Quantifiers: Configurations and Interpretations

Kjell Johan Sæbø
University of Oslo*

Abstract

Scope interactions between quantifiers are constrained by overt syntax. Scope ambiguities seem to in some way presuppose overt NP movement. Recently, two proposals have been made on how to encode such constraints: Frey (1993) takes facts about German to imply that Quantifier Raising (QR) is unnecessary, while Aoun and Li (1993) subject QR to restrictions sensitive to overt movements. I add the observation that in presentative constructions, the potential subject must take narrow scope, and propose that in general, free overt movements restrict LF movements in the sense that an NP that can move overtly but fails to does not move covertly either.

Aoun and Li assume that QR applies obligatorily to a quantificational phrase (a QP) in a θ position. As a consequence of the θ criterion, a QP cannot be interpreted in situ. Evidence from presentative constructions can be taken to support this claim: Given that the potential subject cannot undergo QR but must be interpreted in situ, the so-called Definiteness Restriction with respect to quantificational NPs would be accounted for if the semantics is constructed in such a way that quantificational NPs can only be interpreted in $\overline{\theta}$ positions. I propose such a semantics construction.

1 Introduction

This paper is concerned with the question of how different kinds of NP movement can be expected to influence the scope and interpretation of the NP in question. Two separate questions are considered, one in section 2 and the other in section 3. First, assuming that scope ambiguities are resolved at LF and seeing that Quantifier Raising (QR) is sometimes necessary but not always possible, there is the question of how overt NP movements affect covert NP movements, more exactly, QR. Second, there is the question of how QR affects the interpretation of the NP, inspired by claims that certain NPs must be raised to have an interpretation.

*I have benefitted from presentations to the theoretical linguistics environment in Oslo and, in particular, from comments and suggestions from the following friends and colleagues: Andreas Sveen, Kjartan Ottósson, Alma Næss, Bjørn Krogdahl, Arild Hestvik, and Halvor Eifring.

In section 2, I review the account of quantifier scope in German by Frey (1993), which concludes that scope relations can be read off the overt sentence structure, as only overt NP movements, in this case scrambling, can give rise to ambiguities. Considering that QR is probably needed to account for scope relations in some languages, like English, it is desirable to supplement Frey's theory with an LF component and to give a principled account of the constraints on QR in languages like German. In 2.3, I present facts about so-called presentative constructions, constructions of which 'existential sentences' in English form a proper subset, in a language like Norwegian, facts that show the way to a reinterpretation of the German facts and a unified account: If an NP can be raised in overt syntax but is not, it is not raised at any later stage in the derivation.

Section 3 is concerned with the question of how NP movements, overt or covert, influence the interpretation of an NP, that is, the question of what logical types, or composition principles, should be associated with what syntactic positions. In the LF literature, it is often assumed, with reference to the θ criterion, that a quantificational NP must be raised from its θ positions at LF at the latest. The assumption is an essential component in the analysis of Aoun and Li (1993). But there is scarce empirical evidence to support it, and it has not been specified semantically in what sense a quantificational NP cannot be interpreted in situ. However, presentative constructions can provide some sort of evidence. Here, the lack of wide scope for the potential subject indicates that it is blocked from QR, and it is well-known that quantificational NPs, more precisely proportional NPs, are barred from such positions. In the English 'existential "there" sentence' (i), the NP "some nurses" cannot scope over the quantificational adverb, and in (ii), the corresponding position is occupied by the proportional NP "all nurses".

(i) There are always some nurses on duty.
(ii) ?? There are sometimes all nurses on duty.

This restriction, which is one side to the so-called Definiteness Restriction, can be accounted for on the assumption that such NPs cannot be interpreted from their base-generated positions, provided a natural semantic composition algorithm can be stated on which a semantic difference between $\overline{\theta}$ and θ positions is spelt out. In 3.2 I sketch a translation from LF to Discourse Representation Structure (DRS) on which the interpretation of a quantificational NP in situ results in an improper, thus uninterpretable, DRS. This semantics construction scheme can be seen as an elaboration, in the spirit of de Hoop (1992), on Partee's (1987) suggestion that noun phrases can be assigned different logical types and that certain positions may be reserved for 'lower' types: θ positions will exclude the quantificational type. And the semantics construction scheme can be viewed as a restricted version of Diesing's (1992) Mapping Hypothesis, on which all material from the VP at LF is mapped to the innermost scope in the semantic representation of the sentence. A proportional NP essentially involves a restrictor as well as a scope, but if it is interpreted in a θ position the restrictor will be indistinguishable from the scope.

2 Overt Movement and Quantifier Scope

2.1 NP Scrambling in German

Frey (1993) argues convincingly that LF NP movement, Quantifier Raising (QR), has no role to play in determining the relative scope of quantifiers in German. The claim is that scope interactions can be determined with sole reference to S structure as far as this language is concerned.[1] This does not mean that there are no scope ambiguities in German. But every ambiguity depends on one NP being moved across another (or another quantifier, say an adverb) in overt syntax. Then the moved NP can have scope over the quantifier it c-commands, and in addition, this quantifier can have scope over it, as it c-commands its trace. The following Scope Principle (somewhat simplified), strongly reminiscent of eg. the Scope Principle Aoun and Li (1989) take to operate at LF, operates at S structure:

Frey's Scope Principle

If α, β are operators occurring in a sentence S, then
S has a reading in which α has scope over β if and only if
(i) α c-commands β or
(ii) α c-commands a trace of β

The relevant NP movement is scrambling. German is a language where the order of verb arguments is relatively free. There is no designated subject position, and although a fixed basic order is commonly assumed, an argument can scramble across another to, as is customarily assumed, adjoin to VP (or IP). In (1)a., the basic order obtains, and there is no scope ambiguity, while in (1)b., the accusative object has scrambled across the nominative subject, inducing a scope ambiguity.

(1) a. Ich vermute, daß viele Frauen mindestens einen Mann hofierten.
I suppose that many women at least one man courted
b. Ich vermute, daß [mindestens einen Mann]$_i$ viele Frauen t_i hofierten.
I suppose that at least one ACC man many women courted PL

The scope interaction between a verb argument NP and a VP adjunct parallels the scope interaction between a verb argument NP and another verb argument NP whose basic position is higher up. The NP can take wide scope just in case it scrambles across the adjunct. Thus (2)a. is unambiguous, the c-command relation and the linear order reflecting the scope relation, while (2)b. is ambiguous:

(2) a. Wir wissen, daß fast jedesmal mindestens einer meckert.
We know that almost every time at least one complains
b. Wir wissen, daß [mindestens einer]$_i$ fast jedesmal t_i meckert.
We know that at least one almost every time complains

[1] Krifka (1994) elaborates on Frey's theory to say that focus on two quantifiers can induce an 'invisible' scrambling to produce a scope inversion.

Since the S structural Scope Principle exhausts the scope possibilities in German and QR is evidently not an independent option, overt scrambling supplanting LF 'scrambling', Frey concludes that scope interactions should be described without reference to LF transformations ('Scope without LF', Frey 1993: 210). However, we might want to represent scope explicitly at LF, opting for a 'transparent' Logical Form where scope corresponds to c-command without reference to chains. Then the content of the Scope Principle would be preserved on the supposition that LF NP reconstruction, Quantifier Lowering (QL), is always an option in German, so that (2)b. would give rise to two distinct LFs, (2)c. and d.

(2) c. ... [mindestens einer]$_i$ [[fast jedesmal] [[t$_i$] [meckert]]].
d. ... [fast jedesmal] [[mindestens einer] [meckert]]

On the other hand, Quantifier Raising (QR) is apparently ruled out in German, blocking a second reading of (2)a. Since QR does seem to play a role in a language like English, it is desirable not to leave this fact about German unexplained, postulating a distinct set of interpretive rules, but to trace it back to some structural property of this language. This is the general strategy that Aoun and Li (1993) adopt in treating the interrelations between scope and overt syntax. They provide a principled framework for constraining LF NP adjunction and predicting missing wide scope readings in a number of languages, including Japanese, a language closely similar to German in these respects.

2.2 A Constraint on QR: Minimal Binding

Like Frey (1993), Aoun and Li (1993) consider overt NP movement essential for producing scope ambiguities, but in a much more indirect way. Their theory of scope and movement rests on three principles: A simple LF Scope Principle (somewhat simplified below, disregarding intermediate traces), a principle forcing NP adjunction of quantificational phrases (QPs) in θ positions, and the Minimal Binding Requirement (or the Antecedent Requirement, AR) which in practice makes scope ambiguities conditional on overt (A) movements:[2]

The Scope Theory of Aoun and Li (1993)

The Scope Principle

An operator A has scope over an operator B iff A c-commands B

QR is governed by the θ criterion

a. A QP in a θ position must undergo QR.
b. A QP in a $\overline{\theta}$ position need not undergo QR.

The Antecedent Requirement (or Minimal Binding Requirement) (AR)

A variable must be bound by the most local potential antecedent.

[2]The most local potential antecedent for a variable is the most local possible $\overline{\text{A}}$ binder, typically an NP in an adjoined position. The Antecedent Requirement is reminiscent of, but stronger than, May's (1985) LF version of the Path Containment Condition.

The requirement that QPs in θ positions must undergo QR and the AR impose a severe constraint on QR and so, by the Scope Principle, on scope inversions, by which term I mean that a QP takes scope over a QP overtly c-commanding it. In effect, a scope inversion will be possible just in case one QP is in a $\overline{\theta}$ position but still in an A position in overt syntax, – that is, in case one QP has undergone A movement. Let us say that operator B c-commands operator A in overt structure. For A to take scope over B, A must undergo QR across B (Aoun and Li do not consider Quantifier Lowering). If B is in a θ position, it must itself undergo QR, more locally, becoming a potential antecedent for the variable left by A. If B is in an $\overline{\text{A}}$ position, it is a potential antecedent for that variable. Thus B must be in a $\overline{\theta}$ but an argument position. Such a position is the subject position in English. Aoun and Li assume, as has become customary, that a (standard) subject in English is generated in the VP and moved to [Spec, IP], so that (3)a. has an overt structure like (3)b., which gives rise to ia. two LFs like (3)c. and d.

(3) a. At least one police officer has interviewed nearly all the staff.
b. $[_{\text{IP}}$ [at least one P.O.]$_{\text{i}}$ has $[_{\text{VP}}$ t_{i} interviewed nearly a.t.s.]]
c. $[_{\text{IP}}$ [at least one P.O.]$_{\text{i}}$ has $[_{\text{VP}}$ [nearly a.t.s.]$_{\text{j}}$ $[_{\text{VP}}$ t_{i} interviewed y_{j}]]]
d. $[_{\text{IP}}$ [nearly a.t.s.]$_{\text{j}}$ $[_{\text{IP}}$ [at least one P.O.]$_{\text{i}}$ has $[_{\text{VP}}$ t_{i} interviewed y_{j}]]]

(3)c. yields the reading on which the subject scopes over the object, while (3)d. yields the scope inverted reading. This latter reading would not be forthcoming if the subject were not raised to [Spec, IP]: If it were to remain in its θ position, an LF where the object has been raised above the subject would violate the AR. To see this, recall that the subject, being in a θ position, would have to be raised also, adjoining to VP, thus becoming a potential antecedent for the variable left by the object. (As it is, however, the subject need not undergo QR, and in [Spec, IP] it is not a potential variable binder, nor is its trace a variable.) This is, Aoun and Li could argue, exactly what excludes a wide scope reading for the object in a German sentence like (1)a. or (4)a., where both NPs are in their θ positions. (In fact, they make the point with respect to Chinese.) (4)d. is not a possible LF for (4)a. Actually, in order to derive a possible LF for (4)a. at all, viz. (4)c., it is necessary to assume a 'split VP' so that the object, adjoining to the 'lower' VP, can avoid becoming a potential antecedent for the subject variable.

(4) a. ... mindestens ein Arzt fast alle Patienten untersucht hat.
b. ... [fast alle Patienten]$_{\text{i}}$ mindestens ein Arzt t_{i} untersucht hat.
... almost all patients at least one NOM doctor examined has
c. $[_{\text{VP}_1}$ [mindestens ein Arzt]$_{\text{i}}$ $[_{\text{VP}_1}$ x_{i} $[_{\text{VP}_2}$ [fast alle Patienten]$_{\text{j}}$ $[_{\text{VP}_2}$ y_{j} untersucht hat]]]]
d. * $[_{\text{VP}_1}$ [fast alle Patienten]$_{\text{j}}$ $[_{\text{VP}_1}$ [mindestens ein Arzt]$_{\text{i}}$ $[_{\text{VP}_1}$ x_{i} $[_{\text{VP}_2}$ y_{j} untersucht hat]]]]

As to the ambiguous sentence (4)b., where the object has scrambled across the subject, Aoun and Li present an analysis of a corresponding Japanese sentence.

Importantly, scrambling in Japanese is interpreted as movement to [Spec, IP], not as adjunction, or else neither of the two readings will be available. If scrambling is adjunction, the trace of the scrambled NP is a variable and subject to the AR, and the scrambled phrase will itself be a potential antecedent for the variable left by QR. In this way, the two LFs (4)d. and e. for (4)b. both violate the AR. (Incidentally, (4)d. is a candidate LF for both a. and b., for a. by way of two applications of QR and for b. by way of overt scrambling as adjunction and QR.)

(4) e. * $[_{VP_1}$ [mindestens ein Arzt]$_i$ $[_{VP_1}$ [fast alle Patienten]$_j$
$[_{VP_1}$ x_i $[_{VP_2}$ y_j untersucht hat]]]]

However, there is strong reason to believe that scrambling in German (at least) is in fact adjunction and not raising to a specifier position. With three-place verbs, all permutations of the arguments are possible, indicating that scrambling affects more than one phrase. The fact that two arguments can occur to the left of a VP adjunct points in the same direction. This poses a serious problem for the theory of Aoun and Li. Their analysis of Japanese does not carry over to German.[3]

There is another problem with this theory concerning scope interaction between a quantificational adjunct and an object QP in German as compared to English. Consider the contrast in (5): The English (5)a. is ambiguous between the reading where the adverb scopes over the object and the inverse reading, whereas the German counterpart (5)b. is unambiguous, having only the former reading. For the other reading to obtain, the object must scramble across the adverb as in c.

(5) a. ... we regularly visit most of our clients.
b. ... wir regelmäßig die meisten unserer Mandanten besuchen.
c. ... wir die meisten unserer Mandanten regelmäßig besuchen.

From the availability of the inverted reading of (5)a. we can conclude that the AR does not rule out an LF where the object has undergone QR across the adverb. In other words, the adverb, whether it itself must undergo QR or not, being already in an adjoined position, does not count as a potential antecedent for the variable left by the object. By the same reasoning, the AR would not be violated by (long) QR of the object in (5)b., so there should be nothing to prevent a wide scope reading for this QP. The AR is all that restricts QR in the theory, and cross-linguistic contrasts are explained through A movements providing a means to circumvent the AR. But A movements are irrelevant to the data in (5). Rather, what might be at stake here is the fact that in the German sentence (5)b., the object has had the possibility of moving across the adverb, viz. (5)c., but has not done so, while in the English sentence (5)a. there has been no such choice. Facts about missing wide scope readings in presentative constructions in a language like Norwegian can be taken as further evidence that free overt movements constrain abstract movements in just such a way.

[3]And it is a question whether it is correct even for Japanese: Here, too, the direct and the indirect object can change places to the right of the subject (cp. Aoun and Li 1993: 190ff).

2.3 Presentative Constructions

Presentative constructions in languages like Dutch, English, Italian, or Norwegian involve an overt NP non-movement from an argument position to [Spec, IP]. Some NP is likely to move to the canonical subject position but stays in situ instead. Abstracting away from complicating factors, it is possible to identify one position as the **potential subject**. The relevant languages show considerable variation here; as it appears, in English only small clause subjects are free to not move[4], while in Norwegian or Italian, subjects of ergatives and objects of passives also have this freedom, and in Dutch, even agentive subjects may stay within the VP.

(3) a. Ik ben blij, dat er eindelijk iemand onze auto gekocht heeft.
I am glad that there finally someone our car bought has
b. Ik ben blij, dat iemand eindelijk onze auto gekocht heeft.
I am glad that someone finally our car bought has

In Dutch or English, an adverbial expletive is inserted in subject position; in French or Norwegian, a nominal expletive is inserted, while in Italian, no expletive is necessary. This last fact shows that one should be wary of ascribing any particular property to the expletive in trying to explain the 'definiteness effect'.

(4) a. Janne vet at det er skutt en ulv.
Janne knows that it is shot a wolf
b. Janne vet at en ulv er skutt.
Janne knows that a wolf is shot
(5) a. Era finalmente arrivato qualche studente a lezione.
Was finally arrived some student to lecture
b. Qualche studente era finalmente arrivato a lezione.
Some student was finally arrived to lecture

A hallmark of presentative constructions is the well-known Definitess Effect, or the Definiteness Restriction (DR), affecting definite and proportional NPs, not indefinite and cardinal NPs (cp. the NP typology of Kamp and Reyle 1993), in potential subject position in overt syntax.

(3) c. ?? Ik ben blij, dat er Jantje onze auto gekocht heeft.
I am glad that there Jantje our car bought has
(4) c. ?? Janne vet at det er skutt ulven.
Janne knows that it is shot wolf-the
(5) c. ?? Era finalmente arrivato ogni studente a lezione.
Was finally arrived every student to lecture
(6) a. Det bor mange / ??de fleste samer i Norge.
It live many / most Laps in Norway
b. Mange / De fleste samer bor i Norge.

[4]hence the locution **existential sentence** and the numerous attempts at explaining the 'definiteness effect' by ascribing a property to the copula in English

2.3.1 Presentatives and Scope

Another striking property of presentatives is the absence of wide scope (and de re) readings for the potential subject in relation to a quantificational (or intensional) VP adjunct. Contrasts like the one in (7) led Williams (1984) to regard "there" as a 'scope marker'. (7)a. is unambiguous, the adverb scoping over the SC subject, while (7)b. in addition has the reading where the subject scopes over the adverb.

(7) a. There are always some nurses on duty.
    b. Some nurses are always on duty.

Strictly speaking, this is not a minimal pair; it is hardly surprising that (7)b. should have a reading where the subject scopes over the adjunct, reflecting the overt c-command relation. In fact, Frey's surface oriented account (2.1) would capture the nonambiguity of (7)a. and the ambiguity of (7)b. The former needn't be a property of the construction or indeed of the expletive, it may simply be a consequence of everything being in base position. But Frey's account proves too shallow in the face of the Norwegian data in (8). The ambiguous active sentence (8)a. contrasts with the unambiguous passive presentative sentence (8)b.[5]

(8) a. Teatret setter regelmessig opp flere Ibsenstykker.
       theatre-the puts regularly up several Ibsen-plays
       'The theatre regularly stages several Ibsen plays.'
    b. På teatret blir det regelmessig satt opp flere Ibsenstykker.
       on theatre-the becomes it regularly put up several Ibsen-plays
       'In the theatre, several Ibsen plays are regularly staged.'

Evidently, there is nothing to prevent the direct object from undergoing QR across the adjunct in the construction with a referential subject, so it is difficult to see what prevents it from being raised in the construction with a formal subject, either on Frey's theory or on that of Aoun and Li. Neither construction involves overt movement. However, what unites this contrast with the one between English and German in (5) in the last section is that the missing reading correlates with a *possible* overt movement. The same observation can be made with regard to the relative scope of direct and indirect objects: The ambiguous active sentence (9)a. contrasts with the unambiguous passive presentative sentence (9)b.

(9) a. Politiet viste alle vitnene minst to fotografier.
       police-the showed all witnesses-the at-least two photographs
       'The police showed all the witnesses at least two photographs.'
    b. Det ble vist alle vitnene minst to fotografier.
       it became shown all witnesses-the at-least two photographs
       'All the witnesses were shown at least two photographs.'

[5] Chomsky (1991) offers an English sentence pair that shows the same point: "I haven't met many linguistics students" vs. "There aren't many linguistics students here", commenting that the former has a scopal ambiguity while in the latter "many" unambiguously has narrow scope. Cp. 2.3.3.

2.3.2 Presentatives and Semantic Partition

This analogy between scrambling in a language like German and optional raising to subject in a language like Norwegian as regards relative scope has a parallel in **semantic partition**, the division of a sentence into restrictor and scope of an (explicit or implicit) adverb of quantification. Adverbs of quantification are focus sensitive operators, and it is commonly assumed that focus is what determines the quantification structure (cp. Krifka 1992). Material in the focus of the adverb is (only) in its scope, not in its restrictor. To be sure, it has been noted that scrambling can have an effect on what goes into the restrictor, and to Diesing (1992), such facts support her hypothesis that nothing in the VP at LF is part of the restrictor of any quantifier in the sentence. But to Krifka (1992: 8) scrambling influences semantic partition only because it interacts with focus. On this view, a German sentence like (10)a., in contrast to b., has no interpretation where the object goes into the restrictor of the adverb because it is necessarily in its focus.

(10) a. Wir essen immer einen Eintopf auf.
we eat always a stew up
'always, we finish a pot of stew'
b. Wir essen einen Eintopf immer auf.
we eat a stew always up
'we always finish a pot of stew'

(11) a. Det blir bestandig spist opp ei gryte med lapskaus.
it become always eaten up a pot with stew
'always, a pot of stew is finished'
b. Vi spiser bestandig opp ei gryte med lapskaus.
we eat always up a pot with stew
'we always finish a pot of stew'

By the same reasoning, a Norwegian sentence like (11)a., as opposed to b., has no interpretation where the object goes into the scope of the adverb because, in Krifka's perspective, it is necessarily in its focus. The generalization would be that an NP which has the option of moving across a quantificational adverb but fails to has to be in the focus of the adverb. Optional NP movement interacts with semantic partition by way of focus. On the other hand, optional NP movement, be it scrambling or raising to subject, appears to interact with scope by way of LF (non-)movement. Clearly, there is a higher generalization to be had if we either assume that optional movement interacts with semantic partition by way of LF (non-)movement or that it interacts with scope by way of focus as well. The latter possibility is attractive insofar as scope inversions are often accompanied by distinct intonational patterns, while the former possibility has the prima facie advantage of maintaining a parallel between overt structure and semantic representation. Possibly, however, further research will reveal that (phonological) focus and overt syntax both interact with relative scope and semantic partition, in principle independently of each other.

2.3.3 Presentatives and Full Interpretation

Presentative constructions are potentially problematic in the light of Case Theory (cp. Belletti 1988), and in connection with the Binding Theory (cp. Safir 1987). For such reasons, and on account of the UG condition Full Interpretation, saying that any LF object must receive an interpretation, Chomsky (1991) assumes that the potential subject, the 'associate' of "there", does move at LF. It is interesting to see how this, if at all, affects the scopal properties of the potential subject.

In English, the potential subject bears nominative case and agrees with the verb. Hence, as the story goes, it must be raised to [Spec, IP] at LF at the latest. Moreover, the expletive has no interpretation and so must be 'replaced' by its associate at LF. On the face of it, this assumption is at odds with the hypothesis that the potential subject must take narrow scope in a sentence like (7)a. But the particular form that raising to [Spec, IP] and 'expletive replacement' (ER) take is adjunction of the potential subject to the formal subject, an 'LF affix'. (7)a. thus receives an LF representation like (7)c.

(7) c. $[_{IP}\ [_{NP}\ there_i\ [_{NP}\ some\ nurses_j]]\ are\ [_{VP}\ always\ [_{VP}\ t_j\ on\ duty]]]$

The expletive and the associate are not coindexed. Chomsky comments that if the associate were literally to replace "there", it would be expected to have scope over the adverb, but because no relation is established between the two phrases, the scope of the associate can still be assumed to be narrow. The position of the trace is what should determine the scope of the QP. The account is not definitive, though (fn. 44 p. 452):

> "To account for scopal properties appropriately, more elaborate assumptions are required, taking into account the position of both the head and the terminal position of the associate chain... ...no relation is determined by the proposed LF representation, but such a relation would be established in the correct way if the position of the trace is considered, given that the head of the chain has no relation to the other relevant element. Just what is entailed by a wider range of considerations remains to be determined."

On the premise that scope should be represented explicitly at LF in terms of c-command between full QPs, the associate would be expected to subsequently be lowered into its original position. However, according to Chomsky (1994: fn. 27), as "there" adjunction does not involve the formation of an operator–variable construction, there will be no reconstruction in this case – the trace will be erased. Be that as it may, "there" adjunction or any version of ER has been challenged on independent grounds by den Dikken (1994), who argues in part for a "there" raising analysis (for languages like English), where "there" is a predicate raising to [Spec, IP] and the associate has its case checked in situ, in part for an "it" deletion analysis (for languages like Norwegian, where there is no agreement and the NP arguably bears accusative case).

2.3.4 The Variable Restriction

Asking where the Definiteness Restriction (DR) applies, Heim (1987) takes facts about scope (such as those we have been considering) and about variable binding in English "there" sentences to imply that it applies at the interface level between syntax and semantics, LF, offering the following generalization.

Heim's (1987) Variable Restriction

(VR) * There be x
where x is an individual variable

This predicts the absence of wide scope readings for the potential subject in cases such as (7)a. on the reasonable assumption that QR is necessary for wide scope. QR would produce an individual variable trace. VR is less general than a rule saying that an NP which may move overtly but fails to cannot move subsequently. On the other hand, it is at the same time more general in that it predicts the Definiteness Restriction with respect to overt bound variable pronouns, cp. the Norwegian sentence (12)a., and variables left behind by overt operations such as relativization, cp. the Norwegian sentence (13)a., and interrogativization.

(12) a. * Janne$_i$ sa at det var blitt overfalt henne$_i$ i parken.
Janne said that it was been assaulted her in park-the

(13) a. * De leter etter en ulv (som) det er sett i traktene.
they look for a wolf (that) it is seen in environs-the

Wh movement presents a particularly interesting picture because there are degrees of acceptability depending on the wh phrase: Phrases with "which" are impossible to move to [Spec, CP] across "there", while phrases with "what kind of" or "how" are unproblematic; "who" is more like "which..." in this regard than is "what". The same holds, mutatis mutandis, for Norwegian, cp. the examples in (14).

(14) a. * Hvilke norske byer ble det bombet under krigen?
which Norwegian cities was it bombed during war-the

b. ?? De visste ikke hvem det bodde i hytta.
they knew not who it lived in hut-the

c. ? De visste ikke hva det var i skrinet.
they knew not what it was in casket-the

d. Hva slags musikk blir det spilt i nattradioen?
what kind-of music is it played in night-radio-the

Apparently, all four cases violate the VR. Heim's explanation for the variance in acceptability according to the choice of wh phrase invokes the notion of partial LF reconstruction: In the acceptable cases, part of the phrase is really pied-piped to the Spec of C and subsequently restored to its original position. For example, "what" can be analyzed as 'things of which kind', so that after reconstruction,

what occupies the potential subject position is not just a variable after all but a phrase properly containing one, something like 'things of kind x'. Similarly, after a phrase such as "how many cities" is raised part of it is reconstructed, resulting in something like 'x many cities'. "Which", on the other hand, is, in a sense, used for asking for referents, not properties, so the variable in the postverbal position is in fact the noun phrase in that position, not a modifier therein.

In short, the potential subject cannot as a whole be in an $\overline{\text{A}}$ position at LF, but a proper part of it can. A variable cannot occupy the potential subject position, but a phrase containing one can. This part–whole distinction is relevant not only for wh movement but also for QR. The potential subject cannot as a whole take scope over a c-commanding operator, yet a proper part of it can, as shown in (15), so we must assume that a modifier within the potential subject may undergo QR. (15)a. is scopally unambiguous, while (15)b. is scopally ambiguous.

(15) a. Det blir ofte spilt mange ballader i nattradioen.
it is often played many ballads in night-radio-the
b. Det blir ofte spilt musikk av mange slag i nattradioen.
it is often played music of many kinds in night-radio-the

2.4 Free Overt Movement and QR

The picture that emerges from the last section is that the potential subject cannot undergo QR or indeed any $\overline{\text{A}}$ movement[6] *in toto*, though a proper part of it can. Evidently, overt $\overline{\text{A}}$ movement (that is, wh movement) is only partly relevant; what counts is the ultimate site for the NP at LF and its derivational history, in the following sense: To end up in an $\overline{\text{A}}$ position, it must be overtly raised to subject position, displacing the expletive (or, rather, rendering it superfluous). Assuming that the expletive deletes at LF, the following simple representations may indicate the situation in Norwegian (subordinate clauses; for root clauses, (16)b. and c. must be supplemented with a representation where the expletive or the NP has moved to [Spec, CP], leaving a (intermediate) trace in [Spec, IP]):

(16) a. $[\ \ldots\ [_{\text{IP}}\ -\ [_{\text{VP}}\ \text{V}\ \text{NP}_{\text{i}}\ ]]]$
b. * $[\text{NP}_{\text{i}}\ \ldots\ [_{\text{IP}}\ -\ [_{\text{VP}}\ \text{V}\ \text{x}_{\text{i}}\ ]]]$
c. $\surd$ $[\text{NP}_{\text{i}}\ \ldots\ [_{\text{IP}}\ \text{x}_{\text{i}}\ [_{\text{VP}}\ \text{V}\ \text{t}_{\text{i}}\ ]]]$

In (16)a. the potential subject has remained in its base position (or it has been reconstructed). In (16)b., it has moved across the empty subject position (and it has not been reconstructed), leaving a variable in its base position, whereas in (16)c. it has first moved to subject position, leaving a trace in its base position, and has then moved on, leaving a variable in subject position. Importantly, the movement to subject position in (16)c. must take place in overt syntax.

[6]Topicalization is an exception: The sentence "noen sjukepleiere er det på vakt bestandig" (some nurses is it on duty always) is acceptable and the wide scope reading is still absent.

A comparison with the facts regarding scrambling and scope in German suggests that they and the constraint in (16)b. can be subsumed under a general principle. In German, overt NP adjunction, scrambling, replaces covert NP adjunction, QR, in the sense that the former induces scope ambiguities and there is no evidence of the latter. The empirical content of the theory of Frey (1993) can be preserved if we assume the following principle (and the possibility of Quantifier Lowering).

> **Principle**
>
> An NP which can undergo a movement overtly but does not, cannot undergo that or a similar movement covertly.

The principle is stated in derivational terms, and it is difficult to see how it could be formulated representationally, as constraints on individual levels. In German, where the relevant overt movement is, like QR, adjunction, LF representations cannot show whether an adjunction is overt or covert, so it is necessary to consult overt syntax and LF simultaneously; and, as noted, even (16)c. is incomplete without reference to the interdependency between LF and overt syntax.

The parallel between German and, say, Norwegian as regards free overt movement and covert NP adjunction should not be taken too far. In German, the relevant overt movement is itself adjunction, while in Norwegian, it is raising to subject. When in German QR is precluded because the NP in question fails to scramble, LF adjunction presupposes overt adjunction, whereas when in Norwegian QR is precluded because the NP fails to move to [Spec, IP], LF adjunction presupposes a movement of a different sort. Therefore, the general principle must be tentatively formulated in terms of "a similar" movement.

Still, there is something to be gained from viewing "*there* as a scope marker" (Williams about English) and "scope without LF" (Frey about German) from the same angle. Instead of having to postulate that QR is excluded in German, we are in a position to explain why QR has no part to play in this language. The explanation can be formulated thus: Covert NP adjunction is irrelevant because it is possible to perform the same task overtly. If that opportunity is not taken, then for the reason that it should not be taken, overtly or covertly; if it is taken, then QR is superfluous. At least, this line of reasoning makes sense in a general way; I leave open what is implied for more specific economy considerations.

So the apparent lack of QR in German can be traced back to overt structures in that language. Similarly, the peculiar scopal behavior of the potential subject in a language with a subject position that may remain empty need not be stipulated construction-specifically or indeed attributed to the presence of an expletive; its obligatory narrow scope can be taken to result from its option to remain in situ, insofar as QR as adjunction to IP presupposes overt movement to [Spec, IP] if this is possible. In fact, there is some reason to believe that the potential subject is barred from undergoing any covert movement, even a more local adjunction, and must be interpreted in its θ position. The next section explores how DR, at

least as concerning proportional NPs, could be explained on this assumption.

3 Quantifiers in θ Positions

The Definiteness Restriction (DR) present in presentative constructions has two manifestations: The restriction on definite NPs, including personal pronouns, definite descriptions, and proper names, and the restriction on proportional NPs, NPs with determiners like "every" or "most". Most treatments of the DR have been attempts at explaining it in a uniform way for both of these two NP types, which has meant concentrating on a property evident in one but less evident in the other, such as determiner strength in the sense of Barwise and Cooper (1981) or specificity in the sense of Enç (1991). In two recent approaches, that of McNally (1992) and that of Kamp and Reyle (1993), definite and proportional NPs are treated distinctly. In what follows, the tentative results from 2.3 will be brought to bear on the DR as it manifests itself in relation to genuinely quantificational, ie. proportional, NPs, on what might be termed the Quantification Restriction. (Actually, this was Milsark's (1974) term, meaning how quantificational and/or presuppositional NPs are barred from occurring in "there" sentences.)

It is not self-evident that the prohibition against definite NPs and that against proportional NPs both have the same cause. True, in many of the languages with presentatives, the potential subject can be neither definite nor proportional, but there are exceptions, notably Icelandic, where proportional NPs are acceptable as such in potential subject position but turn inacceptable once they are construed with the definite article, as in (17)b. Although I have no explanation for this, it does indicate that it may be useful to study the restriction on proportional NPs per se, as whatever causes it does not necessarily carry over to definite NPs.

(17) a. $\surd$ thadh búa allir málvísindamenn í steinhúsum
it live all linguists in stone-houses
b. ?? thadh búa allir málvísindamennirnir í steinhúsum
it live all linguists-the in stone-houses

In Norwegian, as in English, the DR affects proportional NPs even when they are indefinite. Thus (18)a. is inacceptable. A sentence like (18)c. is acceptable, but only on the cardinal reading of the determiner; the proportional reading available in (18)d. is ruled out.[7] (18)c. can mean that the number of polar bears shot in Spitsbergen this year is large as compared to the number of polar bears shot in another year (on average) or that the number of polar bears shot in Spitsbergen this year is large as compared to the number of polar bears shot in another region (on average), but not, as can (18)d., that the number of polar bears shot

[7]In the b. and d. examples, the determiner interacts with focus to quantify not just over polar bears but over polar bears shot this year (the scope comprises more than the $\overline{\text{N}}$), maybe over events. For a recent discussion of Focus with Nominal Quantifiers, cp. Eckardt (1994).

in Spitsbergen this year is large in relation to the number of polar bears shot anywhere, in other words, that it constitutes a large proportion of the number of polar bears shot this year.

(18) a. ?? Dette året ble det skutt de fleste isbjørner på Svalbard.
this year was it shot most polar bears on Spitsbergen
b. Dette året ble de fleste isbjørner skutt på Svalbard.
this year became most polar bears shot on Spitsbergen
c. Dette året ble det skutt svært mange isbjørner på Svalbard.
this year was it shot very many polar bears on Spitsbergen
d. Dette året ble svært mange isbjørner skutt på Svalbard.
this year was very many polar bears shot on Spitsbergen

3.1 The Quantification Restriction

The DR is a phenomenon where syntax and semantics interlock in a nontrivial way. On the one hand, it is a function of a syntactic configuration, showing up on potential subjects, NPs that can be expected to move to subject position but remain in argument position, a position ranging from SC subject (in English) via, in addition, subject of ergatives and object of passives (in Norwegian or Italian) to include any subject (in Dutch). On the other hand, its effect is unmistakably semantical in nature, as intuitively, what is wrong with definite or proportional NPs in these structures is that they cannot be assigned proper interpretations.

As it appears, accounts of the DR have been syntactically or semantically biased. Those approaches that have taken the syntax seriously have not as a rule spelt out what goes on semantically. Conversely, those that have definitive predictions about the meaning tend to oversimplify the syntax, making assumptions that are very difficult to generalize beyond (as a rule) English "there be" sentences. Either way, some link in the chain of reasoning remains unaccounted for; one piece of stipulation seems necessary to bridge the gap between the form and the meaning of presentative constructions with proportional or definite potential subjects.

In the previous sections, a case has been made that potential subjects cannot undergo QR or any movement causing them to c-command the whole VP at LF. The case is based on general considerations of scope and optional NP movement. It is possible to make the possibly stronger claim that potential subjects cannot undergo any LF movement but must be interpreted in their argument positions. It might be an idea now to try to exploit this preliminary result to explain why proportional NPs cannot be potential subjects but must be raised to subjects. To this end, it is necessary to make a case that proportional NPs cannot be interpreted in argument positions. It will not be sufficient to refer to the commonly made postulate that QPs must undergo QR and cannot be interpreted in situ; the claim must be substantiated by explicit principles for semantic composition from LFs, spelling out the interpretation of NPs in argument positions or adjunct

positions, and possible undesirable consequences must be countered.

Two recent approaches to the Quantification Restriction deserve mention. Kamp and Reyle (1993) and McNally (1992) both propose not a uniform analysis of DR, but a mixed solution, one for definites and a separate one for proportional NPs.

Kamp and Reyle (1993: 456) assume that the semantic function of "there" sentences is to assert that an individual, or a set of individuals, with certain specified properties exists. In order that "there" can make such a claim, the remainder of the sentence must provide a discourse referent to represent the individual or set whose existence is being asserted; and for this it is crucial that this discourse referent is not bound already, or anaphorically linked to some discourse referent outside the representation of the sentence itself. Proportional quantifiers, now, are unusable in "there" sentences because the discourse referents they introduce are bound by the duplex conditions which they themselves introduce; and definite NPs are unusable because they come with the presumption that the referents they introduce can be linked to some other discourse referent. Cardinality quantifiers and indefinites, on the other hand, both deliver 'free' discourse referents.

McNally (1992), working in Property Theory, assumes that there is a separate verb "be" selecting for 'nominalized functions', entity correlates of properties, not for individuals. Indefinite NPs (may) denote such things, while proportional NPs (as a rule) denote, as usually assumed, generalized quantifiers, properties of properties of individuals, and the variable they leave behind when they are QRed ranges over individuals, so a sort mismatch arises in the argument position of the existential predicate. Definites are excluded from the existential for another reason: They violate the felicity condition that the referent corresponding to the instantiation of the argument of the existential predicate must be novel.

Thus both Kamp/Reyle and McNally are committed to attributing an essential property to the expletive or the copular verb; the analyses cannot carry over to a language like Italian, where no expletive is necessary and the verb may, as in Norwegian, be practically any intransitive, including the passive of a transitive, or Dutch, where any verb may enter into a presentative ("er") construction. This they have in common with the analysis proposed by Barwise and Cooper[8].

The line of argument that suggests itself on the basis of the assumption that the potential subject must be interpreted in its θ position has something in common with McNally's account of the difference between indefinite and proportional NPs (in her terminology: necessarily quantificational DPs), namely, the notion of a type collision. But it has more in common with, and the account to be developed to some extent draws on, proposals and suggestions made in work by de Hoop (1992), Diesing (1992), Keenan (1987), and Higginbotham (1987).

Helen de Hoop, taking a cue from Belletti (1988) and building on Partee (1987),

[8]though Johnsen (1987) undertakes an effort to generalize this analysis to Norwegian by, in essence, interpreting the verb and the XP into the NP

suggests that some positions license only so-called weak case while others license only so-called strong case, correlating weak case with weak (interpretations of) NPs and strong case with strong (interpretations of) NPs in Milsark's sense; in turn, she suggests that weak interpretations are not of the generalized quantifier type but rather of the predicate, property type.

Strong NPs (or NPs with strong determiners) were defined by Milsark (1977) heuristically as such NPs that are disallowed in postverbal position of "there" sentences. Barwise and Cooper gave a model–theoretic interpretation, defining a determiner δ as strong iff for any noun ν the sentence $\delta\nu$ is a ν is necessarily true or false; a determiner is weak iff it is not strong. (A "there" sentence with a strong determiner comes out as a tautology or contradiction on the analysis.) Keenan (1987), noting certain descriptive inadequacies of this dichotomy, pointed out that the notion of weakness is related to other notions that come closer to characterizing the determiners that can occur in existential "there" sentences, notably symmetry, intersectivity, and existentiality (assuming conservativity, all three notions coincide). A (conservative) determiner δ as a relation between two sets ν and υ is intersective iff there is a function ϕ such that $\delta(\nu, \upsilon)$ iff $\phi(\nu \cap \upsilon)$. That is, an intersective determiner does not necessarily impose the tripartite quantification structure that a nonintersective determiner necessarily imposes; the relational determiner is reducible to the functional determiner, the restrictor can be joined with the scope. In the typology of Kamp & Reyle (1993), cardinal NPs have intersective determiners, proportional NPs do not. (The distinction does not readily apply to indefinite and definite articles, though in a certain sense, of course, the former are intersective and the latter nonintersective.)

In the term of Higginbotham (1987), an intersective determiner is a quantifier of *adjectival character*. He proposes to represent a "there be" sentence as $[\mathrm{Q(x)}]\overline{\mathrm{N}}\mathrm{(x)}$ where Q is the determiner, an unrestricted, or absolute, quantifier. Quantifiers whose role is always to relate *pairs* of open sentences, like "most", are taken to lack an unrestricted form, so their absence in "there" insertion contexts follows. Although this account is committed to the assumption that the 'coda' is an NP, rejecting an NP XP analysis, and problems arise in connection with the wide variety of verbs that can replace "be" in other languages, the essential idea can be rephrased as follows: NPs with intersective determiners may appear in postverbal position of "there" sentences because the $\overline{\mathrm{N}}$ is part of the scope, not the restrictor, of the determiner; the construction does not leave room for a tripartite, just a bipartite, quantification structure. Generalizing this idea somewhat, we could say that (the $\overline{\mathrm{N}}$ of) the potential subject is always interpreted in conjunction with the verb and the XP, forming the scope of a necessarily cardinal quantifier corresponding to the determiner.

Such an account would seem to be rather stipulative: The assumption that the descriptive material in the potential subject is conjoined with the remainder of the sentence, forming the scope of the determiner, does not follow from anything more principled. And, the idea that proportional quantifiers lack an unrestricted

form needs specification. However, on the Mapping Hypothesis of Diesing (1992), saying that all material in the VP at LF is mapped to the innermost nuclear scope in the semantic representation of the sentence, in particular the descriptive material of any NP remaining in its argument position at LF forms part of the scope of the determiner. The Mapping Hypothesis may not be valid in all regards, but this restricted form of it may perhaps be viable.

3.2 Argument Structures and Adjunct Structures

The assumption that quantificational phrases (QPs) in θ positions must undergo Quantifier Raising (QR) is an essential element in the scope theory of Aoun and Li (1993) (and it is an underlying premise in much of the literature on LF and scope). In conjunction with the Antecedent Requirement (AR) (cp. 2.2), it serves to rule out certain scope ambiguities in a language like Chinese. Aoun and Li derive the assumption from the θ criterion, arguing that QPs, as nonreferential expressions, cannot remain in their θ positions at LF ("otherwise, the θ criterion would be violated"); in other words, they cannot be interpreted *in situ*.

Yet this remains a postulate; from a semanticist's point of view, there is no prima facie reason why something of type $\langle\langle \mathrm{e}, \mathrm{t}\rangle, \mathrm{t}\rangle$ should not be able to combine with something of type $\langle \mathrm{e}, \mathrm{t}\rangle$ or type $\langle \mathrm{e}, \langle \mathrm{e}, \mathrm{t}\rangle\rangle$, as the in situ interpretation of a subject or an object is commonly constructed. In particular the former mode of composition is simple and elegant, corresponding as it does to functional application. Indeed, in the framework of Barwise and Cooper (1981) even the quantifying in rule, the counterpart of QR, conforms to this pattern in the logical translation, the open sentence being of type $\langle \mathrm{e}, \mathrm{t}\rangle$. True, the translation rule for the combination of an NP with a two-place V is special, so obligatory quantifying in would mean more uniformity. But semantically, there is nothing to substantiate the claim that quantificational expressions cannot be interpreted in θ positions.

If we are to trace the Quantification Restriction, that is, the prohibition against proportional NPs in potential subject positions, back to the necessity of interpreting the phrases in question in situ, that is, the prohibition against LF raising from potential subject positions, we have to take a more differentiated view of 'quantificational phrases' than do Aoun and Li or Barwise and Cooper. To Aoun and Li, indefinite, cardinal, and proportional NPs alike count as QPs, while to Barwise and Cooper, of course, every NP is a generalized quantifier. It will be necessary to exploit the difference between proportional NPs on the one hand and indefinite and cardinal NPs on the other; in particular, the intersectivity of cardinal NPs and the intersectivity or, rather, dynamics of indefinite NPs.

In this section, I will sketch a mapping from LF to SR (semantic representation) on which proportional NPs come out as interpretable in adjunct positions but uninterpretable in argument positions. The central idea is that a node joining an argument with (a projection of) its head corresponds to conjunction, while

adjunction may correspond to something more complex, like functional application. Argument nodes are interpreted as coordination whereas adjunct nodes are interpreted as subordination. The guiding principle is that treating cardinal or indefinite NPs as generalized quantifiers represents an unnecessary complication as long as they can be treated more or less as predicates. The semantic representation does not introduce more structure than is necessary for the interpretation. Partee (1987) assigns three different possible types to NPs – e, $\langle e, t\rangle$, and $\langle\langle e, t\rangle, t\rangle$ – and suggests that certain positions may be reserved for the former two types. The present proposal elaborates on this suggestion to say that θ positions exclude (at least) the last type. The semantic representation framework chosen will be Discourse Representation Theory (DRT), the main reason being that this allows a particularly simple treatment of indefinites. So in what follows, I will present a fragment of a translation from LF to DRS (Discourse Representation Structures) on which interpretations are composed on a least effort basis and which lends some substance to the claim that QPs must undergo QR. A proportional NP in situ will be seen to result in an 'improper', thus uninterpretable, DRS. Definite NPs will be kept apart; they will be briefly discussed in 3.4.

It will be useful to illustrate the DRS construction scheme by way of an example. The sentence (19)a. is supposed to ultimately have the representation (19)b., and the sentence (20)a. is supposed to ultimately have the representation (20)b. or c. The question is how these representations are obtained, and, what representations the sentence (21)a. can in principle have.[9]

(19) a. Det er skutt en ulv.
it is shot a wolf
'A wolf has been shot.'

b. $\langle\{x, y\}, \{wolf(x), shot(y, x)\}\rangle$

(20) a. Noen har skutt hver eneste ulv.
somebody has shot every only wolf
'Somebody has shot every single wolf.'

b. $\langle\{y\}, \{every_x(\langle\{x\}, \{wolf(x)\}\rangle, \langle\{\}, \{shot(y, x)\}\rangle)\}\rangle$

c. $\langle\{\}, \{every_x(\langle\{x\}, \{wolf(x)\}\rangle, \langle\{y\}, \{shot(y, x)\}\rangle)\}\rangle$

(21) a. ?? Det er skutt hver eneste ulv.
it is shot every only wolf

Cooper et al. (1994) discuss several conceptions of the interface between DRSs and syntax. The LF based, semi-compositional DRS construction scheme outlined below has something in common with a 'bottom-up' version of the standard 'top-down' construction algorithm, but more, in fact, with an HPSG style specification for DRSs (cp. Frank and Reyle 1994). It is also inspired by Zeevat (1989). Instead of using lambdas, each lexical item is equipped with a sequence of indices representing values for head or argument features. These indices are assigned

[9] I use the linear DRS notational format. Apart from saving space, it makes the translations more perspicuous. The examples as indeed the items in the fragment are all Norwegian.

through phrase structure, not unlike θ marking, ensuring that (eg.) the head feature of an argument coincides with the relevant argument feature of the head, and a raised constituent brings its indices along. For instance, a two-place verb comes with two indices, one for each argument, and an NP has two indices, one to unify with an argument index of a verb and the other for its argument (VP). If we assume an LF for (19)a. like (19)c., an 'annotated' LF will look like (19)d.

(19) c. $\ldots$ $[_{\mathrm{VP}}\ [_{\mathrm{NP}}\ \mathrm{e}]\ [_{\overline{\mathrm{V}}}\ [_{\mathrm{V}}\ \mathrm{skutt}]\ [_{\mathrm{NP}}\ [_{\mathrm{D}}\ \mathrm{en}]\ [_{\mathrm{N}}\ \mathrm{ulv}]]]]$

d. $\ldots$ $[_{\mathrm{VP}}\ [_{\mathrm{NP}_{[1][5]}}\ \mathrm{e}]\ [_{\overline{\mathrm{V}}_{[1][2]}}\ [_{\mathrm{V}_{[1][2]}}\ \mathrm{skutt}]\ [_{\mathrm{NP}_{[2][4]}}\ [_{\mathrm{D}_{[2][3][4]}}\ \mathrm{en}]\ [_{\mathrm{N}_{[2]}}\ \mathrm{ulv}]]]]$

To see how the DRS (19)b. comes about on the basis of this LF, we must consider both how lexical items like two-place verbs, common nouns or the indefinite article translate into discourse representation structure and how translations of separate constituents combine into translations of complex constituents like VP, $\overline{\mathrm{V}}$ or NP. Consider now the general translation function f whose value is invariably a DRS. Note to start with certain conventions for a simplified notation:

Simplified Notation

$\wedge$ reads "$\cup$" (DRS merge)
x_i abbreviates $\langle\{x_i\},\{\}\rangle$
$\alpha(x_i)$ abbreviates $\langle\{\},\{\alpha(x_i)\}\rangle$
$\alpha(x_i{}^*)$ abbreviates $\langle\{x_i\},\{\alpha(x_i)\}\rangle$

For (19), we need to specify four terminal rules and three composition rules. The terminal rule for one-place verbs and the corresponding composition rule are included because they introduce nothing new as compared to the two-place case. The rule for the plural indefinite article is included because it introduces nothing new in comparison with the singular case. The treatment of plural is simplified; a discourse referent is atomic or non-atomic if introduced as x_i or X_i.

Indefinite Determiners

T(1)	$f([_{\mathrm{D}_{[1][2][3]}}\ \mathrm{en}\,]) = x_1$	indefinite article sg
T(2)	$f([_{\mathrm{D}_{[1][2][3]}}\ \_\ ]) = x_1$	indefinite article pl

Empty Agent NP

T(7)	$f([_{\mathrm{NP}_{[1][2]}}\ \mathrm{e}\,]) = x_1$	'$\mathrm{pro}_{\mathrm{arb}}$' in passives

Nouns and Verbs

T(8)	$f([_{\mathrm{N}_{[1]}}\ \alpha\,]) = \alpha'(x_1)$	common noun
T(9)	$f([_{\mathrm{V}_{[1]}}\ \alpha\,]) = \alpha'(x_1)$	one-place verb
T(10)	$f([_{\mathrm{V}_{[1][2]}}\ \alpha\,]) = \alpha'(x_1, x_2)$	two-place verb

Argument Structures: Determiners and Nouns

T(11) $f([_{\mathrm{NP}_{[1][3]}}\ [_{\mathrm{D}_{[1][2][3]}}\ \alpha\,][_{\mathrm{N}_{[1]}}\ \beta\,]]) = f([_{\mathrm{D}_{[1][2][3]}}\ \alpha\,]) \wedge f([_{\mathrm{N}_{[1]}}\ \beta\,])$

Argument Structures: Verbs and NPs

T(12) $f([_{\mathrm{VP}}\ [_{\mathrm{V}_{[1]}}\ \alpha][_{\mathrm{NP}_{[1][2]}}\ \beta]]) = f([_{\mathrm{V}_{[1]}}\ \alpha]) \wedge f([_{\mathrm{NP}_{[1][2]}}\ \beta])$

T(13) $f([_{\mathrm{VP}}\ [_{\mathrm{NP}_{[1][2]}}\ \alpha][_{\overline{\mathrm{V}}_{[1][3]}}\ \beta]]) = f([_{\mathrm{NP}_{[1][2]}}\ \alpha]) \wedge f([_{\overline{\mathrm{V}}_{[1][3]}}\ \beta])$

T(14) $f([_{\overline{\mathrm{V}}_{[1][2]}}\ [_{\mathrm{V}_{[1][2]}}\ \alpha][_{\mathrm{NP}_{[2][3]}}\ \beta]]) = f([_{\mathrm{V}_{[1][2]}}\ \alpha]) \wedge f([_{\mathrm{NP}_{[2][3]}}\ \beta])$

When in (19)d. the determiner combines with the noun, the DRS associated with the former merges with that associated with the latter; when the verb combines with the NP and finally the $\overline{\mathrm{V}}$ combines with the empty NP, the same happens. In this way, (19)b. is constructed. So far, everything is interpreted in situ; in particular, the NP 'a wolf' is interpreted in its θ position, and every branching node is interpreted as conjunction, or, to be precise, as the union of two DRSs.

This changes once we turn to cardinal and proportional determiners. The former do have an indefinite use, and this use emerges when they are interpreted in situ, according to T(11). But they also have a use, especially with expressions like "exactly n" or "at most n", where not just the noun but the whole VP is taken into account. This reading is not captured by Diesing (1992) or McNally (1992). The relevant interpretation of the sentence (22)a. is indicated in (22)b.

(22) a. Det er skutt tre ulver.
it is shot three wolves
'Three wolves have been shot.'

b. $\langle\{X\}, \{|X| = 3, X = \Sigma x : \langle\{x, y\}, \{wolf(x), shot(y, x)\}\rangle\}\rangle$

To account for this interpretation, ie. to reach this representation, it is reasonable to assume an LF like (22)c and an 'annotated LF' like (22)d. That is, not the NP, but the intersective determiner is raised to adjoin to VP. This form of 'quantifier raising' is compatible with the hypothesis, formulated in the last section, that the potential subject NP is necessarily interpreted in situ. The translation rules that are needed to bridge the gap between (22)b. and d. are listed below.

(22) c. $\ldots$ [VP [D tre]$_{\mathrm{i}}$ [VP [NP e] [$\overline{\mathrm{V}}$ [V skutt] [NP t_{i} [N ulver]]]]]

d. $\ldots$ $[_{\mathrm{VP}}\ [_{\mathrm{D}_{[2][3][4]}}\ \mathrm{tre}]$
$[_{\mathrm{VP}}\ [_{\mathrm{NP}_{[1][5]}}\ \mathrm{e}]\ [_{\overline{\mathrm{V}}_{[1][2]}}\ [_{\mathrm{V}_{[1][2]}}\ \mathrm{skutt}]\ [_{\mathrm{NP}_{[2][4]}}\ [_{\mathrm{D}_{[2][3][4]}}\ \mathrm{t}]\ [_{\mathrm{N}_{[2]}}\ \mathrm{ulver}]]]]]$

The cardinal determiner, whether left in situ, yielding the indefinite reading, or raised, yielding the cardinal reading, introduces a non-atomic discourse referent and ascribes a cardinality to it. The trace left by a raised determiner functions just like the singular indefinite article, introducing an atomic discourse referent x. Thus in the example, when the constituents combine to form the minimal VP, their associated DRSs merge to form, in effect, the DRS (19)b. The rule for VP adjunction of determiners, finally, identifies the non-atomic referent introduced by the cardinal determiner with the set of x described by the DRS for the VP.

Cardinal Determiners

T(3) $f([_{\mathrm{D}_{[1][2][3]}}\ \mathrm{n}]) = |X_1{}^*|{=}\mathrm{n} \qquad \mathrm{n} \in \{\ \mathrm{en}, \mathrm{to}, \mathrm{tre}, \ldots\}$

Determiner Traces

T(4) $f([_{\mathrm{D}_{[1][2][3]}}\ \mathrm{t}\,]) = x_1$ trace of a determiner

Adjunction Structures: Determiner Adjunction to VP

T(15) $f([_{\mathrm{VP}}\ [_{\mathrm{D}_{[1][2][3]}}\ \alpha\,][_{\mathrm{VP}}\ \beta\,]]) = f([_{\mathrm{D}_{[1][2][3]}}\ \alpha\,]) \wedge X_1 = \Sigma x_1 : f([_{\mathrm{VP}}\ \beta\,])$

This last translation rule, specifying the representation of a VP consisting of a D and a VP, departs from the pattern found in T(11)–T(14) of merging the DRS of one constituent with that of the other. The representation of the determiner is merged with something, but this something is not simply the representation of the VP but a complex structure where the representation of the VP appears as a subordinate structure. This renders the bipartite quantification structure.

As soon as tripartite quantification structures come into play, with proportional, non-intersective determiners, the representations will involve two subordination structures, one, for the nuclear scope, linked to QR in the sense of NP adjunction to VP and the other, for the restrictor, linked to determiner adjunction to NP. (This 'two-step' QR, essentially going back to Heim (1982), is what Aoun and Li (1993) adopt.) Let us assume for (20)a. on the reading (20)c. an LF like (20)d.[10]

(20) d. $\ldots$ $[_{\mathrm{VP}}\ [_{\mathrm{NP}_{[2][4]}}\ [_{\mathrm{D}_{[2][3][4]}}\ \text{hver}]$
$[_{\mathrm{NP}_{[2][4]}}\ [_{\mathrm{D}_{[2][3][4]}}\ \mathrm{t}]\ [_{\mathrm{N}_{[2]}}\ \text{ulv}]]]$
$[_{\mathrm{VP}}\ [_{\mathrm{NP}_{[1][5]}}\ \text{noen}]\ [_{\overline{\mathrm{V}}_{[1][2]}}\ [_{\mathrm{V}_{[1][2]}}\ \text{skutt}]\ [_{\mathrm{NP}_{[2][4]}}\ \mathrm{t}]]]]$

To get from here to the DRS (20)c., we need two new terminal rules and two new composition rules. A proportional determiner like "hver" ('every') is rendered as a binary DRS relation, and an NP trace is rendered as nothing. The trace thus does not play the role of a variable; due to the coindexing in verb and argument NP the right referent is present in the rendering of the verb according to T(10). A determiner trace, as before, introduces the relevant referent. The rules for D adjunction to NP and NP adjunction to VP introduce the two DRS arguments of the determiner and identify them with the rendering of the NP (VP).

Proportional Determiners

T(5) $f([_{\mathrm{D}_{[1][2][3]}}\ \alpha\,]) = \alpha'[x_1](K_2, K_3)$ $\alpha \in \{$ hver, de fleste, $\ldots\}$

NP Traces

T(6) $f([_{\mathrm{NP}_{[1][2]}}\ \mathrm{t}\,]) = \_$ trace of an NP

Adjunction Structures: Determiner Adjunction to NP

[10]For simplicity, it is assumed that the subject is interpreted in its base, [Spec, VP] position, ignoring the fact that it moves overtly to [Spec, XP] for some functional projection like IP. In general, the question of whether and in the event how NPs are interpreted in positions like [Spec, IP] is ignored. Likewise, QR is treated as NP adjunction to VP although adjunction to IP may be preferable. Finally, it should be mentioned that the treatment of the 'absorbed agent' of passives implicit in (19)c., (22)c. and T(7) is certainly too simple to be adequate.

T(16) $f([_{\text{NP}_{[1][3]}}\ [_{\text{D}_{[1][2][3]}}\ \alpha][_{\text{NP}_{[1][3]}}\ \beta]]) = f([_{\text{D}_{[1][2][3]}}\ \alpha]) \wedge K_2{}^{*}= f([_{\text{VP}}\ \beta])$

Adjunction Structures: NP Adjunction to VP

T(17) $f([_{\text{VP}}\ [_{\text{NP}_{[1][3]}}\ \alpha][_{\text{VP}}\ \beta]]) = f([_{\text{NP}_{[1][3]}}\ \alpha]) \wedge K_3{}^{*}= f([_{\text{VP}}\ \beta])$

The reader can easily verify that the rules T(1)–T(17) produce the DRS (20)c. on the basis of the LF (20)d. (given that the NP "noen" ('somebody') is to be decomposed into an indefinite determiner and an empty N or an N like 'person'). To produce the scopally inverse DRS (20)b. the subject could undergo QR as well; anyhow, QR of indefinite NPs is required for indefinite objects to take wide scope. I leave it an open question whether a separate translation rule is needed for this adjunction or whether indefinite NPs should be provided with a quantificational interpretation which could subsequently be reduced.

Now how about the inacceptable sentence (21)a., where a proportional NP is a potential subject? The assumption that a potential subject cannot undergo QR rules out an LF in parallel to (20)d., leaving (21)b., in parallel to (19)c., where the NP is interpreted in situ in toto, and (21)c., in parallel to (22)c., where the bare quantifier is raised, as possible LFs. Now either of these two possible LFs necessarily results in an 'improper' DRS, a DRS where a discourse referent occurs free (Kamp & Reyle 1993: 111). And an improper DRS is an uninterpretable DRS. The Quantification Restriction is thus accounted for.

(21) b. $\ldots$ [VP [NP e] [$\overline{\text{V}}$ [V skutt] [NP [D hver] [N ulv]]]]
c. $\ldots$ [VP [D hver]$_{\text{i}}$ [VP [NP e] [$\overline{\text{V}}$ [V skutt] [NP t_{i} [N ulv]]]]]

The DRS resulting from (21)b., (21)d., contains free occurrences of three referents: The x as occurring in the conditions $wolf(x)$ and $shot(y, x)$ is not introduced in an accessible universe, nor are the two DRS referents K_2 and K_3 for the restrictor and the scope of the determiner. In the DRS resulting from (21)c., (21)e., X, K_2 and K_3 occur without introduction. One might think of supplementing the translation rules to improve this latter representation: By an alternative to T(15), D adjunction could be interpreted in parallel to NP adjunction as in T(17).

(21) d. $\langle\{y\}, \{every[x](K_2, K_3), wolf(x), shot(y, x)\}\rangle$
e. $\langle\{\}, \{every[x](K_2, K_3), X = \Sigma x : \langle\{x, y\}, \{wolf(x), shot(y, x)\}\rangle\}\rangle$
f. $\langle\{\}, \{every[x](K_2, \langle\{x, y\}, \{wolf(x), shot(y, x)\}\rangle)\}\rangle$
g. $\langle\{\}, \{every[x](\langle\{x\}, \{\}\rangle, \langle\{y\}, \{wolf(x), shot(y, x)\}\rangle)\}\rangle$

The result of such a modification would (after reduction) be a DRS like (21)f., reducing the number of referents occurring free to one, representing the restrictor. This, however, is essential, reflecting the determiner's intrinsic proportionality. One could consider an alternative to T(5) by which proportional determiners are interpreted as essentially one-place, unrestrictive quantifiers. Taken together with an alternative to T(4), this could result in a 'proper' DRS like (21)g., meaning that every individual is a wolf that has been shot. But such a move is clearly not

justified; an acceptable sentence like (20)a. cannot have this interpretation. In Higginbotham's words, proportional determiners lack an unrestricted form.

Summing up, an interface between LF and DRS has been presented that lends substance to suggestions that QPs cannot be interpreted in argument positions. Together with the assumption that potential subjects are necessarily interpreted in argument positions, this offers an explanation of the Quantification Restriction. Essentially, arguments are treated as conjuncts while adjuncts are treated as functions. Thus, the NPs that can be interpreted as arguments are of type t or $\langle e, t\rangle$ – indefinite NPs, cardinal NPs with the trace of a determiner, and traces of proportional NPs. Distinct types are associated with distinct positions; type shifting of an indefinite to a cardinal or from a cardinal to a proportional determiner ("many") is correlated with raising. The general point could be stated in another semantic framework as well, though a type t treatment of indefinite NPs requires a dynamic framework like DRT or DPL (Groenendijk and Stokhof 1991).

3.3 Problems

The rules relating Logical Forms to Discourse Representation Structures in 3.2 are precise enough, but the assumptions about those Logical Forms are incomplete, and this makes itself felt in a number of ways. First, if, as is tacitly assumed, the VP containing the subject is the minimal node to which an NP can adjoin, one would draw conclusions about the relative scope between a potential subject and another verb argument in a language like Dutch which are not warranted. Second, if in a language like German an NP that does not scramble across another phrase is necessarily interpreted in its θ position, one would expect any proportional NP to undergo overt scrambling. Third, it is sometimes necessary to assume QL to account for scope inversions, but if a lowered quantifier is necessarily interpreted in its θ position, it should not be possible to lower a proportional NP.

Dutch permits transitive presentative constructions, and the Quantification Restriction affects only the subject. Thus (23)a., in contrast to (23)b., is acceptable. Now if the subject is by necessity interpreted in its argument position [Spec, VP], one would expect the object, being proportional, to have to move past the subject, taking scope over it, if QR is adjunction to VP or some higher projection. This expectation is not borne out. Not only do sentences like (23)a. uncontroversially have the reading where the subject scopes over the object; informants tend to distrust the other, inverse reading. (24) provides a further example.

(23) a. . . . dat er ten minste een jongen bijna ieder meisje gekust heeft.
. . . that there at least one boy almost every girl kissed has
b. ?? . . . dat er bijna ieder jongen ten minste een meisje gekust heeft.

(24) Ik weet zeker dat er twee docenten ieder examen nakijken.
I know certain that there two teachers every exam correct

The only way out of this dilemma seems to be to assume a possible intermediate

adjunction site below the subject argument position. Now this is exactly what Aoun and Li (1993) for independent reasons – having to do with the Antecedent Requirement – do: They let the verb and the object form a 'VP_2' to which the latter can adjoin. True, it is not immediately obvious how such a representation, in their words, "lends itself to a straightforward logical translation" (p. 81, fn. 5), the subject variable being outside the scope of the raised object; however, a meaningful translation is just what the framework from the last section provides. The reason is that the subject variable is from the outset present in the discourse representation of the verb. Thus an LF like (25)b. for the sentence (25)a. can be assigned a DRS like (25)c. without further stipulation.

(25) a. ... (dat) er iemand alle schilderijen kocht.
... (that) there someone all paintings buys

b. ... $[_{VP_1}\ [_{NP}$ iemand$]\ [_{VP_2}\ [_{NP}\ [_{D}$ alle$]_j\ [_{NP}\ t_j$ schilderijen$]_i]$
$[_{VP_2}\ [_{NP}\ t_i]\ [_{V}$ kocht$]]]]$

c. $\langle\{y\}, \{every_x(\langle\{x\}, \{painting(x)\}\rangle, \langle\{\}, \{buy(y,x)\}\rangle)\}\rangle$

A related problem arises in connection with a scrambling language like German. (26)a., where the verb arguments are in their base positions, is unambiguous, the relative scope reflecting the overt structure, while (26)b., where the object has undergone adjunction across the subject, is ambiguous. The lesson drawn from this in 2.2 and 2.4 was that an NP that does not undergo overt scrambling cannot undergo QR. But if that is taken to mean that it is necessarily interpreted in its base position, (26)a., with a proportional object, should not be interpretable.

(26) a. ... daß mindestens ein Junge fast jedes Mädchen geküßt hat.
... that at least one boy almost every girl kissed has

b. ... daß fast jedes Mädchen mindestens ein Junge geküßt hat.
... that almost every girl at least one boy NOM kissed has

Since it is, we are again forced to assume an intermediate adjunction site VP_2. The principle formulated in 2.4 that an NP which is free to move overtly but does not cannot undergo that or a similar movement covertly can be maintained if only a 'similar movement' is constrained to mean a movement at least as long. A potential subject, by contrast, appears unable to undergo any LF adjunction. Now to predict the second, inverse reading of (26)b., two options seem to be open: We could say that the subject NP can undergo QR as it is not in the relevant sense free to scramble overtly, or we can assume QL of the object NP, in which case we must again ensure that it does not have to end up in its base position.

In general, QL should not be taken to imply that the lowered phrase is interpreted in its θ position. To predict the inverse reading of a sentence where an NP has been raised past a quantificational adverb, QL seems the only reasonable option, but if, as in the Norwegian (27)a., the NP is proportional, it must be possible to (ultimately) adjoin it to an intermediate projection, or else the LF representation will be as uninterpretable as the presentative construction (27)b.

(27) a. ... at [alle sjukepleiere]$_i$ sjelden er t_i på vakt.
... that all nurses rarely is/are on duty
b. ?? ... at det sjelden er alle sjukepleiere på vakt.
... that it rarely is/are all nurses on duty

Finally, it is a problem that in the theory of Aoun and Li (1993), not only NPs like "everyone" but also indefinite NPs like "someone" must undergo QR. If in their framework indefinites were free to remain in their θ positions at LF, they would not be able to account for the fact that the Chinese equivalent of the sentence "someone loves everyone", like that of "everyone loves someone", is scopally unambiguous (the object NP could undergo a 'long' QR without violating the AR, cp. 2.2). So the present attempt at substantiating the claim that QPs must undergo QR would be of no use for the work the claim is supposed to do. A final assessment of this issue will require a critical look at the Chinese data and, if they are compelling, at the Antecedent Requirement, which, as we saw in 2.2, is inadequate for determining scope in a language like German.

3.4 Towards a Full Account of DR?

A complete account of the Definiteness Restriction must answer the question why in a language like Norwegian, it affects definite and not only proportional NPs. Even if the Quantification Restriction and the Definiteness Restriction proper are, as Icelandic presentative constructions seem to indicate, two separate phenomena, the question naturally arises whether the account of the former given in previous sections can be extended to provide an account of the latter as well.

The given account of the Quantification Restriction rests on the assumption that the potential subject must stay in its θ position at LF, and the assumption that NPs in θ positions must have intersective determiners. The former assumption is based on a syntactic principle that LF movement presupposes overt movement if the overt movement is possible but not necessary, and the latter assumption is based on a semantic principle that a node immediately dominating a θ position is interpreted as DRS merge. As only adjunction nodes are interpreted otherwise, an NP with a nonintersective determiner must be in an adjoined position to have an interpretation. One might now speculate that definite, presuppositional NPs are excluded from θ positions because they are in some sense quantificational.

Let us compare definite with indefinite NPs. In DRT, the meaning of a definite description is an anaphoric presupposition. Following van der Sandt (1991), a sentence can be represented as a pair, a presupposition and an assertion DRS[11]. A definite is represented like an indefinite, only not in the assertion structure but in the presupposition structure. Thus if (28)a. receives the representation (29)a.

[11] in van der Sandt's framework the presupposition DRS, the 'anaphoric structure', is really a DRS set, and a DRS is a triple where the anaphoric structure is the third member.

(28)b. receives the representation (29)b. The left-hand member of the pair is the presupposition structure, and the right-hand member is the assertion structure.

(28) a. A wolf is dead.
b. The wolf is dead.

(29) a. $\langle\langle\{\},\{\}\rangle,\langle\{x\},\{\mathit{wolf}(x),\mathit{dead}(x)\}\rangle\rangle$
b. $\langle\langle\{x\},\{\mathit{wolf}(x)\}\rangle,\langle\{\},\{\mathit{dead}(x)\}\rangle\rangle$

The presupposition is to bring about the substitution of a context referent for the presupposition referent x when the assertion is merged with the context. Thus given a referent y and condition $\mathit{wolf}(y)$ in the context, the presupposition disappears and the condition $\mathit{dead}(y)$ is added. It is reasonable now to represent any expression as a pair, in analogy with the construction of focus meanings in the theory of Rooth (1992). "The wolf" could be represented as (30)b., provided that "a wolf" is represented as (30)a., and "dead" could be represented as (30)c.

(30) a. $\langle\langle\{\},\{\}\rangle,\langle\{x\},\{\mathit{wolf}(x)\}\rangle\rangle$
b. $\langle\langle\{x\},\{\mathit{wolf}(x)\}\rangle,\langle\{\},\{\}\rangle\rangle$
c. $\langle\langle\{\},\{\}\rangle,\langle\{\},\{\mathit{dead}(x)\}\rangle\rangle$

The representation of the indefinite, (30)a., would be the merge of the complex structure for the indefinite article, $\langle\langle\{\},\{\}\rangle,\langle\{x\},\{\}\rangle\rangle$, and the complex structure for the noun, $\langle\langle\{\},\{\}\rangle,\langle\{\},\{\mathit{wolf}(x)\}\rangle\rangle$. These two complex structures adhere to T(1) and T(8) from 3.2, only that an empty presupposition structure is added. The representation of the definite, (30)b., we can assume to result from a "the" translation rule like the (simplified) following, using T(16) for D adjunction to NP (or, rather, a differentiated version incorporating presupposition structures).

Definite Determiner
$f([_{\mathrm{D}_{[1][2][3]}}\ \mathbf{the}]) = \langle K_2, \_\rangle$.

Definite descriptions could thus be interpreted in situ; the definite article would 'shift' the representation of the common noun to the presupposition structure, and the representation of the NP, a complex DRS like (30)b., could be pairwise merged with a complex DRS like (30)c. to produce a complex DRS like (29)b. Unless we are prepared to say that presupposition structures are in some sense invisible in argument positions, there is, compositionally, nothing to prevent the in situ interpretation of presuppositional NPs by complex DRS merge.

In short, there is no reason to exclude the interpretation of definite descriptions (or other definite NPs) in θ positions, as long as there is no principled reason that assertion structures and presupposition structures are not constructed in parallel. Definites are quantificational in the sense that they induce bipartite structures, but due to the generality of the partition, not in the sense of tripartite structures. In fact, if there were a corresponding mechanism available for every proportional

determiner, those would not be quantificational in this sense either.

We may note that NPs can be definite, or presuppositional, in varying degrees and that languages can vary as to how far presuppositional NPs are excluded in presentative constructions. Dutch, in particular, permits indefinite or cardinal NPs on 'strong' interpretations as potential subjects. While partitive NPs on the form "one (two, ...) of the ..." are disallowed in English "there" sentences, their equivalents are allowed in Dutch "er" sentences. This cross–linguistic flexibility suggests that if argument positions are in some sense opaque to presuppositions, the relevant notion of opacity must be sufficiently fine–grained to discriminate between definiteness and specificity in the sense of Enç (1991).

A uniform account of definite and proportional NPs appears to still be a way off, and quite possibly the explanation for the DR in the narrow sense is to be found along a somewhat different line, without crucial reference to θ positions at LF. One might still want to say, in the spirit of Reuland (1985), that a potential subject is necessarily assertional, respecting the Novelty Condition (Heim 1982) and forming a self-contained discourse. But this might well be as directly connected to phenomena like focus, comment, and rheme as to LF positions, and ultimately turn out to fit into the same picture as the tendency in many languages (notably Catalán, cp. Vallduví 1992) for definite NPs to occur to the left in a sentence.

4 Conclusions

Quantifier Raising, or Quantifying In, is a powerful tool: Unless it is constrained, LF representations are, in a manner of speaking, closed under scope inversion. There are indications that overt NP movements constrain covert NP adjunctions, be it that an NP must undergo overt movement for another NP to undergo QR across it, as implied by Aoun and Li (1993), or that an NP must itself undergo overt movement to take scope over an operator basically c-commanding it, as predicted by Frey (1993). We have seen, in 2.2, that Aoun's and Li's account is inadequate in regard to scope limitations in a scrambling language like German, and, in 2.3, that neither this account nor that of Frey can capture the scope limitations imposed by presentative constructions in a language like Norwegian. However, both the German facts and the Norwegian facts, as disparate as they may seem, involve *free* overt movements, and can be accounted for by a principle by which an NP that does not undergo an overt movement it is free to undergo, does not undergo such a movement covertly, after SPELL-OUT. In sum, section 2 has made a case that a principle of this sort is plausible.

Specifically, section 2 concludes that a potential subject is interpreted in situ, that is, in its θ position, and the aim of section 3 has been to apply this result to the Quantification Restriction, the DR as far as it affects proportional NPs, hypothesizing that such NPs cannot be interpreted in θ positions. Although it is prima facie possible to construct the semantics of proportional NPs in situ, such

a construction rests on the assumption that all NPs are of the same logical type. If alternatively, we appreciate the fact that an NP is not necessarily a quantifier, we can exploit a differentiated NP typology as assumed in a framework like DRT. In particular, the mapping from LF to DRS sketched in 3.2 is closely related to proposals by Diesing (1992) and de Hoop (1992); weak NPs are correlated with syntactic positions or features and interpreted more or less as predicates. In 3.2, it is proposed that any mother to a θ node is interpreted as conjunction, more precisely, DRS merge. Indefinite NPs can be treated as expressions of type t, with the capacity to bind occurrences of the same referent in sister representations. Cardinal NPs are not so simple, but if the determiner is raised, the remaining NP can be treated like an indefinite, and the correct semantics results because the determiner is intersective. Proportional NPs, however, must be raised qua NPs, or the resulting DRS will be improper and thus uninterpretable.

This amounts to an account of half of the Definiteness Restriction. An account of the other, definiteness, half along the same lines must await further motivation. All in all, both the result from section 2 concerning the relation between free overt movements and QR and the result from section 3 concerning the relation between LF positions, composition principles, and NP types must be seen as tentative. Primarily, the present paper is to be considered as an attempt to make semantic sense of claims about the interrelations between NP positions and interpretations. The main conclusion to be drawn is, I believe, that such attempts are necessary.

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