The uniform strucure for multiple scope readings

Working in Categorial Grammar, I argue that what the syntax feeds into the semantics for the sentence in (1) are the two logical forms in (2). The syntactic structure is the same for the two logical forms, as shown in (3), where $QNP2$ and $QNP1$ abbreviate the categories $S/(NP\backslash S)$ and $(S/NP)\backslash S$ respectively. Given the lexically assigned category $(NP\backslash S)/NP$ and functor term $\lambda x.\lambda y.love'xy$ ($= love'$) of type e(et) for *love*, the logical functors $love'_1$ and $love'_2$ are derived by way of a modified version of Hendriks (1987)'s Argument Raising, as shown in (4). I call the rule 'Arguement-slot raising' or ASR.

Argument-slot raising of the category $(NP\backslash S)/NP$ is not provable with regard to the object argument-slot in the non-associative Lambek Calculus NL. That is, $(NP\backslash S)/NP \nvdash_{NL} (NP\backslash S)/((S/NP)\backslash S)$. However, instead of modifying the global rules of NL to validate Argument Raising, as in Moortgat (1991), I define ASR as a rule that applies specifically to local functors so that they can take QNPs, instead of their lexically specified NPs, as syntactic arguments. Because ASR generates two functor terms with the same category/type, the syntactic structure/derivation stays the same for the two scope readings. This allows us to explain the binding asymmetry between the subject and the object as in (5) with the simple requirement that the binder must be merged later than the pronoun in the syntactic derivation (or in Minimalist terms, the binder must c-command the pronoun). I argue that excluding (5-b) by postulating a covert A-bar movement such as May's QR together with Weak Cross Over violation between *every lecturer$_1$* and *he$_1$* (or by instantiating an analogous mechanism in Categorial Grammar) is not explanatory, given that A-bar movement (e.g. Wh-movement) and QNP scope are subject to different locality constraints, as Johnson (2000) showed.

My analysis can naturally explain the characteristic tensed-clause locality constraint that applies to QNP scope but not to A-bar movement. The analysis switches scope by applying ASR to the local functor that takes the QNPs in question as co-arguments. In (6-a), the string inside the square brackets counts as a complex predicate to which we can apply ASR, whereas in (6-b), the string inside the square brackets does not count as a complex predicate. Thus, the scope switch between the two QNPs is impossible with (6-b). In the presentation, I show how a Type Logical Grammar based on the non-associative Lambek Calculus NL can recognize *tried to review* as a complex predicate without recognizing *told me that Bill would review* as a complex predicate.

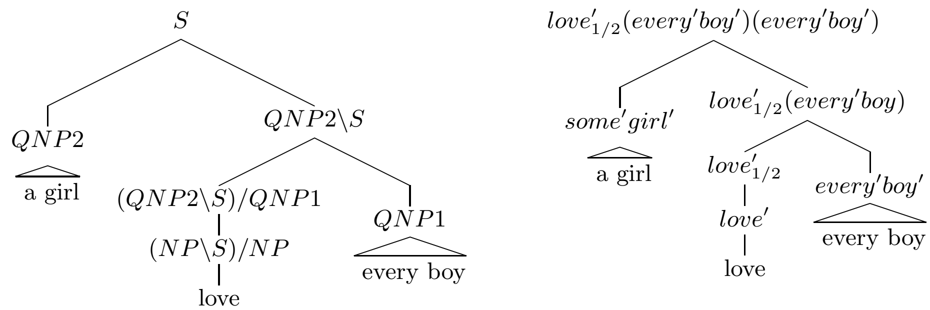
Following Ruys (1992), I assume that the apparent non-tensed-clause-bound scope of indefinites is not a matter of quantificational scope. If the indefinite *three students* in (7-a) could take quantificational wide scope over the matrix clause subject *two teachers*, we should be able to get the reading in (7-b) with the sentence in (7-a), contrary to our judgment. The apparent 'exceptional scope' reading of the indefinite *three students* in (7-c) is explained in terms of the pragmatic domain restriction that may apply to the nominal restriction set, as has been proposed in Schwarzschild (2002). If the set of students is pragmatically restricted to a set that contains only three students for (7-a), then we can derive the reading about the same three students for both the teachers, while keeping the existential scope of the indefinite within the embedded clause. In contrast, the 'real' inverse QNP scope reading in (7-b) is predicted to be impossible in my analysis because the grammar cannot see the string *reported that ... smoked at school* as a complex predicate to which we would be able to apply ASR.

The main claim is that QNP scope taking itself does not require structure modification. Instead, it involves a semantically motivated operation that allows (verbal) functors to consume QNPs as syntactic arguments without applying a structure modification operation for that purpose. Because QNPs are consumed as arguments of their local functors (which may be complex predicates if the grammar can generate them as such), the analysis predicts that QNP scope stays within the final output of this local functor, which is the local S in categorial grammar (= the local TP in Minimalism). The analysis also explains why QNPs occupy the same PF positions as normal NPs in almost all the natural languages.

(1) A girl loves every boy. (Surface scope: $\exists > \forall$. Inverse scope: $\forall > \exists$.)

(2) a. $\exists > \forall$: $love'_1(every'boy')(some'girl') = some'girl'(\lambda y.every'boy'(\lambda x.love'xy))$
where $love'_1 := \lambda Q1_{(et)t}.\lambda Q2_{(et)t}.Q2(\lambda y_e.Q1_{(et)t}(\lambda x_e.love'_{e(et)}xy))$

b. $\forall > \exists$: $love'_2(every'boy')(some'girl') = every'boy'(\lambda x.some'girl'(\lambda y.love'xy))$
where $love'_2 := \lambda Q1_{(et)t}.\lambda Q2_{(et)t}.Q1(\lambda x_e.Q2_{(et)t}(\lambda y_e.love'_{e(et)}xy))$

(3)


(4) a. $(NP\backslash S)/NP \Rightarrow ((S/(NP\backslash S))\backslash S)/((S/NP)\backslash S)$

b. $\lambda x.\lambda y.love'xy \Rightarrow \lambda Q1.\lambda y.Q1(\lambda x.love'xy) \Rightarrow \lambda Q1.\lambda Q2.Q2(\lambda y.Q1.(\lambda x.love'xy))$

c. $\lambda x.\lambda y.love'xy \Rightarrow \lambda x.\lambda Q2.Q2(\lambda y.love'xy) \Rightarrow \lambda Q1.\lambda Q2.Q1(\lambda x.Q2.(\lambda y.love'xy))$

(5) a. Every lecturer$_1$ met a student that he$_1$ once supervized.

b. *A student that he$_1$ once supervized met every lecturer$_1$.

(6) a. A linguist [*tried to review*] every paper. $\forall > \exists$; $\exists > \forall$

b. A linguist [*told me that Bill would review*] every paper. $\forall > \exists$; $*\forall > \exists$

(7) a. *Two teachers* reported that *three students* smoked at school.

b. *There are three students and for each of them, a different pair of teachers reported that he/she smoked. (I.e. there are six teachers involved.)

c. There are (specific) three students about whom (the same) two teachers reported that they smoked at school. (I.e. there are only two teachers.)

References

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