

## Chapter 1

# Introduction

This study discusses a number of topics in the syntactic theory of scope. It takes as a starting point the exceptional scopal behavior of indefinite or weak NPs functioning as antecedents in contexts of Donkey Anaphora, and of weak NPs that are used Specifically. On the basis of these facts we will develop a view of the syntax of scope which we hope will also shed some light on other problematic issues in the QR theory of scope assignment. We are interested in the syntax of weak NPs (and, to yet a lesser degree, in the semantics of weak NPs) only in so far as the analysis of their exceptional behavior furthers our understanding of the syntactic theory of scope in general. Some empirical contributions this study attempts to make to the theory of scope lie in the introduction of the notion of Relativized Specificity, and in describing Weak Crossover as a Scope Theory phenomenon. Theoretically, we will argue for a model of grammar which contains a level of LF, but in which the scope of a quantificational expression is determined by its entire derivational history.

The syntax of scope involves a wide range of issues; most of these issues will not be addressed here. We will restrict attention mainly to the scope that is assigned to quantificational Noun Phrases relative to other Noun Phrases (including pronouns), and relative to containing constituents (Ss, NPs and VPs in particular). We will largely ignore such matters as the scope of Wh-phrases; we will completely ignore the scope of negation, the scope of adverbs, questions of polarity, and many other issues. These limitations merely reflect the restricted (not to say narrow) scope of our research, not the interest of such matters to the theory of scope.

In this introductory chapter, we will present some preliminary considerations concerning the two main objects of this study: the syntactic theory of scope, and the class of weak or indefinite Noun Phrases. As for the theory of scope, our aim in this chapter will be to review some of the existing evidence (and also to present some new arguments) to support the position that the theory of grammar should include a phrase structural level of Logical Form, which determines, among other things, the relative scope of quantificational and modal expressions. Section 1.1. considers the status of the LF level of representation in the T-model of grammar adopted here, and summarizes some of the initial evidence for the insufficiency of S-Structure as the level of semantic interpretation. Section 1.2. discusses familiar as well as new evidence that Scope Assignment should be treated as a rule of syntax, rather than an extra-grammatical phenomenon. Section 1.3. presents a brief introduction to the notion of weak quantification, and ends with an overview of the remainder of this study.

## 1.1. On the Necessity of Scope Assignment

### 1.1.1. On the Level of LF

Within the T-model of grammar that led to the development of the Government Binding Theory in the late seventies and early eighties, and which has been the basis of most subsequent research in mainstream generative grammar, the level of Logical Form (LF) occupies a special position. Whereas almost any hypothesis concerning the principles and mechanisms operating at D-Structure and S-Structure has direct consequences with respect to the class of sentences ruled grammatical by the grammar, the primary effects of most hypotheses concerning the nature of LF are on the classes of interpretations assigned to sentences of the language.

Now, evidently, the (un)grammaticality of a sentence does depend partly on the operation of LF. Such phenomena as crossover and superiority, and certain types of reconstruction phenomena, are usually attributed to the impossibility of deriving wellformed LF structures from the relevant S-Structure representations. In those instances where no well-formed LF structure can be associated with a given SS representation, the principles of LF do contribute towards characterizing the class of wellformed (I-language) sentences. Hence, grammaticality judgments, as well as intuitions of interpretation, can be taken as empirical evidence bearing on the principles and mechanisms operating at LF.

Nevertheless, a special status should be awarded those arguments concerning the existence and the nature of LF that are based on interpretative phenomena. Without such arguments, the assumption of a level of LF would meet with serious methodological objections. For suppose that we would assume that LF does exist, but does not contribute to the interpretations of sentences, in the sense in which it does not contribute to their pronunciations. In that case there would still be empirical evidence for the existence and the nature of LF to be found in its effect as a filter on grammaticality. The T-model of grammar, however, would lose much of its plausibility, since there would remain hardly any principled motivation either for the existence or for the properties of LF representations. As long as there is reason to assume that LF contributes to the semantic interpretation of sentences, the three branches of the T-model can be seen as so many 'interfaces' of the linguistic system with the mental lexicon (DS), with the system of phonetic production and perception (PF), and with other cognitive systems (LF) (Cf. e.g. Chomsky 1986b). This interpretation of the T-model lends it a certain a priori plausibility, a certain naturalness, which would be absent in case the level of LF would not be interpreted in this manner. In that case, nothing would seem to prevent us from attaching to arbitrary levels of the grammar any number of filtering components in which arbitrary operations would be performed on input representations so as to submit them to local grammaticality constraints. Furthermore, not only the existence of LF would become questionable, but also its properties. If the representations obtained at LF were not

interpreted in any way, there would remain no reason to prefer any output representation over any other. What LF representation would be associated with a given sentence would depend only on some arbitrary set of output restrictions, instead of on the interpretation we know that sentence to have, so that the properties attributed to LF representations would not be independently motivated.

In recent literature there has been no lack of empirical motivation for the level of LF. In the works of e.g. Lasnik & Saito (1984), Chomsky (1986a), Chomsky (1991), explicit use is made of principles operating at LF in explaining the (un)grammaticality of classes of sentences. Here, the usefulness of LF as a theoretical construct lies first of all in the possibility of incorporating a type of rule ordering into the grammar by applying certain principles of the grammar to some elements at some level, and to other elements at another level of representation (e.g. adjuncts as opposed to arguments, with respect to ECP). However, in view of the above considerations, we still need to independently establish the necessity of LF with regard to semantic interpretation. It is the purpose of the present section and of section 1.2. to present empirical evidence that serves this purpose.

We take it, therefore, that if our model of grammar includes LF as a level of representation, the LF representation associated with a sentence is further input for semantic interpretation. In this manner, an LF representation for a sentence encodes those semantic properties of the sentence that are grammatically determined. Which semantic properties of sentences are grammatically determined, and which are not, is of course an empirical question. If some semantic feature is found to be conditioned in such a way that it can best be explained as a consequence of some property of the grammar, this will be taken as evidence that it is grammatically conditioned, and we will assume accordingly that the LF representations derived by the grammar of a language will encode, in some manner, the value of this grammatical feature for every sentence of the language. If, on the other hand, some semantic feature is found to be conditioned by principles which are not grammatical in nature, we will assume that LF representations do not encode values for this feature; the value of such a feature will be determined through the operation of the semantic component. If, for instance, it is established that the relative scopes of quantified NPs (hence: QNPs) can best be explained in terms of typical grammatical notions such as 'move  $\alpha$ ' and 'ECP', we will conclude that LF representations must encode relative scope in some way (e.g. through c-command relations). If, for instance, it is found that a phenomenon like 'cumulative quantification' is not subject to any condition that can insightfully be formulated in terms of what we know to be grammatical notions, then we will assume that 'cumulativity' is not determined by the grammar, and is not encoded at LF, and that it is conditioned, perhaps, by semantic properties of the expressions involved.

A further empirical question is in what way the interpretation of LF representations proceeds. This question is of a rather different nature, however, than the ones we are addressing here. First of all, it appears entirely feasible that the interpretation of LF representations proceeds 'directly', by the application of semantic (truthconditional)

clauses in accordance with the information encoded in LF representations. It appears equally feasible, however, that LF representations are interpreted through some correspondence relation (e.g. a mapping) with representations of a different kind, which obey further conditions of their own, and to which further semantic clauses apply<sup>1</sup>. In either case, there is no indication a priori that the rules or principles which interpret LF (by mapping LF representations onto further representations, or by applying semantic clauses to them directly) are in any way similar to the rules and principles which make up the T-model grammar. For this reason, it is not of direct interest to us how these matters are decided. While ultimately, of course, we might conceive of a theory which addresses the interfacing between the various interface components of the linguistic competence and other cognitive systems, and which could supply independent evidence regarding the appropriateness of the type of LF representations postulated by the theory of grammar, at this point we are studying the linguistic system in isolation, and abstract away from its cognitive 'surroundings'. For this reason, it is not relevant to our purposes (apart from considerations having to do with the internal organization of the grammar) in what way grammatically conditioned semantic features are encoded in LF representations, and whether the manner of encoding is convenient for the purpose of semantic interpretation; we have only to insure that they are encoded in some consistent manner.

The latter point is not entirely unproblematic, however. While we do not need to stipulate any grammatical statement as to how LF representations are interpreted, and while the manner in which semantic information is encoded at LF depends solely on the exigencies of an explanatory theory of grammar, we must have some means of establishing that the semantic properties of each sentence, in so far as they are grammatically conditioned, are indeed correctly encoded in the LF representation(s) it is assigned, or we will not be able to decide whether our theory of LF makes the correct predictions for any given case. Toward this, it is required that sentences (four-tuples of  $\langle DS, SS, LF, PF \rangle$ ) which are equivalent with respect to any given semantic feature encoded at LF, should be equivalent at LF with respect to the property of LF structures that encodes this semantic feature. If this is not the case, there can be no consistent way at all of formulating the interpretation of LF structures, and the LF structures generated by the grammar cannot in fact be said to encode the semantic feature in question. In other words, while we do not need to establish how LF structures are interpreted, we must establish that they might in principle be interpreted correctly, and that a set of rules might in principle be formulated which interprets LF structures in such a way that the rules of grammar can be said to correctly predict the (grammatically conditioned) semantics of the sentences they generate. The obvious way to deal with this issue is to formulate some ad hoc set of interpretive rules which assigns to representations at the level of LF, some kind of semantic interpretation, however rudimentary, which we can test against our intuitions. If we succeed in

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<sup>1</sup> The reader is referred to May; (1985) (chapter 2) and references cited there for some further considerations of this particular issue.

formulating such a set of rules, we will have shown that the semantic features we consider grammatical are indeed correctly encoded in the LF structures generated by the grammar, and that a theory of meaning that takes these LF structures as its grammatical input is feasible. For this purpose, we will assume below that the grammatical level of representation that is input to semantic interpretation is associated by means of a set of mapping rules with a further level of representation named LF'; some of the principles governing the operation of the mapping rules refer to properties of LF structure, and some may be purely semantic in nature. The reader is to bear in mind, however, that the notion of LF', the mapping rules, and the accompanying principles are all used here primarily as tools with which to verify the validity of our assumptions regarding the derivation of LF, and are intended as a theory of semantic interpretation only in the most tentative way.<sup>2</sup>

These considerations leave us with two basic empirical questions to be settled. One question is, which semantic properties of natural language sentences are grammatically (syntactically) determined. The second question is whether the determination of these properties indeed requires a separate grammatical level of representation. We will take the position that, among other things, the relative scopes of quantificational and modal expressions are determined at the grammatical phrase-structural level of Logical Form. The properties of the rules that map S-Structure onto LF and determine the possible scope orders of quantificational expressions have been the subject of much research, e.g. by May (1977), May (1985). Here, I will be primarily concerned with the exceptional scopal behavior of a special class of NPs, the so-called indefinite or weak NPs. It is to be expected, however, that a principled account of the scopal properties of these NPs will shed some light on the functioning of LF rules, and on their necessity in deriving the interpretations of sentences containing these and other types of NPs.

Clearly, the exceptional scopal behavior of weak NPs can only be brought to light against the background of the general properties of the level of LF, and of the scopal properties of other types of Noun Phrases. Furthermore, an account of the properties of weak NPs has true explanatory value only if it can be made part of a more general account of scopal phenomena, and if independent evidence can be found for it in the analysis of other types of NPs. For these reasons too I will proceed to discuss in sections 1.1. and 1.2., however briefly and superficially, some general properties of LF scope assignment. In the next section (1.3.) I will characterize the class of weak NPs by pointing out some properties of these NPs that have been discussed in the literature. In the next two chapters, two exceptional scopal properties of weak NPs will be discussed in further detail.

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<sup>2</sup> These assumptions add up to a view of the position of semantic interpretation inside and beyond the grammar which is very similar to the proposal in Chomsky; (1975:105).

### 1.1.2. Against S-Structure Interpretation

For a model of grammar in which semantic interpretation takes place at a separate level of Logical Form to be justified, two types of evidence are required. First, it must be shown that interpretation cannot take place at D-Structure; and second, that it cannot take place at S-Structure. I shall not go into arguments of the first type; an example is the opposition in (1) (Cf. Chomsky 1965:224:fn.9).

- (1) a. everybody knows two languages  
b. two languages are known by everybody

The preferred reading for (1a) is the narrow scope reading for *two languages*, whereas for (1b) it is the wide scope reading for that NP. Apparently, the transformations deriving (1a) and (1b) from similar Deep Structures influence the interpretation of these sentences, so that semantic interpretation cannot take place prior to the application of these transformations. While we will not return to Deep Structure interpretation until chapter 3, section 3.5.2., the arguments against S-Structure interpretation to be presented below apply equally to DS interpretation.

The insufficiency of S-Structure for semantic interpretation has been argued for by May (1977). May argues against Reinhart's (1976) claim that S-Structure does suffice for the determination of the relative scope of quantificational NPs. According to Reinhart, the scope of an NP is its c-command domain at S-Structure. May discusses two counterexamples (both of which were pointed out by Reinhart herself): cases of inverse linking such as (2), and facts like (3).

- (2) some people from every walk of life like jazz  
(3) every man loves some woman

The most salient reading of (2) is, that for every walk of life there are some people who are "from that walk of life", and who like jazz. Here, *every walk of life* has wide scope with respect to *some people*, which is not in accordance with the c-command relation that seems to hold between these expressions at S-Structure. In sentence (3), matters are clearer still: (3) can not only mean that for every man there is a woman he loves, but also that there is a woman such that every man loves her. If it were true that relative scope coincides with S-Structure c-command relations, the latter reading should be absent. But if we assume that S-Structure is followed by a further level of representation (LF), which is derived from S-Structure through the application of a movement rule (QR) which attaches quantified expressions to a dominating (S-)node in arbitrary order, then we predict that (2) has the LF (4), and that (3) can have the LFs (5a) and (5b).

- (4) [<sub>S</sub> every walk of life<sub>i</sub> [<sub>S</sub> [some people from t<sub>i</sub> ]<sub>k</sub> [<sub>S</sub> t<sub>k</sub> like jazz ]]]

- (5) a.  $[_S \text{ every man}_k [_S \text{ some woman}_i [_S t_k \text{ loves } t_i ]]]$   
 b.  $[_S \text{ some woman}_i [_S \text{ every man}_k [_S t_k \text{ loves } t_i ]]]$

We can now simply state that the scope relations in a sentence (taken as a 4-tuple of  $\langle \text{DS}, \text{SS}, \text{PF}, \text{LF} \rangle$  representations) coincide with the c-command relations at LF.

Besides (2) and (3), one further argument for the insufficiency of S-Structure interpretation can be based on (6).

- (6) some man loves every woman

It is now usually assumed (although it has also been denied) that (6) has a reading in which for every woman there is some man who loves her. If this is correct, (6) is an example where scope relations need not be in accordance with S-Structure c-command relations. It is an example, furthermore, which differs from (3) in that it is not susceptible to Reinhart's treatment of the latter, which we will discuss below.

Reinhart defends her position against examples of inverse linking ((2)/(4)) by assuming that the (SS) c-command relations between *some people* and the PP *from every walk of life*, rather than the asymmetric c-command relations between the NPs may be relevant to the determination of relative scope in these cases. Whether this position is indeed tenable or not depends on various points of analysis that I will not go into here; the reader is referred to May (1977).

Reinhart's defence against examples of the (3)/(5) type touches on a matter that has repeatedly cropped up in the literature on definiteness, and that for this reason deserves some special attention here: we therefore now embark on an excursion which will occupy the remainder of the present subsection. Reinhart (1976:193) claims with respect to facts like (3) that

"...most putative examples of such ambiguities which are discussed in the literature are ones where one interpretation entails the other..."

(Thus, the wide scope reading for the direct object in (3) (i.e. the reading associated with LF (5b)) entails the narrow scope reading for the direct object ((5a)).) Reinhart's position appears to be that, because of the entailment that holds between these two readings, no clear distinction can be made between these readings, and that therefore there is no reason to derive both readings as independent interpretations of the utterance. Rather, sentence (3) has only one interpretation, which does not specify whether one specific woman is loved, or a number of women are loved. The relative scopes in this single interpretation are, furthermore, in accordance with S-Structure c-command relations, so that there is no need for the indefinite NP *some woman* to undergo QR. Reinhart does not explain, however, how and why the appropriateness of attributing only one interpretation to (3) follows from the fact that (5b) implies (5a). Her all too brief discussion of this point is probably the cause of May's singularly

inappropriate answer to her defence. May observes that, according to Reinhart, (3) is vague rather than ambiguous. He then objects that Reinhart's position will not allow her to derive all readings for sentence (7).

- (7) everyone convinced someone

In May's theory of LF (7) would be assigned the LF representations in (8a) and (8b) (Cf. May 1977:28).

- (8) a.  $[_S \text{ everyone}_i [_S \text{ someone}_k [_S t_i \text{ convinced } t_k ]]]$   
 b.  $[_S \text{ someone}_k [_S \text{ everyone}_i [_S t_i \text{ convinced } t_k ]]]$

Only in interpretation (8a) are the scope relations in keeping with the SS c-command relations. Therefore, Reinhart's position should imply that the relative scopes in (7) are only those indicated in (8a). The reading represented by (8b) can only arise as the result of an entailment relation obtaining between (8a) and (8b). According to May, however, this is not possible, since (8a) does not imply (8b).

What is peculiar about May's criticism of Reinhart is that, if it were pertinent, Reinhart's defence against (3) must have been inappropriate to begin with, since (3)/(5) is just like (7)/(8) in all relevant respects, and exhibits the same entailment relations. However, although May is correct in observing that (8a) does not imply (8b) (just as (5a) does not imply (5b)), (8b) does imply (8a) (in the same way (5b) implies (5a)). What Reinhart must have meant, and what May must have misunderstood, is that where one reading entails another, the entailing reading is superfluous (need not be derived independently), and not the entailed reading. Therefore, in Reinhart's view, since (8b) implies (8a), we need only (8a) as an interpretation of (7), and Quantifier scope can be said to mirror S-Structure c-command.

The very same misunderstanding of Reinhart's position can be observed again in Huang's (1982:128f) discussion of this issue. Huang first gives the quote from Reinhart cited above, and then proceeds to point out that this argument does not apply to "the very case [(3)] at hand". He observes that, while the S-Structure order of the quantifiers does imply the inverse order in cases like *a student bought every book*, this is not the case in (3) and (7). Hence, the entailment explanation should disallow the wide scope reading for the object in the latter cases. It is not the S-Structure order entailing the inverse order, however, but the inverse order entailing the S-Structure order that figures in Reinhart's entailment explanation of the apparent ambiguity of (3) and similar examples.

Before attempting to establish whether we should accept Reinhart's case for the non-ambiguity of (3), let us briefly consider another controversy in which it has played a role in the literature. Reinhart (1976) was not the last to use the non-ambiguity line of reasoning with respect to cases like (3). Cooper (1979a) employs a similar argument to show that cases where indefinite NPs seem to be assigned extreme



wide scope (across an extraction island) do not really merit any special attention. These are cases like (9) (Cooper's (25c)):

- (9) Mary dates every man who knows *a producer I know*

The most salient reading of (9) is, that there is one specific producer such that Mary dates every man who knows this producer. A QR account of this interpretation appears to require for the underlined indefinite NP to be moved out of the complex NP, in violation of Ross' (1967) Complex NP Constraint. Cooper proposes a different solution. According to Cooper, (9) really only has the interpretation where the indefinite has narrow scope; and the sentence can really only mean that Mary dates every man who knows some producer I know (possibly a different producer for every date). However, anyone who produces or perceives an utterance of (9) will suppose that the choice of producer will happen not to vary with every date, since the situation in which there is only one producer to inspire Mary to this behavior is much more likely to obtain in the real world. In reference to (9) and similar examples, Cooper writes:

"There seems to be no reason a priori for us to suppose that the English sentences are ambiguous between a wide scope and a narrow scope reading since the narrow scope reading will always give truth in those worlds where the wide scope reading gives truth." [Cooper 1979a:142]

In fact we seem to be presented with two different arguments here. One argument is, that sentences like (9) can be understood as if they had an interpretation that they do not in fact have, if this missing interpretation is much more plausible from a pragmatic point of view. The second argument parallels Reinhart's argument discussed above: since there is an entailment relation between the two available readings, one of these (the wide-scope reading) need not be represented.

It is well known that the first argument cannot be taken very seriously in itself. It is quite evident that, as a matter of performance, sentences can be *used* as if they had a reading that they do not in fact have, just as sentences can be used that are not assigned any well-formed representation at all. But this does not mean that one can have the intuition that a sentence has a reading that it really lacks, merely because this reading would be pragmatically plausible. Sentences like (10) clearly indicate that this is not the case.

- (10) Mary dates every man who knows *few producers I know*

It is pragmatically quite plausible (even more plausible in fact than the situation described by the wide scope reading of the indefinite in (9)) that there will be very few producers of my acquaintance such that Mary can find the time to date every single man who knows them. Nevertheless, (10) cannot be understood with wide scope for

the italicized NP, although that would produce the reading that corresponds to this highly likely state of affairs. I presume therefore that Cooper must really have meant that a pragmatically plausible reading can appear as a true reading, not as a general rule, but only by virtue of an entailment relation that must hold between this reading and the interpretation that the sentence is assigned by the grammar. We are left then with the one argument previously provided by Reinhart. But like Reinhart, Cooper does not explain why that entailment relation (whether or not in connection with pragmatic factors) results in a reading appearing to be available that is really not available.

Cooper (1979a) has also not remained unchallenged in the literature. Fodor & Sag (1982) (hence: F&S) have a special interest in sentences such as (9) being truly ambiguous between a narrow scope reading and a wide scope reading. For this reason, they argue against Cooper. They start out by paraphrasing Cooper's position as follows (I have adapted the example numbers to fit the above):

"...a sentence with interpretation  $I_1$  (e.g. narrow scope of the indefinite in [(9)]) may be understood by a hearer as if it had interpretation  $I_2$  (e.g. wide scope of the indefinite in [(9)]) just in case (i)  $I_1$  entails  $I_2$ , and (ii) the hearer has empirical knowledge (or belief) which renders inapplicable to the real world all entailments of  $I_1$  other than  $I_2$ ." [Fodor & Sag 1982:371/2]

F&S's reply focuses on (11).

- (11) Mary dates at least five men who know *a producer I know*

In (11), like in (9), the italicized NP can be understood as having wide scope with respect to the containing complex NP. Yet, according to F&S, this cannot be explained away with the entailment argument, since (11) does not obey condition (i): in (11), the entailment relation runs in the opposite direction: here  $I_2$  (wide scope) entails  $I_1$  (narrow scope). This is indeed the direction of entailment in (11). But (11) for that very reason does not constitute a counterexample to Cooper's position. The direction of entailment wide scope  $\rightarrow$  narrow scope is precisely the direction Cooper refers to, and F&S have misunderstood him in this respect (and also misparaphrased him, as the reader can check by comparing the above quotations).

F&S's mistake, which, curiously, runs exactly parallel to May's and Huang's misinterpretation of Reinhart pointed out above, may perhaps be attributed to the following: not only is (11) a proper example of the situation Cooper describes, it is furthermore, ironically, the only proper example of that situation we have as yet encountered. For the examples Cooper himself presents us with (such as (9)) are not proper examples: in (9) there is no entailment between the wide scope reading and the narrow scope reading in either direction, and what Cooper says about that in the above quote is incorrect.

Although we have seen that F&S have unwittingly provided Cooper with an

example for his claim, he has himself provided us with an example that refutes his claim, to wit example (9): in (9) an indefinite NP is seen to have scope outside a containing complex NP, while this interpretation cannot be attributed to any entailment relation with the narrow scope reading. Therefore, it would hardly appear worthwhile mentioning that there is yet another example, by F&S, where an indefinite has ultra-wide scope, and no implications obtain; Cf. (12) (F&S's (67)).

- (12) John wants to date exactly half the girls who go out with a professor  
who flunked him out of linguistics 101

However, the comedy of errors we have witnessed has some unexpectedly interesting spin-off in the case of (12); for (12) draws our attention to the exceptional behavior of non-monotone expressions like *exactly half the*. While (12) and (9) show that the implication argument does not suffice to explain away the wide scope indefinites Cooper is concerned with, we can now construct (13) as a counterexample to Reinhart's account of (3).

- (3) every man loves some woman  
(13) exactly half the boys kissed some girl  
a. [exactly 1/2 boys x [some girl y [ x kissed y ]]]  
b. [some girl y [exactly 1/2 boys x [ x kissed y ]]]

Like (3), (13) has a reading in which *some girl* has wide scope, contrary to SS c-command relations. But Reinhart's defence against (3) is not applicable to (13), for neither reading of (13) implies the other. This is strong evidence that (13) (and (3), presumably) are truly ambiguous, and that scope relations do not always coincide with SS c-command relations.

Not only can we construct empirical evidence against Reinhart's and Cooper's lines of argument, by pointing out examples which are ambiguous in the relevant ways but where no entailment holds between the ambiguous variants, as in (9), (12) and (13); it is also questionable in those cases where entailment does obtain, whether a valid argument can be constructed to the effect that, because of the entailment relation, the ambiguous variants need not both be represented. We noted that both authors have not made explicit why and how the one leads to the other. Let us try to establish what the structure of such an argument might be.

Consider sentence (3) once again.

- (3) every man loves some woman

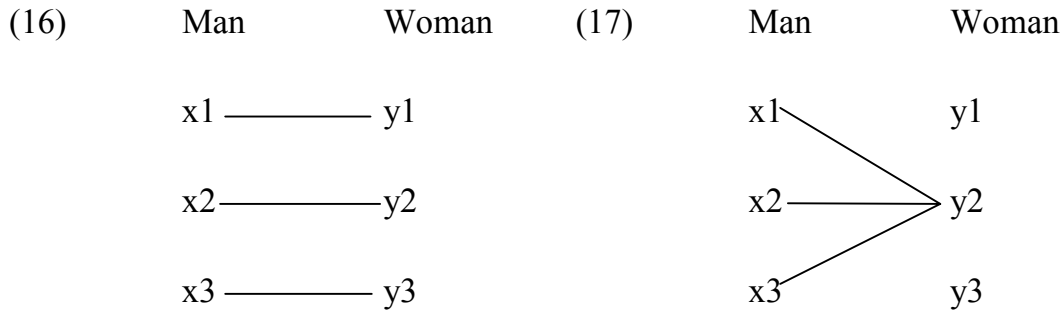
We are investigating the claim that (3) is not as ambiguous as it appears to be at first sight. This actually seems to be a reasonable claim. For it can be argued that the meaning of (3) is fully accounted for if we assign to (3) the interpretation in (14).

$$(14) \quad \forall x:\text{Man} \ \exists y:\text{Woman} \ L(x,y)$$

After all, the state of affairs described in (15)

$$(15) \quad \exists y:\text{Woman} \ \forall x:\text{Man} \ L(x,y)$$

is nothing more than a special case of (14). If for every man, there is some woman that he loves ((14)) then, through some unhappy circumstance, this just may turn out to be the same woman for every man ((15)). There is no reason to attribute two distinct logical forms, (14) and (15), to sentence (3), merely because it can be truthfully uttered with respect to both situation (16) and situation (17).



We can rephrase this argument more formally as follows. We might say that linguistic ambiguity appears to give rise to a disjunction of truth conditions. An ambiguous sentence like (18)

$$(18) \quad \text{John saw the man with the telescope}$$

is true iff: John saw the man while using the telescope, or John saw the man that was holding the telescope. The reason for this is that, while (18) represents one string of English words, it really comprises two I-language sentences, so that in a given situation the speaker/listener can choose as an interpretation for (18) whichever I-language sentence underlying (18) is true with respect to that situation. This choice can be represented by means of a disjunction of truth conditions.

Consequently, if (3) is ambiguous between (14) and (15), the conditions under which the string in (3) can be truthfully uttered can be represented by means of the paraphrase in (19), the disjunction of (14) and (15).

$$(19) \quad \begin{aligned} & [ \forall x:\text{Man} \ \exists y:\text{Woman} \ L(x,y) ] \vee \\ & [ \exists y:\text{Woman} \ \forall x:\text{Man} \ L(x,y) ] \end{aligned}$$

Now, if we look at (19), it is immediately evident that (15) adds nothing to the interpretation of (3). Since the second part of (19) implies the first part, (19) is true iff

the first part of (19) is true, i.e. iff (14) is true.<sup>3</sup> Therefore, the truth of (15) need not be established for the truth of (19) to be established, and the meaning of (3) can be completely represented as in (14). Paraphrasing this in terms of the arguments by Reinhart and Cooper, we can again say that since the wide scope readings for the indefinites in (3) and (11) imply the narrow scope readings, taking both the wide scope readings and the narrow scope readings as true interpretations of the sentences is equivalent to taking only the narrow scope readings as true interpretations. We now appear to understand why the reading that entails the other reading can be left unrepresented, so that in (3) and (11) there is no reason to assume that the indefinites can have wide scope.

The argument we have constructed here, although plausible, does not appear to me to be quite correct. The ambiguous analysis and the non-ambiguous analysis lead to different predictions, when sentences like (3) are embedded under negation<sup>4</sup>. Take (20) as an instance.

(20) It is not true that every man loves some woman

If we assign the embedded S in (20) the interpretations in (14) and (15), the ambiguous analysis comes up with (21) and (22) as interpretations of (20).

(21)  $\neg [ \forall x:\text{Man } \exists y:\text{Woman } L(x,y) ]$

(22)  $\neg [ \exists y:\text{Woman } \forall x:\text{Man } L(x,y) ]$

According to the ambiguous analysis then, (20) is true iff (21) or (22) is true, so that (20) can be paraphrased as in (23). Note, that the negation does not have scope over the disjunction: the disjunction always has widest scope since, according to the ambiguous analysis, (23) is really a paraphrase of the choice between two complete and independent LF-representations.

(23)  $[ \neg \forall x:\text{Man } \exists y:\text{Woman } L(x,y) ] \vee$   
 $[ \neg \exists y:\text{Woman } \forall x:\text{Man } L(x,y) ]$

The non-ambiguous analysis on the other hand assigns to (20) the interpretation in (24).

(24)  $\neg \forall x:\text{Man } \exists y:\text{Woman } L(x,y)$

(24), however, is not correct. Although in (23), one conjunct again implies the other,

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<sup>3</sup> (19) has the shape  $(\phi \vee \psi)$ , where  $\phi$  is (14) and  $\psi$  is (15). In the cases we are discussing,  $(\psi \rightarrow \phi)$ . But  $((\phi \vee \psi) \ \& \ (\psi \rightarrow \phi))$  is equivalent with  $\phi$ , so that (19) is equivalent with (14).

<sup>4</sup> For previous uses of a negation test for similar purposes, see Kempson; & Cormack; (1981), and references cited there. We will return to Kempson; & Cormack;'s position on quantifier scope ambiguity in section 1.1.3..

the implication runs in the opposite direction here. Therefore, while in (23), as in (19), one of the conjuncts is redundant, in (23) it is not the second part but the first part that is superfluous: the truth value of (23) does not always equal the truth value of (24), it always equals the truth value of (25) (where scope relations are inverted with respect to S-Structure c-command).

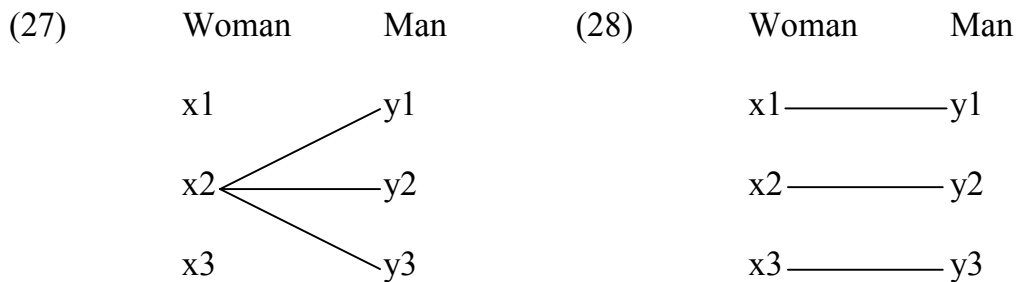
$$(25) \quad \neg \exists y:\text{Woman} \ \forall x:\text{Man} \ L(x,y)$$

It turns out, therefore, that the ambiguous analysis is to be preferred over the non-ambiguous analysis, since the ambiguous analysis allows for a compositional semantics to operate unproblematically in the case of embedding under (e.g.) negation, where the non-ambiguous analysis seems to run into trouble. Together with the intuition that (23) does, but (24) does not predict the correct truth conditions for (20), the above considerations indicate that the theory of QR can be supported on the basis of facts like (3), and that the CNPC really appears to be violated in (11).

The notion that (15) is an acceptable representation of the semantics of (3), perhaps arises from the fact that the meaning of a sentence is usually based on the class of circumstances in which that sentence can be truthfully uttered. The range of meanings that a sentence like e.g. (26) can have,

$$(26) \quad \text{some woman loves every man}$$

is usually demonstrated by showing that (26) can not only be truthfully uttered w.r.t. (27), but also w.r.t. (28).



This manner of demonstrating the ambiguity of (26) allows one to assume that native speakers do not have any conscious intuitions with respect to the (possibly manyfold) structures of sentences of their language, but only with respect to the acceptability and meaning of strings of words of their language. Only the meanings of a string of words, determined on the basis of the class of situations to which it can be truthfully applied, need to be counted as a linguistic datum.

While I do not intend to take issue with this position, it seems to me that it does not exclude a wider class of judgments from being taken into account. In particular, it seems to me that native speakers can have intuitions about the possible untruthful application of a string of words.

This extension is not necessarily void. It is, after all, only at a metalinguistic level that a sentence like (3) allows of a paraphrase as in (19), and that the truth conditions of an ambiguous sentence consist of the disjunction of the truth conditions of the ambiguous variants. At the linguistic level there are two sentences of the I-language that both happen to look like (3) at S-structure, but that differ at LF, resulting in semantic representations like (14) and (15) respectively. Now a language user, when confronted with a situation and a string of words (3) that he must parse, can choose an I-language sentence which underlies that string and which is true w.r.t. that situation, but he is also free to choose an alternative I-language sentence underlying the same string which is false w.r.t. that situation.

In consequence, what I would like to propose is that the following argument be taken as a valid argument demonstrating the ambiguity of (3) (repeated).

(3)            every man loves some woman

Sentence (3) can be truthfully uttered with respect to (29); (3) can also be untruthfully uttered with respect to (29).

(29)	Man	Woman
	x1 —————	y1
	x2 —————	y2
	x3 —————	y3

That is, I have the intuition that I can understand (3) in such a way that it is true in (29), but that I can also understand it in such a way that it is false in (29). Therefore, more than one structure must be assigned to (3).

We have devoted quite a few pages to arguing that sentences (3) and (9) must be considered ambiguous with respect to the scope of the indefinite NPs they contain, because this fact will play a rather important role in subsequent chapters. We can return now to our main line of argument. The inverse-linking example in (2) indicates that the scope domains of quantified NPs cannot be equated with their c-command domains at S-Structure; the ambiguous examples (3) and (6) indicate more generally that the relative scope of quantified NPs is not determined at S-Structure. We shall encounter further evidence to this effect when we review the evidence that Scope Assignment is mediated through a rule of movement, in section 1.2. below. First, however, we need to consider one alternative view of the determination of relative quantifier scope in natural language.

### 1.1.3. On Non-Syntactic Scope Assignment

If on the basis of the above considerations we should conclude that relative scope does not always mirror S-Structure c-command relations, this does not necessarily imply that a level of LF is needed to represent quantifier scope. We might for instance hypothesize that S-Structure contains all the information that the linguistic system provides with respect to the interpretation of a sentence, and that some other cognitive system which is not linguistic in nature calculates the class of possible semantic interpretations of S-Structure. Such a hypothesis might in fact be viewed as an extreme version of the Sigma-sequence mechanism proposed in May (1985). According to May, some LF-representations remain ambiguous with respect to the relative scope of some quantifiers they contain. That is, these LF structures represent a class of distinct interpretations, rather than one interpretation.

One proposal along these lines has been put forward by Koster (1987). According to Koster, there is no phrase-structural level of Logical Form. Instead, a QNP may take scope over any other quantified expression it S-commands. The grammar thereby provides some information with respect to the relative scope of quantifiers, in that it determines what NPs belong to what minimal Ss. But the grammar does not fully determine the relative scopes of QNPs, since S-Structure remains ambiguous and different semantic interpretations of one S-Structure may ensue. There is, in principle, the possibility that the semantic interpretation of S-Structure is subject to further conditions which are proper to semantics, although within the bounds set by the S-command condition. We shall return to Koster's and other, similar proposals in chapter 3.

More radical and elaborate versions of such a proposal can be found in e.g. Kroch (1974), Kempson & Cormack (1981) and Verkuyl (to appear). The paper by Kempson & Cormack has been cited (e.g. by Huang 1982) as supporting the non-ambiguity hypothesis defended by Reinhart (1976) and Cooper (1979a). Kempson & Cormack's (hence: K&C's) position is considerably more complex, however, than the views discussed so far, and is not subject to the criticism we have levelled against these views. In fact, we do not believe that Kempson & Cormack support a non-ambiguity position in the sense proposed by Reinhart & Cooper. K&C's proposal can be roughly outlined as follows.

K&C make use of a negation test similar to the one employed above, in order to establish the correct semantic representations for putatively vague or ambiguous sentences. For instance, example (30) contains an undisputably ambiguous noun, *bank*, which can refer either to a riverside or to a monetary institution.

(30)        John owns a bank

Since *bank* is ambiguous, not vague, we will want to say that (30) reflects the phonological representation of two distinct sentences, one containing a noun referring



to riversides, the other containing a different noun that refers to monetary institutions. We do not want to say that (30) is the PF of a single sentence containing a noun that can be used to vaguely describe something that may be either a riverside or a monetary institution. The position that (30) is not merely vague is supported by the following observation.

- (31) John doesn't own a bank  
 (32)  $\neg (\exists x [ (\text{Riverside}(x) \vee \text{Money\_institute}(x)) \ \& \ \text{Own}(j,x) ])$   
 (33) a.  $\neg (\exists x [ \text{Money\_institute}(x) \ \& \ \text{Own}(j,x) ])$   
       b.  $\neg (\exists x [ \text{Riverside}(x) \ \& \ \text{Own}(j,x) ])$

If *bank* were vague, we would expect (31) to have a meaning roughly like (32), denying that John owns anything like a monetary institute or a riverside. If *bank* is ambiguous, then so is (31), giving us the two readings in (33). The latter result seems to be correct, since (31) can be truthfully uttered in a situation in which John owns a riverside, but not a monetary institution, and also if John is in the banking business, but is not a land-owner. In the first case, we can take (31) to be the PF of a sentence that has (33a) as a semantic representation, while in the latter case (31) is the PF of a different sentence meaning (33b). These options would all be excluded if (32) were the correct representation.

(Alternatively, to pursue my remarks in connection with (29) above, we can observe that (31) can also be *untruthfully* uttered if John owns a monetary institution, but not a riverside, and vice versa, since we can choose to parse (31) as the PF of a sentence whose semantic representation happens to render it false in such a situation).

Consider now example (34) (compare K&C's (49)).

- (34) It's not the case that every linguist has read ONE article on quantifiers  
 (...because they can't possibly all have read the same one)

This sentence can be truthfully uttered in a situation where every linguist has read some (different) article on quantifiers, but there is not one single article that they have all read. Thus, (34) can be used to selectively deny just the wide-scope reading for the object. K&C conclude that the interpretation of (34) is compatible with an ambiguity position along the lines of May (1977) which we have adopted, but not with a non-ambiguity position of the type discussed earlier. K&C's position, however, belongs to neither of these categories.

K&C propose a model of grammar which assigns to every sentence a phonological representation, a syntactic representation, and a semantic representation (a (non phrase-structural) logical form). Example (31) represents a PF that occurs in two such three-tuples; the PF in (34) however occurs in just one. In the case of examples such as (34), the semantic representation assigned by the grammar is input to further transformations (so-called 'procedures') that map logical forms onto logical forms.

Different applications of various procedures serve to derive different possible readings for a given semantic representation. For example, the single semantic representation assigned to (34) by the grammar can, by means of the procedure called 'uniformising' be mapped onto a logical form that represents the wide-scope reading for the object. Since this rule transforms a (sub)formula into a different (sub)formula to which, in the case of (34), the negation is applied, the reading observed here can be accounted for.

From this point of view, the remaining question whether (34) (and (3), etc.) are ambiguous or not is largely terminological. If we take the grammatical representation of a sentence to be a three-tuple as described above, and define ambiguity as the co-occurrence of distinct three-tuples containing non-distinct PFs, then in K&C's analysis (3) is not ambiguous. In fact, K&C describe their position as the (radical) vagueness analysis. Given the model proposed by K&C, however, there is no reason why a sentence should not be defined as a four-tuple containing both the primary logical form and the secondary logical form derived by means of the procedures. This would imply that (3) is ambiguous, although the ambiguity would simply be expressed at a different level of representation than if we adopt, e.g., a QR analysis of the wide-scope reading for the object in (3). What our 'ambiguity-position' and K&C's procedural analysis of (3) have in common is the notion that such examples can be assigned various distinct readings, each of which can be considered the single interpretation of a derivationally distinct variant of the sentence. This distinguishes these approaches from what I have referred to as the non-ambiguity position maintained by Reinhart and Cooper, which assigns to (3) no more than one semantic representation at any specified level of representation, referring any further determination of its possible uses to pragmatics.

The distinction between Kempson & Cormack's approach and our own is essentially empirical in nature. Kempson & Cormack place the determination of the manyfold readings of (3) outside of the grammar proper (causing them to deny it the predicate 'ambiguous') on the strength of the assumption that the generalizations governing the determination of such readings refer to logical, rather than grammatical notions. These generalizations are therefore expressed by means of procedures mapping logical formulae onto logical formulae. This assumption is based, of course, on the observation that there exist logical dependencies (or implication relations) between the various readings of (3), which allow them to be derived from a common source through the manipulation of logical formulae. We have placed the locus of the determination of the various readings that can be assigned to (3) inside the grammar, claiming thereby that the generalizations involved refer to grammatical (syntactic) notions. It seems, therefore, that we should attempt to establish, by constructing a successful theory of LF, the viability of this empirical claim, if we want to argue that the LF-hypothesis is to be preferred over an alternative like Kempson & Cormack's (1981), Koster's (1987) or Verkuyl's (to appear). In the case of these alternatives, a possible first move would be to establish the relevance of Bounding Theory to the determination of relative scope. We shall return to this matter in section 1.2..

We turn now to a second possible way in which one might attempt to avoid having to assume a separate level of LF. It might be hypothesized that relative scope is determined by S-Structure in the sense that a D-Structure may be associated with any one of a class of possible S-Structures that differ only in bearing different (covert) diacritics indicating scope. Scope assignment would not proceed through the application of movement rules, but rather in the manner proposed by Van Riemsdijk & Williams (1981) and Williams (1986), (1988). In Williams (1986) it is proposed that the scope of the direct object in (35) be expressed by means of the index attached to the dominating S-node (Williams (1986) is especially taciturn on the subject of relative quantifier scope, we will return to Williams (1988) in chapter 3, section 3.5.3.).

(35)            [S<sub>i</sub> John loves every woman<sub>i</sub> ]

The first alternative hypothesis (the one entertained by Koster, Kempson & Cormack, and others) explicitly places the determination of relative quantifier scope outside the grammatical system. But for purposes of linguistic theorizing, Williams' alternative does so too, if the diacritic system in question does not use any strictly grammatical notions, and plays no part in any other module of grammar. I believe this is the case with Williams' proposal. Both alternative hypotheses can therefore be refuted by showing that the determination of relative scope depends on factors that are typically grammatical in nature. The work that has been done (among others, again, by May (1977)) to show that Scope Assignment is a movement operation that obeys the usual principles governing movement in general serves this purpose.

For this reason it would be of some importance if it could be established that the restrictions on QR (May (1977) in fact only discusses subjacency) can in fact be derived from the restrictions governing LF movement that have been developed since the early work on QR. More so, since claims regarding the principles and operations of LF that have been put forward in work on movement (such as Chomsky 1986a) can only be justified, if those principles and operations can be shown to be of use in determining the interpretative properties of sentences. This research on the exact properties of the conditions on movement as they apply to QNPs undergoing QR will not be taken on here; but I shall proceed to discuss briefly some arguments in favor of a movement perspective on Scope Assignment, formulated in terms of the *Barriers*-framework. It should be noted, however, that a justification of for instance the *Barriers*-framework as a theory of LF movement, and a justification of QR as a theory of Scope Assignment, need not run in parallel. For matters of scope to provide evidence in favor of that framework, scopal phenomena must be found to obey the principles attributed to LF by the framework. For the QR/LF theory of quantifier scope assignment to be justified however, there need not exist a fully elaborated theory of (LF-)movement that can explain the relevant phenomena. It is sufficient if it can be shown that Scope Assignment obeys a set of restrictions which have been

shown to be restrictions on movement, to justify the conclusion that Scope Assignment must be a movement operation, even if these restrictions have not been satisfactorily explained.

## 1.2. Scope Assignment as a Movement Rule

In this section we will discuss some arguments that have been put forward in the literature, as well as some new arguments, to the effect that scope assignment takes place by means of a rule of movement. We will not aim at completeness in any historiographic or linguistic sense, but simply run over a list of known restrictions on movement, to see whether scope assignment can be shown to obey them.

### 1.2.1. Bridge Verbs

As a first approximation it may be said that QR is generally clause bounded. In May (1977) this restriction was attributed to the Subjacency Condition. QR adjoins quantified NPs to any S-node. Due to conditions on the proper binding of variables, this will generally be a dominating S-node (apart from some exceptional cases to which we will return in chapter 3, section 3.5.2.1.). Since S is a bounding node, no quantified NP may be raised out of a clause, since it would then cross both the embedded S-node, and the matrix S-node to which it is adjoined.

In Williams (1977a) however, it was argued rather convincingly that QR need not always adjoin NPs to S, but may also adjoin NPs to VP. If this view (which, incidentally, was adopted in May (1985)) is correct, May's (1977) statement of the clause boundedness of QR cannot be maintained in full. QR might then raise an NP out of an embedded clause and adjoin it to the matrix VP; in this case only one S node would be crossed. Thus an embedded quantifier would be allowed to have scope outside of the matrix predicate (although not outside of the matrix subject). In fact, counterexamples to the alleged clause boundedness of quantifier scope were already noted by May (1977); May considered these examples marked. What is of interest to us here, is May's observation that the matrix verbs allowing such long Quantifier Raising are the well-known bridge verbs that also allow overt Wh-movement across sentential boundaries. Some of May's examples are given in (36) and (37) (Cf. May 1977:94,120).

- (36) a. John hissed that Smith liked every painting  
       b. \* What did John hiss that Smith liked
- (37) a. John said that everyone had left  
       b. Who did John say had left

The quantified NP *every painting* in (36a) cannot be construed outside the scope of the matrix verb *hissed* any more than the Wh-object in (36b) can be moved out of the

embedded clause. The matrix bridge-verb *said* in (37a) on the other hand does allow wide scope for *everyone*, as it allows for the embedded Wh-subject to be moved to the matrix Comp.

The parallel between the restrictions on movement in the b-cases, and on interpretation in the a-cases can be taken as an indication that scope assignment is in fact brought about by movement. It should be noted however, that the property of being a bridge verb is not directly incorporated in the system of restrictions on movement presented in Chomsky (1986a). In fact, in this system, it is not clear how it can be explained that some verbs are not bridge verbs, unless one assumes that verbs such as *hiss* do not assign a theta-role to their CP-complements, or do so without governing the CP. In either case, the complement CPs in (36) are expected to behave as extraction islands on a par with adjunct phrases. An analysis of non-bridge verbs along these lines is proposed in Stowell (1981). If, on the other hand, it should be concluded that the ungrammaticality of (36b) must not be attributed to a restriction on movement, but perhaps to unexplained pragmatic factors, the a-cases might perhaps not bear on the questions discussed here. For a different view on bounding theory which includes an analysis of bridge phenomena, see Aoun, Hornstein, Lightfoot & Weinberg (1987).

### 1.2.2. Finiteness

It is well-known that extraction out of tensed sentences can be more difficult than extraction out of non-tensed sentences. Like the bridge-verb phenomenon discussed above, this fact has not yet been satisfactorily explained. Chomsky (1986a:36) cites the following data:

- (38) a. to whom did you wonder what John gave  
b. to whom did you wonder what to give

(38a) is felt to be less acceptable than (38b). Chomsky proposes that the most deeply embedded finite IP can be an inherent barrier (whereas in general IP can only be a barrier by inheritance). As a consequence, the only barrier the indirect object crosses in (38b) is the embedded CP, while in (38a) it crosses two barriers, yielding a subjacency violation.

Besides being stipulative, Chomsky's account appears to be empirically inadequate. Consider the contrasts in (39).

- (39) a. who left before he did what  
b. who left before doing what

The a-variant of (39) also seems to be less acceptable than the b-variant. This, however cannot be attributed to the direct object's moving out of the embedded tensed IP in (39a) and thereby yielding a stronger subjacency violation, since the Subjacency

Condition presumably does not apply to LF movement. Nor can these facts be attributed to an ECP violation. Even if we were to assume that the direct objects in (39), when moving at LF, leave successive traces that must be antecedent governed, this would imply that both sentences would violate the ECP, since in both sentences the direct object crosses the embedded (Adjunct-)CP, which is a barrier to antecedent government. Here, as in general, it must be concluded that the theory of conditions on movement in Chomsky (1986a) does not seem particularly adapted to explaining LF-movement in English. But whatever the explanation, the facts in (39) do indicate that LF-movement is subject to finiteness effects. Now consider the following facts from Dutch.

- (40) a.     Wie heeft beloofd om wat te doen  
               'Who has promised to do what'  
        b.     ? Wie heeft beloofd dat hij wat zal doen  
               'Who has promised that he will do what'
- (41) a.     Hij ontkent [<sub>CP</sub> dat hij iedere misdaad heeft gepleegd]  
               'He denies that he has committed every crime'  
        b.     Hij ontkent [<sub>CP</sub> iedere misdaad te hebben gepleegd]  
               'He denies having committed every crime'

The facts in (40) show that the finiteness effect obtains at LF in Dutch too. Now look at (41). (41b) has a reading, although elusive, in which for every crime, involvement in that crime is denied, whereas (41a) only has the narrow scope reading for the embedded object. A similar contrast is found in (42).

- (42) a.     er heeft een arts beloofd dat hij 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'

Sentence (42a) certainly does not have a reading in which for every soldier there is some doctor who has promised to cure him, whereas that reading is felt to be more readily available for (42b). The contrast is clearer in (43).

- (43) a.     dat de nieuwe directeur omdat hij iedere secretaresse wilde leren  
               kennen een uur heeft uitgetrokken  
               'that the new CEO, because he wanted to meet every secretary,  
               scheduled an hour'  
        b.     dat de nieuwe directeur om iedere secretaresse te leren kennen een uur  
               heeft uitgetrokken  
               'that the new CEO, in order to meet every secretary, scheduled an hour'

In (43b), the quantified NP *iedere secretaresse* can have wide scope with respect to *een uur*; (43a) cannot be so construed. We will return to examples like (43) in section 1.2.6..

A general caveat is in order here. In this section, as well as in many instances below, I have presented judgments that should be taken as contrastive, rather than absolute. Quite generally, clear intuitions on relative quantifier scope are hard to come by. There is usually a very strong preference for taking the Surface Structure linear order as the order in which scoped elements are interpreted. Even in simple clause-internal cases such as (6) (repeated below), concerning which it is now widely agreed that a wide scope reading for the object is available, the narrow scope reading is more easily obtained.

- (6)           some man loves every woman

Note that for this reason the wide scope reading for the embedded quantifier is more straightforward in (43b) than in the other examples in this section, since in (43b) the linear order is reversed. Other (pragmatic) factors, and perhaps lexical preferences, also seem to be involved in strengthening some readings at the cost of others. Also, we might speculate that the human natural language parsing mechanism, if presented with a choice between two derivations involving a different number of movement operations, would attach higher preference to the shorter derivation as a general rule. Thus, in the absence of overt movement, or principles requiring covert movement (as in the case of LF Wh-movement), sentences would tend to be understood with c-command relations at LF mirroring those at S-Structure as a consequence of this strategy. But whatever the cause, the difficulty of obtaining clear judgments of possible quantifier scopes, which increases sharply if more than two scoped elements are involved, inevitably affects research in this area.

Returning to the judgments presented in this section: the wide scope readings of the quantified objects in the b-cases of (41)-(43) are certainly not the preferred readings. They are, however, much more easily obtained than the corresponding readings in the a-cases, which supports the claim under discussion here, that finiteness affects Scope Assignment as it affects movement more generally.

### 1.2.3. Subject - Object Asymmetries

The superiority facts in (44) are an indication that objects and subjects obey different restrictions on movement at LF, as they do at S-Structure.

- (44) a.    ' I wonder who<sub>i</sub> t<sub>i</sub> said what  
      b.    \* I wonder what<sub>i</sub> who said t<sub>i</sub>

Possibly, the superiority condition reduces to the ECP; in this case the trace of LF-movement of *what* in (44a) will be properly governed by *said*, whereas *who* in

(44b) will not antecedent govern its LF-trace since *what* intervenes. In the framework of Rizzi (1990), a similar analysis is proposed, whereby the LF trace of *who* in (44b) will not be properly head-governed by C, since *who* cannot trigger agreement with C, Spec,C already being filled by *what*. Other analyses (for instance making use of the Path Containment Condition of Pesetsky (1982), as in May (1985)) also depend on the assumption that movement of the wh-operators left in situ is involved. If any of these analyses are on the right track, then we also expect object QNPs to take wide scope more easily than subject QNPs in certain contexts, if scope is mediated by a movement operation. In Lasnik & Saito (1989), however, the ill-formedness of (44b) is not attributed to the ECP but instead to a Superiority-type condition, which does not explain Kayne's (1981) examples of subject-complement asymmetries discussed below.

Kayne (1981) pointed out the contrast in (45) to support the assumption that Quantifier Raising is sensitive to the ECP.

- (45) a. He's suggested that they write not a single term paper  
 b. He's suggested that not a single term paper be written

(45a) has a reading where there is not a single term paper that he has suggested they write (indicating that the QNP in object position can take matrix scope) whereas the quantified subject in (45b) can only be read with narrow scope.

There is some reason to suspect, however, that Kayne's argument on the basis of (45) may not be entirely compelling. Firstly, as we saw earlier, some quantified NPs can take matrix scope from subject position. *Everyone* in (37a) (repeated, taken from May (1977)), is an example.

- (37) a. John said that everyone had left

Consequently, there must be some distinction in extractibility between *everyone* and *not a single term paper* in (45b). This distinction, whatever its source, may obviate the need for an ECP-account of (45b) (we shall consider a possible explanation in chapter 3, section 3.4.3.). Furthermore, the availability of the wide-scope reading for (45a) is suspect, given the contrast in (46).

- (46) a. ? He's suggested that they write no more than three papers  
 b. \* Some books about no more than three papers were on sale

The matrix-scope reading for the embedded object in (46a) (which is similar to (45a)) is much more easily available than the inversely linked reading for the same NP in (46b). Usually, however, those QNPs that take matrix scope from an embedded position (such as *everyone* in (37a)) do so less easily than they allow of inversely linked readings. The fact that judgments are reversed in (46) suggests, that (46a) (and



(45a)) may not be completely representative. A possible explanation for the exceptional interpretation of (45a) is suggested by the fact that the intonational pattern associated with it on its wide-scope reading is compatible with the assumption that the embedded complement undergoes (string-vacuous) rightward movement at S-Structure to a position outside the scope of the matrix predicate. A similar analysis (restructuring at S-Structure) is proposed by Huang (1982) to account for the wide-scope reading for the object in *I couldn't solve many of the problems*, which is favored in case *solve* is followed by an intonational break. We then expect the wide scope reading to be unavailable in (47), where such movement has not taken place.

- (47)            He's suggested that they write not a single term paper without consulting him

Huang's analysis leaves the question, of course, of why such movement should sometimes not be clausebound. We shall not further pursue this question here.

Nevertheless, Kayne also presented the French examples in (48) to argue for the relevance of the ECP to Quantifier Scope:

- (48) a.    ? Je n'ai exigé qu'ils arrêtent personne  
          b.    \* Je n'ai exigé que personne soit arrêté

Again, the embedded object in (48a) may be associated with the negative scope marker *ne* at LF, but the subject in (48b) may not. A similar contrast is reported for the pair in (49) (cited from May 1985:142), where NP shift is unlikely to have occurred:

- (49) a.    Angleton demanded that the CIA arrest nobody  
          b.    Angleton demanded that nobody be arrested by the CIA

In conclusion, subject - object asymmetries indicative of movement are found with relative scope phenomena. Matters are obscured, however, by differences among various types of QNPs; also, the effects observed do not appear to have the strength usually associated with ECP violations, at least not in English. Thus, the evidence for QR from subject - object asymmetries is uncertain at best.

#### 1.2.4. Definite Noun Phrases

The definiteness of dominating NPs imposes a further restriction on the overt movement of Wh-phrases. Thus, Wh-extraction is considerably better in the a- and b-cases of (50) than in the c- and d-cases.

- (50) a.    who did you see some pictures of ?  
          b.    who didn't you see any pictures of ?

- c. \* who did you see those pictures of ?
- d. \* who did you see John's pictures of ?

This restriction holds not only at S-structure, but also at LF, as witness the following examples with Wh-in-situ.

- (51) a. who saw pictures of whom ?
- b. \* who saw John's pictures of whom ?
- c. \* who saw those pictures of whom ?
- (52) a. who saw pictures by whom ?
- b. \* who saw John's pictures by whom ?
- c. \* who saw those pictures by whom ?

The definiteness restriction is also found in the case of Quantifier Scope<sup>5</sup>. In the a- and b-cases of (53), the quantifier can take wide scope with respect to the containing NP; in the c- and d-cases this reading is much less easily available.

- (53) a. I found pictures of everyone in the room
- b. I need to have a picture of every boy in the school
- c. I found John's pictures of everyone in the room
- d. I need to have John's picture of every boy in the school

Similar examples can be found in Chomsky (1973); see Fiengo & Higginbotham (1981) for more examples with Wh-in-situ and with QNPs. This observation also equally for NPs in object position and for NPs in subject position. The inversely linked reading (wide scope for the embedded NP) is available in (54a), and in the well-known (54b), but not in (54c).

- (54) a. a picture of every boy can be found in this cabinet
- b. someone in every city hates it
- c. John's picture of every boy can be found in this cabinet

If these judgments are reliable, then the facts presented in this section are of special interest for two reasons. Firstly, the definiteness restriction can be seen to apply to other cases of LF-movement besides QR. While Wh-in-situ are generally known to move more freely at LF than Quantified NPs do, thereby complicating the bounding theory with regard to LF-movement, the present cases seem to present a fairly

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<sup>5</sup> The restriction observed here is usually referred to in the literature as the 'Specificity Condition' or the 'Specificity Constraint'; a range of factors, including for instance singularity, as well as the presence of certain determiners, are believed to contribute to Specificity in the sense of this condition. We will restrict attention to the easily identifiable class of definite NPs here, and we will refer to the condition involved as the 'definiteness restriction', reserving the term 'Specificity' for the phenomena discussed in Chapter 3.

straightforward restriction on movement. Secondly, the examples of limited quantifier scope given above are among a fairly small class of such examples which show that the scope of a quantifier cannot be equated with the lowest S-node dominating it.

### 1.2.5. Complex Noun Phrases

Not long after the appearance of Ross' dissertation in 1967 the notion began to emerge in the literature that the island constraints on movement that Ross had described might also be relevant to the scope of natural language operators. The Complex NP Constraint and the Coordinate Structure Constraint, in particular, were soon argued to constrain the scopal position of an operator relative to its Surface Structural position. This notion seems first to have gained ascendancy in the context of Generative Semantics. Lakoff (1970:408) attributes it to McCawley (1968 institute lectures).

One example cited by Lakoff (from McCawley, it would appear), is (55).

- (55) a. Bill believes the claim that John likes many girls  
       b. there are many girls such that Bill believes the claim that John likes them

According to Lakoff, (55a) cannot be paraphrased as (55b). Thus, the scope of *many girls* (or *many*) seems to obey Ross' Complex NP Constraint (cited in (56)), which also accounts for the ungrammaticality of overt extraction from complex NPs, an example of which is given in (57).

- (56) *The Complex NP Constraint* (= Ross 1967:Ch.4:(20))  
 No element contained in a sentence dominated by a noun phrase with a lexical head noun may be moved out of that noun phrase by a transformation.

- (57) \* which girls does Bill believe the claim that John likes

Lakoff accounts for the absence of reading (55b) for (55a) on the basis of the GS assumption that for this reading to be available, there must be an underlying structure which has the quantifier outside the complex NP, and from which the Surface Structure in (55a) can be transformationally derived. This derivation would involve an application of Quantifier Lowering, a movement rule which, like any other movement rule, is subject to Ross' constraints. Hence, the derivation of (55a) from the relevant underlying structure would violate the CNPC.

A similar reasoning can account for other cases of operator scope obeying restrictions on movement. Postal (1974), for instance, investigating the scopal properties of a comparative operator in English, cited an array of such cases, including the CNPC, non-bridge verbs (Cf. section 1.2.1. above), Adjunct Clauses (Cf. section 1.2.6.), and Definite NPs (Cf. section 1.2.4.). Postal went on to argue that these cases

can be taken as evidence against the interpretive approach to semantics. He claimed there was no a priori reason why the interpretive rules that govern quantifier scope should obey the same constraints that restrict rules of movement, especially since other interpretive rules (e.g. rules of coreference) do not obey these constraints. Of course, this line of argument lost its relevance when the interpretive rule involved was reinterpreted as a movement rule.

The CNPC effect on quantifier scope has also received attention within the framework of Montague Grammar. Rodman (1976) notes the non-ambiguity of (58): *every man* cannot take scope over the complex NP it is contained in.

- (58) John has dated a woman who loves every man

Rodman proposes to account for this observation through a mechanism which diacritically marks variables contained in a relative clause in such a way that they cannot be bound from outside the relative clause. Obviously, this mechanism will also account for the CNPC as it applies to overt extraction from a relative clause. Curiously, Rodman (1976:165) concludes that "a generalization is captured in a Montague grammar that as yet has not, and perhaps cannot, be captured by any 'standard' grammar".

Finally, within an LF approach to quantifier scope, we can also capture the generalization under discussion. Complex NPs block extraction of quantified NPs at LF, both in the relative clause case (Cf. (58)), and in the noun-complement case; this holds for objects as well as for subjects.

- (59) a. John overheard the rumor that every student had been called before the dean  
       b. \* [ every student<sub>i</sub> [ John overheard the rumor that t<sub>i</sub> had been called before the dean ] ]
- (60) a. John overheard the rumor that the dean had summoned every student  
       b. \* [ every student<sub>i</sub> [ John overheard the rumor that the dean had summoned t<sub>i</sub> ] ]

The LFs in (59b) and (60b) violate the CNPC, hence the unavailability of the corresponding readings for (59a) and (60a).

The examples we have reviewed so far are not entirely convincing however, since besides containing complex NPs they show several further properties which are known to affect quantifier scope, such as definiteness, and containing an embedded clause that is finite. In order to isolate the complex NP effect, we should consider examples where the complex NP is indefinite, and contains a non-finite clause. Under these conditions, we expect the wide scope readings for the embedded quantifiers to become less remote, yet to remain essentially unavailable.

- (61) John reported a plan to invite every student to the dean  
 (62) John designed a pedestal to mount every statue on

These expectations are borne out, I believe, by (61) and (62). Consider, furthermore, the contrast in (63).

- (63) a. John said that everyone had left (= (37a))  
       b. John heard the claim that everyone had left

The embedded subject in (63a) is known to have a wide-scope reading; adding a dominating NP node apparently blocks this reading.

### 1.2.6. Adjunct Islands

The Adjunct Condition case of Huang's (1982) Condition on Extraction Domain has received relatively little attention in the literature on quantifier scope. Huang argued that the Adjunct Condition does not apply to Wh-movement at LF, either in Chinese or in English. (64), for example, (cited from Chomsky 1986a:93:fn.29) is relatively acceptable.

- (64) who left before doing what

Similarly, as we saw in section 1.2.2. above, when an adjunct clause is not a tensed sentence, a quantifier may sometimes apparently be extracted from it. (65) is an example from Dutch.

- (65) Jan nam, alvorens elk meisje te kussen, eerst een slokje water  
       'John took, before kissing each girl, first a sip of water'

(65) may be taken to imply that each individual kiss was preceded by a sip of water, indicating that *elk meisje* can take scope over the matrix predicate. Intuitions appear to be rather insecure in English; however, my informants were in agreement that the wide scope reading for the embedded object is more or less acceptable in (66) (other examples, where the adjunct was a tensed S, or where the embedded quantifier was in subject position, were given lower marks).

- (66) After kissing each pretty secretary, the director told a lie

However, even if no Subjacency violation can occur with Quantifier Raising, as Huang (op. cit.) and other authors suggest, we still expect extraction of a quantified subject from an adjunct phrase to violate the ECP. (66) contrasts with (67) (cited from Fodor & Sag 1982:(62)):

- (67) if each friend of mine from Texas had died in the fire I would have inherited a fortune

No wide scope reading for the embedded subject in (67) is possible; similarly in (68).

- (68) I would have inherited a fortune if each friend of mine from Texas had died in the fire

This example contrasts with (69) (also cited from Fodor & Sag 1982:(50)), in which a similar quantified subject can be extracted from a complement (i.e. L-marked) CP.

- (69) this producer believes that each actor in our company is too fat to appear in public

The LFs for the wide scope readings for (68) and (69) would be (70a) and (70b), respectively.

- (70) a.  $[_{IP} \text{ each friend of mine from Texas}_i [_{IP} \text{ I would have inherited a fortune } [_{CP} \text{ if } [_{IP} t_i^2 [_{IP} t_i^1 \text{ had died in the fire } ]]]]]]$   
 b. this producer  $[_{VP} \text{ each actor in our company}_i [_{VP} \text{ believes } [_{CP} [_{IP} t_i^2 [_{IP} t_i^1 \text{ is too fat to appear in public } ]]]]]]$

I am assuming for (70b) that QNPs cannot pass through Spec-CP, but may adjoin to IP instead, since this is presumably where they must end up; the choice between these options is irrelevant to our present concerns. In (70a),  $t_i^2$  cannot be antecedent-governed due to the intervention of the adjunct CP. However, the lack of antecedent government in this case may also be attributed to the (rigid) minimality condition, since *if* (unlike *that* in (70b)) is not deleted at LF. With this alternative analysis, the contrast in (68)-(69) is still evidence for a movement approach to quantifier scope assignment (although not for the islandhood of adjuncts at LF).

In spite of the examples in (65) and (66), however, the Adjunct Condition also appears to apply in the case of complement extraction, where no ECP effects should obtain. (71a & b), for example, do not appear to be very much better in the wide scope reading for the embedded QNPs than are (67) and (68).

- (71) a. if I had killed each friend of mine from Texas I would have inherited a fortune  
 b. I would have inherited a fortune if I had killed each friend of mine from Texas

Such examples suggest, contrary to (64), that the Adjunct Condition does apply at LF (or at least with tensed adjunct CPs). Note, that the possible wide-scope readings in

(65) and (66) are initially compatible with the assumption that the QNPs in question are adjoined to the adjunct phrases, not extracted from them. A similar assumption would appear to account for the absence of a Subject Condition violation in the inversely linked reading for (72a): we may assume, with May (1985), that an LF such as (72b) allows the wide-scope quantifier to c-command the entire IP.

- (72) a.  $[_{IP} [_{NP} \text{some people from } [_{NP} \text{every walk of life } ]_i ]_j \text{ like Jazz } ]$   
 b.  $[_{IP} [_{NP} \text{every walk of life}_i [_{NP} \text{some people from } t_i ]_j ]_j [_{IP} t_j \text{ like Jazz } ]]$

A similar analysis might be proposed for (65) and (66); differences in adjunction possibilities (perhaps in conjunction with the tense factor) would then be invoked to account for the contrast between (65) and (66) on the one hand, and (71) on the other. We will not further pursue this possibility here.

### 1.2.7. Coordinate Structures

The possible relevance of Ross' Coordinate Structure Constraint to operator scope has received at least as much attention in the literature as the CNPC effects discussed above.<sup>6</sup>

Lakoff (1970) is devoted almost entirely to CSC effects. One of his examples is (73).

- (73) a. Abdul believes that many men and few women like baba ganouze  
 b. There are many men such that Abdul believes that they and few women like baba ganouze

Whereas the subject of a clausal complement to *believe* can take matrix scope in general, (73a) cannot have the reading that Lakoff paraphrases as (73b). The scope of *many men* in (73a) therefore appears to obey the CSC (cited in (74)), which also accounts for the ungrammaticality of overt extraction from coordinate structures (examples of which by Ross are given in (75)).

- (74) *The Coordinate Structure Constraint* (= Ross 1967:Ch.4:(84))  
 In a coordinate structure, no conjunct may be moved, nor may any element contained in a conjunct be moved out of that conjunct.

- (75) a. \* the madrigals which<sub>i</sub> Henry [<sub>VP</sub> plays the lute ] and [<sub>VP</sub> sings t<sub>i</sub> ] sound lousy  
 b. \* the shortstop who<sub>i</sub> [<sub>NP</sub> Billy and t<sub>i</sub> ] went to the movies will wed me ere the morn

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<sup>6</sup> Some of the material in this section was previously published in Ruys (1990).

The CSC examples given by Rodman (1976) include the following.

- (76) a. a soldier shot every woman and every child  
 b. every dog or every cat loves a woman

Both (76a) and (76b) are merely two-ways ambiguous. Either the subject takes scope over the object, or vice versa. (76a), for example, cannot be paraphrased as: "for every woman  $x$ , there is a soldier  $y$  such that  $y$  shot both  $x$  and every child." This appears to indicate that "the quantifiers in a conjoined structure function as a single unit with respect to scope differences" (Rodman 1976:171).

One further example of quantifier scope assignment obeying the CSC can be found in the literature on branching quantification in natural language.

- (77) Quite a few boys in my class and most girls in your class have all dated each other

Barwise (1979) noted that (77) has a reading where there is one group consisting of quite a few boys in my class, and one group consisting of most girls in your class, such that every member of each group has dated every member of the other group. What interested Barwise was that this is a reading that essentially requires quantifiers to be represented as branching (not linearly ordered), since in this reading neither quantified expression is in the scope of the other. What is mainly of interest to us here, is that this is in fact the only available reading for (77). This sentence does not have a reading where for each member of a particular set of quite a few boys in my class, there is some (perhaps different) set of most girls in your class, such that that boy dated all of those girls. Nor is the reading with the opposite scopal order available.

We can explain these observations if we adopt the obvious assumption that for one of the conjuncts in e.g. (77) to take scope over the other conjunct, it must take scope over the conjunction. Indeed, it would be hard to imagine a formula of any predicate logic containing a conjunction of two formulae, such that a quantifier contained in one formula takes scope over the other formula. Hence, for one QNP to take scope over the other in (77) it must undergo QR by separately adjoining to a dominating node. This would imply deriving the LF (78) for (77), which violates the CSC.

- (78)  $[_S [_{\text{quite a few boys in my class}}]_i [_S [_{t_i \text{ and most girls in your class}}]_k$   
 $[_S t_k \text{ have all dated each other } ]]]]$

Note, that the restriction on quantifier scope formulated in the preceding paragraph is a restriction on the interpretation of LF, not on the derivation of LF. Since the left conjunct in (77) already c-commands the right conjunct at S-Structure, and will probably continue to do so at LF, there is probably no principle of grammar that prevents the QNP on the left from taking scope over the one to its right. It is quite



reasonable to assume, however, that the mapping of LF onto LF' will be restricted in the manner proposed, in view of the type of formulae we are likely to assume at LF'. There seems to be no reason at all, however, why an LF such as (78) could not be interpreted in the manner described above. Therefore, the CSC must be invoked to rule out this LF structure.

Finally, we can construct examples of coordinated NPs where only one of the conjuncts is a quantificational NP.<sup>7</sup>

- (79) The dance instructor and each student waltzed around the room twice

There is no reading for (79) where for every student *x*, it is the case that *x* waltzed twice around the room with the dance instructor. It can only mean that the instructor danced around the room twice, and every student did so, too. For a (GPSG) analysis of one apparent counterexample in Russian, see McNally (1990).

The examples given so far all illustrate the first clause of the CSC: no conjunct may be moved from a coordinated NP at LF. The second clause of the CSC accounts for the mere two-way ambiguity of (80).

- (80) someone from every branch of science and a student who had won the sweepstakes (all) had dinner together

There is the (pragmatically odd) reading for (80) where someone who is from every field of science had dinner with a certain student. Alternatively, *every field of science* can take scope over *someone*, giving a reading where a student got to have dinner with a group of representatives of all branches of science. This reading we expect, given the possibility of inverse linking described by May (1977). It is not possible, however, for *every branch of science* to take scope over the right-hand conjunct, giving the interpretation that for every science *x*, someone from *x* and some student had dinner together. The contrast in (81) also illustrates this point.

- (81) a. someone from every city<sub>*i*</sub> hates it<sub>*i*</sub>  
b. \* someone from every city<sub>*i*</sub> and my father hate it<sub>*i*</sub>

In (81b), *every city* cannot bind the pronoun *it* as a variable. One explanation of this would be that the QNP cannot take scope over the pronoun. We will return to pronominal binding in chapters 2 and 4.

Extraction from conjuncts in object position is equally impossible, as evidenced by (82).

- (82) John met [<sub>NP</sub> someone from every branch of science and a student ]

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<sup>7</sup> This example is due to Louise McNally; (p.c.).

Like (80), (82) lacks a reading where *every branch of science* takes scope over *a student*.

We have identified a range of positions inside coordinate structures from which quantified NPs cannot take wide scope. Overt extraction of Wh-elements is also illicit from each of these positions (Cf. (75)). Examples with Wh-in-situ lend further support to the assumption that coordinated structures cannot be extracted from at LF. Consider (83).

- (83) a. \*  $\text{who}_i \text{ } t_i \text{ described } [_{\text{NP}} \text{ what}_k \text{ and the party } ]$   
 b. \*  $\text{what}_k \text{ who}_i \text{ } t_i \text{ described } [_{\text{NP}} t_k \text{ and the party } ]$

The ill-formedness of (83a) can be attributed to its LF (83b) violating the first clause of the CSC. The CSC's second clause explains the ill-formedness of (84).

- (84) \*  $\text{who}_i \text{ saw } [_{\text{NP}} [_{\text{NP}} \text{ pictures of whom}_k ] \text{ and } [_{\text{NP}} \text{ paintings of Mary } ]]$

In the remainder of this section, we shall concentrate on VP coordination structures. We shall first discuss some evidence that LF movement is restricted by the CSC in these structures, and then go on to analyze some apparent counterexamples, which will turn out to provide strong additional evidence in favor of a movement analysis of Quantifier Scope assignment.

Consider first the following cases of Wh-in-situ. (85a) is usually assumed to have the LF in (85b).

- (85) a.  $\text{who}_i [ \text{ } t_i \text{ said what}_k ]$   
 b.  $\text{what}_k \text{ who}_i [ \text{ } t_i \text{ said } t_k ]$   
 (86) a. \*  $\text{what}_k [ \text{ did who}_i \text{ say } t_k ]$   
 b.  $\text{who}_i \text{ what}_k [ \text{ did } t_i \text{ say } t_k ]$

The assumption that wh-words left in situ at S-Structure generally undergo move-wh at LF (Cf. Chomsky 1977a) accounts for the unacceptability of (86a), a superiority violation, perhaps as an instance of an ECP violation: the trace of *who* in (86b) is not properly governed. Now consider (87).

- (87) a. \*  $\text{who}_i [ \text{ } t_i [_{\text{VP}} \text{ read what}_k ] \text{ and } [_{\text{VP}} \text{ kissed Mary } ]]$   
 b. \*  $\text{what}_k \text{ who}_i [ \text{ } t_i [_{\text{VP}} \text{ read } t_k ] \text{ and } [_{\text{VP}} \text{ kissed Mary } ]]$

The ill-formedness of (87a) cannot be attributed to a superiority effect, since (87a) runs parallel to the well-formed (85a), rather than to (86a). It can be explained, however, if we assume that the CSC is operative at LF, since the LF of (87a), (87b), violates this condition.

The behavior of Wh-in-situ with respect to the CSC is mirrored by Quantified NPs. The following example is by May (1985:95).

- (88)           some professor admires every student and despises the Dean

In (88), *every student* cannot take scope over *some professor*. This is what we expect to find, since the object cannot be adjoined to a higher node than VP or it would violate the CSC.

A similar point can be made about the relative scope of a pair of direct objects included in conjoined VPs. Consider (89).

- (89) a.       John [<sub>VP</sub> kissed every girl ] and [<sub>VP</sub> bought a flower ]  
       b.   - [ every girl y [ a flower z [[ John kissed y ] & [ John bought z ]]]]  
       c.   + [[ every girl y [John kissed y ] ] & [ a flower z [ John bought z ]]]

One might imagine (89a) having the reading roughly paraphrased in (89b), where the NP *every girl* has scope over the NP *a flower*. However, this interpretation is not in fact available, and (89) can only be interpreted as in (89c), where neither object NP has scope over the other.

The LF representation assigned to (89a) must therefore be the one in (90a), not the one in (90b).

- (90) a.       [<sub>S</sub> John [<sub>VP</sub> [<sub>VP</sub> every girl<sub>k</sub> [<sub>VP</sub> kissed t<sub>k</sub> ]]] and [<sub>VP</sub> a flower<sub>m</sub> [<sub>VP</sub> bought t<sub>m</sub> ]]]]  
       b.   \* [<sub>S</sub> every girl<sub>k</sub> [<sub>S</sub> John [<sub>VP</sub> [<sub>VP</sub> kissed t<sub>k</sub> ] and [<sub>VP</sub> a flower<sub>m</sub> [<sub>VP</sub> bought t<sub>m</sub> ]]]]]]

Adjoining *every girl* to S would result in reading (89b); we must conclude that (90b) is ruled out in accordance with the CSC.

The examples presented so far are of particular interest to us, since they illustrate the parallelism between QNPs, overtly moved Wh-phrases, and Wh-in-situ with respect to the usual bounding conditions, and demonstrate also that the scope of quantified NPs cannot be described in terms of clause-boundedness alone. We now turn to some exceptional cases.

Reinhart (1987) gives the following example of a pronoun that appears to be bound by a QNP across a VP-conjunct.

- (91)           Felix kissed every woman<sub>i</sub> and invited her<sub>i</sub> to dance

This example is quite surprising in view of the above. Firstly, it seems to involve a violation of the Bijection Principle. If *her* is a bound pronoun, then the QNP *every woman* locally A-bar binds both its trace and the pronoun at LF, unless we assume

that the pronoun is already c-commanded by the quantified NP at S-structure (hence A-bound by it). Even so, the sentence should still be out, since as we have seen, the QNP cannot take scope over the pronoun and consequently should not be able to bind it as a variable. In fact, the literature on Donkey Anaphora abounds with examples of (weakly) quantified NP objects which cannot manage to variable-bind pronouns that are contained in coordinated VPs, only allowing such pronouns to be interpreted as Donkey-anaphors. So (91) is clearly exceptional.<sup>8</sup>

Furthermore, the exceptionality of (91) carries over to the other structures we have examined. As was pointed out to me by Tanya Reinhart (p.c.), there is a clear contrast between (89a) and (92).

- (92) John [<sub>VP</sub> kissed every girl<sub>i</sub> ] and [<sub>VP</sub> bought her<sub>i</sub> a flower ]

In the latter example, *every girl* can take scope over *a flower*, as well as binding the pronoun *her* as a variable, in apparent violation of the CSC. It would appear that a quantified NP object can take scope over a coordinated VP, if the coordinated VP contains a pronoun coindexed with the quantified NP.

Finally, the CSC restriction on quantifier scope noted by May (1985) in connection with (88) allows of similar exceptions. Rodman (1976) notes (with some disappointment, it appears) that VP-conjunction structures do not seem to block wide scope for quantified object NPs. The one example he takes into consideration is (93).

- (93) a soldier found every student<sub>i</sub> and shot him<sub>i</sub>

In this example, *every student* can take scope over the subject, although it could not do so in (88).

Although surprising, these exceptions can only strengthen the movement analysis of Quantifier Scope Assignment, since Wh-in-situ allow of a similar range of exceptions. Consider the contrast in (94).

- (94) a. \* I wonder who<sub>k</sub> t<sub>k</sub> [<sub>VP</sub>[<sub>VP</sub> took what<sub>i</sub> from Mary] and [<sub>VP</sub> gave a book to Fred]]  
 b. I wonder who<sub>k</sub> t<sub>k</sub> [<sub>VP</sub>[<sub>VP</sub> took what<sub>i</sub> from Mary ] and [<sub>VP</sub> gave it<sub>i</sub> to Fred ]]

(94b) is judged considerably better than (94a). This cannot be explained on the assumptions we have made so far, since both (94a) and (94b) should violate the CSC at LF, when the Wh-in-situ are moved to Comp to yield (95a) and (95b), respectively.

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<sup>8</sup> For a discussion of the Scope Condition on bound variable pronouns, see chapter 4, section 4.1.. Donkey-anaphora is discussed in chapter 2.

- (95) a. I wonder what<sub>i</sub> who<sub>k</sub> t<sub>k</sub> [VP [VP took t<sub>i</sub> from Mary ] and [VP gave a book to Fred ]]
- b. I wonder what<sub>i</sub> who<sub>k</sub> t<sub>k</sub> [VP [VP took t<sub>i</sub> from Mary ] and [VP gave it<sub>i</sub> to Fred ]]

If we want to account for the range of data we have reviewed, the following generalization must be captured in the grammar. No QNP contained in a coordinate structure may take scope over the conjunction, and no Wh-in-situ may be extracted from a coordinated structure, or they will violate the CSC, with one exception: a QNP in a VP-conjunct may take scope over the conjunction, and a Wh-in-Situ in a VP-conjunct may be extracted from the conjunction, if they have a coindexed pronoun in the coordinated VP. But this generalization is strongly reminiscent of the one known exception to the CSC: the case of Across-the-Board extraction (Cf. Williams 1977b, 1978).

Extraction from a conjoined VP is possible, if the same extraction takes place from all coordinated phrases at the same time. Thus, in contradistinction to the CSC-violation (75a) (repeated here), the parallel extraction in (96) is fully acceptable.

- (75) a. \* the madrigals which<sub>i</sub> Henry [VP plays the lute ] and [VP and sings t<sub>i</sub> ]  
sound lousy
- (96) the madrigals which<sub>i</sub> Henry [VP learned t<sub>i</sub> from Peter ] and [VP and sang t<sub>i</sub> to Mary ] sound lousy

Our exceptional cases of LF-movement may also be analyzed as Across-the-Board exceptions. Then in (93), for example, the quantified direct object *every student* is extracted from the VP at LF, and is thereby assigned scope over the coordinated VP and the subject. There is no CSC violation however, if the pronoun *him* is interpreted as a resumptive pronoun at LF. Compare the resulting LF (97) with the overt extraction case (98).

- (97) [IP every student<sub>i</sub> [IP a soldier [VP [VP found t<sub>i</sub> ] and [VP shot him<sub>i</sub> ]]]]
- (98) Here is the man who<sub>i</sub> I don't believe the claim that Peter saw him<sub>i</sub>

Like the pronoun *him* in (98), which 'covers' the site from which *who* has been extracted, and which is the foot of the A-bar chain headed by *who*, the pronoun *him* in (97) is made part of the chain headed by *every student* at LF. The CSC is not violated by (97), since it features only an Across-the-Board extraction. The QNP *every student* binds a variable (a locally A-bar bound NP) in each of the coordinated VPs.

Note that with respect to the present discussion there is no need to decide whether structures with resumptive pronouns are base-generated, or involve A-bar movement followed by 'insertion' of the pronoun in the extraction site, in general. However, the ATB analysis of (93) does depend on the availability of the (perhaps marked) option

of incorporating a base-generated pronoun into an A-bar chain formed at LF. Furthermore, this analysis, if correct, seems to indicate that the CSC, and the ATB exception to the CSC, are conditions on the chains that result from movement, rather than on the application of move  $\alpha$ . This may be taken as an argument in favor of a final analysis of the CSC in terms of the ECP, but is also what we expect if we want to adopt Pesetsky's (1982) path-containment account of the CSC.

The advantages to the ATB-analysis of our exception cases are obvious. It makes use of a known property of the CSC and obviates the need for any additional stipulations, and it provides a unified account of the data in (91) through (94). Also, it accounts for the otherwise puzzling contrast observed in (99).

- (99) a. Felix [<sub>VP</sub> [<sub>VP</sub> kissed every woman ] and [<sub>VP</sub> left her<sub>i</sub> ]]  
 b. ?? Felix [kissed every woman<sub>i</sub>] and [left the room [ because you said she<sub>i</sub> got angry ]]

If *her* in (99a) were a straightforward bound pronoun, we would not expect this contrast, since pronominal binding is entirely insensitive to depth of embedding or to bounding conditions in general. Instead, the ill-formedness of (99b) can be seen to parallel the ill-formedness of (100a) and (100b).

- (100)a. \* what<sub>i</sub> did you [take t<sub>i</sub> from Bill] and [leave the room [because you said t<sub>i</sub> was broken]]  
 b. ? what<sub>i</sub> did you [take t<sub>i</sub> from Bill] and [say that Peter gave t<sub>i</sub> to Mary]

Although we do not expect (99b) to be quite as bad as (100a) (since in (99b) there is a resumptive pronoun instead of a trace) we do not expect it to be well-formed either, if only because Across-the-Board extraction is possible only from parallel positions in general, as witnessed by the reduced well-formedness of (100b).

To summarize, the ATB analysis proposed here fully predicts the declining acceptability of the Dutch examples in (101a) through (101c).

- (101)a. Ik vraag me af wie er [ wat<sub>i</sub> ontdekte ] en [ het<sub>i</sub> beschreef ]  
 'I wonder who [ discovered what ] and [ described it ]'  
 b. ?? Ik vraag me af wie er [ wat<sub>i</sub> ontdekte ] en [ geld kreeg [ <sub>$\alpha$</sub>  om het<sub>i</sub> te beschrijven ]]  
 'I wonder who [ discovered what ] and [ received funds [ <sub>$\alpha$</sub>  to describe it<sub>i</sub> ]]'  
 c. \* Ik vraag me af wie er [ [ wat ontdekte ] en [ geld kreeg ]]  
 'I wonder who [ discovered what ] and [ received funds ]'

These judgments are paralleled by the deterioration of the wide-scope readings for the quantified objects in (92), (99b) and (89a) respectively.

Our analysis of these exceptional cases, if correct, provides very strong evidence in favor of a QR approach to Quantifier Scope Assignment. It implies that the interpretation of the pronoun in (91) and similar examples as a variable bound by the quantified object NP is possible only by virtue of the fact that the object is extracted from the conjunct and the pronoun becomes part of the resulting A-bar chain as a resumptive element. The same is true for the availability of the wide-scope reading for the strong quantified objects in (92) and (93). Consequently, the acceptability of these readings comes to depend crucially on a movement (i.e. Quantifier Raising) analysis of scope assignment.<sup>9</sup>

Above, we referred to the fact that weakly quantified objects in VP-conjuncts have often been found unable to take scope over coordinated VPs containing coindexed pronouns. We will provide some evidence for this in chapter 2, section 2.2., while postponing our explanation to chapter 3, section 3.4.3..

In this section, we have observed a strict parallel between overt Wh-movement, Wh-in-situ and Quantifier Scope Assignment with respect to both clauses of the CSC. We have seen, in addition, that this parallelism is far from superficial, as it extends to some exceptional cases, which arise equally with Wh-in-Situ and with Quantified NPs. An analysis of these cases has been provided which strongly favors a QR theory of quantifier scope assignment.

### 1.2.8. Summary

In the preceding sections we have inspected some of the evidence that the assignment of scope to Quantified NPs is mediated through a rule of movement. We have considered a number of factors that are known to contribute to the locality of movement operations, and can now come to the general conclusion that these factors also contribute to the locality of quantifier scope. While the evidence fell short from being entirely convincing with respect to the expected asymmetry between subjects and complements, scope assignment can be shown to reproduce the bridge verb phenomenon and the effect of finiteness on movement; there is some evidence that scope assignment obeys the adjunct condition, and the evidence is especially clear in the case of the CNPC, the CSC, and the Definite NP restriction. On the basis of this range of observations, mostly culled from existing literature on QR, in conjunction with our argument based on CSC exceptions in the previous section, we believe that we are justified in adopting the QR theory of quantifier scope assignment, hence the T-model's grammatical level of LF.<sup>10</sup>

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<sup>9</sup> In chapter 3, section 3.5.3., we will consider (and find wanting) a possible reformulation of the CSC and its ATB exceptions that does not make reference to movement.

<sup>10</sup> Wh-islands are missing from the range of island effects discussed here, as they are from many discussions of Quantifier Scope in the literature. Matters are obscured here by the reconstruction effects connected with QNP-Wh interactions. There is no need to assume, for instance, that *everyone* in (i) can take matrix scope or can violate superiority, even though it can take scope over *what*:

The CSC and Definiteness effects are particularly interesting, for two reasons. Firstly, overt Wh-movement, Wh-raising, and Scope Assignment are all equally sensitive to these effects, indicating the similarity of these operations. Secondly, the CSC and Definiteness effects provide us with evidence against those approaches to Quantifier Scope that, instead of assuming a level of LF and a rule of Quantifier Raising, propose the simple statement that the scope of a QNP is clause-bound. This generalization (see e.g. Haik 1984 and Koster 1987) will, for example, correctly predict the effects of the CNPC. But we can now provide two types of evidence against it: in those cases where move  $\alpha$  would allow a QNP to be extracted from a clause, clause-boundedness will be too strong a restriction on Quantifier Scope; and in those cases where move  $\alpha$  would restrict the scope of a QNP to a smaller domain than the lowest S, a rule of clause-boundedness will be too permissive. Examples of the latter case can be found in our sections on the Definiteness effect (1.2.4.) and on the CSC (1.2.7.): these effects sometimes require a QNP to take scope no wider than a dominating NP or VP. Examples of the former case we discussed in our section on Bridge Verbs (1.2.1.); (102) is a particularly striking example:

- (102) John believed every girl to be a boy

In the preferred reading for (102), *every girl* has scope over the matrix predicate; unless an S-Structure operation of Raising-to-Object is assumed, this example indicates that the scope of a QNP cannot be equated with its S-command domain.

We want to mention briefly a serious analytic problem for the theory of QR that is presented by Huang's (1982) argument that the Subjacency condition does not apply at LF. Huang discusses a range of examples from English (as well as Chinese) of Wh-in-situ which can apparently be extracted from Complex NPs, Adjunct Islands, etc. We have seen above, however, that QR, at least in English, is sensitive to these island conditions.

We have already commented briefly on this matter as it pertains to the Adjunct Condition, in section 1.2.6.. As for the CNPC, Huang cites (103) from Hankamer (1975).

- (103)  $\sqrt{\text{we must find out which agent has } [_{NP} \text{ bats that are trained to kill which senator}]}$

Hankamer's example would present only a relatively weak type of CNPC violation, since it has a Wh-in-situ contained in a [-definite] complex NP; we do not expect it to

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(i) I wonder what everyone will do



be quite as illformed as many of the usual examples of extraction from Complex NPs. Nevertheless, a quantifier in the same position could not be assigned matrix scope.<sup>11</sup>

In view of the difference between quantifiers and Wh-operators, there is a choice of either assuming the Subjacency condition to be operative at LF, and treating Wh-operators as exceptional, or else devising an additional condition to restrict just the movement of QNPs in the relevant configurations. The first option is argued for by Pesetsky (1987a), who proposes that certain types of Wh-operators in situ at SS (including, presumably, the one in (103)), do not move at LF, but are assigned scope through an additional mechanism of D-linking. Examples from languages without overt Wh-movement where non D-linked Wh-operators apparently violate the Subjacency Condition are attributed to a Pied Piping strategy (see Pesetsky (1987a) and references cited there).

While I have little to say on the feasibility of Pesetsky's approach (but see chapter 2, on the subject of D-linking with indefinites), the alternative proposed by Huang (1982) does not appear particularly appealing. Huang attempted to account for the difference between QNPs and Wh-in-situ by postulating the following constraint, which specifically restricts the movement possibilities of Quantified NPs:

- (104)      The General Condition on Scope Interpretation  
               (= Huang 1982:Ch.4:(70))  
               Suppose A and B are both QPs or both Q-NPs or Q-expressions, then  
               if A c-commands B at SS, then A also c-commands B at LF

This condition will for example prevent a QNP from being extracted from a complex NP with a quantificational specifier, since this operation would annul existing c-command relations between two QPs. For examples such as (72) (repeated),

- (72)            some people from every walk of life like Jazz

which apparently violate condition (104), Huang proposes a rule of (string-vacuous) reanalysis which mimics the effects of LF at S-Structure, but without being subject to condition (104).

Note that condition (104) as an alternative to the Subjacency condition reduces the evidence for a grammatical level of LF; (104) might as well be a condition on the mapping from S-Structure to the level of 'semantic interpretation' (what we have termed LF), since it does not refer to any typically grammatical notions besides structural relations obtaining at S-Structure. Its scope, however, is limited: out of the

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<sup>11</sup> Presumably, if our suggestions in section 1.2.2. are pertinent, we may expect Wh-in-situ to move further than QNPs in general as a matter of economy, since long movement of the former may be required by a principle of grammar (as is the case in example (103)), whereas long movement of the latter generally is not; this tendency cannot be of more than relative weight, however, or scope relations would always mirror S-Structure c-command relations.

various restrictions on QR discussed in the preceding sections, it replaces only the CNPC. The Definiteness restriction and the CSC presumably should not be analyzed as Subjacency effects; these conditions apply to Wh-in-situ as well as to QNPs. Complement-extraction violations of the Adjunct Condition (which we saw in section 1.2.6.), and perhaps non-bridge verb violations, both of which do not occur with Wh-in-situ but only with QNPs, should be analyzed as subjacency effects. For these examples, however, condition (104) cannot replace Subjacency, since the QNPs in question do not move out of the c-command domains of QNPs or QPs, but of verbs or complementizers<sup>12</sup>. In sum, besides being less than optimal for conceptual reasons (being a restriction on movement that applies exclusively to a specified class of elements) (104) is, in the case of English, descriptively both too weak (in view of the examples just mentioned) and too strong (requiring an S-Structure or post-S-Structure rule of reanalysis to allow for normal cases of QR). Thus, it would appear that the partially differential behavior of Wh-in-situ and QNPs remains essentially unexplained.

### **1.3. Weak Noun Phrases**

This section provides a brief description of the notion of weakness or indefiniteness in Noun Phrases. Our aims are quite unambitious here: we merely want to present the set of weak NPs as a syntactically significant class of objects, so as to clarify our references to such NPs in later chapters. We will not aim at originality here, nor shall we attempt to give a precise definition of the notion of weakness. The interested reader can be referred to a vast amount of literature, of both a syntactic and a semantic nature. To name just a few, in the generative literature, syntactic discussions of definiteness effects of various types have appeared e.g. in Milsark (1974,1977), Safir (1982), and more recently, many papers in Reuland & Ter Meulen (1987). Well-known semantic discussions of definiteness can be found, e.g., in Barwise & Cooper (1981), Heim (1982), and other papers in the same collection. Other references are to be found in these works, and throughout the present study. Semantically, weak NPs (or weak NP determiners) have been characterized as symmetric or intersective (as defined in Barwise and Cooper (1981)), or 'existential' (Keenan 1987a) within a Generalized Quantifier approach, as 'open sentences' (Heim (1982), discussing only singular indefinite NPs), and as 'cardinal' expressions (Milsark 1974), as opposed to strong NPs, which have e.g. been characterized as 'quantificational' (Milsark 1974), or 'proper' (De Jong & Verkuyl 1984). Syntactically, weak NPs determiners have been analyzed e.g. as 'adjectival' (Higginbotham 1987), or as NP-internally generated, as opposed to strong determiners, which are generated as spec,DP (Hudson 1989).

We shall use the terms 'weak' and 'indefinite' as synonyms here, referring to a class

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<sup>12</sup> These examples are excluded by a further condition proposed by Huang; which requires QNPs to adjoin to the lowest possible landing site; but this condition obviously does not differentiate between bridge verbs and non-bridge verbs, or between complement and non-complement clauses.

of NP-determiners, as well as to the NPs they specify. These NPs share a range of syntactic and semantic properties.

The semantic distinction between weak and strong determiners can roughly be described as follows.

- (105)        [NP DET A ] B  
 (106)a.     three girls arrived  
               b.     three arrivals were girls  
 (107)a.     most girl arrived  
               b.     most arrivals were girls

In a structure such as (105), if DET is weak, it places an absolute condition on the cardinality of the intersection of the sets denoted by A and the predicate B. Thus, (106a) says that the intersection of the set of girls and the set of arrivers contains (at least) three members. Consequently, it is irrelevant which of the sets is denoted by the N', and which is denoted by the predicate (symmetry): (106a) is equivalent to (106b). On the other hand, if DET is strong, it places a condition on the cardinality of the intersection of A and B, relative to the cardinality of A. (107a) says the set of arriving girls contains a certain proportion (most) of the set of girls. As a consequence, the strong determiner is not symmetric: (107a) and (107b) are not equivalent.

Probably the best-known syntactic singularity of weak NPs is their ability to occur in 'there-insertion' contexts (see, e.g. Holmback (1984), Milsark (1974, 1977), v.d. Putten (1984), Rando & Napoli (1978), Reuland (1983, 1985), Safir (1982, 1987), Stowell (1978), Williams (1984), Woisetschlaeger (1983)). Some examples of weak NPs are given in (108a), some examples of strong NPs in (108b):

- (108)a.     there is/are a/more than 1/no/a single/a certain/some/many/Ø/three/  
                  more than 5/exactly 5/less than 5/no dog(s) in the room  
               b.     \* there is/are every/that/the/neither/most/all/both/John's dog(s) in the  
                  room

This generalization, of course, has its exceptions; (109) is cited from Woisetschlaeger (1983):

- (109)     √ there was the smell of pot all over the apartment

Furthermore, an NP's determiner is not always decisive with respect to its strength. For instance, bare plurals when used generically are semantically strong; generics also may not appear in existential sentences:

- (110)     \* there are paintings by Dali beautiful

More generally, much recent literature (including Milsark (1974); see e.g. De Hoop (1992) and references cited there), makes a distinction between the 'strong' and the 'weak' uses of the NPs in (108a): these NPs are then called 'strong' when they give rise to generic, specific, or partitive readings. We will simply use the term 'weak' to refer to any NP that has a determiner of the type exemplified in (108a), irrespective of its interpretation.

A further syntactic context in which indefinite NPs behave uniformly is the partitive construction:

- (111)a. \* some of many/three/more than 5 boys are ill  
 b. ✓ some of the/our/Mary's boys are ill

However, De Jong (1987) has shown that the class of determiners that are allowed in this context is not identical to the class of 'strong' quantifier phrases disallowed in existential sentences:

- (112) \* some of all/most boys are ill

Furthermore, a definiteness effect can be observed with predicate nominals ((113) cited from Higginbotham (1987)):

- (113) John is a/\*every lawyer from Pittsburgh

although the definite article may be used in these constructions (from the same source):

- (114) I consider John the man for the job

The definiteness effect in light-verb constructions ((115)) and constructions such as (116) may well be related to the effect in (113):

- (115)a. ✓ I gave Mary a/some/three/less than 5 kiss(es)  
 b. \* I gave Mary the/most/all kiss(es)  
 (116)a. ✓ John has a/some/three brother(s)  
 b. \* John has the/most/all brother(s)

And again, the definite article is sometimes exceptionally allowed here:

- (117)a. ✓ I gave Mary the kisses she had asked for  
 b. ✓ John has the brother he deserves

These examples together indicate that the notion of weakness is syntactically

significant, although the weak / strong distinction appears to lend itself more naturally to a semantic definition. Below, we shall not be interested in the definiteness effects mentioned so far. In particular, we shall not concern ourselves with contexts of there-insertion, although (Cf. Williams 1984) a definiteness effect as well as scopal peculiarities can be observed there. At present, however, we have nothing enlightening to say about these constructions from the point of view to be developed below.

In the following chapters, we shall be concerned mainly with two constructions which feature weakly quantified NPs behaving exceptionally with respect to scopal phenomena. Chapter 2 discusses the phenomenon of Donkey Anaphora, exemplified here in (118):

- (118) every farmer who owns a donkey beats it

Chapter 3 presents a less extensive discussion of the Specificity phenomenon, exemplified by the non-narrow scope reading for the indefinite in (119):

- (119) John will rejoice if a certain student of his passes the exam

This discussion will give rise to a syntactic view of scopal phenomena which we will argue compares favorably with a number of competing analyses, in the face of quantifier-Wh interactions, and examples of apparent quantifier lowering. Chapter 4 applies the findings of chapter 3 to some of the Donkey Anaphora facts discussed in chapter 2, and to weak crossover phenomena.