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Phrasal movement in LF: *de re* readings, VP-ellipsis and binding.

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1.   Overview

The goals of this paper are (i) to present evidence of covert movement of phrases out of finite complement clauses; and (ii) to argue for analysis similar to May's (1985) QR (I call covert XP-movement out of finite CP 'long QR' / LQR). The facts presented are relevant to several recent proposals. They militate against the idea that covert A-movement can supplant QR (Hornstein 1995). They also appear incompatible with Chomsky's (1995:Ch 4) 'move-F' proposal, according to which 'pied-piping' of phrases along with the features targeted is restricted to movement in the overt syntax. In particular, ellipsis and binding facts to be discussed argue for phrasal movement in the LF-component. Attention is also devoted to *de re* readings, which seem a more controversial source of evidence for (long) QR. Distributional restrictions and correlations with ellipsis and binding facts provide reasons for analyzing a certain class of *de re* readings as resulting from LF movement. It is further proposed that long QR is subject to a strict locality requirement, which may help to explain what has been called the 'scope puzzle', to which we turn first.

2.   The scope puzzle

In (1), five types of evidence are listed that have been used to argue for QR:

(1)   a. relative quantifier scope
       b. *de re / de dicto* ambiguities
       c. Antecedent Contained Deletions (ACDs)
       d. constraints on movement ('movement diagnostics')
       e. binding possibilities

It is generally assumed that QR is clause-bounded, i.e. that QR cannot raise a quantified expression out of a finite clause. This assumption is supported by the absence of inverted scope readings in examples like (2b) and (2d)—i.e. evidence of type (1a):

(2)   a.   some teacher believes every student to be intelligent   ∃∀
       b.   some teacher believes every student is intelligent   *∃∀
       c.   a soldier stood at every door   ∃∀
       d.   a soldier said that he stood at every door   *∃∀

However, concentrating on relative quantifier scope gives a false picture. Other facts indicate that covert movement of phrases out of finite CP is possible. One aim here is to show that evidence of all four remaining types (1b)-(1e) converges in favour of long QR.

There thus seems to be a scope puzzle (cf. Chierchia & McConnell-Ginet, 1990:245f.): although the phrase *every student* in (2b) cannot scope over *some teacher*, it CAN scope over the matrix verb *believes*—*every student* can be interpreted *de re* with respect to the beliefs of the teacher in question.

There is no paradox, though. It is possible for *every student* to take scope over *believe* without taking scope over *some teacher*. Where an expression α originating in the clausal complement CP of verb like *believe* gets a *de re* reading with respect to that verb, the minimal requirement for a scopal treatment is that α be higher than V' containing V and CP. It does not follow that α must also c-command the subject of V. In fact, any scope-sensitive satellite (argument, adjunct) of V may be higher than V', either because it is generated higher or because it moves (by A-movement, QR or some other rule).

If it were the case (i) that every such satellite were NECESSARILY outside VP at LF, and (ii) that α, having left CP (i.e. having undergone long QR), could adjoin to VP but no higher (and could move no further), then the facts would follow. I adopt these assumptions (3) as a working hypothesis:

(3)   a.   having crossed finite CP, α must adjoin to VP immediately dominating CP
       b.   having adjoined to VP, α may move no further
       c.   all scope-sensitive satellites of the matrix predicate are higher than VP at LF

(4) $[_{VP'} \ V \ [_{CPfin} \ ... \ SU \ ... \ [_{VP} \ \alpha \ [_{VP} \ V \ [_{CPfin} \ ... \ t_\alpha \ ... \ ] \ ...] \ ...] \ ... \ ] \ ... \ ]$

In addition to offering a basis for accounting for the scope puzzle (lack of inverted readings with LQR), (3) generates further predictions about the constrained nature of LQR. The claim about locality (3a-b) is supported by binding and ellipsis facts discussed in sections 5-7 below. In particular, ellipsis facts show that α may not raise as far as VP' in (4), and binding facts show that α remains in the c-command domain of SU.[1]

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[1] No independent support for (3c) is discussed here. The assumption that α in (4) is adjoined rather than in a specifier position is not forced. Nor is analysis of LQR in terms of feature-checking precluded; though

In the following, three constructions are examined which provide evidence of the types (1b)-(1e) for assuming long QR—temporal adjuncts with *before*; comparatives; and QNPs with *every*. Section 3 starts with evidence from *de re* readings.

3.   *De re* readings of temporal adjuncts and *than*-clauses

3.1   Movement account

Consider the contrast in (5). While (5a) is absurd, (5b) has a sensible reading, paraphrased in (6b). In fact, (5b) is ambiguous, also having a reading (6a) in which the complement clause has the absurdity of (5a):

(5)   a. #I left before I did (leave)
       b. John thought that Mary$_j$ left before she$_j$ did (leave)

(6)   a. John thought: "Mary left before she did"   = *de dicto* (absurd)
       b. the time t, such that John thought that Mary left at t,
           preceded the time t' at which she did leave   = *de re*

This is a classic instance of a *de re-de dicto* ambiguity. In the sensible reading of (5b), the temporal adjunct *before she left* is not treated as part of John's thought, i.e. is interpreted *de re* with respect to the verb *thought*.

The paradigm (7) involving comparatives is similar. This paradigm is treated in Stechow (1984), who traces discussion back to Russell (1905). While (7a) is absurd, the 'Russell-sentence' (7b) is ambiguous, with an absurd *de dicto* reading (8a) and a sensible reading (8b), in which the comparative expression within the complement to *thinks* is understood *de re*:

(7)   a. # John$_j$ is taller than he$_j$ is
       b. Mary thinks John$_j$ is taller than he$_j$ is

(8)   a. the degree to which John is tall is greater than the degree to which John is tall
       b. the degree to which Mary thinks John is tall is greater than the degree to
           which John is tall

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the feature involved should (i) be optional, and (ii) permit multiple checking (more than one α may undergo LQR out of a given CP—cf. Wilder 1996). The approach conflicts with Hornstein's (1995) A-movement approach to scope inversion in (2): if α in (4) c-commands the trace of SU, inverted scope is predicted to be possible. But the conflict disappears if the subject in a transitive construction starts higher than the VP of V governing CP, as in Chomsky (1995:Ch.4). More importantly, the facts discussed here cast doubt on the idea pursued by Hornstein and others that the assumption of covert A-movement obviates the need for QR. Of the cases of α appearing in the configuration (4)—temporal adjuncts (PPs), compared predicative APs, argument DPs already case-marked in the lower CP—none lends itself to interpretation as A-movement.

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This type of example (*de dicto*-absurd, *de re*-sensible) is useful in sorting out where *de re* readings are available—as soon as they aren't, we get absurdity, easy to detect.

The claim to be defended here is that *de re* readings arise from LF-movement of the *before*-clause or degree phrase out of the finite complement (cf. Larson 1987:262, fn. 21, for a similar claim). Thus two questions need to be addressed—why movement should be assumed at all, and why this movement must be covert rather than overt.

This claim presupposes (i) that the ambiguity of examples like (5b) is one of scope, indicated in the informal representations (9); and (ii) that this ambiguity is represented structurally in LF, i.e. the example can be associated with one of two distinct LF-representations. If PP is inside the complement clause in LF, the absurd *de dicto* reading arises; if PP is outside CP, it gets the sensible *de re* interpretation:

(9)   a.   John said $[_{CP}$ that Mary left at t & $[_{PP}$ t < t', t' s.t. Mary left at t']]
        b.   John $[_{VP}$ said $[_{CP}$ Mary left at t]] & $[_{PP}$ t < t', t' s.t. Mary left at t']

The reason why the *de re* reading must involve movement is that the temporal PP must be initially generated inside the complement clause; and the movement must take place after S-structure, since the PP can be shown to be still inside CP at S-structure.

It is uncontroversial that a *before*-adjunct is generated in the clause of the verb whose event-time it modifies. Taking the event time to be an argument (t) of the verb, the meaning of (10a) can be informally represented as (10b):

(10)   a.   Mary ate before she left.   b.   eat(m,t) & t<t' & leave (m,t')

Equally undisputed are the word order facts (12) which show that in an example like (5b), the temporal adjunct is inside the complement clause at S-structure (11) under the embedded reading (note that the string is ambiguous with respect to which verb the PP modifies). (12) illustrates that the PP cannot be separated from the rest of its clause by material (underlined) belonging to the matrix:

(11) $[_{CP1}$ John said $[_{CP2}$ that Mary$_j$ left $[_{PP}$ before she$_j$ did (leave)]]]

(12)   a.   He will say (when you meet him) tomorrow that she left before she did.
        b.   * He will say that she left (when you meet him) tomorrow before she did.
        c.   He will say that she left before she did (when you meet him) tomorrow.

This is the 'right roof' effect, which argues against an extraposition approach (e.g. along the lines of Baltin 1987) to *de re* readings. PP does not leave the complement clause by rightward movement before S-structure.

Given this, if (9b) is the LF-representation for (5b) in its sensible reading, then the adjunct must have raised out of the complement CP between S-structure and LF. In other words, temporal adjuncts undergo long QR.

The same argument can be constructed for 'Russell-sentences' (7b). Skirting difficult questions about the syntax of comparatives, it is assumed here that the *than*-clause is an (extraposable) complement to the Degree item *more /-er*, analyzed as Deg° heading DegP. Hence the *than*-clause must be generated within the complement clause in (7b). The 'right roof' paradigm (13) shows that the *than*-clause cannot leave the lower CP by rightward movement:[2]

(13) a. She will say (when you meet her) tomorrow that he is taller than he is.
      b. * She will say that he is taller (when you meet her) tomorrow than he is
      c. She will say that he is taller than he is (when you meet her) tomorrow

In cases where the *than*-clause is extraposed (separated from the rest of DegP) at S-structure, it must be assumed to undergo reconstruction into its base position prior to LF raising of DegP. LQR of DegP provides the structural basis for the *de re* interpretation of (7b), as indicated informally in (14b):[3]

(14) a. Mary thinks $[_{CP}$ that John is d-tall & $[_{DegP}$ d>d'(-er) &(than) he is d'-tall]]
      b. Mary $[_{VP}$ thinks $[_{CP}$ that John. is d-tall]] & $[_{DegP}$ d>d' & he is d'-tall]]

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[2] Chomsky (1981:82ff) discusses examples where right roof seems not to contrain the relation between *-er* and *than-CP*; the case at hand does not fall under that type. An extraposition approach would not work for comparatives in any case. The nature of the *de re* reading indicates that it is DegP, not the *than*-clause alone, which must scope out—contrary to what is often assumed in the literature (e.g. Stechow 1984). To demonstrate this properly would require a more detailed treatment of comparatives than is possible here. At an intuitive level, the semantic import of comparison (some degree d exceeds another degree d') is carried by the degree morpheme (*-er*); d measures the property denoted by the 'compared' adjective of the matrix; and d' measures the (same) property introduced by an elided copy of that adjective in the *than*-clause (i):

(i)   John is d-tall & $[_{DegP}$ d>d'(-er) &(than) he is d'-tall]]

In (7b) (*de re* reading), the information introduced by *-er* is not presented as part of Mary's thought. If the *than*-clause alone were to scope out (ii), the degree morpheme itself would remain in the *that*-clause and incorrectly get interpreted as part of Mary's thought:

(ii) Mary thinks $[_{CP}$ that John is d-tall & $[_{DegP}$ d>d']] & [John is d'-tall]

[3] The (marginal) acceptability under the sensible-*de re* reading of examples like (i) indicates that more than one constituent may undergo LQR across a given CP. Unless *every student* raises above the raised DegP, the pronoun in DegP should not be able to get a bound variable interpretation:

(i)   Mary thinks that every student$_j$ is taller than he$_j$ actually is.

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3.2   Alternative: *de re* readings via '*in situ* interpretation'

There is an alternative approach to the ambiguity of (5b) and (7b), discussed in Stechow (1984), which would render these facts compatible with the view that there is no long QR. This is a 'double indexing' technique, which makes use of world variables within a possible world semantics and a special implicit modal operator that permits direct reference to the actual world, to describe *de re / de dicto* ambiguities without 'scoping out', i.e. without assuming different positions for the *than*-clause at LF, thus obviating that particular motivation for covert movement.

Suppose that the LF of a finite clause contains a world variable $w_j \in \{w_1, \dots w_n\}$, such that the content of the clause is evaluated with respect to the world picked out by w_j. In an indicative root clause, w_j refers to the 'actual' world, while in the complement of an intensional verb (e.g. in the complement of *Mary believes...*), w_j picks out a relevant belief-world (e.g. a belief-world of Mary). Suppose further that in a *than*-clause, w_j can be bound by an implicit operator (ACTUALLY) that ties the world variable it binds to the actual world. Then (7b) can be associated with two LFs (15). In (15a), w_j and w_k are both interpreted with respect to Mary's belief-worlds, yielding the contradictory *de dicto* reading. In (15b), ACTUALLY binds w_k, so that the *than*-clause is evaluated with respect to the actual world, while w_j is not so bound, ensuring that the remainder of the complement clause is evaluated with respect to Mary's belief-worlds:[4]

(15)   a.   Mary thinks [$_{CP}$ John is d-tall in w_j & [$_{DegP}$ d>d' & he is d'-tall in w_k]]
         b.   Mary thinks [$_{CP}$ John is d-tall in w_j & [$_{DegP}$ d>d' & ACTUALLY (he is d'-tall in w_k)]]

The ambiguity reduces to the presence or absence of ACTUALLY in the *than*-clause. The *de re* reading is obtained by interpreting the *than*-clause *in situ*, so that scoping out (QR) can be dispensed with. The solution will work in the same way with *before*-adjuncts.

Stechow gives one argument for this proposal concerning examples like (16)— counterfactual conditionals whose antecedent is a Russell-sentence:

(16)   If Bob had been taller than he was, he would have made the team.

Intuitively, part of the antecedent (*Bob had been taller*) has a counterfactual reading—is evaluated with respect to some fictive world—while the remainder (the *than*-clause) is evaluated with respect to the actual world. Stechow claims that a proper treatment of the

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[4] A simple sentence like (i) also has two LFs under this approach. These turn out to be synonymous: the effect of the binding of w_k by ACTUALLY in (ii) is the same as that of leaving it unbound (iii):

(i)   John is taller than he is.
(ii)   [$_{CP}$ John is d-tall in w_j & [$_{DegP}$ d>d' & he is d'-tall in w_k]]
(iii)   [$_{CP}$ John is d-tall in w_j & [$_{DegP}$ d>d' & ACTUALLY (he is d'-tall in w_k)]]

semantics of such examples requires *in situ* interpretation of the *than*-clause, hence the assumption of the ACTUALLY operator. Given that the ACTUALLY operator is required for this case, so the argument goes, it can be applied elsewhere, making a QR solution for other cases redundant.

It is not clear to me that a scope-based solution would not work in these cases, with DegP scoping the implication. But to argue this would require detailed examination of counterfactual conditionals, which cannot be undertaken here.

Instead, additional arguments will be given for the correctness of a scope-based solution. The first set of arguments (section 4) concerns the distribution of *de re* readings—these readings turn out to be unavailable precisely where we expect A'-movement to be blocked. In other words, *de re* readings display movement diagnostics. If we assume an *in situ* interpretation account, some if not all of these restrictions would require extra *ad hoc* constraints to be placed on the occurrence of the implicit ACTUALLY operator. In a movement based account, these results should come for free.

The second set of arguments concerns the correlation of *de re* readings with wide scope ACDs (section 5) and with the neutralization of Binding Condition C effects (section 6). Both types of fact independently require a configurational solution; hence their correlation with *de re* readings lends strong support to a scope-based approach to *de re* readings generally.

4.   Restrictions on *de re* readings

4.1   Island effects

De re readings are not confined to the complements of *believe-think-say* (17), but their distribution is restricted in ways that provide interesting support for the movement approach. Embedded in factive complements (18), the constructions under discussion only have an absurd reading:

(17)   a.   You shouldn't tell him that Mary$_j$ left before she$_j$ did (leave)
        b.   You've convinced her that she$_j$ is taller than she$_j$ is

(18)   a.   # John regrets that Mary$_j$ left before she$_j$ (actually) did (leave)
        b.   # The fact that Mary$_j$ left before she$_j$ did (leave) surprised us

It is possible to regard the absurdity of (18) as an island effect: the factive complement is a 'barrier' for LQR (as it is for most cases of A'-movement). *De re* readings are also unavailable in *wh*-islands (19a,b) and adjunct islands (19c):

(19)   a.   # John asked [who$_j$ left before he did$_j$]
        b.   # John wonders [whether Mary$_j$ left before she did$_j$]
        c.   # John thought [that I would arrive early [because I left before I did]]

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4.2   Topic freezing effect

The second type of restriction concerns the unavailability of *de re* readings for clauses that have already undergone (leftward) A'-movement. A *before*-adjunct can stand in pre-subject position in the clause containing the verb it modifies (20a). However, the *de re* reading is not available for a *before*-adjunct in pre-subject position (20b). The same effect is found with preposed DegP in comparatives—(21b) has only the absurd reading:

(20)   a.   John said that [before she left], Mary ate *t*.
        b. # John said that before she$_j$ (actually) did (leave), Mary$_j$ left.

(21)   a.   John said that taller than Mary is, (only) John is.
        b. # John said that taller than she$_j$ is, (only) Mary$_j$ is.

It is unlikely that a purely semantic-interpretive account of this restriction can be found. In the *in situ* interpretation approach to *de re* readings outlined above, it would have to be stated in terms of a restriction on the distribution of the ACTUALLY operator.

The movement account of *de re* readings, on the other hand, offers an interesting perspective. Suppose that the fronted *before*-clause has undergone leftward A'-movement (topicalization) in overt syntax. The absence of the *de re* reading then falls' under the restriction that a phrase that moves to an A'-position in overt syntax may not undergo further movement in the LF-component. This restriction has been analyzed by Epstein (1992) in terms of a derivational economy constraint. The main instances are found in multiple *wh*-constructions—an *in situ* *wh*-phrase cannot be topicalized in English (22), nor scrambled in German (23) (cf. Müller & Sternefeld 1993):

(22)   * Who said that who$_j$, John saw t$_j$?

(23)   * Wer$_j$ sagte, daß wen$_j$ Hans t$_j$ gesehen hat?   (German)
             who said   that whom John seen   has

In these cases, economy selects the derivation in which the wh-phrase moves in the LF-component directly to its target CP-specifier position from its A-position. Likewise, the *before*-clause in (24), having A'-moved in overt syntax, is unable to undergo QR at LF, leaving the absurd reading as the only one available:

(24)   # John said [that [before she$_j$ did]$_k$, Mary$_j$ left t$_k$]

4.3   Parentheticals

In normal contexts, a simple declarative root clause like *Mary left before Bill did* is taken to report a belief of the speaker. Inserting a parenthetical changes this. In (25a), the root clause is taken to report what John believes, not what the speaker believes. Thus the root in (25a) is interpreted as if it were the complement of the verb of the intensional verb *thinks* in the parenthetical expression, i.e. like the complement clause in (25b):

(25)   a.   Mary left, John thinks, before Bill did.
        b.   John thinks that Mary left before Bill did.

The simple declarative root clause (26a) is anomalous because it attributes a contradictory belief to the speaker. As before, inserting a parenthetical (26b) changes the status of the root, which is now interpreted as reporting a belief of John's—but the absurdity remains. The *before*-clause cannot be interpreted *de re* with respect to the verb of the parenthetical:

(26)   a. # Mary_j left before she_j did.
        b. # Mary_j left, John thinks, before she_j actually did leave.

Comparatives behave in the same way—the parenthetical in (27b) fails to license a *de re* reading for the degree expression in the root clause:

(27)   a. # Mary_j is taller than she_j is.
        b. # Mary_j is taller, John thinks, than she_j actually is.

In an *in situ* interpretation approach to *de re* readings, it is unclear why the *de re* reading should be blocked in (26b) or (27b). (27a) has two LFs under this approach (cf. note 4):

(28)   a.   Mary is d-tall in w_j & $[_{DegP}$ d>d' & Mary is d'-tall in w_k]
        b.   Mary is d-tall in w_j & $[_{DegP}$ d>d' & ACTUALLY (Mary is d'-tall in w_k)]

While ACTUALLY has no effect in (28b), it should have an effect when a parenthetical is inserted (28b), namely that of permitting the *than*-clause to be interpreted with respect to the actual world, while the matrix is linked to the belief world introduced by the parenthetical.

      Under a movement approach, this result is expected. Making the usual assumption that nothing can be extracted from a root clause,[5] there is no higher VP available for the PP / DegP to adjoin to in (26b) / (27b), hence no *de re* reading.

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[5] Overt movement from a main clause to the CP-specifier of a parenthetical is certainly impossible:

(i)   * John, what_j do you think, gave t_j to Mary?

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There is a contrast between temporal adjuncts and comparatives, and a concessive adjunct like that in (29). While (29a) is contradictory in the same way as (5a), (7a) etc., inserting a parenthetical in this case removes the absurdity. In (29b), *Mary left* is interpreted as subordinate to the verb thinks, but the *although*-clause is interpreted with respect to the 'actual world':

(29)   a. # Mary$_j$ left, although she$_j$ didn't.
         b. Mary$_j$ left, John thinks, although she$_j$ didn't.

Why the contrast? The answer lies in the different way in which concessive adjuncts get licensed. Unlike a temporal or comparative clause, the *although*-clause in (29b) does not need to be generated within the matrix clause. Rather, it behaves more like a conjunct, coordinated with the matrix clause. I suppose that it can be generated outside the matrix, forming with it an utterance unit ('U' in (30a))—and that it can be attached to a unit U' already formed by the combining the matrix with the parenthetical P (30b):

(30)   a.   [$_U$ [$_{ROOT}$ Mary left] although she didn't]

         b.   [$_U$ [$_{U'}$ [$_{ROOT}$ Mary left] [$_P$ John thinks]] although she didn't]

Neither the temporal (26b) nor the comparative (27b) can reach the position of the *although*-clause in (30b), since both must—to be licensed at all—be generated inside the root CP, where they are then trapped.

5.   ACDs

Assuming May's (1985 etc) approach to ACDs is correct, then whole phrases must move at LF to resolve antecedent containment. The phrasal movement (LQR) analysis predicts *de re* readings to correlate with the possibility for wide scope VP-ellipsis in antecedent-containment configurations.

May's approach has recently been contested by Hornstein (1994, 1995), who claims (i) that ACDs are finite-clause bound, and (ii) that it is not QR but covert A-movement that resolves antecedent containment in these cases. The first claim is simply not correct—wide scope ACDs are possible (albeit marginally) across finite CP (Fiengo & May 1994:255ff.; Wilder 1995)—cf. (31). This shows at the very least that the A-movement account of ACDs is insufficient.

(31)   John thinks that Mary is taller than Bill does

In (31), the empty VP, contained within a comparative clause inside the complement to *thinks*, takes the matrix VP headed by *thinks* (which contains it) as its antecedent. To resolve containment, either the empty VP or a constituent containing it

must move up out of the finite complement of *thinks*. The claim here is that DegP undergoes LQR to adjoin to the matrix VP, just as in the case of the *de re* readings discussed above. The matrix VP (32b) is then a licit antecedent to the VP deletion site.

(32)   a.   [$_{VP}$ [$_{DegP}$ -er than Bill does _] [$_{VP}$ thinks that [$_{IP2}$ Mary is t$_{DegP}$ tall]]]
       b.   *thinks that Mary is t$_{DegP}$ tall*

The analysis correctly predicts that (31) only has the *de re* reading (33b), although in this case the corresponding *de dicto* reading is perfectly sensible:

(33)   a.   What John thinks is that the degree to which Mary is tall exceeds
            the degree to which Bill thinks that Mary is tall   (*de dicto*)
       b.   The degree to which John thinks that Mary is tall exceeds the degree
            to which Bill thinks that Mary is tall   (*de re*)

Similar cases of wide scope ACDs can be constructed using relative clauses modifying QNPs headed by *every* (34a), although such cases tend to be less readily accepted than examples involving comparatives. It can be assumed that LQR applies to the QNP headed by *every*, adjoining it to the VP headed by *said*. The relative clause containing the empty VP is 'carried along', so that at LF, the empty VP is no longer contained in the VP of *said*, and can take that VP as its antecedent:

(34)   a.   John [said [that you were on every committee that Bill did [e]]]
       b.   John **[every committee that Bill did [e]]$_j$** [said [that you were on t$_j$]]
       c.   *say that you were on t*

Although *every NP* in (34a) cannot scope over an XP of the matrix (35a), scoping it over *believe* gives the correct (*de re*) reading. In particular, the *de dicto* reading (36a), while possible for an 'undeleted' example (36b), is not available for (34a):

(35)   a.   someone said that you were on every committee that Bill did [e] *∀∃
       b.   ∀x [committee(x)] (B. said that you were on x → J. said that you were on x)

(36)   a.   J. said that (∀x[committee(x)] (B. said that you were on x → you were on x))
       b.   John said that you were on every committee that Bill said that you were on.

Further confirmation of this approach is provided by the contrast in (37). (37a) illustrates the impossibility for wide scope ACDs in factive complements (correlating with the absence of *de re* readings mentioned above). In the 'undeleted' (37b), by contrast, relativization across the factive CP yields only the weaker deviance associated with weak island violations incurred by overt *wh*-movement of arguments (Cinque 1990):

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(37)   a. * John regrets that we invited the same people that Mary does
        b. ? John regrets that we invited the same people that Mary regrets that we invited.

6.   QR voids Condition C effects

Fiengo & May (1994:265-6) argue that QR 'bleeds' the binding conditions: i.e. that c-command (hence binding) relations obtaining at S-structure may be destroyed by QR, prior to application of the binding conditions. Their argument is illustrated by the contrast in (38) with respect to Condition C. Finite clause complements do not undergo QR, hence *him* c-commands *John* at LF as at S-structure, and the pronoun must be noncoreferent with the name. The free relative (38b) undergoes QR (to VP or IP) so that the pronoun no longer c-commands the name, and coreference is possible:

(38)   a. * She told him$_j$ that John$_j$ must leave
        b.   She gave him$_j$ whatever John$_j$ asked for
             [whatever John$_j$ asked for] she gave him$_j$ *t*

Notice that, as with ellipsis, the phrase must be carried along by LF-movement, for the account to work.

A similar effect can be observed with LQR. The name in the temporal adjunct in (39) must be noncoreferent with the pronoun, indicating that PP is in the c-command domain of the matrix subject at LF. The same holds if (39) forms a factive complement—we have hypothesized that LQR of PP out of CP is barred (CP is a barrier), and the obviation effect indicates that PP is in the domain of the embedded subject at LF:

(39)   * She$_j$ left before Mary$_j$ ate

(40)   a. * John regrets that she$_j$ left before Mary$_j$ ate
        b.   John regrets [$_{CP}$ that she left PP]
             <———x————

The judgement is subtle, but it seems that the obviation (Condition C) effect can be lifted if PP gets a *de re* reading (41). In cases where the *de re* reading is strongly preferred (42), the judgement is clearer:[6]

(41)   ? John thinks that she$_j$ left before Mary$_j$ ate.   (ok if PP = *de re*)

(42)   a. ? John thinks she$_j$ left before Mary$_j$ did (leave).
        b. ? John thinks she$_j$ is taller than Mary$_j$ (actually) is.

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[6] The acceptability of (41)-(42) depends on intonation—the name (*Mary*) must be less prominent than the verb in its clause (*ate, did/leave, is*) for coreference with the pronoun to be possible. I do not know why this should be so. The same applies to (38b). (38a), (39) and (40) remain ill-formed under any intonation.

The contrast between (39)-(40) and (41)-(42) is correctly predicted by the LQR analysis of *de re* readings.

7. Locality

Recall the claim about the locality restriction on long QR (section 2.)—α may cross at most one finite CP, must adjoin to the VP immediately dominating, and may move no further. Besides the lack of inverted scope readings, there are two types of corroborating evidence.

Firstly, with respect to the voiding of Condition C effects, it is predicted that a name in a phrase α undergoing LQR can escape the c-command domain of the subject of the clause it originated from, but cannot escape the c-command domain of the subject of the next clause up. This prediction is met—contrast (42) with (43):

(43) a. * She$_j$ thinks she$_j$ left before Mary$_j$ did (leave).
b. * She$_j$ thinks she$_j$ is taller than Mary$_j$ (actually) is.

Secondly, wide scope ACDs are predicted to exist (correctly, cf. section 5) but to be strictly bounded. This is in fact the case, as illustrated in (44)-(46):

(44)   John thinks that more trees died than Mary does.
=   John [thinks [that more trees died than Mary does *think [that _ died]*]]
= α_j [$_{VP}$ thinks [$_{CPfin}$ ... t_j ...]]
    |_____|

(45)   John thinks that it seems that more trees have died than Mary thinks it does.
=   John thinks that it [seems [that more trees have died
    than Mary thinks it does *seem [that _ have died]*]]
= α_j [$_{VP}$ thinks [$_{CPfin}$ ... t_j ...]]
    |_____|

(46)   * John thinks that it seems that more trees have died than Mary does _
=   * John [thinks [that it seems [that more trees have died
    than Mary does *think [that it seems [_ have died]]*]]]
= * α_j [$_{VP}$ thinks [$_{CPfin}$ ... seems [$_{CPfin}$ ... t_j ...] ...]]
    |_____—x—_____|

In (44), DegP containing a VP-ellipsis site (*more trees than Mary does*) raises into the next (finite) clause up, across *thinks*. In (45), *more trees than Mary thinks it does* also raises one clause up, in this case, across *seems*. But it is not possible for an ACD in a DegP α to take as its antecedent a VP separated from α by two finite CP nodes. In (46), the first VP

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up is not a possible antecedent for the elided VP (given the ill-formedness of *Mary seems that IP*). For *thinks that IP* to form the antecedent VP, α (=*more than Mary does*) must raise to the VP of *thinks*; yet to do so, α needs to cross two finite CPs, in violation of the proposed locality restriction.

This restriction is limited to ACD contexts. If the ellipsis site is not antecedent-contained, it can contain two finite clauses spanned by an operator-variable dependency. The discourse antecedent in (47) is identical to the impossible antecedent in (46):

(47)   a.   John thinks that it seems that only ten trees have died.
               This is more than Mary does _.
        b.   *think [that it seems [t have died]]*

To summarize: we have seen three types of evidence—*de re* readings, wide scope ACDs, and neutralization of Condition C effects—come together with diagnostics for movement to provide evidence for long QR of DegP (the same can be shown for QNP with relative clause). We have also seen two types of evidence—*de re* readings and neutralization of condition C—join with movement diagnostics to support the claim that temporal *before*-adjuncts undergo LQR.

One problem ignored so far is that wide scope ACDs are not found in *before*-adjuncts. If *before* in (48) modifies *rain*, then the example gets only an absurd reading (*...before Bill rains*):

(48)   # John thinks that it will rain before Bill does

There is reason to suppose that the absence of the 'wide' reading in (48) is not due to failure of QR, but rather to the unavailability of the necessary ellipsis type. Ellipsis of the matrix VP in a *before*-adjunct with long-distance temporal operator movement, necessary for the wide ACD reading in (48), is impossible even with a discourse antecedent (cf. Wilder 1996 for discussion):

(49)   a.   Bill thought [that it would rain at 3].
        b. # This was before Mary did _.
        c.   *[think [that it would rain t]]*
        d   *[rain t]*.

(50)   a.   Bill thought [that it would rain at 3].
        d.   This was before Mary thought it would _ (= *rain t*)

The elided VP in (49b) cannot take the VP in (49c) as its antecedent, only the absurd (49d). Hence the intended meaning of (49b) requires the ellipsis site to be smaller (50). If this restriction (whatever its source) holds independently of ACDs, then (48) does not threaten the LQR proposal.

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