Quantifier Raising in a top-down grammar

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The covert movement operation of Quantifier Raising cannot cross a finite clause boundary ((1); see Reinhart 1997 on the exceptional behaviour of indefinites), though it can cross certain non-finite clauses (e.g. (2), Cecchetto 2004). In the standard bottom-up grammar, this means that QR cannot access the edge of a finite embedded CP phase, so that it cannot undergo cyclic movement into the matrix phase. Cecchetto’s elegant account of (1)-(2) rests on the assumption that QR cannot have semantically unmotivated intermediate steps, unlike feature-driven instances of movement. QR thus remains a “unicum” (though a well-behaved one w.r.t. the PIC):

(a) it is covert;
(b) it is not feature-driven;
(c) it cannot be freely cyclic.

In this paper we argue that the unique properties of QR can be properly understood from a top-down derivational perspective. From this perspective, leftward movement is a head-first dependency, in which the syntactic system computes the displaced head first, and then the rest of the chain, looking for a selected position where the displaced element can be reintegrated (Chesi 2004); on the contrary, QR is an operation which computes a selected position and removes from it an element (QP) which cannot be interpreted there. It follows that QR is actually a rightward movement (Fox/Nissenbaum 1999). Specifically, we propose that QR:

(a) stores a QP in a dedicated memory buffer of the current phase (Chesi 2004, Schlenker 2005);
(b) integrates a coindexed variable in the corresponding argument position;
(c) when the top-down computation of the current phase is concluded, the QP function is retrieved from the Q-buffer and takes scope over the structure.

The elements retrieved from memory buffers are (typically) not spelled out (Chesi 2004); hence QR is covert, complying with a weak LCA. CP and DP phases are computed top-down, and a phase is closed off after its lexical head is computed; the recursive right branch constitutes the next sequential phase. E.g., in the computation of (3), CP is the first phase computed and QP2 constitutes the sequential phase; the subject QP1 is instead a nested phase, which is computed while CP is still incomplete. The nested QP1 is stored in the Q-buffer of the containing phase (Phi); the sequential QP2 is stored in the Q-buffer of the immediately previous phase (again Phi). The two QP functions are stored in the same Q-buffer and can be retrieved in either order, yielding scope ambiguity. The clause-boundedness of QR follows from the computational sequencing of phases. The computation of (1) is illustrated in (4). The matrix subject QP1 is stored in the Q-buffer of the containing phase Phi, while a variable x1 is inserted in the argument position; this Q-buffer is also inherited by the sequential phase Ph3. The
embedded subject QP2 too is stored in the Q-buffer of Ph3, but it cannot “get into” the Q-buffer of the previously computed Phi. As a result, QP2 will only have scope over the embedded CP2, whereas QP1 will have scope over both CP1 and CP2. Thus, the phase boundaries determined by our top-down model, though not corresponding to complete subtrees, derive the clause-boundedness of QR, subsuming one instance of the mysterious “right roof constraint”. As for (2), we critically re-examine Cecchetto’s (2004) data, and argue that long QR is only possible out of non-finite (or subjunctive) clauses which do not constitute independent phases. 

Finally, the top-down derivation also accounts for the Leftness Condition. We assume that a pronoun can be Q-bound only by being coindexed with a variable; since the variable is inserted by the application of QR, coindexing will be impossible whenever the pronoun is computed before the QP, as is the case in a WCO configuration like (5) (cf. Schlenker 2005, Shan & Barker 2006). However, Q-binding will be possible whenever the computation of the pronoun follows the application of QR, even if the variable position fails to c-command the pronoun (cf. Bianchi 2001). We conclude that the top-down derivational perspective allows for a more principled account of the exceptional, yet indispensable, operation of QR.

**Examples**

(1) Someone expected \[CP that every Republican would win\]. \((\exists \forall.; *\forall>\exists)\)

(2) Someone expected \[IP every Republican to win\]. \((\exists \forall.; \forall>\exists)\)

(3) \(\begin{align*}
\text{Ph1} & : CP \\
\text{Ph2} & : QP1 \\
\text{Ph3} & : QP2 \quad \text{every professor}
\end{align*}\)

(4) \(\begin{align*}
\text{Ph1} & : CP1 \\
\text{Ph2} & : QP1 \quad \text{Someone} \quad \text{expected } x_1 \\
\text{Ph3} & : CP2 \\
\text{Ph4} & : QP2 \quad \text{every republican} \quad \text{would win } x_2
\end{align*}\)

(5) \(\begin{align*}
\text{Ph1} & : CP1 \\
\text{Ph2} & : DP1 \quad \text{His wife} \quad \text{loves} \\
\text{Ph3} & : QP2 \quad \text{every man}.
\end{align*}\)

**Selected references**


