LF representation.

I will call the pattern of distributivity shown by GQPs PSEUDO-DISTRIBUTIVITY (henceforth, PD), reserving the term Strong Distributivity (SD) for the pattern displayed by DQPs.

In the classification of QP types given in ch. 2, definite DPs are included with GQPs. Definites appear to support distributive readings less readily than indefinite GQPs. However, both types seem to conform to essentially the same pattern; the distinction is one of (strong) dispreference for distribution on the part of definite GQPs. I do not address this difference here, concentrating on indefinite GQPs in the examples. For the moment, I also leave aside the distributive behavior of CQPs; these QPs are not directly relevant to the discussion in the following sections (I return

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[8] The material in this section is taken from Beghelli 1995b.

to CQPs in section 3.3).

The PD pattern is more restricted than the SD pattern in two respects. The availability of ditributive readings depends (i) on the type and interpretation of the distributee; and (ii) on the relative argument positions of distributor and distributee.

This is more thoroughly laid out in (34) and (35) below, where I state the main descriptive generalization governing the distribution of SD and PD readings (the former repeated from section 1.2). Table 1 gives a detailed break down of the availability of distributive readings depending on the type and position of distributor and distributee. The rest of this subsection is devoted to illustrating the pattern.

It will be helpful, in the presentation of the data, to refer to subtypes of GQPs that have restricted interpretation. I introduce the following distinction. BARE GQPs are the plain type, built with determiner + head noun (*some student, two students, ...*); PARTITIVE GQPs are those built with the addition of *of the*: *some of the students, two of the students*, etc. The distinction is relevant to interpretation: as pointed out by Diesing (1992), bare GQPs can be interpreted either as presuppositional or as cardinal; partitive GQPs are generally interpreted as presuppositional. In terms of the account given in ch. 2, cardinal GQPs are licensed in Spec,AgrOP (or Spec,AgrIOP); in their cardinal reading, GQPs are interpreted as CQPs are, i.e. as generalized quantifiers. Presuppositional GQPs introduce group referents, and must be licensed in Spec of ShareP or Spec of RefP: they must be at least as high as Spec,ShareP.

(34) **The pattern of Strong Distributivity (SD)**

a. Type of the distributee. Distributivity is supported over any type of distributee: both cardinal (=non-specific) and presuppositional indefinites.

b. Position of the distributor. Distributivity is supported from any argument or adjunct position: both direct and inverse distributive scope are possible.

(35) **The pattern of Pseudo-Distributivity (PD)**

a. Type of the distributee.

(i) PD is generally possible between two co-arguments when the distributor is presuppositional, unless the distributee is a subject;

(ii) PD is generally impossible when the distributee is presuppositional, unless the distributor is a subject.

b. Position of the distributor. When both distributor and distributee are bare GQPs, PD is possible when the syntactic position of distributor and distributee observes the following argument hierarchy: subject > indirect object/adjunct > direct object.

None of the restrictions listed in (35) hold for SD. The ability of DQPs to support distributive readings is affected neither by the type of the distributee nor by syntactic position. The differences between DQPs and GQPs thus go well beyond the observation that DQPs only possess a distributive reading, whereas GQPs display also group readings.

GQPs and DQPs are somewhat comparable only when the distributor is interpreted presuppositionally and the distributee is a non-subject interpreted cardinally (cf. (35a)); the pattern is detailed in the top portion of Table 1. The mark 'ok' means that the reading is natural; '?' that it is possible; '??', '*' that it is very hard, or impossible.

Table 1. ***Availability of pseudo-distributivity with GQPs***

Type of distributor	*Type of distributee*	*Position of distributor*	*Position of distributee*	*Availability of distrib. reading*
partitive	bare	subject	ind. object	ok
partitive	bare		dir. object	ok
partitive	bare	ind obj	subject	?*
partitive	bare		dir object	?
partitive	bare	dir obj	subject	?*
partitive	bare		ind object	?
bare	bare	subject	ind. object	ok
			dir. object	ok
bare	bare	ind obj	subject	?*
bare	bare		dir. object	?
bare	bare	dir obj	subject	?*
bare	bare		ind. object	??
bare	partitive	subject	ind. object	?
			dir. object	?
bare	partitive	ind obj	subject	*
			dir. object	*
bare	partitive	dir obj	subject	*
			ind. object	*

Let's illustrate with some examples:

(36) a. Five of the(se) students read two books
    ok 'five of these students each read a (possibly different) set of two books'
    * 'there is a set of two books such that for each of them, there is a (possibly different) set of five of these students who read it'
  b. John showed five of the(se) books to a student
    ? 'five of these books are such that for each of them, John showed it to a (possibly different) student'
  c. John showed a book to five of the(se) students
    ? 'five of these students are such that to each of them, John showed a (possibly different) book'

Observe that even with presuppositional distributor and non-presuppositional distributee (top portion of Table 1), the similarity between GQPs and DQPs breaks down considerably when we consider inverse distributive scope over a subject (as in the second gloss given above for (36a)). Inverse (distributive) construals are generally unavailable with GQPs, as observed in ch. 2, section 1.5. These readings are perhaps more available when the narrow scope QP is a

CQP, but there is still a considerable contrast between the ability of DQPs and GQPs to take inverse distributive scope over a subject CQP, as shown in (37).

(37) a. More than one student visited three of the(se) professors
?(?) 'for each of these three professors, there is a (possibly different) set of more than one student who visited her/him'
b. More than one student visited every professor
ok 'for every professor, there is a (possibly different) set of more than one student who visited her/him'

Let's consider now another parameter for PD. There is a marked difference in the ability of DQPs and GQPs to support distributivity when the distributee is chosen to be a presuppositional indefinite, like *two of these books*. This is expressed in (35a(ii)), corresponding to the lowest portion of Table 1. DQPs are insensitive to whether the distributee is presuppositional or not, but this makes a difference with GQPs. The examples below contrast DQPs and GQPs in their ability to distribute, as subjects, over a presuppositionally interpreted QP. These examples test the possibility of construing *two of these women* as the distributee, when the quantifier serving as distributor ranges over the set of men:

(38) a. Every/each man visited two of the(se) women [ok distribution]
b. Three men visited two of the(se) women [? distribution]
c. John introduced two of the(se) women to three men [?? distribution]
d. John introduced three men to two of the(se) women [*? distribution]
e. Two of the(se) women visited three men [* distribution]

(38) shows that only subjects can accomplish this task: whereas subjects can somewhat marginally support distribution over presuppositional indefinites, complements are typically unable to. Adjuncts seem to pattern with complements, as the following additional examples show:

(39) a. I left five books for two of these people [* distribution *book→two of these people*]
b. I saw five students at one of the conferences
[* distribution *student→one of the conferences*]

Note that the singular indefinite *some* (to be kept distinct from its unstressed counterpart, *'sm'*, cf. Milsark 1974) behaves like a presuppositional indefinite. I will return to this in section 4.

(40) a. Every/each man visited some woman [ok distribution]
b. Three men visited some woman [? distribution]
c. John introduced some woman to three men [?? distribution]
d. John introduced three men to some woman [*? distribution]
e. Some woman visited three men [* distribution]

The judgements reported so far rest on interpretation. They are however supported by parallel judgements of grammaticality. The syntactic difference between SD and PD is highlighted by the distribution of QPs like *a different book*, analyzed in section 1.1. As observed there, only DQPs support distribution over QPs built with *a different*. GQPs don't, whether they are in subject or non-subject position.

(41) a. Every/each student read a different book [ok on distri. reading]
b. Two students read a different book [* on distr. reading]
c. The students read a different book [* on distr. reading]

In sum, GQPs freely distribute only over CQPs and non-specific GQPs. Note that the determiner *a* seems (at least with many speakers) to prefer a non-specific construal, and is a good (pseudo-)distributee with GQPs (cf. the examples in (36) above). I assume, accordingly, that QPs built with determiner *a* can, and perhaps typically do, take scope in their Case positions.

Let's now consider the availability of distributive readings when the distributor and the distributee are both bare GQPs (cf. the middle portion of Table 1). Let's start with inverse distributive scope. As already observed, this is generally impossible with GQPs. Table 1 shows that when both distributor and distributee are bare GQPs, distribution over subjects is very unnatural.

As a recap of our observations about the availability of inverse distribution over subjects, consider the examples below; the readings relevant here, which I abbreviate as 'inv(erse) dist(ribution)', follow the schema 'for each y in the set of books, a possibly different x in the set of students is such that x read y':

(42) a. Two students read five books [?? inv. dist.]
b. Two students read five of the(se) books [?? inv. dist.]
c. More than two students read five of these books [? inv. dist.]

As a final step in our exploration of distributivity with two bare GQPs, we observe that there are further restrictions depending on the syntactic position of the distributor. As noted above, the most natural examples of distributive readings with GQPs are when these occur in subject position. In the position of direct object, GQPs like *five boys/three books* do not naturally support distributive readings, even when the distributee is a prepositional indirect object (P-IO), or an adjunct:

(43) a. I showed five books to a student [?? distribution *book→a student*]
b. I introduced five boys to a girl [?(?) distribution *boy→a girl*]

(44) a. I left five books for a friend [?(?) distribution *book→a friend*]
b. I saw five students at a conference [?(?) distribution *student→a conference*]

(45) a. I showed the books to a student [* distribution *book→a student*]

b. I saw the students at a conference [?* distribution *student¬a conference*]

So, GQPs are best as distributors when subjects; worst when direct objects. P-IOs (and certain adjuncts, it seems) are somewhere in between. Consider the configuration where the distributor is a P-IO or an adjunct, and the distributee is a direct object. In this configuration distributive readings are more available than when the distributor is a direct object. This might be surprising, since in terms of phenomena such as pronominal binding, WCO, and NPI licensing, direct objects appear to c-command P-IOs and adjuncts (cf. Barss&Lasnik 1986). Given that inverse scope is generally harder, these examples show that scope is not computed using the same type of structural relations.

(46) a. I showed two papers to three students [? distribution *student¬two papers*]
b. I introduced two women to three men [? distribution *man¬two women*]

3.2 *The analysis of PD*

There are two parts to the account of PD that I am going to propose. First, I will make a proposal as to what is the grammatical mechanism behind PD. Next, I show that we can make sense of this pattern on the basis of the theory of LF scope positions for GQPs outlined in ch.2, 2.

3.2.1 *A silent distributor*

The hypothesis that I present here is that differences in the SD and PD patterns reflect entirely different grammatical mechanisms at work in the two cases. SD comes about as the distributor moves to Spec of DistP, and the distributee to Spec of ShareP. In PD, DistP is not involved. Following Link (1983), Roberts (1987) and others, I propose that PD takes place through the agency of a covert distributive operator. Syntactically, I treat this distributor (which is distinct from the distributive Operator in Dist^{o}) as an adverbial. In this way, I maintain that the group reading is the default reading of GQPs. My proposal goes beyond the literature in that I observe empirical constraints on where distribution may occur and attempt to provide a syntactic account of them.

The distributive operator in PD can be compared to a SILENT FLOATED *each*. PD is possible insofar as the distributor GQP (or its trace, if the GQP has moved to a higher position) is at LF in a position where it can antecede a silent *each*, whereas the distributee sits in the scope (=c-command) domain of *each*; I assume this implies that the distributee must not c-command the position of the (trace of the) distributor.

I express the relevant claims below:

(47) **Distribution of PD**

a. PD involves the use of a (silent) distributive adverbial which is distinct from the distributive Operator in Dist°;
b. This adverbial is only available in AgrXP (X=S,O,IO) and in ShareP;
c. A GQP can antecede the adverbial if it has a trace/copy in the Spec position of one of these projections.
d. Additionally, for a GQP to fill the role of PD distributor, the adverbial must c-command the position of the distributee QP in LF.

This analysis boils down to taking (48b) below as a close paraphrase of the LF representation for the PD reading of (48a):

(48) a. Two students read a book
b. Two students each read a book

In contrast to DistP, which has (one) fixed position, I assume that silent *each*, like overt floated quantifiers, can occur in a variety of LF positions. Data from Romance languages like French and Italian (cf. Cinque, class lectures, GISSL 1994) show that *each* can be floated off any argument position.

However, there is a strict positional hierarchy, according to which a subject-anteceded floated quantifier is higher than one anteceded by an indirect object, and one anteceded by a direct object is lowest. The data in (49) illustrates[9]. (The differences in gender marking help to identify the antecedents of the floated quantifiers).

(49) a. Les cadeaux, ils les leur ont toutes tous donnés [French]
the gifts(masc) they them to them have all(fem) all(masc) given(masc)
b. * Les cadeaux, ils les leur ont tous toutes donnés
the gifts(masc) they them to them have all(masc) all(fem) given(masc)
c. Ils les ont tous toutes vues
they(masc) them have all(masc) all(fem) seen(fem)
d. * Ils les ont toutes tous vus
they(masc) them have all(fem) all(masc) seen(masc)

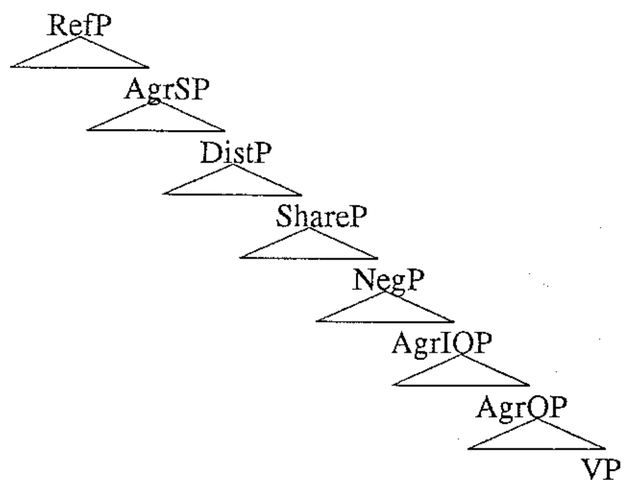
These data match the findings of syntactic literature on Germanic, which support the

[9] I am grateful to Dominique Sportiche (p.c.) for providing these data. Comparable data are presented by Cinque (class lectures, GISSL 1994).

assumption that the Case/Agreement position of indirect objects is higher than the Case/Agreement position of the direct object.[10] There is also support for the hypothesis that certain adjuncts--e.g. locatives--also seem to be higher than direct objects.

I thus assume the following hierarchy of maximal projections at LF

(50)



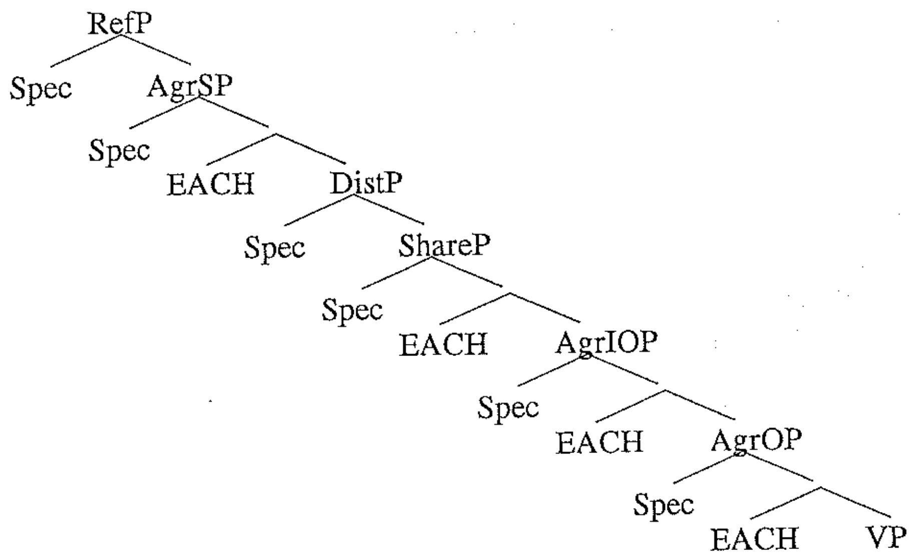
Following a suggestion by Cinque (class lectures, GISSL 1994), I assume that floated quantifiers are generated in AgrXP projections. I take silent *each* to have similar distribution; thus I assume silent *each* can float off any position between AgrSP and VP where arguments (or adjuncts) sit at LF. This implies that it can float off Spec,ShareP, but not Spec,RefP.

Thus, silent *each* can only be as high as the standard subject position. I assume that silent *each* has essentially the same distribution as overt floated *each*, which cannot be placed to the left of a DP in Spec,AgrSP. There is no silent *each* attached to the RefP projection, otherwise by moving there, a VP-internal argument could take a subject GQP as its distributee in a PD dependency. But we have seen in ch. 2, 1.5, that the group referent of object GQPs can take inverse scope, but not support distributivity, over subject GQPs.

[10] Similar assumptions are also made by Pica&Snyder 1995.

The following tree representation summarizes the possible positions of silent *each*:

(51) **Distribution of silent *each***



3.2.2 Scope positions accessible to GQPs

Given the assumptions of the previous section, the hierarchy of scope positions accessible to GQPs sketched in ch. 2 provides the basic theoretical tool to derive the PD pattern. I devote some space here to illustrating its application. The following table summarizes the scope positions available to GQPs:

(52) **Scope positions for GQPs**

	Position	*Logico-Semantic function*	*Intepretation*
a.	Spec of RefP	subject of predication	presuppositional
b.	Spec of ShareP	group reference	presuppositional
c.	Spec of AgrXP	count	cardinal (VP-internal args. only)

GQPs that have a presuppositional interpretation are at least as high as Spec of ShareP at LF. Some comments are required for the assumption in (52c). Partitive GQPs (*two of the(se) students*) are interpreted only as presuppositional. Bare GQPs (like *two students*) can be interpreted either as presuppositional or as cardinal. This ambiguity holds only for VP-internal GQPs; recall from ch. 2, 2.9 that I do not assume, unlike Diesing, that (bare) GQPs normally have the option of reconstructing VP-internally[11]. One of the reasons for this decision comes from the PD pattern. If subjects had the option of reconstructing VP-internally, we would

[11] I abstract away from special intonation: cf. B&S 1995b.

expect inverse distributive scope to be generally possible, contrary to fact. The distributive asymmetries found between direct and indirect objects also militates against this assumption.

Armed with these assumptions (from ch. 2), we can derive the pattern of PD. Let's first review the case where the distributee is a bare, non-subject GQP and receives only a cardinal interpretation. Assume the distributor GQP is also a bare GQP and receives a presuppositional interpretation: the distributor has moved to Spec,RefP or Spec,ShareP. Thus the distributee sits in its Case positions in LF; the GQP that acts as distributor has a trace in its Case position.

This yields the prediction that PD will be licensed if either of the following conditions obtain: (i) if the Case position of the (trace of the) distributor is higher than the Case position of the distributee; or, failing that, (ii) if the scope position of the distributor can antecede one of the positions where a silent *each* can occur. Let's consider some possible cases.

A subject GQP (as distributor) is predicted to always support PD over a cardinally interpreted distributee: this is because the GQP has a trace in Spec,AgrSP, which antecedes the highest position available to silent *each*.

On the other hand, if the distributee is a subject GQP, PD will not be supported, because the scope position of the distributee is higher than the highest position of silent *each*. Thus, PD does not allow inverse distributive scope O>S.

Consider next the case when both distributor and distributee are VP-internal arguments; I will just consider the case when these are direct object and (prepositional) indirect object.

Given the hierarchy of Case and scope positions of the previous section, it is predicted that an indirect object (or a high adjunct) can always support PD as distributor when the distributee is a direct object. If the distributee is in Spec,AgrOP in LF, then an indirect object GQP can support PD via its trace in Spec,AgrIOP, which can antece a silent *each* in AgrIOP.

But the reverse configuration--when a bare-numeral GQP in object position is the distributor and the bare-numeral distributee is an indirect object--does not necessarily support distributivity, as observed in the previous section. To understand why, recall that bare-numeral GQP in VP-internal position may merely receive a cardinal interpretation. PD will be supported when the GQP that acts as distributor is a direct object and receives a presuppositional interpretation, i.e. is interpreted in Spec,ShareP. If the GQP receives merely a cardinal interpretation, its scope position will be Spec,AgrOP, which is lower than the LF position of the QP that acts as distributee. I consider this case first, and next the case when the distributor is interpreted presuppositionally.

When they receive a cardinal reading, GQPs are interpreted as generalized quantifiers (i.e. like CQPs). In section 3.3 I will discuss distributive readings with CQPs, and argue that a CQP supports distributivity only over an indefinite QP that receives a cardinal interpretation, if the scope position (=Case position) of the QP that acts as distributor is higher than the scope position of the distributee. Thus even if it just receives a cardinal interpretation, a bare-numeral GQP can support distributivity when its distributee also receives a cardinal interpretation and the distributee's Case position is lower than that of the distributor.

In sum, when the distributee QP is interpreted (as a generalized quantifiers) in its Case position, we predict that PD will be at least available when the distributor's Case position is higher than that of the the distributee, according to the following hierarchy of argument positions:

(53) **Hierarchy of Case positions**
Subject > Indirect Object > Direct Object

This is, in fact, the pattern that we have illustrated in the previous section when both distributor and distributee are bare-numeral GQPs.

Let's return to the case when a non-subject GQP receives a presuppositional interpretation. A partitive GQP, in particular, requires this type of interpretation. Since partitive GQPs can move to Spec,ShareP (even as non-subjects), they have access to a position higher than the Case position of any other VP-internal argument/adjunct (though not of subjects). The hierarchy of argument positions is therefore bypassed so as to derive the generalization in (35a(i)): a presuppositional distributor is generally able to distribute over another (non-subject) argument. The constrast between the two sentences below (repeated from section 3.1) illustrates:

(54) a. I introduced two women to three men
?(?) 'I introduced each of two women to (a possibly different set of) three men'
b. I introduced two of the(se) women to three men
ok 'I introduced two of the women each to (a possibly different set of) three men'
b'. [*AgrSP* I [*ShareP* two (of the) women$_2$ [*each* [*AgrIOP* to three men$_3$ [*AgrOP* t_2 [*VP* introduced t_2 t_3]]]]]]

Let's now consider the situation where the distributee is interpreted presuppositionally. For example, if the distributee is partitive, but the distributor is a bare GQP. In this configuration distributivity is excluded, since the distributee is out of the c-command domain of the distributor. Subject distributors are again the exception. We could force a presuppositional interpretation on the (bare) distributor, but this would only raise it to Spec,ShareP in LF, not higher than a presuppositional distributee (also in Spec,ShareP); thus the PD pattern would not be licensed. We thus obtain the second generalization in (35).

3.3 Distributivity with CQPs

Having discussed at length the syntactic properties of distributivity with GQPs, we can ask ourselves how distributive readings with CQPs can be accounted for.

Extending the treatment of PD to CQPs appears to be neither necessary nor correct. It is not necessary, since, as I have argued in ch. 2, section 3.3, the semantic effect of distributivity with CQPs follows from their mode of operation as generalized quantifiers. Following Szabolcsi (1995a), I have assumed that CQPs are counting quantifiers. They count the cardinality of set of individuals. The appearance of distributivity (when CQPs do support this type of construal; recall from ch. 2, 3.3 that they also support collective readings) is merely a by-product of the fact that they count *atomic* individuals.

Furthermore, the hypothesis that CQPs antecede a silent *each* is questionable, given that CQPs are generally very marginal if not ungrammatical, as antecedent of floated *each*. The following examples illustrate:

(55) a. ?? More than five students each read a book.
b. ?* Few student each read a book.
c. ?* More boys than girls each came to the party.

In conclusion, then, I will assume that CQPs do not avail themselves of a silent distributor; their distributivity is a semantic effect induced by their mode of operation, which is that of operators that take scope *in situ* and count the number of atomic individuals with the property corresponding to the interpretation of the CQPs c-command domain in LF.

Thus, it is predicted that a CQP will (as distributor) only support distributive readings when the distributee is in its c-command domain in LF. This prediction seems correct. The examples below illustrate.

First, consider subject CQPs. It appears that distributive readings can always be licensed when the distributor is a subject CQP. All kinds of indefinites can serve as distributees, ranging from another CQP (56a), a bare (56b) or partitive GQP (56c). This derives from our hierarchy of positions: a subject is high enough that any other argument has at least one scope position which is lower in LF.

(56) a. More than five students read at least six books
b. More than five students read six books
c. More than five students read six of the books

Coming now to VP-internal arguments, the examples in (57) show: (a) that an indirect object CQP can be licensed as distributor when its distributee is a direct object GQP interpreted cardinally; (b) that it is hard for an object CQP to serve as distributor when the distributee is an indirect object GQP; and finally, that a direct object CQP can serve as distributor over an indirect object QP only when the latter is also a CQP. The latter possibility is (marginally) available through reconstructing the distributee into its thematic position.

(57) a. I showed two books to more than five students
ok: 'I showed to more than five students two books each'
b. I showed more than two books to five students
?(?) 'I showed more than two books to five students each'
c. I showed at least two books to more than five students
? 'I showed at least two books to more than five students each'

The conditions under which distributive readings are licensed with CQPs can thus be summarized as follows.

(58) **Availability of distributive readings with CQPs (as distributors)**
A CQP α supports distributive readings with respect to another indefinite QP β (serving as distributee) iff the scope (=Case) position of α c-commands the scope position of β in LF.

4 Licensing of *every* N under negation

In this section I come back to considering the motivation for the assumption that the set variable associated with *every*-QPs may be bound by the Negative Operator (in Neg°). Recall that at the end of section 2 our hypothesis was that *each*-QPs must be licensed in Spec,DistP, but *every*-QPs don't have to. The predictions of this hypothesis are twofold: (i) we expect to find the SD pattern supported wherever *each* is licensed; conversely, (ii) we expect to find evidence that the SD pattern is not supported when the closer binder of the set variable introduced by *every*-QPs is the Negative Operator.

Let's start from prediction (ii). Consider the examples in (59):

(59) a. John didn't show every book to one of the students/some student b. John didn't show one of the books/some book to every student

In (59a,b) *every* N is in the c-command domain of negation at LF, and an indefinite is present. We have to explain first how *every* N is licensed in these examples; and second, give evidence that it is bound by negation.

As regards the first point, neither of the examples in (59) seems to naturally allow an interpretation where the DQP scopes wider than negation (i.e. a scoping *every > one of the/some > not*). Given that DistP is higher than NegP, this means that *every* N in (59) is licensed in a lower position, which I assume is simply its Case position (Spec,AgrXP; X=O,IO). What allows *every* N to do so, I have claimed, is that, being underspecified for [distributive], it does not need to move to Spec,DistP, but is licensed insofar as its set variable is bound by an appropriate Operator, like negation; and in (59) negation (in NegP) is the closest binder (closer than the Existential Operator in RefP). Thus (59a) contrasts minimally with (60), which displays a different argument structure, namely *every* N is a subject, and supports the scoping *every > one of the/some > not*:

(60) Every student didn't read one of the books/some book

In (60) the Existential Operator in RefP is the closest binder (negation doesn't qualify as a potential binder since it doesn't c-command). Thus in (60) *every student* must be licensed in Spec,DistP; in fact we have seen that subject *every* N behaves like *each* N.

Now, the prediction of the analysis of (59) is that since *every* N does not move to Spec,DistP, SD should not hold. This brings us to to the second point. Consider in particular the interaction of *every* N and *one of the/some* N, both of them scoped under negation. We naturally interpret (59a) as talking about a singular student[12]. This is uncharacteristic of the behavior of SD distributors. These can distribute over a clausemate indefinite from any position, including the object position; relevant examples were given in section 1.1.

Consider also (59b): the most natural interpretation of this sentence, too, seems to be that we are talking about a single book, though distribution over the indefinite becomes possible when *a book* is substituted for *some book*, as in (59c):

(59) c. John didn't show a book to every student
ok 'it is not the case that for every student x, there a possibly different book that John showed x'

Recall from section 3.1 that *some book/one of the books* cannot be lower than Spec,ShareP, whereas *a book* can be licensed lower, in Spec,AgrOP. Substituting *a book* for *some book/one of the books* seems to have no effect on (59a), however.

In sum, when we consider the properties of *every* N as distributor in (59a,b), we find no distributivity when *every*, as distributor, is the direct object and the distributee is an indirect object (cf. (59a)); or when the distributor is the indirect object, but the distributee is *one of the books/some book*, which, recall from section 3.1, cannot be lower than Spec,ShareP, thus behaving as a presuppositional GQP (cf. 59b). We find that distributivity is supported only when the distributor is the indirect object, and the distributee, *a book*, is a direct object that can be interpreted low, in Spec,AgrOP (cf. (59c)).

As we saw in section 3.1, this is exactly what we find in the PD pattern: direct objects are bad distributors, prepositional indirect objects can distribute only over direct objects that have a cardinal interpretation (indefinites with determiner *a* easily receive a cardinal interpreation). Our conclusion with respect (59a-b) is thus the following: *every* N in the scope of clausal negation becomes a pseudo-distributor, i.e., shifts to the PD pattern.

A final observation: if we substitute *a different book* for *some book* in (59), the sentences appear degraded (under the distributive reading of *a different*). These sentences are only acceptable on the relevant reading if interpreted as denials of their affirmative counterparts, given in (61c-d). (The latter of course are fine, since there is no negation.)

(61) a. John didn't show every book to a different student [?? unless denial]
b. John didn't show a different book to every student [?? unless denial]
c. John showed every book to a different student
d. John showed a different book to every student

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[12] The judgements reported about (59) are relative to neutral intonation; focus and other contrastive prosodic devices are known to alter the quantificational mapping of the sentences (cf. B&S 1995b for discussion). In particular, the judgements do not hold if negation is stressed, and/or (59a-b) are used as denials. When this happens, negation is interpreted in a higher position than NegP, taking scope over the whole clause. The consequence seems to be that *every* N is able to move to Spec,DistP as if negation weren't there. Tentatively, we could suggest that this is comparable to a CP-level negation. Such 'higher' negation is not expected to interact directly (as NegP-level negation does) with DistP.

I give below the LF representation of (59a). In such a configuration, I assume Dist is not projected. I use a slash index added on to the index of *every* N as a notation to represent the claim that the set variable of *every* N is bound by the Negative Operator; I will continue using this notation in the rest of this work.[13]

(59) a. John didn't show every book to some student
a'. [*AgrSP* John [*NegP No event*$_i$ [Neg$_k$ [*AgrIOP* some student$_3$ [*AgrOP* every book$_{2/k}$ [*VP** t$_i$ [*VP* show t$_2$ to t$_3$]]]

I consider now the prediction in (i): that we should find evidence of the emergence of the SD pattern wherever *each*-QPs occur grammatically, even when *each* is closely c-commanded by negation.

The relevant data has already been presented in (23). Unlike with *every*, c-commanding negation does not prevent *each* from being licensed as an SD distributor, provided there is an indefinite that can move to Spec,ShareP. The following contrast (in addition to (23)) illustrates the different behavior of *every* and *each* when in the scope of negation:

(23) a. Some student (or other) didn't read each book
ok/? 'for each book, there is some student who didn't read that book'
b. Some student (or other) didn't read every book
?* 'for every book, there is some student who didn't read that book'

(62) a. At least one student didn't read each book
ok: 'for each book x, there is at least one student who didn't read x'
b. At least one student didn't read every book
?? 'for every book x, there is at least one student who didn't read x'

These data are especially significant since they show that DQPs are not necessarily blocked in their (distributive) scope by c-commanding negation, as assumed by both Aoun&Li (1993) and Hornstein (1994)--cf. ch. 1.

Finally, I return to deriving the lack of inverse scope in examples like (14), from section 2.1 (and initially introduced in ch. 2, 1.6).

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[13] As indicated in section 2, I remain agnostic as to whether the emergent relation between a negative quantifier (=negation) and *every* N implies movement of the latter to Spec of NegP. I do not pursue this possibility here. I assume that when bound by negation, *every*-QPs remain, in LF, in their Case positions.

If we were to assume that *every*-QPs licensed by negation move to Spec,NegP, this would imply that they undergo a process comparable to ABSORPTION, possibly yielding a quantifier like NOT-EVERY.

(14) a. No students read every book
* 'for every book y, no students read y' = 'no book was read'
b. Few students read every book
* 'for every book y, a (possibly) different set of few students read y'

The inability of *every book* to take scope over *no student* follows from the fact that the subject NQP reconstructs into Spec,NegP in LF, thus 'activating' clausal negation ((14a), in fact, counts as a negative sentence, licensing positive tags etc.--cf. Klima 1964, Beghelli 1995a). (14a) is thus parallel to *John didn't read every book*, in the relevant respects: i.e. *every book* is licensed by being bound by negation. Thus it doesn't move to Spec,DistP but remains in its Case position. From this it follows that inverse scope *every*>*no* is impossible in (14a).

The derivation of (14b), where the subject is a decreasing CQP is essentially analogous. We can derive the lack on inverse scope by assuming, as in Beghelli 1995a, that decreasing CQP subjects can reconstruct into Spec,NegP. The hypothesis of Beghelli 1995a is that reconstruction is possible because downward-entailing subject CQPs like *few students* can move through Spec,NegP on their way to their Case position in Spec,AgrSP. Movement to Spec,NegP 'activates' a downward entailing Operator in Neg°. This Operator would be semantically similar, though not identical to clausal negation. Support from this analysis comes from the asymmetries in NPI licensing discussed in Beghelli 1995a, and reviewed in ch. 2, sect. 1.4.1.

CHAPTER 5

DISTRIBUTIVITY IN QUESTIONS

0 Outline of the chapter

This chapter is devoted to a discussion of the interactions between QPs and Wh phrases, focussing on the associated phenomenon of pair-list readings (cf. ch. 1, esp. section 3.1), henceforth PL for short.

Wh-QP interactions present a no less compelling case for diversity of scope than QP-QP interactions (as discussed in ch. 2). Scopal asymmetries abound in this area. Most of the relevant observations are presented in Szabolcsi 1995b. First, as reviewed in ch. 1, there are subject-non-subject asymmetries in the availability of pair-list readings with *every*-QPs in matrix questions.

(1) a. What did every student read? [ok PL]
— Sue read *Syntactic Structures*, Mary read *Barriers*, ...
b. Who read every book on the reading list? [* PL]
* — Sue read *Syntactic Structures*, Mary read *Barriers*, ...

This type of asymmetries, however, do not appear to carry over, in general, to embedded questions. Consider the contrast between (2a,b). Despite the fact that in (2b) the quantifier occurs in object position and the *Wh* is a subject, PL seems possible.

(2) a. By tomorrow, we'll find out which book every student read
[ok PL, also ok in matrix case]
b. By tomorrow, the committee will decide which applicant will fill every position
[ok PL, * in matrix case]

Next, in matrix questions, not all quantifiers support PL readings when they interact with *Wh*-elements (nor do all types of Wh-elements behave alike). For example, it is well known that no PL is available for questions that are syntactically similar to (3a), but feature QPs like *most* *students*, *few students*, or *more than five students*:

(3) a. What did every student read? [ok PL]
b. What did most students read? [* PL]
c. What did few students read? [* PL]
d. What did more than five students read? [* PL]

Finally, as observed e.g. by Williams (1986, 1988), it appears that PL is actually available even in configurations where *every*-QPs do not support PL, as in (4), when the quantifier *each* is employed instead:

(4) Who read each book (on the reading list)? [ok PL]
'for each book x, (tell me) who read x'
— Sue read *Syntactic Structures*, Mary read *Barriers*, ...

As we saw in ch. 1 and 2, the theories in May (1985) and Aoun&Li (1993) are unable to deal with this diversity. But even the (more recent) account of PL provided by Chierchia (1993), and its implementation in Hornstein (1994), are not immune from difficulties in this regard.

The view that I take here is that the inadequacies of current approaches to PL to deal with diversity stem from two sorts of standard assumptions. The first (and more general) is the assumption that 'all quantifiers are created equal,' i.e. that they participate in the same scope assignment mechanism. The second, and related, assumption is that distributivity is a free component of scope: i.e. that all QPs equally support distributive readings.

Once these assumptions are abandoned, it becomes possible to account for the distribution of PL. In this chapter I will present an account of this phenomenon on the basis of the theory developed in the previous chapters.

The chapter is organized as follows. Section 1 presents an analysis of pair-list readings with *every*-QPs in matrix questions; *each*-QPs are considered in section 2. Section 3 presents an account of pair-list with DQPs in embedded Wh-complements. The interactions between CQPs and GQPs and Wh-phrases are discussed in section 4. Section 5 returns to a discussion of the scope of DQPs in embedded Wh-complements, focussing on their long-distance scope. Finally, section 6 presents some speculations about the interpretation of *every*-QPs in generic and modal contexts. Much of the material in this chapter is drawn from Beghelli 1995b.

1 Pair-list readings in matrix questions

In ch. 4, I presented two syntactic patterns through which semantic distributivity can be realized: a pattern of strong distributivity (SD), and a pattern of weak distributivity, which I have called pseudo-distributivity (PD). The SD pattern is realized when a DQP moves to Spec,DistP by LF, activating the distributive Operator in Dist°; this also requires that an existential NP (a GQP, and/or an existential quantifier over the event argument) move to Spec,ShareP. The PD pattern is realized via a covert adverbial, which I have called 'silent *each*'; this adverb can be generated in AgrXP (or ShareP) projections. It allows GQPs, which do not have access to

Spec,DistP, to support distributive readings, though in a more restricted set of configurations than with SD.

The PD pattern was also found to be supported by *every*-QPs in certain special configurations. I drew, in ch. 4, the following distinction between *each*-QPs and *every*-QPs: in addition to features common to all DQPs, only *each*-QPs are endowed with a [+distributive] feature; this feature drives them to move to Spec,DistP. I have assumed that DQPs built with *every* move to Spec,DistP only when their set variable is bound by a 'default' existential Operator (in Ref°), i.e. when there is no other (closer) binder for their set variable. When a closer binder for the set variable (e.g. negation) intervenes, *every*-QPs do not move to Spec,DistP (note that this would place them outside of the c-command domain of negation) but remain in the scope of negation, and are licensed *in situ* (=in their Case position). In this case, they do not activate the distributive Operator in Dist°, and accordingly support only the PD pattern. It also follows from this analysis that *each*-QPs, having to move to Spec,DistP, cannot have their set variable bound by Neg°, which is lower than DistP. The diagrams below illustrate the two types of licensing that *every*-QPs undergo:

(5) a. Some student read every book [under *every*>*some* construal]
[*AgrSP* t_1 [*DistP* every $book_2$ [*ShareP* $\exists e_3$ some $student_1$ [*AgrOP* t_2 [*VP** t_3 [*VP* t_1 read t_2]]]]]]
b. Some student didn't read every book
[*RefP* some $student_1$[*AgrSP* t_1 [*NegP* *No*:e_3 [-n't [*AgrOP* every $book_2$ [*VP** t_3 [*VP* t_1 read t_2]]]]]]

I consider now another case where the set variable of a DQP can be bound by an Operator other than the existential. In this chapter, I present the claim that this binder can be the Question Operator (in C°) which is activated by WhQPs when these have interrogative force. The environment where binding by Question Operator takes place is (mostly) matrix questions.

I argue that when *every* N is bound by the interrogative operator in C°, this manifests in the well-known phenomenon of pair-list (or family of questions) readings. Since the interrogative Operator is in C°, which is lower than Ref°, it is a closer binder than the existential Operator for any argument DQP (including a subject). Thus the asymmetry found with *every*-QPs in negative contexts, namely that only VP-internal *every*-QPs can be bound by negation, disappears. Not only VP-internal DQPs (as in the case of binding by negation) but also VP-external DQPs can be bound by the Question Operator. I will also argue that *each*-QPs, which must move to Spec,DistP, can be bound by the Operator in C°.

This section is organized as follows: after an introduction to the phenomenon of pair-list readings, where I discuss semantic issues and preview the analysis to be developed in later sections, I analyze the distribution of pair-list in matrix interrogatives as a subcase of the PD pattern (1.1). The theoretical account is fleshed out in 1.2. In section 1.3 I consider some residual questions. I turn to the distribution of pair list readings with *each* N in the next section (section 2).

In discussing the interaction of *every* with WhQPs, I start by considering only contexts where

Wh has interrogative force, which is to say, I focus (mostly) on matrix questions[1]. Wh-complements are considered separately (cf. section 3).

1.1 Semantic views of PL

Recall from ch. 1 (3.3.1.3.1) that when DQPs interact with WhQPs, the WhQP can usually be construed as taking wide scope with respect to the DQP (except, of course, when doing so would incur a Weak-island violation). This is to say, questions with DQPs (like (6) below) typically support an INDIVIDUAL ANSWER reading, corresponding to the WhQP having widest scope. This is given informally in (6a). In addition, questions with DQPs may support FUNCTIONAL readings and answers (cf. Engdahl 1986), as shown in (6b).

In some particular configurations, like when a WhQP is a VP-internal argument and a DQP occurs in subject position (6), we have yet another type of reading, where *every* seemingly takes scope over Wh. Since May 1985 this reading has been variously known as 'distributed question', 'family of questions', or PAIR-LIST reading. May (1985) states the descriptive generalization on the availability of PL as requiring the thematic position of the quantifier to be higher than that of the WhQP. PL is illustrated in (6c).

(6) What did every student read?
  a. '(tell me) what x is such that every student read x'
     — *Syntactic Structures*
  b. '(tell me) which function f is such that for every x, x read f(x)'
     —The book assigned to her'
  c. 'for all the students x, (tell me) what x read'
     — Sue read *Syntactic Structures*, Mary read *Barriers*, ...

I will not be concerned with functional readings in this thesis. My discussion of the interactions between DQPs and WhQPs will instead focus on the phenomenon of PL. Before discussing how PL questions should be represented at LF, it is useful to briefly review some of the approaches to the semantics of PL. One of the basic (and most delicate) questions in PL is what its logical representation should be like.

There are various proposals in the literature. One view (cf. Karttunen 1977, and also Karttnen&Peters 1980) is that PL arises by 'direct' quantification into questions: i.e. that the quantifier operates in its usual way, comparably to its use in declarative sentences. To see what this approach consists in, let's begin by considering the interpretation of individual questions. Karttunen 1977 proposes that the interpretation of an individual question like *Who did John kiss?* is the set of true propositions of the form 'John kissed x'. Assuming John kissed Bill and kissed Mary, the interpretation of our question is the set of proposition that can be used as true answers, i.e. {^John kissed Bill, ^John kissed Mary}. We obtain the following schema (7b) for an

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[1] As pointed out by Szabolcsi (1995b), complements of *wonder*-type verbs are parallel to matrix questions. In complements of *wonder*, WhQPs have the same interrogative force they carry in matrix questions. In fact, all the data patterns to be discussed below with matrix questions extend to complements of *wonder*.

individual question like (7a):

(7) a. Who did John kiss?
b. $\lambda p \exists x[{}^{\smile}p \wedge p = {}^{\wedge}(\text{John kissed } x)]$
'the set of propositions p such that, for some x, p holds and p is of the form "John kissed x"' (= the set of true answers to the question who John kissed)
c. Who did everyone kiss? [under PL interpretation]
d. $\lambda P \forall y[\text{person}(y) \dashrightarrow P(\lambda p \exists x[{}^{\smile}p \wedge p = {}^{\wedge}(y \text{ kissed } x)]$
'the set of properties P such that for every person y, the set of true answers to the question who y kissed has these properties'

Given that individual questions are interpreted as in (7b), Karttunen's proposal for the interpretation of a PL question like (7c) can be given the formulation in (7d). This formulation incorporates 'lifting' (cf. ch. 1, 3.3.1.3.1), in order to accommodate both PL with DQPs and 'choice' readings with GQPs. Thus (7d) is not a set of propositions (corresponding to the set of true answers to the question who x kissed), but is the set of properties P such that for every person y, the set of true answers to the question who x kissed has those properties.

Both the LF treatments of PL given by May 1985 and Aoun&Li 1993 are in principle compatible with a semantics involving direct quantification into questions. This squares with their syntactic treatments of PL. As noted in ch. 1, they assume that the DQP takes scope and quantifies over the Wh-element, more or less like, in an ordinary declarative context, *every* quantifies over an indefinite over which it takes distributive scope.

Another, more recent, approach is Chierchia's (1991, 1993), reviewed in ch. 1, 3.3.1.3.1 He analyzes PL as a subcase of the functional reading (which, in turn, can be seen as a type of individual reading, trading functions for individuals). Chierchia's insight is that in a PL answer, the function is given 'extensionally' (by listing a set of pairs), rather than in its normal 'intensional' form (as a procedure to compute pairs). At LF, a PL question like (7c) is accordingly analyzed as 'what is that function f, such that for every student x, x read f(x)?'. The answerer, then, proceeds to list the function extensionally, by enumerating, for each student x, what x read. The adaptation of this view of pair-list by Hornstein 1994 has also been reviewed in ch. 1, 3.3.

Chierchia's proposal adapts the basic format for functional readings, given in (8b), and incorporates a device introduced by Groenendijk&Stokhof 1984, known as Domain Restriction. Chierchia's resulting format for PL is given in (8c):

(8) a. Who does every Italian fear?

b. $\lambda p \exists f[p = {}^\wedge \forall x[\text{Italian}(x) \dashrightarrow \text{fear}(x,f(x))]$

'the set of propositions p such that for some function f, p is of the form "every Italian x fears f(x)"'

c. $\lambda p \exists A[\text{Witness } (A, [[\textit{every Italian}]]) \wedge P(\lambda p[\exists f \in [A \dashrightarrow \text{people}] \; \exists x \in A \; [p = {}^\wedge \text{fear}(x,f(x))]])]$

'the set of properties P such that there is a set A, including all and only Italians, and such that the set of true answers to the question what member x of A is such that x fears f(x), for f some function into the set of people, has these properties'

Groenendijk&Stokhof's Domain Restriction incorporates the insight that quantifiers that support PL (like *every*) do not actually quantify over Wh in the way they quantify over non-Wh Qps). Their relation with the WhQP is different in that they 'lend' to the interrogative quantifier or operator their own restrictor set, thus extending the domain of the question. With *every/each* N, the restriction corresponds to the whole set of individual with the property given by N. Their approach (which is largely equivalent to Higginbotham 1991) represents thus a more 'indirect' way of quantifying an NP into a question.

Below I give Groenendijk&Stokhof's semantics for PL. (This formulation incorporates their own semantic approach to the interpretation of individual questions which is different from Karttunen's, in that questions are associated with equivalence relations over the set of possible worlds; but these technicalities need not concern us here.[2])

(9) **Domain Restriction** (Groenendijk&Stokhof 1984)

a. What did every student read?

b. $\lambda P \; \exists X \; [\text{Witness}(X, [[\textit{every student}]]) \wedge P(j)(\lambda i \; [\lambda x \in X \; \lambda y \in \text{THING} \; [\text{read}(i)(y)(x)] = \lambda x \in X \; \lambda y \in \text{THING} \; [\text{read}(j)(y)(x)]])]$

'the set of properties P such that there is a set X, witnessing 'every student', and such that P holds, in the real world, of the denotation of the question 'which x read which y', for x a student, y a thing (where the denotation of the question is the set of worlds where those who read and the things read are the same as in the real world j)'

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[2] Groenendijk&Stokhof interpret a basic question like 'Who did Mary kiss' as the set of worlds i where the entities that Mary kissed are the same as in the real world, j.

(ii) a. Who did Mary kiss / who Mary kissed

b. $\lambda i \; [\lambda x \; [\text{kiss}(i)(x)(\text{Mary})] = \lambda x \; [\text{kiss}(j)(x)(\text{Mary})]]$

'the set of worlds i in which set of x's such that Mary kissed x at i is the same as the set of x's such that Mary kissed x in the real world j'

Thus the denotation of (i.a) is a proposition, not, as for Karttunen, a set of propositions (we can trade propositions for the set of worlds in which they hold).

My proposal for the derivation of PL does not implement Karttunen's Quantification-into-Questions, nor follows Chierchia's functional approach; rather it uses a modified version of Domain Restriction, following the semantic proposal in Szabolcsi 1995b. Szabolcsi draws a basic difference between PL readings in matrix questions (or in complements of *wonder*) and PL-like readings in embedded Wh-complements. Let's for now focus only on accounting for PL in the matrix interrogative case, which is where my proposal differs most from alternatives in the literature.

I submit that in PL *every* N does not distribute over WhQP in the sense of a syntactic SD dependency. In other words, pair-list is not derived by moving *every* N to Spec,DistP and having a trace/copy of (i.e. reconstructing) the WhQP in Spec,ShareP.

If PL happened that way, we would find that the availability of PL follows the syntactic pattern of SD. We find, instead (as I will show below) that PL has a restricted distribution, which matches the PD pattern. I therefore propose an LF treatment where the relation between Wh and *every* N is similar to the relation between (c-commanding) negation and *every* N.

My proposal, in a nutshell, is as follows. In PL questions the set variable introduced by DQPs becomes bound by the [+Wh] Question Operator in C°. The Wh-chain therefore composes with the DQP-chain. In addition, the WhQP reconstructs in the scope of the DQP.

When bound by the interrogative Operator, *every*-QPs do not move to Spec,DistP (as when bound by negation, cf. the previous chapter); *each*-QPs, on the other hand, must move to Spec,DistP even when bound by the Question Operator. I claim that this distinction implies that *every*-QPs and *each*-QPs support different distributivity patterns with respect to PL readings. Data on the distribution of PL with *every*-QPs and with *each*-QPs bear out this difference.

Under this analysis, the DQP does not quantify over the WhQP in the same fashion that it quantifies over an indefinite in a (non-negative) declarative sentence. Instead, we might say it 'merges' with the WhQPs in the sense that the interrogative Operator binds both the set variable of the DQP and the individual variable of the Wh. In this respect, my analysis bears similarities with Chierchia's, who assumes that the QP 'absorbs' with the WhQP.

Semantically, this analysis is consistent with either Groenendijk&Stokhof's Domain Restriction or with a simplified version of this approach, proposed in Szabolcsi (1995b), which dispenses with lifting. The set variable introduced by DQP and bound by the question Operator thus corresponds directly to the restriction on the domain of the question in Groenendijk&Stockof's schema.

Note that in Domain Restriction, or in Szabolcsi's own proposal, PL (as in (10a)) is treated on a par with multiple interrogation (as in (10b)).[3]

(10) a. What did every student read? [under PL interpretation]
b. Which student read what?

Gronendijk&Stokhof in fact propose their schema both for the interpretation of questions with quantifiers and for multiple interrogation.

[3] I note that this approach is also taken by Hornstein 1994, who suggests that the analogy between PL and multiple interrogation is reflected already in LF. However, there are basic differences between Hornstein approach to PL and the one I propose here, as will be more clearly seen in the following sections.

The main difference between Szabolcsi's and Groenendijk&Stokhof's proposals is that the latter incorporates type-lifting. (Thus Domain Restriction provides a semantic interpretation for pair-list questions as Generalized Quantifiers over individual questions). As noted in ch. 1, 3.3.1.3.1, type-lifting is required specifically to accommodate Choice readings with indefinites. Szabolcsi (1995b) argues that GQPs in matrix questions do not actually support choice readings, but another type of reading. This will be discussed in section 4. Hence type-lifting is no longer necessary.

The analysis presented here provides in fact a syntactic justification for Szabolcsi's approach: the mechanism I propose for PL does not extend to Choice readings with GQPs. The reason is that only DQPs introduce a set variable that can be bound by operators other than the existential. Under my proposal, the group referent contributed by GQPs cannot be bound by the Question Operator. I will return to this in the next few sections.

Thus I assume that PL readings, which in my proposal are only supported with DQPs in matrix questions, are semantically interpreted according to the following schema (11b), which can be fleshed out using, for example, Groenendijk&Stokhof's proposal for the semantics of individual questions, as in (11c) (from Szabolcsi 1995b, her [17]):

(11) **Szabolcsi 1994 (Domain Restriction without Lifting)**
  a. What did every student read?
  b. $\lambda x \in \mathrm{STUDENT}\ \lambda y \in \mathrm{THING}$ [x read y]
  c. $\lambda i[\lambda x \in \mathrm{STUDENT} \lambda y \in \mathrm{THING}\ [\mathrm{read}(i)(y)(x)] = \lambda x \in \mathrm{STUDENT}\ \lambda y \in \mathrm{THING}\ [\mathrm{read}(j)(y)(x)]]$

The following sections present the various components of the proposal summarized above, and provide motivation for it. I begin by showing that the distribution of PL in matrix questions with *every*-QPs matches that of distributive readings with GQPs reviewed in ch. 4, section 3. In other words, it is a subcase of the PD pattern. Thus for the moment I will only be concerned with PL questions where the DQP is *every* N; PL with *each*-QPs will be considered afterwards, in section 2.

1.2 The PL pattern as a subcase of the PD pattern

My first claim is that the distribution of PL readings in matrix questions with *every*-QPs (henceforth, the 'PL pattern with *every*' for short), is a subcase of the PD pattern. In other words, in PL, *every* N behaves like a pseudodistributor.

To support this claim, I show that the distribution of PL with *every*-QPs conforms to the pattern listed in Table 1 of ch. 4. Both the type of WhQP and its syntactic position with respect to *every* are relevant to the availability of PL. Like with GQPs, there are two types of WhQPs, which I consider in turn: (i) BARE WhQPs (*who, what, ...*); (ii) D-LINKED or PARTITIVE WhQPs (*which men, which of the(se) men, ...*)).

Bare WhQPs interacting with *every* N show a pattern that parallels that of PD when both distributor and distributee are bare GQPs: we find that PL is essentially available when the distributor (=*every* N) is higher than the distributee (=the reconstructed WhQP) according to the LF Case Hierarchy: subject > indirect object > object. So, subject *every* N is best in supporting PL; as indirect object, *every* N is still somewhat able to yield PL readings with object Wh; the converse configuration, *every* N object and Wh indirect object, is less likely as PL; finally, no PL is available when Wh is the subject.

These judgements, which come from my own field work, are slightly different from those reported by Chierchia. He notes that when *every* and Wh are both VP internal, PL is sometimes possible either way, though he predicts that as direct object, *every* should be generally better in supporting PL than as indirect object. (This matches the distribution of WCO). I find that for most of the speakers I interviewed, PL is more easily available when *every* is an indirect, rather than a direct, object. The judgements that I have collected can be summarized in the following pattern:

(12) a. What did every student write about? [ok PL]
b. What did you show to every man? [? PL]
c. To whom did you show every picture? [?? PL]
d. Who wrote about every book? [* PL]
e. Who showed this book to every man? [* PL]

A somewhat different pattern is found with QPs built with *which* (as also reported by Szabolcsi 1995b). With D-linked WhQPs, PL readings are only available when *every* is in subject position:

(13) a. Which man did every dog bite? [(?)PL]
b. Which dog bit every man? [*PL]
c. Which picture did you show to every man? [*PL]
d. To which man did you show every picture? [*PL]

Partitive WhQPs (e.g. *which of the(se) men*) behave likewise. If they support PL, it is only when *every* N is the subject.

The pattern in (13) has special theoretical significance. First, it is not predicted under May's nor Aoun-Li's proposals. These accounts say that subject *every* N should behave, with respect to a WhQP in any other position, just like direct object *every* N behaves with respect to indirect object WhQP. The data in (12-13) show that this prediction is incorrect, both with bare and D-linked Wh.

The pattern in (13) cannot be captured under Chierchia's WCO account either. Chierchia's prediction is that PL should be more easily available when both *every* N and Wh are VP-internal arguments, given that WCO effects are generally very weak (if present at all) in such configurations. With bare Wh, judgements are perhaps simply not so clear as to falsify or confirm this prediction. But with D-linked and partitive Wh we have cases where the speakers' intuitions sharply point in the opposite direction from WCO. These data seems therefore problematic for the WCO story. On the other hand, they provide significant confirmation for the suggestion that the distribution of PL in matrix questions follows the PD pattern.

In sum, the data reviewed in (12-13) support the hypothesis that the PL pattern with *every* is a subcase of the PD pattern outlined in section 2.2.

The core questions, at this point, are: (i) why does *every* N revert to PD, and (ii) how does this fit in with the configurations considered in ch. 4: namely we saw that when in the scope of negation, *every* N supported the PD pattern of distributivity. The first question that I consider is what triggers the PD behavior of *every* N in PL.

The answer is that the interrogative operator is responsible for it. In line with the discussion of the negation facts, I propose that the interrogative operator (like negation) can license *every* N through binding its set variable. This in turn, pre-empties movement of *every* N to Spec,DistP, resulting in the emergence of the PD pattern of distributivity.

I will now provide some independent motivation for this latter assumption, since the situation in questions is different from the case of negation interacting with DQPs. When bound by the negative operator, *every* was prevented from moving up to Spec,DistP for structural reasons: NegP was lower than DistP. But since CP (the site of the question operator) is higher than DistP, *every* N could in principle move to Spec,DistP and still be within the binding domain of the question operator.

Consider the scopal properties of *every* in non-existential contexts, such as generic sentences.

(14) a. An American housewife prefers every new product on the market
b. A good salesman treats every customer as a friend

Recall that the availability of inverse distributive scope is diagnostic of SD. In the example (14a) above the inverse distributive construal 'for every new product y, there is some housewife x such that ...' is not available. Similar remarks hold for (14b).

In examples like (14) we would assume the presence of a generic operator; no existential operator seems present in these cases. Thus, the set variable of the DQP would be bound, in (14a,b), by a generic operator, as reflected in the fact that the domain of quantification of *every* is not limited to the set of individual products or customers in a particular situation, but but generically to all such individuals in the world.

I will return to a discussion of these contexts in section 6: What is of relevance here is that generic contexts like (14) indicate that *every* loses the ability to support SD when its variable is not bound by an existential operator. The emergence of the PD pattern of distributivity in matrix questions with *every*-QPs derives thus from the fact that *every* has not moved to the Spec of DistP position, since this movement is only licensed when an existential operator binds its set variable.

I now consider under which structural conditions this happens.

1.3 Conditions on the emergence of PL readings with every-QPs

I list below three observations that need to be accounted for in characterizing the conditions on the emergence of PL readings with *every*-QPs. The first observation is that simply being in the scope of an interrogative operator is not sufficient to license PD behavior on the part of *every* N. To begin with, in Yes/No questions, *every* N clearly shows the SD pattern. Consider:

(15) a. Did every student read a different book?
b. Did you show every book to a (different) student?
c. Did a different student write about every book?

(15a) can be quite naturally interpreted with *every* taking *a different book* as distributee. In (15b) there is distribution between *every book*, in direct object position, and *a different student*, the indirect object. (15c) offers an example of inverse distributive scope where an object is the distributor and the subject is the distributee. These are all distinctive properties of SD (recall that they do not obtain with PD). In Yes/No questions, therefore, *every* behaves as in non-negative declarative contexts.

The second observation is that in matrix Wh-questions *every* N is not prevented, under the individual answer reading, from behaving as a strong distributor. Consider the examples in (16).

(16) a. Who showed every book to a different student? [* PL, ok SD]
b. Who showed a different book to every student? [* PL, ok SD]

Since in (16a-b) the WhQP is a subject, these questions do not have a PL construal (cf. the generalization on the distribution of PL given above). However, on the individual answer construal, *every* behaves as a strong distributor: we can construe both (16a-b) in such a way that we have distribution of *every book/student* over (*a different*) *student/book*. What distinguishes these examples from those that support PL is the relative scope of WhQP and DQP. Insofar as the WhQP takes wide scope, i.e. is higher than DistP at LF, it is 'out of the way' of the distributive relation, *every* N can shows its default SD behavior[4].

These examples prompt a more careful formulation of the licensing conditions on PL laid out in the previous section: they show that it is not sufficient, for the [+Wh] Question Operator in C° to bind the set variable of a DQP, that it be the closest binder.

A further observation can be drawn from these examples, our third observation so far. In matrix Wh questions, it appears that *every* N either supports SD or PL, but not both.

These three observations allow us to characterize more precisely the conditions under which *every* N can be bound by the question operator, which I have assumed is the condition on the

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[4] Consider near-minimal pairs like:

(iv.i) a. When did every student read a book? [ok PL]
b. When did every student read a different book? [* PL]

The question in (a) allows a construal where *when* refers to the time of reading of each individual student, but in (b), *when* can only refer to the overall time period within which all the readings took place, so that we can only answer (b) by saying something like 'In the summer of 1994'. Accordingly, PL is possible in (a), but not in (b).

In (b), the presence of the indefinite *a different book* forces *every* to be interpreted as its distributor; moreover, we have seen that indefinites modified by *different* (in the relevant distributive interpretation) demand a strong distributor.

The contrast in (iv.i) should not be taken as an indication that there is some principled incompatibility between movement to Spec,DistP (and SD) on the part of a DQP, and its supporting PL. In the analysis presented in this chapter, *every*-QPs do not move to Spec,DistP when they support PL; but *each*-QPs do move to Spec,DistP when they support PL.

There is an independent reason why (b), and in general, matrix questions where *every/each* cooccur with an indefinite distributee like *a different book*, do not support PL. The reason is that sentences like (b) they cannot be answered in a pair-list fashion, as shown in (iv.ii) below.

(iv.ii) When did every student read a different book?
* — John read a different book on Monday; Mary read a different book on Tuesday, ...

emergence of PL readings.

I propose the following analysis of these conditions. In interpreting a Wh-question with *every* N, we can in principle construe the WhQP either (i) wide scope with respect to *every*, or (ii) within the scope of *every* N. In the latter case, I assume that the WhQP is reconstructed into its Case position, if it is a bare WhQP, or into Spec,ShareP if it is partitive or D-linked (thus I assume that partitive WhQPs introduce a group referent). More exactly, I assume that whereas the WhQP can be reconstructed, the interrogative operator remains in CP.[5] Reconstruction of the Wh-phrase is thus the first condition on the appearance of PL in matrix questions with *every* N. This accounts for our second observation: there is no PL if the WhQP is assigned scope above the LF position of the DQP.

It follows that matrix questions with DQPs can always support an individual answer interpretation: if the Wh-phrase does not reconstruct, it will be interpreted as widest scope, given its position in Spec,CP. A PL interpretation is only possible when, by reconstructing the WhQP into its Case position, the Wh finds itself in the scope of *every*.

The two situations considered in (i-ii) above can be represented as in (17). Only the scope positions of *every* and Wh are indicated in the LF diagrams, and reconstructed elements are in curly brackets (a convention that I follow in the rest of the chapter):

(17) i. [*CP* [Q-Op$_i$ + WhQP$_i$] [... [*AgrXP* [*every* N]$_k$ ...] ...]] [* PL]
ii. [*CP* [Q Op$_i$ + t$_i$][...[*AgrXP* [*every* N]$_{k/i}$ ...]...[*AgrYP* {WhQP}$_i$ ...]...]] [ok PL]

The second condition on the appearance of PL has to do with the relative position of the reconstructed Wh-phrase and of *every* N. Since we have seen that the PL pattern appears to be a subcase of the PD pattern, we should expect, for PL to be supported, that the relative position of DQP and WhQP should conform to the configurations that license PD (cf. ch. 4, 3.1).

The derivation of PL—cf. (17ii)—proceeds as follows. Wh is reconstructed either into Spec,ShareP or into its Case position, depending on its interpretation, as seen above. In (17ii), which exemplifies the LF configuration that supports PL with *every*-QPs, the reconstructed Wh in is bound by the interrogative (Q) operator. Since *every* N falls within the binding domain of the same Q operator, it gets unselectively bound along with the WhQP.

Thus, it is not enough that the Question Operator in C° be the closest binder for *every* N; since an [+Wh] Question Operator (plausibly) binds a reconstructed WhQP (which has, prior to reconstruction, entered into Spec-Head agreement with the Operator), the set variable introduced by *every* N can only be unselectively bound when the DQP intervenes between the Question Operator and the reconstructed WhQP.

Binding by the interrogative operator enforces the PD pattern on *every* N (like we saw that binding by negation did). PL will be available iff the position of *every* N (=the distributor) and the position of the reconstructed WhQP (=the distributee) fall within a configuration that supports PD, as characterized in ch. 4.

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[5] The hypothesis that I am making here is simply that WhQPs, whether in Wh-movement languages or *in-situ* languages, are a type of QPs which can be bound by the Question Operator. When an interrogative WhQP is reconstructed at LF, it is like a Wh-in-situ in multiple interrogation constructions.

Our third observation is accounted for: once *every* N is bound by the question operator, it is no longer driven to move to Spec,DistP; thus SD and PL are mutually exclusive. Recall that we have assumed, since ch. 4, that if it is not possible for the set variable of *every*-QPs to be bound by the Negative or Question Operator, it will be bound by the (default) Existential Operator in Ref°. Only *every*-QPs that are bound by the Existential Operator must move to Spec,DistP.

I consider now how to derive the first observation in this section, i.e. why Yes/No questions do not bind the variable of DQPs. In the analysis outlined so far, the argument asymmetries in the PL pattern are reduced to a failure of strong distributivity on the part of *every* N, owing to the fact that its set variable is bound by the interrogative operator. That we do not find PL, nor PD behavior on the part of *every*-QPs in Yes/No questions requires therefore an explanation.

The reason for this is that the Yes/No Q operator is not a variable binding operator[6], or at least not a variable binding operator of the type that could bind the set variable of a DQP.

First, the Yes/No Q operator does not bind the event argument: in a question like 'Did John graduate?', the speaker is not asking what is the event in which John graduated. If the Yes/No operator should bind anything, this would likely be a sentential operator or adverb. The only way to turn a Yes/No question into a Wh-question is to paraphrase the question 'Did John graduate?' as: 'How true is it that John graduated?'. This question can receive an individual answer like 'True' or 'False'.

Now, pursuing the hypothesis that the Yes/No Operator does bind some suitable adverbial (i.e. assuming this is possible), the plausible conclusion is that the set variable of a DQP could not be unselectively bound along with the adverbial because they wouldn't, semantically, be variables of the same type.

Some supporting evidence for this conclusion comes from looking at multiple interrogation. As pointed out in section 1.1, there are semantic affinities between PL and multiple interrogation. If looking at multiple interrogation provides us with a (semantically, at least, if not structurally, as actually argued by Hornstein 1994 and Williams 1994) comparable situation, we see that the semantic variable introduced by adverbials like *how* and *why* cannot be questioned along with individual-denoting WhQPs in a multiple interrogation. As is well-known, adverbial Wh-elements like *how* and *why* cannot remain in-situ:

(18) a. * Who left why?
b. * Who left how?

To summarize our proposal thus far, PL will only appear when (i) the WhQP reconstructs in the c-command domain of *every* N, and (ii) the relative positions of *every* N and of the reconstructed Wh support PD. I give below the LF representations for the pattern of bare Wh presented in (12) above:

[6] I wish to thank Anna Szabolcsi (p.c.) for discussion of this point and helpful suggestions.

(19) a. What did every student write about? [ok PL]
[*CP* Q-Op$_i$ + t$_i$ [*AgrSP* every student$_{k/i}$ [*each* [*AgrOP* {what}$_i$ [*VP* t$_k$ wrote about t$_i$]]]]]

b. What did you show to every man? [? PL]
[*CP* Q-Op$_i$ + t$_i$ [*AgrSP* you$_j$ [*AgrIOP* every student$_{k/i}$ [*each* [*AgrOP* {what}$_i$ [*VP* t$_j$ showed t$_i$ to t$_k$]]]]]

c. To who did you show every picture? [?? PL]
[*CP* Q-Op$_i$ + t$_i$ [*AgrSP* you$_j$ [*AgrIOP* {who}$_i$ [*AgrOP* every picture$_k$ [*VP* t$_j$ showed t$_k$ to t$_i$]]]]]

d. Who wrote about every book? [* PL]
[*CP* Q-Op$_i$ + t$_i$ [*AgrSP* {who}$_i$ [*AgrOP* every book$_k$ [*VP* t$_i$ wrote about t$_k$]]]]]

e. Who showed this book to every man? [* PL]
[*CP* Q-Op$_i$ + t$_i$ [*AgrSP* {who}$_i$ [*AgrIOP* every man$_k$ [*AgrOP* this book$_j$ [*VP* t$_i$ showed t$_j$ to t$_k$]]]]]

Note that the schema in (17ii) generalizes directly to the cases where Wh, thematically originating in an embedded clause, has moved to the matrix CP:

(20) a. What do you think that every student read?
b. [*CP* [Q-Op$_i$ + t$_i$] do [you think [*CP* that [*AgrSP* every student$_{k/i}$ [*AgrOP* {what}$_i$] [*VP* read t$_i$]]]]] [ok PL]

Unlike May (1985), who raises the DQP to matrix IP, we account for these complex PL questions by reconstructing the WhQP into the scope of *every* N in the embedded sentence.

1.4 Licensing of every-QPs by the Question and by the Negative Operator

The analysis of PL developed in this chapter provides a situation where *every* N is not licensed in Spec,DistP. This analysis represents an application of the licensing conditions for *every*-QPs given in ch. 4 and repeated here:

(21) **Licensing of *every* N**
a. QPs built with *every* are endowed with the feature [+singular]. This feature may, but doesn't have to, be discharged in Spec,DistP.
b. *Every*-QPs must move to Spec,DistP only when the closer binder of their set variable is an existential Operator in Spec,RefP. When in Spec,DistP in LF, *every*-QPs activate the distributive Operator in Dist°, and support SD.
c. When the closer binder is a Negative or Question Operator, QPs headed by *every* do not move to Spec,DistP.

This licensing principle says that the set variable of *every* N must be bound (by either the Existential Operator or by an operator like Negation or [+Wh]Question) but not by both. PL is contingent on *every* N becoming bound by the question operator; it also requires that the WhQP reconstruct.

Having formulated the generalization under which the set variable introduced by *every*-QPs is bound by the Question Operator, we can see that these conditions, summarized in the configuration in (17ii) above, are not different from the conditions under which *every* N can be bound by Negation. Both cases belong under the same generalization. In either case, (i) the binding Operator must be the closest (potential) binder; in addition, (ii) binding of the set variable of the DQP is done unselectively, by the DQP intervening in LF on the binding path connecting the binder to the variable that it normally binds. In the case of the Question Operator, this variable is carried by the reconstructed WhQP; in the case of Negation, the variable bound by Negation, as seen in ch. 4, is the event argument.

Thus, the cases where *every* is in the scope of c-commanding negation are indeed an instance of the same configuration as (17ii). We have the following parallel configurations, as given by the diagrams below [(22b) = (17ii)]:

(22) a. What did every student read? [under PL reading]
b. [*CP* [Q Op_i + t_i] [... [*AgrXP* [*every* N]$_{k/i}$ ...] ... [*AgrYP* {WhQP}$_i$ ...] ...]]

(23) a. John didn't read every book
b. [... [*NegP* No $event_i$ [... [*AgrXP* [*every* N]$_{k/i}$ ... [*VP** t_i ... [*VP* V ...]]]]]]

1.5 PL and parasitic chains

In ch. 3, section 1.1, we saw how Brody 1993, elaborating on suggestions in Kayne (1983, 1984), analyzed Wh-in-situ as a type of parasitic chain construction. Given the semantic similarity between the interpretation of Wh-in-situ in terms of multiple interrogation, and the interpretation of questions with DQP in terms of PL, we may wonder about their structural, i.e. syntactic similarities. The analysis of PL developed here suggests that such structural similarities exist.

The analogy rests on looking, as I have done here, upon *every* N as being bound, in the PL configuration, by the question operator; i.e. as a link in the binding chain headed by the question operator. Specifically, as a parasitic link.

Recall that Kayne assimilates the structural conditions on multiple Wh-in-situ, as in (24) below, to those on parasitic gaps. In both types of constructions, the paths between the links in the composite chains must form a subtree, and be 'connected' to the Wh-in-Comp.

(24) a. * (I'd like to know) what who hid there
b. * What did you walk away without filing *t* ?
c. ? (I'd like to know) what who hid where
d. ? What did you read *t* without filing *e* ?

Kayne suggests that the Connectedness condition applies in a parallel way to parasitic gap and multiple interrogation constructions. Kayne's analysis is independent of the question of whether the Wh-in-situ moves to the Wh-in-Comp or not, focussing on the structural relation between the links in the chains. Brody's (1993) non-derivational frameworks develops this analysis in terms of composing the secondary chain of the in-situ element with the primary chain of the in-Comp element.

Extending these observations to the case of PL questions,[7] we can view the QP *every* N, as schematically represented in (25), as parasitic on the chain headed by the Question Operator (Q-Op), which contains the reconstructed WhQP as a link. The well-formedness of the whole chain (including the parasitic link) depends, as with the examples in (24), on the parasitic element being properly 'connected' to the reconstructed Wh-phrase. In (25) the parasitic element bears, using the notation introduced above, a slash indexation:

(25) [*CP* Q-Op$_i$ + t$_i$ did [*IP every student*$_{k/i}$ read {what}$_i$]] PAIR-LIST

Under the assumption that in PL *every* is bound by the question operator, while the WhQP is reconstructed in its Case position, the PL configuration, as defined in (17ii), turns out to be therefore another instance of the same type of binding chains found with parasitic gaps and multiple Wh-in-situ.

Since I will not be concerned here with providing an analysis of Wh-in-situ, I will not pursue the matter of whether multiple interrogation is also to be analyzed as an instance of pseudo-distributivity (though the question is intriguing from the point of view developed here). The question whether multiple interrogation involves syntactic distributivity (PD) is separate from the analysis of PL. What is relevant to the analysis here is that both in the PL configuration and in multiple interrogation, there is a binding chain between the question operator on one hand, and the DQP or the in-situ WhQP.[8]

In the standard analysis of multiple interrogation, one question operator binds two (or more) WhQPs. This holds whether we assume that the Wh-in-situ moves to CP (and undergoes Absorption) or remains in-situ. One of the two Wh-phrases is then interpreted as providing the restriction on the domain of the question. Typically this is the Wh-in-Comp, but the reverse

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7 I owe this suggestion to Anna Szabolcsi (p.c.).

8 The similarity between multiple interrogation and PL has been argued for by both Hornstein (1994) and Williams (1994), who have suggested that the Superiority effects found with Wh-in-situ conform essentially to the same pattern as PL. Hornstein (1994), in particular, extends to multiple interrogation the account of PL proposed in Chierchia (1993), as seen in ch. 1, sect. 3.3.

The analysis of PL given here is also compatible with a movement analysis wherein the Wh-in-situ moves to the Wh-in-Comp (though I do not pursue this analysis here). The binding relation between the Question Operator and (the set variable of) *every* N may be taken to imply movement of *every* N to CP. In this way the LF account of PL could become entirely parallel to the classic account of multiple interrogation as involving movement of the Wh-in-situ to CP where it undergoes absorption with the Wh-in-Comp.

Either way, both PL and Wh-in-situ are examples of complex binding chains resulting from the composition of separate chains.

possibility also can obtain.[9]

2 Matrix questions with *each*-QPs

The syntactic distribution of PL readings in matrix questions with *each*-QPs provides one of the main arguments for the analysis presented here. The distinction between the PL pattern with *every* and with *each* represents a distinctive feature of the present approach, since it cannot be (easily) incorporated in neither May's/Aoun&Li's nor in Chierchia's/Hornstein's treatments of PL.

For most speakers, *each* appears to support PL not only in the configurations where PL is possible with *every*-QPs, but also in configurations where PL with *every* is excluded (26a-b) or difficult (26c-d). In (26a), *each book* is a direct object and the WhQP is a subject, a configuration where *every book* does not support PL (26b). In (26c) *each book* is also a direct object, whereas the WhQP is a prepositional indirect object: in this configuration, it was found that *every*-QPs would support PL only with difficulty.

(26)	a. Who read each book?	[ok PL]
	b. Who read every book?	[* PL]
	c. Who did you assign each book to?	[ok PL]
	d. Who did you assign every book to?	[?* PL]

The same data are available in Italian, which as noted, displays a distinction which seems to match that between *each* and *every*: unlike French and Spanish, which have only one active DQP (cf. French *chaque*, Spanish *cada*), Italian has a distinction between *ogni* ('every') and *ciascun(o)* ('each'). In Italian, PL with *ciascuno* appears to be available in the same configurations where *each* licenses PL. PL with *ogni* on the other hand, has more restricted distribution, comparable to that found with *every*-QPs:

9 Either Wh-phrase can apparently be interpreted as providing the domain restriction. Note however that only one of the two can do so, not both. The following data illustrates: (a) is typically answered as in (b), and can perhaps be answered as in (c). But it cannot be answered as in (d):

(ix.i) a. Which student read which book?

b. --John read *Ulysses*, Mary read *War&Peace*, ...

c. --*Ulysses* was read by John, *War&Peace* was read by Mary, ... , but *Death in Venice* was read by noone.

d.* --John read *Ulysses*, ..., *War&Peace* was read by Mary, ..., noone read *Death in Venice*, and *Arabian Nights* was read by noone.

(27) a. Chi ha letto ciascun libro? [ok PL]
who has read each book?
b. Chi ha letto ogni libro? [* PL]
who has read every book?
c. A chi hai mostrato ciascun libro? [ok PL]
to who have-you shown each book
d. A chi hai mostrato ogni libro? [?* PL]
to who have-you shown every book

The data presented above show, in essence, that there are no syntactic asymmetries in the distribution of PL with *each*. This observation goes back to Williams 1986, 1988. (Note also that Karttunen&Peters (1980) use *each* throughout their paper without remarking on any asymmetry of the type shown by *every*.)

None of the other approaches to PL reviewed here seem to be able to account for these data. May (1985) and Aoun&Li (1993) treat all quantifiers alike, hence it is unlikely that their account could be made to distinguish two otherwise so similar quantifiers like *every* and *each*. Neither can Chierchia's (1993) account for the different behavior of *every* and *each*, since WCO effects are just as strong with *each* as with *every*:

(28) a. ?? His_i mother accompanied every child_i
b. ?? His_i mother accompanied each child_i

The behavior of *each* in PL questions can however be accounted for by our proposal. Recall the licensing conditions on *each*-QPs (slightly modified from chs. 2 and 4):

(29) **Licensing of *each* N**
a. QPs built with *each* are endowed with the features [+singular, +distributive]. Since the latter feature must be discharged in Spec,DistP, *each*-QPs must move there in LF.
b. Therefore, *each*-QPs always support SD.
c. Semantically, the set variable introduced by QPs headed by *each* must be bound by an existential or Question Operator.

Given that *each*-QPs are endowed with a [+distributive] feature, they have to check it off in Spec,DistP. This requirement prevents *each*-QPs from being bound by negation, since DistP is higher than NegP, the site of the Negation Operator. In fact, as observed in ch. 4, there is a basic incompatibility between *each* and negation. Both sentences where negation c-commands *each*, or is c-commanded by it, are somewhat deviant, or at least show very restricted distribution and/or require special intonation:

(30) a. ?? Each student didn't come
b. ? John didn't read each book

However, in a matrix Wh-question, the Question Operator in C° is a closer potential binder (than the Existential Operator in Ref°) for the set variable of an *each*-QP that has moved to Spec,DistP. (Recall from ch. 2 that the hierarchy of projections is RefP > CP > DistP > ShareP > NegP). Thus, if the WhQP is reconstructed in the scope of the DQP, we have the conditions for configuration that supports PL.

The difference between PL with *every* and PL with *each* is that, when their set variable is bound by a question operator, the former instantiates the PD pattern of distributivity, whereas the latter instantiates the SD pattern. The different syntactic distribution of PL readings in the two cases follows directly.

In detail, the derivation of PL readings with *each*-QPs proceeds as follows. I assume that the WhQP becomes the distributee. Given that *each*-QPs are driven to move to Spec,DistP, the WhQP is reconstructed in Spec,ShareP. The set variable of the *each*-QP is bound by the Question Operator in C°. The respective thematic or Case positions of *each* N and Wh are irrelevant to the availability of PL with *each*, just as the relative Case positions of the distributor and the distributee were irrelevant in the SD pattern reviewed in ch. 4, section 1. The *each*-QP is driven to move to Spec,DistP for distributivity checking from any argument position; and similarly we can reconstruct the WhQP in Spec,ShareP. The distribution of PL with *each* as in (26-27) is therefore derived.

The derivation of (26a) below summarizes the proposal for PL with *each*:

(26a) Who read each book?
[*CP* Q_i + t_i [*AgrSP* t_i [*DistP* each $book_{k/i}$ [*ShareP* $\{who\}_i$ [*AgrOP* t_k [*VP* t_i read t_k]]]]]]

3 PL readings with *every*- and *each*-QPs in Wh-complements

In this section, I consider the behavior of DQPs in embedded questions. The main focus will be on so-called EXTENSIONAL Wh-complements (e.g. those selected by *know, find out,* etc.). Other types of Wh-clauses will receive less attention.

What distinguishes matrix from (extensional) Wh-clauses is that in the latter, WhQPs don't have interrogative force. Following Groenendijk&Stockhof 1984, Szabolcsi 1995a,b and others, I assume that the Operator in C° is distinct from the Question Operator found with matrix Wh-questions. Given that the distribution of PL in matrix questions hinges, on the analysis presented here, on the Question Operator acting as binder for the set variable of DQPs, we would expect its absence in Wh-complements to have effects on the distribution of PL. This expectation is borne out, as will be seen below.

As pointed out by Szabolcsi (1995b), in embedded Wh-clauses the asymmetries in the availability of PL that are found in matrix questions seem to disappear. The notes in brackets under each example highlight the differential availability of PL in the two configurations.

(31) a. By tomorrow, we'll find out which book every student read
[ok PL, also ok in matrix case]
b. By tomorrow, the committee will decide which applicant will fill every position
[ok PL, * in matrix case]
c. By tomorrow, we'll find out which topic the teacher has assigned to every student
[ok PL, ? in matrix case]
d. The teacher has already decided to which student he'll assign every book on the list
[ok PL, * in matrix case]

Speakers are able to construe *every student* in (31a) as distributing over *what*, arriving at construals like 'we'll find out, for every student x, which book x read'. Such interpretations are on a par with the distributed (matrix) questions readings that I labeled as PL. I refer to them as PL-like interpretations (in the glosses however, I simply indicate 'PL', as with (31) above).

That PL-like construals are possible in the configuration (31a), where *every* N is in subject position is unsurprising, given that as subject, *every* N generally supports PL in matrix questions. What is surprising is that speakers don't have difficulty in obtaining PL-like construals uniformly throughout the paradigm in (31) (cf. also Szabolcsi 1995b), contrary to the matrix question case.

Let's start by considering the semantics of PL-like readings with embedded interrogatives. Extensional Wh-clauses are complements of verbs like *know, find out,* etc., which denote relations between individual and the ANSWER to a question (cf. Groenendijk&Stokhof 1984). These are distinct from INTENSIONAL Wh-complements of verbs like *wonder,* which denote relations between an individual and a QUESTION.

Under Szabolcsi's (1995b) analysis, which I adopt here, PL is not a unitary phenomenon. Szabolcsi argues, partly on the basis of the different distribution of PL-like readings observed above in (31), that these readings with extensional Wh-complement clauses are to be treated differently than matrix PL. She proposes that they are obtained, semantically, by quantification into lifted questions (which is something she argues against doing in the matrix case).

By "quantification" Szabolcsi means that the DQP behaves in its own regular way (as opposed to providing a domain restriction, as in matrix questions). Instead of taking a property of individuals (=a set of individuals) as its nuclear scope, a DQP which supports a PL-like reading with an extensional Wh-complement takes a property of answers as its scope. Recall from our discussion in section 1.1 that whereas an individual question can be seen as a set of propositions, a 'lifted question' is a set of properties such that the set of true answers to the question has those properties. Thus the DQP quantifies over 'lifted' questions.

To illustrate with an example: in *John found out what every student read*, we can have the QP *every student* take as its nuclear scope of quantification the property (P) that x has iff John found out what x read. P is thus the property of finding out the set of true answers to the question what John read.

There are both conceptual and empirical reasons for this assumption. As to the former, extensional Wh-complements are not direct questions; the matrix clause provides the extra material that we need to build the property to serve as nuclear scope for the quantifier. In the case of matrix interrogatives, there is no such material, unless we adopt the hypothesis of a 'silent performative' verb.

The empirical reasons are given (i) by the different distribution of PL-like reading in embedded Wh-complements with DQPs; and more importantly (ii) by the fact, to be considered in section 4, that non-DQPs also support PL-like readings in embedded interrogatives, whereas they do not do so in matrix interrogatives. Thus there are grounds to assume that PL in matrix and (extensional) Wh-complements are distinct semantic phenomena.

Szabolcsi's analysis of the semantics of PL-like readings in Wh-complement clauses matches, essentially, the conclusions that can be reached when the syntactic (=LF) analysis developed in the previous sections is applied to the problem at hand.

As proposed above, there is a fundamental difference between matrix questions and (embedded) extensional Wh-complements. The relevant syntactic difference is that only the CP of matrix interrogatives contains a Question Operator. This has been argued in Groenendijk&Stokhof (1984) and Munsat (1986) for interrogatives in general and in Szabolcsi (1995b) as regards to pair-list readings in particular. The CP of extensional Wh-complements lacks such an operator. Similarly, the CP of other types of embedded Wh-clauses lacks a Question Operator: relative clauses, comparative clauses, etc. I consider these in passing in section 3.2. I assume that, in the relevant respects, the C° Operator which occurs with extensional Wh-complements and relative/comparative clauses is akin, as far as the phenomena that are relevant here are concerned, to the Existential Operator.

Recall that my analysis of matrix PL relied on the assumption that *every* N gets bound by the Question Operator, which in turn pre-empties its moving to Spec,DistP, enforcing a shift from the SD pattern of distributivity to the PD pattern. Since the examples in (31) are claimed not to involve a question operator, we expect *every* N to be bound by its default operator, the existential operator in Ref °, or by the non-interrogative operator in C°; consequently, to support SD, and not shift to the PD pattern. That is, we expect *every* N in extensional complements to behave like *each* N does in matrix questions (though for different reasons).

This expectation is borne out since PL-like readings in extensional Wh-complements with *every*-QPs do not show the asymmetries found in matrix questions with *every*-QPs. In extensional complements, *every* N is thus able to satisfy SD by moving to Spec,DistP, and taking the (reconstructed) WhQP as distributee. This accounts for the lack of asymmetries found with (31) above.

PL-like readings with extensional Wh-complements can thus be derived as follows. Since there is no Question Operator to bind the set variable of *every* N, it is bound by the Existential Operator; thus, *every* N moves to Spec,DistP. The WhQP reconstructs in Spec,ShareP. Therefore the SD pattern becomes instantiated. I present below the derivation of examples like (31b). Similar derivations obtain for the other examples in the paradigm (31):[10]

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[10] It is a separate question why Wh-clauses introduced by *whether* do not show PL-like readings, not even in the argument configurations that normally support PL (cf. Karttunen and Peters 1980, Szabolcsi 1994a, this volume, and references therein):

(x.i) John found out whether everyone left
 * 'John found out about everyone whether (s)he left'

(32) John found out who will present every paper
[*AgrSP* John [*VP* found out [*CP* t_i [*AgrSP* t_i [*DistP* every book$_k$ [*ShareP* {who}$_i$ [*AgrOP* t_k [*VP* t_i present t_k]]]]]]]

Consider, now, (intensional) Wh-complements of *wonder*, which select only for [+Wh] complement. Szabolcsi argues that the semantics of PL readings in this type of construction is parallel to the case of matrix questions. Interestingly, we find that the PL pattern of matrix questions with *every*-QPs re-emerges, too. This is shown in (33). (33b,c) can only be construed with the WhQP taking wide scope over *every*; but (33a,d) appear to allow for the reverse scoping:

(33) a. I wonder what book every student will write about [ok PL]
b. I wonder who read every book [* PL]
c. I wonder to whom you will assign every problem [?? PL]
d. I wonder who John introduced to every girl [? PL]

There are some other respects in which complements of *wonder* behave, sintactically, like matrix clauses (cf. Szabolcsi 1994a, 1995b): one is that they can license negative polarity items, in the same rather restricted way in which Wh-questions do (cf. Munsat 1986). Extensional Wh-complements do not.

(34) a. When will I ever get a raise?
b. I wonder when I will ever get a raise
c. * I found out when I will ever get a raise

(35) a. Why did anybody bother to come?
b. I wonder why anybody bothered to come
c. * I know/found out why anybody bothered to come

For these reasons, I assume that complements of *wonder* contain a Question Operator in C°. This accounts for the distribution of PL readings in (33), which proceeds as outlined in section 1 for matrix questions with DQPs.

4 Pair-list readings with GQPs and CQPs

In the discussion of PL so far, I have concentrated on DQPs. I now consider how the analysis can be extended to account for the availability of PL-like readings (and the lack thereof) with other

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Moltmann&Szabolcsi (1993) suggest that this is a subcase of a general prohibition against quantification into clauses lacking a variable-binding operator. *Whether*-complements are, semantically, the embedded version of Yes/No questions. Referring back to our discussion of *every* in Yes/No questions, our conclusion was that the Y/N question operator was not a variable-binding Operator, or at least that it couldn't bind the kind of variable introduced by DQPs. This explanation can be extended to *whether*-complements.

QP types. The differences between the ability of DQPs and of these other QPs to support PL in various configurations, provide significant support for the analysis developed in sections 1 and 2.

4.1 Matrix questions

In this section, I consider the issue of whether PL readings are available, in matrix interrogatives, with QPs other than DQPs. The conclusion, following Szabolcsi 1995b, is that only DQPs support PL in matrix questions. Szabolcsi's arguments are semantic in nature. I show that Szabolcsi's conclusions are in part justified by, and generally consistent with, the LF account developed in this chapter.

4.1.1 List readings and CQPs

It is well known that in matrix questions, CQPs do not support PL readings. Neither of (36a-b) can be answered as in (36c).

(36) a. What did more than two students write about? [* PL]
b. What did few students write about? [* PL]
c. * --John wrote about *War&Peace*, Susan about *Buddenbrooks*, Bill about *Death in Venice*, ...

These facts follow directly from the account presented here. Since CQPs are interpreted as generalized quantifiers, they do not introduce a variable, and thus cannot be bound by the Question Operator in C^{o}.

As argued by Groenendijk&Stokhof (1984) and Chierchia (1993), quantification into questions is not an available option, for semantic reasons. Thus, some alternative mechanism must become available for a given QP type to support PL in matrix questions. I have argued that this mechanism consist in letting the variable introduced by the QP be bound by the question operator (for Chierchia, this mechanism consisted in letting the QP undergo absorption with the Wh).

It follows that a CQP is not expected to support PL even if the Wh-element should reconstruct in its scope, as CQPs do not introduce a discourse referent.

Chierchia must stipulate that CQPs do not undergo absorption. Our account offers a more principled account of why it should be so, based on the theory of QP types of ch. 2. The lack of PL readings with CQPs is thus consistent with our analysis, given that the same mechanism that produces PL readings with DQPs is in principle not available with CQPs.

4.1.2 List readings and GQPs

The account developed in this chapter excludes the possibility that GQPs may behave like DQPs with respect to PL in matrix questions. This is because only DQPs introduce a set variable that can be bound by operators other than the existential; as claimed in ch. 2, the group variable contributed by GQPs can only be bound by an existential operator. Thus the claim is that if PL-like readings are available with GQPs at all, these should be derived via a distinct mechanism. I argue for such claim below, using arguments from Szabolcsi 1995b. I consider first definite GQPs, next indefinite GQPs.

There is general consensus in the literature that 'true' PL readings are not available in matrix questions with definite GQPs. If PL-like readings are ever possible with definite GQPs, it appears that these are obtained via an altogether different mechanism. There are a number of properties that distinguish the 'apparently PL-like' answers supported by definites from PL answers with DQPs. First, as observed by Pritchett (1990), there are no asymmetries (of the type shown by *every*-QPs) in the availability of such answers. Pritchett's examples are as follows:

(37) a. What did the boys rent last night?
     b. Who rented these movies last night?
     c. ok/? --John rented *Casablanca*, Moe rented *Red*, ...

Pritchett points out that both (37a,b) may be answered as in (37c).

The answers supported by definite GQPs further differ from those available with DQPs as follows: (i) answers to questions with definite GQPs allow for vagueness as to the actual pairings, and do not require exhaustive listing; (ii) definites do not seem to support list answers with singular WhQPs like *which/what book* (bare WhQPs, like *who/what* may be interpreted as plural).

Krifka 1992 and Srivastav 1992 argue that the PL-like answers in (37) are to be viewed as resulting from a reading of the question which is not PL, i.e. from a type of 'dependent plural' reading. PL-like answers with definite GQPs should be regarded as 'cooperative' attempts to spell-out a dependency between two plural terms. This observation is found already in Szabolcsi 1983. An adequate answer to a question like (37a) would be 'The boys (John, Moe, ...) rented *Casablanca, Red*, ... (between them)'. But the answerer can choose to be more cooperative, i.e. informative, and spell-out some of the pairs <boy, movie rented>.

Crucially, as remarked by Krifka and Srivastav, answers to questions like in (37) tolerate vagueness as to the actual pairings and do not require exhaustiveness. These observations argue that these answers do not spell-out a distributive dependency; but rather, something similar to a 'cumulative' dependency (cf. Scha 1981, as mentioned in ch. 4, 1.1). Szabolcsi proposes that the readings conveyed by questions with definite GQPs are a subtype of construal available when two (or more) QPs that introduce (plural) groups interact. She calls it 'distributed group' reading (cf. Szabolcsi 1995b).

Let's turn now to indefinite GQPs. It has often been claimed (cf. May 1985, Groenendijk&Stokhof 1984, etc.) that indefinite GQPs support a type of list reading which is referred to as 'choice' reading, and that this is to be assimilated to PL-readings with DQPs. Consider:

(38) a. What (book) did two students write about?
     b. ? --(Well, for example) John wrote about *War&Peace* and Mary wrote about *Death in Venice*.

The question in (38a) can, marginally, be answered as in (38b). But unlike a question containing a DQP, like *What (book) did every/each student write about?*, (38a) does not have a unique and complete answer. To answer (38a), it has been claimed that one has to choose one group of two students (e.g. John&Mary) and aswer about these. (Thus, to accommodate choice answers as a kind of PL answers, it is necessary to 'type-lift' the semantic interpretation of list questions, so that these are interpreted as generalized quantifiers over individual questions. Specifically, an existential quantifier over questions, which corresponds to a generalized disjunction of questions--cf. below. Questions with DQPs are the subcase where the set of individuals that provides the domain of the question (hence, the answer) is unique. Cf. e.g. Groenendijk&Stokhof's Domain Restriction schema).

Szabolcsi 1995b argues that apparent list readings supported by indefinite GQPs are a separate phenomenon than PL readings. She offers both a speculative and an empirical argument.

The conceptual argument is based on a principle that has already been introduced in section 3, to justify interpreting PL-like readings in extensional Wh-complements as quantification into lifted questions. Szabolcsi proposes that "it is justified to interpret an expression E as a function over [=a generalized quantifier taking scope over; FB] properties P only if E actually combines with denoters of P" (1995b:sect. 2.2). By this principle, it is justified to assign to PL-like readings with (extensional) Wh-complements a lifted interpretation (as Szabolcsi does, cf. section 3.1), because complement interrogatives are syntactic complements. Thus *John found out what book every student wrote about* is interpreted as a function over the property 'John found out what x wrote about'. But matrix interrogatives are not complements; they should be interpreted on a par with questions, not on a par with argument expressions (generalized quantifiers). Lifting should thus only be applicable with complement questions.

The empirical argument is twofold. First, it can be observed that indefinite GQPs do not support (as naturally as DQPs do) list readings with singular WhQPs like *which/what boy*:

(39) a. Which boy did every/each dog bite?
ok --Fido bit Billy and King bit Joey.
b. Which boy did two dogs bite?
?? --Fido bit Billy and King bit Joey.

This suggests the hypothesis that their apparent PL-like readings are not actually choice readings, involving distributivity, but rather cooperative ways to spell-out a different type of dependency, as we saw in the case of definite GQPs. This squares with the fact that both definite and indefinite GQPs introduce groups.

The second empirical argument allows us to refine this hypothesis. As Groenendijk&Stokhof point out, the lifted interpretation that they propose for choice questions like (40a) corresponds to interpreting the question as a disjunction of questions, as in (40b), since the existential quantifier that interprets the indefinite in (40a) is semantically equivalent to a disjunction. The lifted interpretation thus predicts that the distribution of question disjunctions should match that of choice readings with GQPs.

(40) a. What did two students write about?
b. What did John & Bill write about? Or, what did Mary & Bob write about?
c. ?? What did John & Bill write about or what did Mary & Bob write about?

However, Szabolcsi argues, the connective *or* in (40b) is not a true logical disjunction operator that introduces a choice between questions. Rather, "it is an idiomatic device that allows one to cancel the first question and replace it with the second" (1995b:sect. 2.3.1). This is indicated by: (i) the fact that when *or* is moved from inter-sentential (40b) to intra-sentential position (40c), the question becomes degraded; and (ii) the very restricted cross-linguistic distribution of questions like (40b).

Szabolcsi concludes that matrix questions cannot be directly disjoined. She proposes that so-called choice questions are really a type of disjunctive (individual) questions like (41a), and that they support construals as in (41b):

(41) a. What did Sue&Bill or John&Mary write about?
b. ok 'What x is such that either Sue&Bill or John&Mary write about it?

The claim is that (41a) does not yield a choice reading; the alleged list reading is an individual reading (cf. 41b), asking the answerer to just mention one individual answer, which can be spelled-out cooperatively as in the case of distributed group readings supported by definite GQPs. There is no actual choice, in the logical sense of answering a disjunction of questions by answering one of the disjuncts; rather, the answer is of one the 'mention-some' type discussed by Groenendijk&Stokhof 1984.

To summarize the purport of this subsection: using both semantic arguments and arguments from the syntactic distribution of the relevant readings, which I took from Szabolcsi (1995b), I have argued that apparent list readings available with GQPs in matrix questions are semantically distinct from PL with DQPs. In particular, it has been proposed that there are no actual 'choice' readings with indefinite GQPs. I conclude that list answers with GQPs arise via distinct LF mechanisms than PL answers with DQPs. I do not present here an LF account of 'mention-some' readings with indefinite GQPs, nor an account of the distributed group readings with definite GQPs.

4.2 Wh-complements

I consider now PL-like readings with CQPs and GQPs in non-matrix questions; the focus, as in section 3, will be on extensional Wh-complements. The basic data comes again from Moltmann&Szabolcsi (1994) and Szabolcsi (1995b).

4.2.1 PL-like readings with CQPs

Let's begin with CQPs. These authors note that although (subject) CQPs support PL-like answers in extensional complements (42), the syntactic distribution of such answers is narrower than with DQPs, as shown by the contrast in (43):

(42) John found out which book/what more than five boys needed.
ok 'John found out about more than five boys which book/what each needed'

(43) a. I know which boy John introduced every girl to.
ok 'I know about every girl which boy John introduced her to'
b. I know which boy/who John introduced more than five girls to.
* 'I know for more than five girls which boy/who John introduced her to'

These data are predicted by our analysis. In (42) *more than five boys* in AgrSP takes scope over the Wh-phrase, because the latter is reconstructed into its Case position, Spec,AgrOP or Spec,ShareP, in accordance with our general assumptions about distributive readings with CQPs (ch. 3, section 3.3) and with our specific assumptions about PL-like readings in extensional Wh-complements (cf. section 3). In ch. 3, I proposed that distributive readings with CQPs are possible whenever the LF (=Case) position of the CQP is higher than that of the indefinite which is the distributee. PL in (43b) is out, then, because the Case position where the WhQP reconstructs, i.e. Spec,AgrIOP, is higher than the LF scope position of the CQP, i.e. Spec,AgrOP.

4.2.2 PL-like readings with GQPs

Similar observations apparently hold of GQPs in extensional Wh-complements. The pattern of PL-like readings with GQPs in these contexts appears to match the PL pattern with *every* N in matrix clauses, both with bare and D-linked Wh-phrases. Consider the following data:

(44)	a. I found out what three students need	[ok PL]
	b. I found out who needs three books	[* PL]
	c. I found out to who(m) John showed five books	[?* PL]
	d. I found out who John introduced to five girls	[?(?) PL]

(45)	a. I found out which book three students need	[?/ok PL]
	b. I found out which student needs three books	[* PL]
	c. I found out to which student John showed five books	[* PL]
	d. I found out which boy John introduced to five girls	[* PL]

The same account can be extended to these cases: when the WhQP is reconstructed to its Case position (if it is a bare WhQP, or to Spec of ShareP for a D-linked WhQP), PL-like readings will be supported (according to the PD pattern) insofar as the Case position of the GQP is higher than that of Wh.

5 Long-distance scope with DQPs

In this section, I focus on a phenomenon that provides further support for one of the conclusions reached in ch. 2: namely, that the scope of DQPs is not, in general, bound to their own clause.

Some of the relevant data were first analyzed in Moltmann&Szabolcsi (1994), though their presentation differs from the one I offer here. Moltmann&Szabolcsi observe that in sentences like (46), it is possible to construe the indefinite *some librarian or other* as co-varying with each choice of individual students:

(46) Some librarian or other found out which book every student needed
ok 'for every student x, there is a (possibly different) librarian who found out which book x needed'

This is, of course, in violation of the assumption that DQPs cannot scope out of finite clauses. Moltmann&Szabolcsi go on to show that apparently, this kind of long-distance scope is also available in other Wh-constructions, ranging from comparatives to free relatives:

(47) a. Some professor or other is as tall as every student is
ok 'for every student, there is a professor who is as tall as he is'
b. Some student read what every professor wrote
ok 'for every professor x, there is some student who read what x wrote'

There are, in fact, plenty of examples of ordinary embedded interrogatives which quite naturally support long-distance distributive construals. Some are given by (48)-(49) below, where it is quite easy to interpret the CQP subject of the matrix as in the scope of *every* N. (48b) and (49b) prove that this is an instance of SD: as discussed above, only SD (distributivity involving movement of the distributor to Spec,DistP) supports distribution over *a different* N; PD does not.

(48) a. (For security reasons), no more than two employees know what secret code every customer chose to access his account [ok *every* > *no more than one*]
b. (For security reasons), a different employee knows what secret code every customer chose to access his account [ok *every* > *a different*]

(49) a. (For security reasons,) No more than one employee knows what combination opens every door to the safety deposit [ok *every* > *no more than one*]
b. (For security reasons,) A different employee knows what combination opens every door to the safety deposit [ok *every* > *a different*]

The above sentences are clear illustrations of long distance distributivity, but to do so, they rely on help from the pragmatics; in a number of other cases, the judgements are considerably less clear. In many examples, long-distance distributive scope is not a natural reading. I interpret this as an indication that such long-distance scope construals simply exploit one derivational possibility. Whereas (clause internal) distribution *every* > WhQP in these embedded interrrogatives is a generally available construal, scoping *every* out to the matrix clause seems to be a more restricted option.

Long-distance construals are nevertheless a fact, which becomes compelling when we look at a wider range of constructions, similarly exhibiting scope-out of *every* into the matrix clause. The examples below feature adjunct Wh-clauses (temporal and relative). These cases establish that the pattern is widespread with non-interrogative Wh-clauses:

(50) a. A nurse will come in when every patient leaves[11] [ok *every* > *a*]
b. A nurse was in attendance when the doctor performed every examination [ok *every* > *a*]

a. A clerk will certify the statement that every witness rendered at the trial [ok *every* > *a*]
b. A clerk will certify the statement that the judge asked every witness to make [ok *every* > *a*]

In all the above cases, there is no doubt that the subject indefinite can be interpreted as co-varying with *every* N. This implies that *every* N is being distributive over the matrix clause: i.e., that *every* N is checking its [+distributive] feature in Spec,DistP of the matrix, and that the matrix subject indefinite has reconstructed into Spec,ShareP.

This is however surprising, not so much in view of the long-distance LF-movement that it involves, but because the DQP would have to cross over an island: a Sentential Adjunct island in (50) and a Complex-NP in (50). Yet we have seen in ch. 3 that DQPs otherwise display Subjacency effects.

Moltmann&Szabolcsi suggest a solution to the puzzle. They indicate that such long-distance construals of *every* are, in fact, not obtained by scoping the DQP in one fell swoop to the matrix clause. They argue that assigning the Wh-complement a PL-like interpretation is a precondition on the availability of long-distance construals of the DQP. As seen in section 3, they interpret PL-like readings of extensional Wh-complements in terms of quantification over lifted questions. To use (46), repeated below, as an illustration:

(46) Some librarian or other found out which book every student needed

The whole expression *which book every student needed* is interpreted as a generalized quantifier, taking the property 'some librarian or other found out x' as its scope. Such complex quantifier is referred to as a 'layered quantifier' in Moltmann&Szabolcsi's terminology. Since the layered quantifier contains the (semantic interpretation of the) whole Wh-clause, it is in fact co-argument with the subject of the matrix verb. Therefore, what had appeared as long-distance scope obtains through a series of clause-internal steps.

Syntactically, I translate their proposal as follows: *every* N can take long-distance scope, in these cases, because it pied-pipes the whole Wh-complement. This offers a solution to the (apparent) island violations: the whole island (i.e. the sentential adjunct or the complex NP) is pied-piped along with the DQP.

The evidence Moltmann&Szabolcsi give in support of their analysis includes considering examples like (51). If a PL-like interpretation is assigned to the complement clause in (51), and furthermore we interpret (51) so that librarians co-vary with students, the sentence becomes degraded.

[11] These examples have been attributed to T. Parsons.

(51) More than one librarian$_1$ found out which book every student stole from her$_1$
 * 'for every student x, there is more than one librarian y who found out what x stole from y'

They regard this effect as a binding violation, noting that the relation between the CQP and the pronoun *her* must be binding, not coreference. Unlike GQPs like *some librarian*, which support inter-sentential anaphora, a morphologically singular CQP like *more than one librarian* can only bind a pronoun if it c-commands it (at LF). The following contrast bears this out:

(52) a. Some librarian$_1$ lost her hat$_1$. She$_1$ was sad.
 b. * More than one librarian$_1$ lost her hat$_1$. She$_1$ was sad.

Going back to (51), Moltmann&Szabolcsi point out that the lack of long-distance distributive scope is strong evidence for the layered-quantifier hypothesis, i.e. for the hypothesis that the DQP pied-pipes the whole Wh-complement. The deviance of (51) under a the scoping *every>more than one* could not be explained if *every student* scoped out on its own. Of the two LFs in (51'), only (51'b), the pied-piping analysis, correctly accounts for the data, because it takes the pronoun out of the binding domain of the CQP:

(51') a. [every student [more than one librarian$_1$ found out [what book t had stolen from her$_1$]]
 b. * [what book every student had stolen from her$_1$]$_2$ [more than one librarian$_1$ found out t$_2$]]

Another piece of data which supports the pied-piping hypothesis has been pointed out by Tim Stowell (p.c.). Consider (53a), one of the 'nurse' sentences reviewed above, which syntacticallyoffer a configuration parallel to (50a): note that the *after*-clauses in the examples (53) arguably contain a covert *when*, which is required by the semantics of these constructions (cf. the glosses to (53a-b)). Accordingly, they are parallel to the embedded Wh-adjunct clauses in (50). (53a) similarly supports an interpretation where nurses co-vary with patients. This interpretation disappears, however, when we change the (simple past) tense of the embedded clause to a pluperfect (cf. 53b), as indicated in the translations.

(53) a. A nurse came in after every patient left
 ok 'for every patient and time t when (s)he left, a (possibly different) nurse came in after t'
 b. A nurse came in after every patient had left
 * 'for every patient and time t of his/her leaving, a (possibly different) nurse came in after t'
 ok 'for some nurse x, x came in at a time t which was after the time when every patient left'

The same type of contrast also obtains with the sentences in (54), structurally parallel to (50). Only (54a) supports a construal where clerks co-vary with lawyers (and statements):

(54) a. A clerk filed the statement which every lawyer submitted to the judge
b. A clerk filed the statement which every lawyer had submitted to the judge

To understand the significance of these contrasts, recall from Stowell (1995) that to be licensed in an embedded clause, a pluperfect requires the matrix to contain a past tense:

(55) a. John came in after Mary had left
b. * John can come in/will come in/is coming in/comes in after Mary had left

Recall Stowell's analysis of tense licensing from ch. 3. The requirement on the licensing of the pluperfect can be expressed in that framework as follows: a pluperfect must be licensed by superordinate past; in addition, the reference time argument of the clause containing a pluperfect must be controlled by the (existentially quantified) event time of the superordinate clause in the past tense. In this way we have that the event time of the pluperfect is temporally ordered before the event time of the superordinate past.

If we assume that in (53b) *every* N pied-pipes the temporal clause (containing a covert *when*), we can derive the lack of matrix scope on the part of *every* N in (53b-54b). If *every* N pied-pipes the Wh-complement, and thus its tense, to the matrix DistP, we would have that the embedded tense would be too high to be c-commanded by the event time of the matrix clause, since the event-time of the matrix would be in ShareP, thus below DistP.

(53b) * [[*DistP* when$_1$ every patient had left (at time z_1)]$_2$ [*ShareP* ∃time/event, a nurse [*VP* came in after t_2]]

To summarize the discussion so far, I have argued that long-distance distributivity requires pied-piping of the embedded Wh-clause. In addition, it was observed that long-distance distributivity is not generally available. Let's now collect and formulate these observations in a syntactic proposal.

When a DQP is contained in an embedded, non-interrogative (non-negative) Wh-clause, it has, in principle, two available target landing sites. The closest is Spec of DistP of the Wh-clause; this landing site is clause internal, and represents the unmarked option. In this case the argument occuring in Spec,ShareP can be either the WhQP, by reconstruction, in which case we have a PL-like reading. Or, if the WhQP does not reconstruct, it can be the event argument (or another indefinite); the WhQP is acordingly interpreted as wide scope with respect to the DQP.

Consider now the second, 'marked' option: the case when the DQP takes the higher Spec,DistP as its landing site, acquiring matrix scope. As noted, this implies a PL-like reading; i.e. it implies that the DQP is taking wide scope over the WhQP.

Assume that the DQP, on its way to Spec,DistP of the matrix, moves to a position where it can enter in a Spec-Head agreement relation with the (non-interrogative) operator associated with embedded (extensional) Wh-complements. Let's for now leave open how exactly this comes about (I will return to it below). Then, it can mark the whole embedded CP projection as [+distributive], and pied-pipe it to Spec of matrix DistP.The pied-piped clause (including the

WhQP) becomes part of the the restrictor of the DQP; this accounts for the fact that long-distance scope of DQPs implies a PL-like reading.

There are various solutions in the literature to derive the required Spec-Head agreement relation between the DQP and the non-interrogative Operator. I present here one such possibility, following a proposal by Koizumi (1994). Elaborating on an analysis by Authier (1992), Koizumi proposes that embedded topicalization (cf. (56a)) targets a projection between CP and IP; this projection also hosts preposed 'affective' elements, such as negative phrases. Koizumi refers to this CP-like projection as Pol(arity)P. Since both embedded topics and preposed negative constituents can co-occur in the same sentence, as in (56b), he assumes that PolP has two Specifier positions (a move that is consistent with Minimalist assumptions about X'-theory).

(56) a. Robin says that, *the birdseeds*, he is going to put in the shed
b. Becky said that these books, only with great difficulty can she carry

PolP is also accessible by WhQPs. Following Culicover (1991), Koizumi proposes that in matrix questions, the fronted WhQP occupies the lower Spec of PolP, since topics must precede WhQPs:

(57) a. These prices, what can anyone do about?
b. * What these prices can anyone do about?

It can be suggested, at this point, that non-interrogative, embedded WhQPs occupy the higher Spec of PolP. Co-occurrence restrictions between embedded WhQPs, topics, and preposed negative elements bear this out. The only acceptable configuration appears to be (58c), where the WhQP precedes the preposed negative elements. Embedded WhQPs and topics seem to be in complementary distribution (cf. 58a-b).

(58) a. * John figured out what, these prices, everyone can do about.
b. * John figured out, these prices, what everyone can do about.
c. ? John finally figured out what, at no previous time, Mary was able to confess to him.
d. * John finally figured out, at no previous time, what Mary was able to confess to him.

Under this analysis, the DQP can move to the lower Spec of PolP, and find itself in the desired Spec-Head configuration with the (non-interrogative, i.e., existential) Operator of the WhQP. The derivation of an example like (59a) would thus proceed from (59a) to (59b).

(59) a. A nurse came in after every patient left
b. [*AgrSP* A nurse$_1$ [*DistP* [*ShareP* [*VP* came in [*PolP* [after (*when*) [every patient$_2$ [*AgrSP* t_2 [*VP* left]...]
c. [*AgrSP* t_1 [*DistP* [(*when*) every patient$_2$ [*AgrSP* t_2 [*VP* left]...]$_k$][*ShareP* a nurse$_2$ [*VP* came in [*PolP* after $\mathbf{t}_k$]

6 *every*-QPs in the scope of modal operators

So far, I have argued that the set variable introduced by DQPs can, in principle, be bound by negation and question operators, in addition to the 'default' binder, existential operators. In this section, I consider the possibility that a fourth type of binder is available for *every*-QPs. Such binder is given by certain modal and generic operators..

Nevertheless, I include them here because they pursue in a suggestive way an analogy between *every*-QPs and polarity items (cf. Beghelli&Stowell 1995b). Polarity items such as *any* can be bound by negative and (in a restricted set of contexts) by question operators. In addition, as argued by Kadmon&Landman 1993, *any* can be bound by modal/generic operators, giving raise to 'free choice' *any*.

The basic observation is that when in the scope of certain modal/generic operators, *every* takes on a generic flavor. *Each*-QPs, on the other hand, do not partake in this phenomenon. Consider the examples in (60) and (61) below. *Every* N is featured in both modal and non-modal contexts, its interpretation contrasts with that of *each* N in the same contexts.

(60) a. Every problem can be solved
b. Each problem can be solved
c. Every problem could be solved
d. Each problem could be solved

(61) a. Every dog has four legs
b. Each dog has four legs
c. Every dog had four legs
d. Each dog had four legs

In (60a-b) there is an overt modal operator (*can*); in (61a) such modal operator is part of the habitual meaning of the simple present tense in English. In the (a) sentences, quantification is generically over problems or dogs; the (b) sentences, where *each* takes the place of *every*, restrict the domain of quantification to a subset of houses or persons existing in the discourse. It is understood that the subset in question has been previously introduced; it cannot be a novel referent. Accordingly, whereas (60a) and (61a) have a generic flavor, (60b) and (61b) cannot be understood as generic statements.

This is not to say that *every* N becomes like a generic quantifier: it is not tolerant of exceptions as *most* or generic bare plurals are. *Every* N maintains the property of universal quantification. This is also the case when *every* N is bound by the interrogative operator. The effect of the modal operator is rather to extend the domain of quantification of *every* N. In declarative, non-modal contexts, *every* N ranges over the set of individuals (with the property determined by N) that exist with respect to the situation, world, and time of utterance. In modal contexts, the domain of quantification of *every* is not restricted by these parameters.

Examples (60c-d) and (61c-d) do not contain an overt modal; the simple past in English does not readily allow habitual interpretations (at least without an overt generic operator, like *usually*). In the (c-d) examples, the contrast between *each* and *every* is greatly reduced. In both (60c) and

(61c), the domain of quantification of *every* is restricted to the particular set of (relevant) individuals existing in some situation in the past. This is an indication that the extended domain of quantification in (60a) and (61a) is not a property of *every* itself, but derives from the deontic modal or the generic flavor of the present tense.

As mentioned by B&S 1995b, who make use of an observation of Gil 1991, *each* N requires the set of individuals in its restriction to be an old referent. In that, *each* N resembles definite NPs. It is unsurprising, therefore, that *each* N would be incompatible with binding from a modal/generic operator. What needs to be explained is the behavior of *every*, namely the contrast between the (a) and (c) sentences.

The sentences in (60a) and (61a) present us with complex scope interactions between modal operators and *every* N. An analysis of their meaning confirms our suspicion that the change in the quantificational properties of *every* in (60a) and (61a) is to be traced to the presence of the modal or generic tense[12]. In the scope of a modal operator, *every* appears to have an extended domain of quantification.

The relevant type of modality seems to be alethic (relating to the worlds in which something can be true) or deontic (the possibility or obligation of something to be true). Epistemic modalities (the probability of something to be true, given my current information) does not seem to influence the interpretation of *every*.

The question now is how, simply by taking wide scope over it, could a modal operator cause the domain of quantification of *every* to become extended. The suggestion is that this presents us with another case where an operator binds *every* N, imparting a special meaning to it.

The configuration can also be reduced to a subcase of the schema given in (17ii). Assume that a modal or generic (tense) operator is similar to negation in that it binds the existentially quantified event argument. We obtain the following scenario where *every* can be bound by the operator:

(62) [*CP* Modal/Generic-Op (event)$_i$ [... [*AgrXP* *every*$_{k/i}$ ... [*VP** t$_i$ [*VP* V ...]]]]]

To account for the differential behavior of *each*, we can simply assume that *each*-QPs have a definite feature (in addition to the featural specification introduced in ch. 2 and assumed so far), and that this feature prevents binding by a generic/modal operator.

As already remarked in section 1.2, it also appears that binding by a modal/generic operator causes a failure of SD on *every*. An interesting case is given in (63b). We can have distribution between generic *every* in subject position and a VP-internal complement (63a), but inverse scope over a subject indefinite (63b) does not seem to be available with generic *every*:

[12] In (61a), it seems that the habitual/generic operator takes *every* in its scope: the meaning is that in most worlds, all the dogs have four legs (not that for every dog, it will have four legs in most worlds). (60a) shows a similar scoping: in most worlds, for every problem, there is a possible scenario/accessible world where it is solved.

(63) a. In LA, every family owns at least two cars
ok 'for every family X in LA, there at least two cars that X owns'
b. An American shopper prefers every new product on the market
* 'for every new product, there is a (possibly different) American shopper who prefers it'

6.1 *Cross-linguistic data*

The analysis of the licensing of DQP (especially, *every*-QPs) in negative, interrogative, and (even) generic contexts finds some significant cross-linguistic support. I briefly review here two types of data that are of relevance, without attempting an analysis. Consider first the case of Hebrew *kol,* studied in Doron&Mittwoch 1993.[13]

Three uses of *kol* can be distinguished: universal quantifier, free-choice 'any', and polarity-sensitive (NPI) 'any'. These are illustrated in (I-II-III) below.

(I) The most basic use of *kol* is as universal quantifier, corresponding to 'each', 'every', 'all', as in:

(64) a. kol yeled kibel matana
every child received present
b. kol ha-yeladim kiblu matanot
all the children received presents

(II) A second use of *kol* is a 'free choice' use, which occurs in certain modal contexts and corresponds roughly to 'free choice any', but more restricted (e.g. does not occur in imperatives like *Take any apple*):

(65) edey re'iya mitvakSim la-sur le-xol taxanat miStara
eye witnesses are asked to go to any station-const police

Sometimes, the readings in (I) and (II) may be both available, determining the kind of ambiguity illustrated below in (66):

13 Thanks to Anita Mittwoch (and to Tim Stowell, to whom they were communicated) for making these data available to me.

(66) a. at yexola la-vo kol yom
you can to come every/any day
b. kol exad yaxol li-t'on ta'ana kazot
every/any one can to argue argument like this
c. efSar la-tet kol tSuva
possible to give every/any answer

(III) When *kol* occurs in the scope of negation, a further meaning becomes available, corresponding to (existential) polarity-sensitive (NPI) 'any'. Consider the negation of (66c): this sentence, as indicated by the gloss, is three way ambiguous.

(67) i efSar la-tet kol tSuva
neg possible to give every/any-fc/any-NPI answer

The data discussed by Doron&Mittwoch is all the more relevant in view of Kadmon&Landman (1993) analysis of *any* as an element that can be bound by either negation or a generic operator, determining the well-known distinction between polarity sensitive and free-choice *any*.

A further type of cross-linguistic evidence, from East-Asian languages, equally seems to suggest that the mechanism of binding and of parasitic licensing (à la Kayne and Brody) that I have described in this chapter extend to a number of constructions. We have seen in section 1.4 that an analogy can be drawn between PL configurations with WhQPs and DQPs and multiple interrogation. The behavior of WhQPs in East Asian languages appears to indicate that the analogy goes even further.

It is well-known that in some East Asian languages, such as Chinese, WhQPs show a variety of meanings depending on the syntactic configuration they occur in. They have a behavior that has been compared to that of English *any*, in that they appear to require a syntactic licensor, and show a corresponding change in meaning.

The following table (adapted from Cheng 1991, p.122) summarizes the possibilities for WhQPs in Mandarin Chinese:

Table 2. Licensing of WhQPs in Chinese

Type of licenser	*Meaning of the WhQP*
Wh-question particle	interrogative
Y/N-question particle	polarity/existential
Negative marker	interrogative or polarity/existential
universal/distributive marker	universal/distributive

The reader is referred to Cheng 1991 (and references therein) for an analysis of the lincensing conditions of WhQPs in Chinese. These data have a place here because the pattern of possible binders for Chinese WhQPs has a significant overlap with the set of operators which can license *every*.

All of these seem to be interesting issues, which might spin future research directions on the syntax-semantics interface.

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