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Scope of Logical Operators and Indirect Binding

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The following paradigm shows a difference between such universal quantifiers as *every* and *all* on one hand and such 'existential quantifiers' (as they have been called) as *any*, *many*, and indefinite NPs on the other, with respect to their scope interaction with negation. (Kroch (1974), Linebarger (1980), etc.)

(1) a. Everyone didn't invite John. (*NOT > EVERY, EVERY > NOT*)
    b. John didn't invite everyone. (*NOT > EVERY, *EVERY > NOT*)
(2) a. *Anyone didn't invite John.
    b. John didn't invite anyone.
(3) a. Many people didn't invite John. (**NOT > MANY, MANY > NOT*)
    b. John didn't invite many people. (*NOT > MANY, MANY > NOT*)
(4) a. A girl didn't invite John. (**NOT > A, A > NOT*)
    b. John didn't invite a girl. (*NOT > A, A > NOT*)

I have assumed that the scope interaction in (1) is accounted for in terms of the structural relation of the relevant operators at LF, while in (2-4) the wide scope of negation is encoded in terms of Indirect Binding of Haik (1984) (or Unselective Binding of Heim (1982)).

Negation of 'existential quantifiers' as in (2-4) and the cases of Indirect Binding share the following significant properties. First, just like X must c-command Y at S-Structure in order for X to indirect-bind Y, the negation operator *not* must c-command *any*, *many*, and *a* at SS in order to negate them. Thus *anyone*, *many people*, and *a girl* in (2-4) cannot be negated when they appear in the subject position, which the negation operator does not c-command at S-Structure. Secondly, while *any*-phrase does not have to c-command a pronoun in order to be coindexed with it, the pronoun has to be in the c-command domain of the negation operator that c-commands and hence licenses *any*.

(5) a. *Mary is not teasing everyone $_i$ because she hates him $_i$.
b. Mary is not teasing anyone $_i$ because she hates him $_i$.
c. *Mary is not teasing anyone $_i$, because she hates him $_i$.

This coindexation possibility is on a par with that of 'donkey sentences' as Haik (1984) has discussed.

(6) a. Everyone $_i$ who owns a donkey $_{i/j}$ likes it$_{i/j}$.
b. *Everyone $_i$ who owns a donkey $_{i/j}$ came, and Mary bought it $_{i/j}$.

Turning to the so-called *any* thesis, I have argued for the univocal *any* analysis, treating *any* uniquely as an indefinite expression that is semantically a free variable. In this regard, I have assumed 'free choice' *any* to be another instance of 'polarity' *any* bound by the abstract universal operator, which Heim (1982) has called 'invisible necessity operator'. This assumption makes it possible to account for why 'free choice' *any* apparently must take scope wider than other logical expressions, when it appears in the subject position, while ordinary quantifiers like *every* may take narrower scope.

(7) a. Every dog doesn't like catnip. (ambiguous)
b. Any dog doesn't have one tail.
(*FC-ANY* > *NOT*, **NOT* > *FC-ANY*)

The negation operator in (7b) cannot take scope wider than the *FC-any* because its scope can never be wider than the abstract universal operator which I assume to lie under the head of CP and thus behave on a par with such sentential operators as *Q* and *IF*.

(8) [$_{CP}$ *A* [$_{IP}$ any dog [$_{I'}$ doesn't [$_{VP}$.....]]]]