

# Minimalism and QR<sup>1</sup>

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## 0 Introduction

This paper aims to eliminate Quantifier Raising (QR) as a rule of Universal Grammar. In GB style theories, QR is the operation that targets quantified NPs (QNP) in A-positions and moves them to A'-positions. QNPs contrast with non-quantified expressions (e.g. names) in being uninterpretable unless moved to A'-positions from which their relative scopes and binding domains are determined.<sup>2</sup> To deny that QR exists is to claim that no rule targeting QNPs as such obtains. Rather, the relative scope and binding properties that QNPs manifest is parasitic on the movements that all NPs undergo to satisfy grammatical demands such as case requirements and other species of feature checking. This attitude towards QR reflects a more general sentiment concerning interpretation: semantic structure is a by-product of grammatical operations driven by formal concerns. Grammars seek morphological rectitude, not meaning. What meaning there is is the unintended consequence of this mundane quest.<sup>3</sup>

This global vision motivates the desire to eliminate rules like QR that syntactically target expressions for essentially semantic reasons. This is buttressed by additional theory internal reasons for dispensing with QR in the minimalist program (MP). These largely boil down to the fact that QR and Minimalism fit together awkwardly. Consider some illustrations.

First, MP presumes that movement serves to check morphological features. Thus, if QR obtains, its end must be the checking of Q-features. However, in contrast to WH features or Focus features or Topic features, each of which has overt morphological realization in some language, Q-features are virtually unattested overtly. This suggests that Q-features do not exist and no movement exists whose concern is to check them. Second, like WH, Topic, and Focus movement, QR yields an A'-structure. However, in contrast to the former operations, QR seems able to append a quantified NP (QNP) to virtually any maximal projection.<sup>4</sup> Thus, it appears that Q-features, if they exist, have no particular position of their own. Rather, they can be sprinkled on any XP to yield the desired abstract movement at LF. Once again, this contrasts with the more familiar features (such as WH and Topic) that induce A'-movement to rather specific IP peripheral positions. One cannot move a WH to the front of just any XP or focus an expression

by adjoining it to any arbitrary projection.

Third, eliminating QR is a step towards eliminating the antecedent government part of the ECP from MP. Antecedent government does not fit well into MP. Its key notions -blocking category, barrier, gamma marking etc.- are not easily defined in minimalist terms. Nonetheless, the ECP is critical to theories that employ LF A'-movement operations. It prevents them from overgenerating. However, if LF A'-operations like QR (and WH-raising) are dispensed with, then the need for antecedent government likewise recedes.<sup>5</sup>

Fourth, if quantifier scope interactions (QSI) piggy back on the structure of A-chains (i.e. the chains that result from operations that check L-related features) the clause boundedness of QSIs in NLs can be directly accounted for.<sup>6</sup> The general clause boundedness of quantifier interaction effects reduces to the very local nature of A-movement. In other words, if A-chains define the limits of quantifier scope then the observed restricted scopal reach of NL quantifiers follows trivially.

Fifth, the elimination of QR (and other A'-movements from LF) allows apparent S-structure conditions like subjacency and parasitic gap licensing to reposition to LF.<sup>7</sup> For MP, this is a very desirable result. A core tenet is that there are only two grammatical levels -LF and PF- and that only the former has significant phrasal structure. A consequence of this is that all grammatical conditions that GB distributes among DS, SS, LF and PF must now be largely relocated to LF. LF A'-movement operations like QR greatly complicate this task. To illustrate, consider parasitic gap (PG) licensing.

Since Chomsky 1985, it has been standardly assumed that PGs must be licensed at SS. This is required in a GB theory to distinguish the acceptable (1a) from the unacceptable (1b).

- (1) a. Which book did John read *t* without reviewing *pg*  
 b. \* John read every book without reviewing *pg*

The problem (1) poses can be directly traced to the presence of QR for its application renders the two sentences in (1) structurally analogous at LF.

- (2) a. [Which book<sub>*i*</sub> [ John read *t<sub>i</sub>* [without reviewing *pg<sub>i</sub>*]]]  
 b. [every book<sub>*i*</sub> [ John read *t<sub>i</sub>* [without reviewing *pg<sub>i</sub>*]]]

Thus, if LF A'-operations obtain, then PG licensing cannot be stated neatly at LF and this is a problem for MP given the absence of any other suitable level at which to state the condition.

However, if QR is eliminated then there is no difficulty relocating the PG licensing condition to LF.<sup>8</sup> The reason is that there is no more A'-structure at LF than the overt syntax provides. Hence (1a,b) are no more structurally similar at LF than they are prior to Spell Out. So, if PG licensing is sensitive to A'-dependencies (as standardly assumed) eliminating QR allows one to state this condition at LF without empirical loss and this is what MP, a theory that eschews SS, requires.

The above points provide part of the motive for what follows: a reanalysis of QSI effects without the benefit of QR.

There is one further methodological reason with a minimalist resonance. For the standard instances of QSIs, QR is not required. But if not required, it is not desirable either. The argument below rests on the observation that given the MP theory of case, it is easy to construct an empirically adequate account of quantifier scope exploiting technical machinery already in general use. The opportunity for exploiting case chain structure to serve as the basis of QSIs exists in MP for one main reason, I suggest below; the fact that the structural configurations for the realization of case and theta requirements are very different. In GB theories government unifies all core grammatical relations. Moreover, the domains of case and theta assignment are essentially identical in GB. For example, an object gets its theta role assigned in roughly the same position in which it meets its case requirements.<sup>9</sup> Though MP still retains (more or less) the GB approach to theta assignment, it construes morphological feature checking in a very different way. It is this difference that the proposal below exploits.

The rest of the paper is organized as follows. §1 outlines a way of representing QSIs in MP via the structure of case chains. §2 argues that there are empirical payoffs to the theory sketched in §1. §3 considers some cross linguistic QSI data from Japanese, Hungarian and the Romance languages. §4 revisits the details of the proposed analysis in the context of Chomsky's proposal (1995, Chapter 4) that Agr projections be eliminated. The section considers some ways of implementing the proposal in §1 without exploiting Agr nodes. A necessary feature of both implementations is that "lowering" be permitted. §5 considers some influential arguments against lowering rules. §6 is a brief conclusion.

## 1 The Basic Proposal

Assume as background the version of MP set out in Chomsky (1995:chapter 3). The key elements are listed in (3).

- (3)
- a. The VP Internal Subject Hypothesis: NPs in English begin in VP internal positions
  - b. NPs in VP internal positions move to Spec Agr positions to check case features. In particular, subjects move to Spec AgrS in overt syntax and objects move to Spec AgrO at LF.
  - c. Movement is copying and deletion.
  - d. LF is the sole structured grammatical level and all grammatical conditions hold here.

(3a) has been amply motivated and is no longer controversial (cf. Kuroda, Koopman and Sportiche). In MP, it reflects the conviction that all theta roles are assigned within lexical projections.<sup>10</sup> If one further assumes, as Chomsky 1995 does, that all theta roles are assigned to trivial chains, and that the theta criterion is a convergence condition then all NPs must begin inside lexical shells for derivations to converge. (3b) is revisited in §4. For now, I assume the MP theory of case presented in Chomsky 1995 chapter 3. Its distinctive feature is that an accusative case marked D/NP is checked in a configuration analogous to nominative case, viz. in a Spec-Head configuration with the case checking head outside the VP shell. This Spec-Head configuration is realized for accusatives in English at LF with the object raising from the VP shell to Spec AgrO. (3c,d) are both standard assumptions. Both are used in accounting for the data in §2.<sup>11</sup>

I make two additional assumptions.

- (4) A QNP  $Q_1$  takes scope over a QNP  $Q_2$  iff  $Q_1$  c-commands  $Q_2$
- (5) At the CI interface an A-chain has at most one and at least one member

(4) is innocuous. It is just the commonly assumed algorithm for translating syntactic c-command relations into semantic scope dependencies.<sup>12</sup> (5) is not trivial. It generalizes the assumptions concerning deletion in A'-chains (Chomsky 1995 chapter 3) to all chains.<sup>13</sup> It forces deletion of all copies in an A-chain save one. (5) does not specify which chain members delete. The optimal assumption is that the process is free. It is not important here whether one takes this

deletion process to be a fact about the interface interpretation procedure or about the structure of LF phrase markers themselves. For present purposes, it is immaterial whether all but one member of the LF chain actually delete or the members of the chain remain intact until some post-LF interpretive module where only one member of the chain is "chosen" to be interpreted. If the latter is correct, then "deletion" simply amounts to being uninterpreted. If the former holds true then deletion is an actual grammatical operation and (5) is a convergence requirement. Nothing below chooses between these two interpretations of the deletion process. What is key is that some form of deletion exist in A-chains. This is controversial. §4 below rebuts arguments that reconstruction in A-chains is illicit.

(3)-(5) suffice to provide an analysis of QSIs in English. Consider a typical instance. (6) is ambiguous with either the universally quantified object or the indefinite subject interpreted as taking wide scope.

(6) Someone attended every seminar<sup>14</sup>

The LF structure of (6) prior to deletion of copies is (7).<sup>15</sup>

(7) [<sub>AgrS</sub> Someone [<sub>TP</sub> Tns [<sub>AgrO</sub> every seminar [<sub>VP</sub> someone attended every seminar]]]]

'Someone' raises to Spec AgrS to check its nominative case in the overt syntax. At LF 'every seminar' moves to Spec AgrO to check accusative case. Each move leaves a copy of the moved expression behind. Conforming to (5) requires deleting one member of each of the two A-chains. Four possible structures result (deleted expressions are in parentheses).

- (8) a. [<sub>AgrS</sub> Someone [<sub>TP</sub> Tns [<sub>AgrO</sub> every seminar [<sub>VP</sub> (someone) [attended (every seminar)]]]]]  
 b. [<sub>AgrS</sub> Someone [<sub>TP</sub> Tns [<sub>AgrO</sub> (every seminar) [<sub>VP</sub> (someone) [attended every seminar]]]]]  
 c. [<sub>AgrS</sub> (Someone) [<sub>TP</sub> Tns [<sub>AgrO</sub> (every seminar) [<sub>VP</sub> someone [attended every seminar]]]]]  
 d. [<sub>AgrS</sub> (Someone) [<sub>TP</sub> Tns [<sub>AgrO</sub> every seminar [<sub>VP</sub> someone [attended (every seminar)]]]]]

With the interpretive principle (4) we can represent the ambiguity of (6). Of these four structures, (8a-c) are LFs in which 'someone' scopes over 'everyone'. (8d) represents the LF in which the object scopes over the subject.<sup>16</sup>

The above shows that QSIs in transitive sentences in English can be represented without QR by exploiting the structure of A-chains in a minimalist theory. The assumptions in (3)-(5) have been crucial. For example, in the absence of copying and deletion, determinate scope relations among QNPs would not be represented and quantifier scope dependencies would be grammatically underdetermined.<sup>17</sup>

More interestingly, VP internal subjects are instrumental in allowing objects to scope over subjects. So too is the assumption that objects check accusative case outside the VP shell in Spec AgrO. In fact, the VP internal subject hypothesis and the assumption that accusative case is checked outside the VP shell in Spec AgrO are actually flip sides of the same minimalist intuition, viz. that the grammar segregates morphological case and agreement properties from theta properties. The domain of theta assignment is the VP shell. Case, in contrast, is checked in a Spec-Head relation outside this lexical shell. This separation of functions is a constant refrain in MP. It is interesting to observe, therefore, that representing quantifier scope interactions without QR requires exploiting both halves of this central minimalist dichotomy.<sup>18</sup> The converse is also true. One can interpret QR as the technical price a theory that grammatically represent QSIs must pay if it identifies the domains and relations of case and theta theory.

## 2 Some Empirical Benefits

§1 shows how to represent QSIs without the benefit of QR. This section provides evidence in favor of this approach. Two features of the analysis are crucial. First, quantifier scope is parasitic on the structure of A-chains. Second what scope an expression has is a function of which member of its A-chain survives the deletion process.<sup>19</sup>

Consider first different scope interactions manifest in raising and control structures.

- (9) a. Someone seemed to attend every seminar  
 b. Someone hoped to attend every seminar

'Every seminar' can be interpreted as scoping over 'someone' in (9a) but not in (9b). This follows given the different structures of the two sentences. At LF, prior to deletion, (9a) has the structures in (10a) typical of a raising construction while (9b) has the structure in (10b) characteristic of control.

- (10) a. [Someone [tns [seem [someone [to [every seminar [someone [attend every seminar ]]]]]]]  
 b. [Someone [tns [someone [hope [ PRO [ to [every seminar [PRO [attend every seminar ]]]]]]]]]

Observe that through judicious deletions it is possible to get a copy of 'someone' c-commanded by a copy of 'every seminar' in (10a), as in (11).

- (11) [(Someone) [tns [seem [(someone) [to [every seminar [someone [attend (every seminar) ]]]]]]]

This is not possible in (10b) as at no point do the chains headed by 'someone' and 'every seminar' interleave. Hence, no amount of deletion can duplicate the effect we see in (11) for the structure (10b).

In sum, if relative scope piggy backs on A-chain structure and reflects relative c-command after deletion we expect matrix subjects to be able to scope under embedded clause objects in raising constructions but not in control structures. This accounts for the contrast in (9).

Consider a second pair of sentences. (12) illustrates that QSIs are sensitive to the tensed S condition. It is possible to interpret 'someone' in (12a) as within the scope of 'every Republican'. This reading is absent in (12b).

- (12) a. Someone expected every Republican to win  
 b. Someone expected that every Republican would win

This contrast follows on our previous assumptions. (12a) is an ECM construction. The embedded subject raises to the matrix Spec AgrO to check its accusative features at LF. The embedded subject in (12b) is marked nominative and it has its case checked in the embedded Spec AgrS. Prior to deletion at LF the two sentences have the structures in (13).

- (13) a. [<sub>AgrS</sub> someone [<sub>AgrO</sub> every Republican [<sub>VP</sub> someone [expected [<sub>AgrS</sub> every republican [<sub>VP</sub> every republican to win]]]]]]  
 b. [<sub>AgrS</sub> someone [<sub>VP</sub> someone [expected [<sub>AgrS</sub> every republican would [<sub>VP</sub> every republican win]]]]]]

Note that the chains headed by 'someone' and 'every Republican' interleave in (13a) but do not in (13b). Consequently, 'every Republican' can c-command (and hence scope over) 'someone'

after the relevant deletions -(14).

- (14) [<sub>AgRS</sub> (someone) [<sub>AgRO</sub> every Republican [<sub>VP</sub> someone [expected [<sub>AgRS</sub> (every republican) [<sub>VP</sub> (every republican) to win]]]]]]]]

No combination of deletions will allow 'every Republican' to c-command 'someone' in (13b) and so the analogous interpretation is unavailable.

The above accounts both rely on case chains undergirding quantifier scope. For these data, the (independently motivated) structure of case chains alone account for the indicated scope contrasts.<sup>20</sup> In GB-style theories both sorts of data are accounted for in terms of the ECP.<sup>21</sup> As the ECP is an unwelcome condition in MP, it is a side benefit of this approach that it can handle these contrasts without invoking it.

Let's now turn to a different set of interactions, ones that highlight the effect of assumption (5). MP assumes (see (3d)) that there is only a single level at which grammatical conditions can apply -LF. We now review some data that rely on the combination of (3d) and (5). Consider the interaction of relative quantifier scope and binding.

Higginbotham 1980 observes that (15a) is ambiguous with either the subject or the object taking widest scope. (15b) is similarly ambiguous so long as the pronoun is not interpreted as bound by 'someone'. However, with the bound reading, the sentence can only be interpreted with the indefinite subject outside the scope of the 'every' phrase.

- (15) a. Someone played every piece of music you knew  
 b. Someone<sub>i</sub> played every piece of music he<sub>i</sub> knew

The requirement that 'someone' take wide scope in (15b) follows given the assumptions above. The LF structure of the sentence prior to deletion is (16a). To be interpreted as bound, the pronoun must be c-commanded by its antecedent at LF.<sup>22</sup> However, this forces 'someone' to c-command the 'every' phrase. Given (4) above, this in turn leads to an LF in which 'someone' scopes over the 'every' phrase -(16b,c).

- (16) a. [<sub>AgRS</sub> Someone [<sub>Tns</sub> [<sub>AgRO</sub> [every piece of music he knew] [<sub>VP</sub> someone [<sub>VP</sub> played every piece of music he knew]]]]]]  
 b. [<sub>AgRS</sub> Someone<sub>i</sub> [<sub>Tns</sub> [<sub>AgRO</sub> [every piece of music he<sub>i</sub> knew] [<sub>VP</sub> (someone) [<sub>VP</sub> played (every piece of music he knew)]]]]]]  
 c. [<sub>AgRS</sub> (Someone)<sub>i</sub> [<sub>Tns</sub> [<sub>AgRO</sub> [(every piece of music he<sub>i</sub> knew)] [<sub>VP</sub> someone [<sub>VP</sub> played



every piece of music he knew]]]]]

Given the minimalist assumptions in Chomsky 1995, these data cannot be similarly handled in a theory that represents QSIs via QR. The problem is as follows. Chomsky argues that A'-chains minimize the restrictor in A'-position at LF. In effect, this forces QR to move bare Qs in MP. But if just bare Qs move, then (17) is a legitimate LF structure where the pronoun can be bound by the variable  $t_j$  while at the same time 'some' is c-commanded by 'every'.<sup>23</sup>

(17) [<sub>IP</sub> every<sub>i</sub> [<sub>IP</sub> some<sub>j</sub> [<sub>IP</sub>  $t_j$  [<sub>VP</sub> [ $t_j$  one] played [ $t_i$  piece of music he knew]]]]]]]

There are further instances of quantifier scope/binding interactions. A classic one is discussed by Aoun 1982. He observes that in a raising structure -(18a)- 'someone' can be interpreted as within the scope of the embedded 'every' phrase. However, if the raised subject binds a matrix pronoun or anaphor, this reading disappears and 'someone' must be interpreted as having wider scope than the 'every' phrase -(18b,c).

- (18) a. Someone seemed (to Bill) to be reviewing every report  
 b. Someone<sub>i</sub> seemed to his<sub>i</sub> boss to be reviewing every report  
 c. Someone<sub>i</sub> seemed to himself<sub>i</sub> to be reviewing every report

The LF structures of (18b,c) are those in (19).

- (19) a. [Someone<sub>i</sub> seemed to his<sub>i</sub> boss[(someone) to be [every report[ (someone) reviewing (every report)]]]]  
 b. [Someone<sub>i</sub> seemed to himself<sub>i</sub> [(someone) to be [every report[ (someone) reviewing (every report)]]]]

If 'someone' is to bind the matrix pronoun/anaphor in (19) the embedded copy must delete. This makes it impossible for the 'every' phrase to c-command 'someone'. Consequently, 'someone' must be interpreted as outside the scope of the 'every' phrase.

We find similar effects in simple clauses with adjuncts.

(20a,b) are ambiguous with either the 'every' phrase or 'someone' taking wide scope. (20c,d) with 'someone' binding into the adjunct are no longer ambiguous. 'Someone' must take wide scope.

- (20) a. Someone seranaded every woman  
 b. Someone reviewed every brief

- c. Someone<sub>i</sub> seranaded every woman before he<sub>i</sub> left the party
- d. I got someone to review every brief without leaving the office

We can account for these scope/binding interactions just as we did above if we assume that adjuncts are adjoined to VP or higher.<sup>24</sup> If 'someone' is to bind into the adjunct, the copy inside the VP shell must delete as this copy does not c-command the adjunct. The copy in Spec AgrS thus determines the scope of 'someone'. However, the 'every' phrase cannot scope over this position as no 'every'-copy c-commands it. (21) are the relevant Lfs.

- (21) a. [<sub>AgrS</sub> Someone<sub>i</sub> [<sub>Tns</sub> every woman [<sub>P</sub> ↓<sub>VP</sub> (someone) seranaded (every woman)] [before he<sub>i</sub> left the party]]]]
- b. [<sub>AgrS</sub> Someone<sub>i</sub> [<sub>Tns</sub> to [<sub>AgrO</sub> every brief [<sub>P</sub> ↓<sub>VP</sub> (someone) reviewed (every brief)] [without PRO<sub>i</sub> leaving the office]]]]]

This reasoning further implies that if the object (rather than the subject) binds into the adjunct, then scope ambiguities will persist. (22a) can be read with the 'someone' in the scope of the 'every' phrase or outside it. This is because (22a) has two well formed LFs. In (22b), the extant 'every' phrase c-commands the undeleted 'someone'. In (22c) the opposite c-command relations obtain.

- (22) a. Someone questioned every suspect, before he<sub>i</sub> was released
- b. [<sub>AgrS</sub> (Someone)<sub>i</sub> [<sub>AgrO</sub> every suspect [<sub>VP</sub> ↓<sub>VP</sub> someone questioned (every suspect) [before he<sub>i</sub> left]]]]]
- c. [<sub>AgrS</sub> Someone [<sub>AgrO</sub> every suspect [<sub>VP</sub> ↓<sub>VP</sub> (someone) questioned (every suspect) [before he<sub>i</sub> left]]]]]

There is another consequence of this theory. We've argued that subjects that bind into adjuncts must get wide scope because VP internal subjects fail to c-command adjuncts. This implies that if a subject binds into a complement rather than an adjunct it should be able to scope inside the object as the VP internal subject position c-commands the complement position. Hence the copy in Spec AgrS can delete and binding will remain licit. This is illustrated in (23). Here 'someone' can be interpreted within the scope of the 'every' phrase with the indicated binding. The relevant LFs are provided in (24).

- (23) a. Someone<sub>i</sub> asked every attendant if he<sub>i</sub> could park near the gate
- b. John got someone/at least one patron, to tell \*every critic that he<sub>i</sub> hated the play

- (24) a. [<sub>AgRS</sub> (Someone) [<sub>AgRO</sub> every attendant [<sub>VP</sub> someone<sub>i</sub> asked (every attendant) if he<sub>i</sub> could park near the gate]]]
- b. John got [<sub>AgRS</sub> (someone/at least one patron) to [<sub>AgRO</sub> every critic [<sub>VP</sub> someone/at least one patron<sub>i</sub> tell (every critic) that he<sub>i</sub> hated the play]]]

The interaction between scope and binding illustrated here cannot be easily duplicated in a grammar that delivers quantifier scope via QR yet retains the standard binding theory. The problem arises because in such a theory relative quantifier scope is sensitive to the A'-positions of A'-chains whereas binding is sensitive to the A-positions of these chains. For example, a quantified object can scope over a subject by QRing over it while the subject remains outside the VP shell in some Spec IP position from which it can bind into the adjunct. So, for example, with QR in the LF arsenal, (25) is a perfectly fine LF representation of (20c). Here, both the object scopes over the subject and the subject binds into the adjunct.

- (25) [every woman<sub>i</sub> [<sub>AgRS</sub> t<sub>j</sub> [<sub>AgRO</sub> t<sub>i</sub> [<sub>VP</sub> [t<sub>j</sub> [<sub>VP</sub> t<sub>j</sub> seranaded t<sub>i</sub>] before he<sub>i</sub> left the party]]]]]

In sum, a QR based theory fails to capture dependencies between relative quantifier scope and binding. The reason is that the grammatical expression of quantifier scope -the QRed expression- is different from the object relevant for case and binding effects in such a theory. The former is a matter of A'-chain structure while the latter is the province of A-chain configuration. The present proposal identifies scope markers and anaphoric anchors. The c-command domain of the same grammatical element determines both its binding properties and relative scope. We thus expect one to potentially restrict the other.<sup>25</sup>

### 3 Some Cross Linguistic Considerations

The above has argued that English QSIs can be accounted for without LF A'-movement. The structure of A-chains suffice. The A'-operation we have considered has been QR and the A-chains at issue are those driven by case theory. However, the logic of the proposal is more general than this. Japanese scrambling constructions manifest a version of this same logic.<sup>26</sup>

Saito 1992 demonstrates that clause internal scrambling (CIS) and long distance scrambling (LDS) are quite different operations. CIS is an instance of A-movement, LDS is A'-movement. A-movement is distinguished from A'-movement in two ways. The former rescinds weak cross over (WCO) effects and licenses anaphoric binding. English raising constructions

illustrate this.

- (26) a. No one<sub>i</sub> seems to his<sub>i</sub> mother [t<sub>i</sub> to be ugly]  
 b. The men<sub>i</sub> seem to each other<sub>i</sub> [t<sub>i</sub> to be ugly]

The matrix subjects in (26) are able to licitly bind the indicated pronoun/reciprocal. The fact that this is possible indicates that the trace in the embedded clause is the residue of A-movement. When the trace is the residue of A'-movement, neither binding is permitted.

- (27) a. Who<sub>i</sub> does it seem to his<sub>i</sub> mother [t<sub>i</sub> is ugly]  
 b. Which men<sub>i</sub> does it seem to each other<sub>i</sub> [t<sub>i</sub> are ugly]

Japanese CIS functions like raising while LDS resembles WH movement. (28) indicates that CIS obviates WCO effects. (29) shows how it licenses reciprocal binding.

- (28) a. ?\* [Masao-wa [Hanako-ga pro<sub>i</sub> yomu mae-ni] dono hon<sub>i</sub>-o yonda]] no  
*Masao-TOP Hanako-NOM read before which book-ACC read Q*  
 'Masao read which book before Hanako read'  
 b. Dono hon-o<sub>i</sub> [Masao-wa [Hanako-ga e<sub>i</sub> yomu mae-ni] [t<sub>i</sub> yonda ]] no  
*which book-ACC M-TOPH-NOM read before read Q*  
 'Which book did Masao read before Hanako read it'
- (29) a. ?\* [Masao-ga [[otagai, -no sensei]-ni [karera<sub>i</sub>-o syookaisita ]]] (koto)  
*M-NOM each other-GEN teacher to they-ACC introduced fact*  
 'Masao introduced them to each other's teachers'  
 b. [ Karera-o, [Masao-ga [[otagai, -no sensei]-ni [t<sub>i</sub> syookaisita]]]] (koto)  
*they-ACC M-NOM each other-GEN teacher to introduced (fact)*  
 'Them, Masao introduced to each other's teachers'

In contrast, LDS induces WCO effects -(30)- and fails to license reciprocal binding -(31).

- (30) \* dono ronbun<sub>i</sub>-ni-mo [sore<sub>i</sub>-no tyosya]-ga [John-ga t<sub>i</sub> manzokusita to] omotteiru (koto)  
*every paper-DAT it-gen author -Nom J-Nom was-satisfied that thinks*  
 '\*Every paper<sub>i</sub>, its<sub>i</sub> author thinks that John was satisfied with'
- (31) \* [Karera-o, [Masao-ga [otagai, -no sensei]-ni [<sub>CP</sub> [<sub>IP</sub> Hanako-ga t<sub>i</sub> hihansita] to] itaa]] (koto)  
*them-ACC M-NOM each other-GEN teacher to H-NOM criticised COMP said (fact)*  
 '\*Them<sub>i</sub>, Masao said to each other's teachers that Hanako criticised t<sub>i</sub>'

What happens with respect to relative quantifier scope? As is well known, without scrambling, relative quantifier scope in Japanese reflects S-structure c-command relations.<sup>27</sup>

Interestingly, CIS induces ambiguities. LDS, in contrast, does not. (32a) is unambiguous. The nominative subject 'dareka-ga' must be interpreted as having wide scope. In (32b), however, the accusative 'dareka-o' has been clause internally scrambled and now either the subject can scope over the object or the converse interpretation is permitted. In other words, CIS, a species of A-movement by the standard diagnostic tests, fosters novel quantifier scope interactions.

- (32) a. Dareka-ga daremo-o semeta  
*someone-Nom everyone-Acc blamed*  
 b. [Dareka-o [daremo-ga [t<sub>i</sub> semeta]]

What of LDS? It is inert. Overt long distance scrambling to an A'-position does not permit the scrambled expression to take wide scope. In (33), 'daremo-ni' cannot scope over the matrix 'dareka-ga' despite having been overtly moved there.<sup>28</sup>

- (33) Daremo<sub>i</sub>-ni dareka-ga [Mary-ga t<sub>i</sub> atta to] omotteiru (koto)  
*everyone someone Mary met that thinks fact*  
 "Everyone, someone thinks that Mary met"  
 = For some person x, x thinks that Mary met every y  
 NOT= For every person y, some person thinks that Mary met y

Saito 1992 provides independent evidence from the scrambling of WH morphemes that LDS in Japanese is semantically inert. He observes that WH elements scrambled outside the domain of their related Q-morphemes are nonetheless licensed at LF -(33').

- (33') Dono hon-o<sub>i</sub>[Masao-ga [<sub>CP</sub> [<sub>IP</sub> Hanako-ga t<sub>i</sub> tosoyokan -kara karidasita] ka] siritagatteiru]]  
 koto  
*which book-acc M-nom H-nom library from checked out Q want-to-know fact*  
 "\*\*Which book, Masao wants to know Hanako checked out from the library"

Saito assumes that lowering is both possible and required at LF. That this is possible follows if indeed the position to which LDS moves a scrambled expression is semantically inert. Were it not, lowering the WH morpheme at LF would violate full interpretation.

For our purposes, the interesting fact is that this form of overt A'-movement seems incapable of altering quantifier scope patterns while A-movement can. This supports the view that QSIs are sensitive to A-movement rather than LF A'-movement.

This said, things cannot be as simple as this. There are well known cases of languages in which overt A'-movement does appear to determine the relative scope of quantified

expressions. One of the best studied cases is Hungarian. In Hungarian, D/NPs, whether quantificational or not, are typically moved from IP to various pre-sentential positions. This movement fixes the relative scopes of the QNPs.<sup>29</sup> (34) illustrates this.

- (34) a. Sok ember mindenkít felhivott  
*many men everyone phoned* = Many men>everyone  
 b. mindenkít sok ember felhivott = everyone>many men

It appears, however, that in the absence of this movement, Hungarian overt structure does not disambiguate quantifier scope. Szabolcsi 1995 provides examples of post verbal QNPs that have not been A'-moved. She indicates that these QNPs enjoy the same scope ambiguities attested in English. In short, for these cases, S-structure fails to determine relative scope.

- (35) Egy keddi napon harapott meg hatnal tobb kutya minden fiut  
*a Tuesday day-on bit-pfx more than 6 dogs bit every boy*  
 "It was on Tuesday that more than six dogs bit every boy"  
 =more than 6 dogs > every boy  
 =every boy > more than 6 dogs

How are we to interpret these Hungarian facts? First, it seems that relative quantifier scope can piggy back on A'-chains. This is consistent with the larger picture outlined in the introduction. The big idea there is that there are no rules specifically for fixing quantifier scope. There is no rule of grammar whose concern it is to assure that quantified expressions reside in scope positions. This, however, does not prohibit quantifier scope from piggy backing on the structure of A'-operations required for other reasons, as in Hungarian. Szabolcsi 1995 makes a very interesting proposal in this regard. She argues that pre-IP positions in Hungarian make rather specific informational demands on the expressions that inhabit them. In contrast Japanese LDSs, these positions are semantically active. As evidence for this, Szabolcsi argues that the QNPs in pre-sentential position in Hungarian are not actually interpreted as (generalized) quantifiers, in contrast to the interpretation of such expressions in post verbal positions in Hungarian or quite generally in English. Rather, the pre-IP positions in Hungarian have more specific interpretive requirements associated with them. The structure of the clause, she proposes, is (36).<sup>30</sup>

- (36) [Topic\* [Quantifier\* [Focus [ Negation [ Verb [NP\*]]]]]]

Nominal elements in the first three positions, Szabolcsi insists, are not interpreted simply as quantifiers. This is not surprising for elements in Topic and Focus positions whose informational contributions to interpretation have been well studied. However, Szabolcsi argues that even QNPs in the second "Quantifier" slot are not interpreted as generalized quantifiers but rather "provide subjects of predication" in more or less complex ways. Only some kinds of D/NPs can do as much. Those that cannot are barred from this position just as certain D/NPs are barred from being Foci or Topics due to their inability to play the informational requirements these positions demand.

If Szabolcsi is correct, then it is possible to combine the English and Japanese data with the Hungarian facts as follows. Deletion of copies is free but the resulting LF structure must be interpretable. If pre-IP positions make interpretive demands then the deletion process must leave a copy in these positions. But as only a single copy can survive to the CI interface, this will freeze the relative scopes of expressions that move there. This is what happens in Hungarian if Szabolcsi is correct. If, however, the landing sites of movement are not associated with any specific informational tasks, as for example in case positions or LDS scrambling positions, then the general properties of the grammar have free play and we end up with the English and Japanese data reviewed above.

One further point is worth mentioning in the context of MP. The considerations in the introduction strongly suggest that if A'-movement obtains in a grammar, it should be overt. What is minimalistically awkward is covert A'-movement. This is consistent with the data above.

The overall picture concerning QSIs that emerges is the following. Quantifier scope emerges from structures required for independent grammatical reasons. There is no quantifier scope rules *per se* in the grammar. Rather it is determined by deleting copies that movement induces leaving but one at the CI interface. Which copy survives determines what sort of binding can occur, what the relative scopes of the expressions can be and what informational structure the sentence can bear. The interaction of all of these factors should be the norm.

The empirical virtue of this picture of things is that it provides a possible way of dealing with the cross-linguistic variety QSIs manifest. Consider one last example. The romance languages appear to allow certain kinds of QSIs but not others. For example, it is apparently difficult to scope a subject under an object in Spanish. It is considerably easier to scope an indirect object over a direct object, however. Thus, 'todos dios' can scope over 'alguien' in (37b) but not (37a).<sup>31</sup>

- (37) a. Alguien vio a todos dios  
 Someone saw everyone  
 b. Juan dio un libro a todo dios  
 Juan gave a book to everyone

Why this contrast? Recent work by Barbosa (1994) is suggestive. She argues that Romance subjects are in fact topics.<sup>32</sup> If this is correct, then we would expect subject positions in Romance to pattern like those in Hungarian, viz. their overt positions are their scope positions. In other words, as in Hungarian, copies of elements in the Spec of Topic would have to be retained in order to meet full interpretation. This, in turn, requires deleting all other copies. This in effect freezes the scope position of subjects in Romance in the topic slot. Non-subjects, however, are not topics and so their scope interactions should pattern like those we find in English. The data in (37) is consistent with this.<sup>33</sup>

#### 4 Doing Without Agr Positions

The above analysis of QSIs makes critical use of Agr projections. Chomsky (1995:ch4) has recently subjected them to a minimalist critique concluding that Agr nodes are superfluous and so should be eliminated from UG. This raises the technical issue of whether the above analysis can be duplicated using this sparser phrase structure.

Before arguing that they can be, one methodological point is worth making. The Minimalist Program is just that -a program. It outlines a worthy goal: to see how close we can get to a theory guided by concerns of simplicity and conceptual necessity. Assume for a moment that its strictures prove to be too austere in some domain and that some of its ideals clash with what we took to be an empirically well supported theory. What are our methodological options? There are at least two. We could decide that the analysis should be set aside and that we should stick to our MP principles. Or we could decide to retain the analysis and retreat from the MP assumptions that clash with it. Neither alternative is in and of itself preferred. Minimalism is not a theory but a set of guidelines for constructing grammatical theories. These guidelines gain their interest from being both conceptually elegant and empirically adequate. Pretty principles with short empirical reach do nobody any good. Consequently, being minimalistically suspect does not imply that Agrs should be dispensed with. It simply argues that an analysis that can do



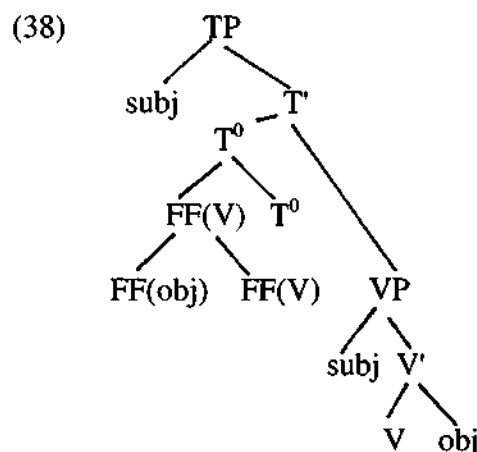
equally well without them is better off. As it happens, the above analysis can do without them.

Let's return to the above story. The key elements are that quantifier scope is grammatically a free rider. It exploits the structures made available by other processes. In English, this other process is case checking. Chains formed by checking case interact with a deletion process constrained to yield single membered chains to provide D/NPs with their scopes. Agrs are implicated to the degree that case is checked in the Specs of Agr projections. To see what a theory without Agrs looks like we must consider how case is checked with Agrs eliminated.

Chomsky proposes the following technology. Lexical elements are bundles of features. Among these are "formal features" (FFs) which include categorial, case, and number features among others. All nominal expressions receive case features, as previously. However, at LF, feature bundles rather than categories move to accommodate checking requirements.<sup>34</sup> An illustration will clarify matters.

Accusative case is checked at LF by raising the FFs of the object and adjoining them to those of the verb. The verbal FFs have risen to T to check V(erb)-features such as tense and agreement. (38) displays the relevant LF structure.

Call the formal features of a constituent A 'FF(A)'. The element from which the FF(A) moves is A. We assume, following Chomsky, that the FFs adjoin to the elements that check the relevant features. Hence FF(V) raises to T to check nominative case and FF(Obj) raises to V to check accusative case. We similarly assume that {FF(V),V}, {FF(obj),obj} and {subj, subj} are the relevant chains formed by these operations.



Given structures like (38), it is possible to mirror the account in §1 on the following

assumptions.

- (39) a. FF(X) and X have the same quantificational force  
 b. FF(V) raises to T at LF and FF(obj) raises to V at LF leaving copies of the moved Ffs behind.  
 c. Any chain member can delete and all but one must  
 d. In (38) 'subj' in Spec TP c-commands FF(obj) and FF(obj) adjoined to FF(V) c-commands 'subj' in Spec VP

(39a) allows the scope of an expression to be represented by its FFs. Chomsky (1995: 273ff) notes that FFs are potential binders. This increases their powers to include quantificational force. This allows FF adjunction to fully mimic the effects of category raising to Agr. (39b) states that features are checked at LF by raising FFs. This is essentially Chomsky's main proposal for LF operations which we are assuming here. It is a necessary part of his elimination of Agr projections.<sup>35</sup> (39c) restates the key deletion mechanism of the analysis in §1. In particular the free deletion process permits "lowering" at LF and this is responsible for getting subjects in the scope of objects. (39d) amounts to adopting the definition of c-command in (40) and the assumption that if a node B excludes a node C then B does not dominate C. Hence in (38), T' dominates FF(obj) but neither FF(V) nor T<sup>0</sup> do. (40) differs from more standard definitions (e.g. Aoun & Sportiche) by having all projections, not just maximal ones count.

(40) A c-commands B iff every node that dominates A dominates B

With the translation manual provided above, an Agr-less analysis accounts for the data reviewed above.<sup>36</sup> The reason is that it expresses the same general sentiments as the prior version. In particular, it divorces the domains of case and theta requirements and it gives enough structure to feature checking chains to support the attested scope interactions.<sup>37</sup> The verb (or its features) checks FF(obj) after raising out of the VP shell to T<sup>0</sup>. Thus, accusative case is checked within the TP while it is theta endowed within the VP.

A key feature of the revised approach is the definition of c-command. (39d)/(40) aim to achieve a particular end: an objects can scope over objects only if subjects "lower" to Spec VP at LF, i.e. only if the copy of the subject chain deletes and the copy in Spec VP is retained. This is crucial for it permits this technology to account for the correlation between scope and binding reviewed in §2. To illustrate, consider (20c) once again.

(20c) Someone, seranaded every woman before he, left the party

'Someone' cannot scope under 'every woman'in (20c). Given FF movement, (20c) has the LF (41) prior to deletion.

- (41) [<sub>TP</sub> Someone [[FF(every)+FF(serenade)]+Past] [<sub>VP</sub>[<sub>VP</sub> someone seranaded every woman] before he....]]

(39c) requires deletion of all but one member of every chain. If 'someone' in Spec TP is deleted and 'FF(every)' is retained we end up with an LF in which the object scopes over the subject. However, here the 'someone' cannot bind the pronoun as it fails to c-command it. To bind the pronoun, we must retain the copy in Spec TP. But in this position, 'someone' must scope over the 'every' phrase as it c-commands all copies of the 'every' chain. Consider what happens if we replace (39d)/(40) with a definition of c-command which permits 'FF(every)' adjoined to FF(V) to scope over the subject in Spec TP, e.g. a version of the Aoun & Sportiche definition will do as it ignores intermediate projections in calculating c-command. If adopted, this both allows the object to scope over the subject and the subject to bind into the adjunct. (42) licenses both aspects of this interpretation (curly brackets indicate deletion) as 'FF(every)' c-commands 'someone' in Spec TP and 'someone' in Spec TP c-commands 'he'.

- (42) [<sub>TP</sub> Someone [[FF(every)+FF(serenade)]+Past]  $\sqrt{p}$   $\sqrt{p}$  {someone} seranaded {every woman}} before he....]]

As this reading is unavailable for (20c), we must assume that the correct definition of c-command is the one in (39)/(40).<sup>38</sup>

This conclusion has an interesting theoretical consequence. Chomsky (1995:377), following Reinhart (1995) proposes integrating QR into MP as a last resort principle. He assumes that a Q can adjoin to either T<sup>0</sup> or V.<sup>39</sup> It does so if T or V has an LF affix feature able to host such FF(Q). This feature is licensed iff it leads to an interpretation not otherwise available.<sup>40</sup> Note that the structure that results from such proposed raising is entirely identical to (42). However, if the above is correct, this configuration fails to allow the object to scope over the subject. Thus, this way of integrating QR into MP is empirically inadequate. To my knowledge there is no other concrete proposal for consistently integrating QR into MP.

The discussion in this section points to two conclusions. First, that it is possible to cover the ground reviewed in §2 in an Agr-less grammar. However, doing this requires exploiting "lowering" rules in the grammar, i.e. some version of (5)/(39c). This device is essential.<sup>41</sup>

Moreover, once it exists, then other QR-like devices are both unnecessary and empirically awkward. The next section rebuts some empirical arguments purporting to show that lowering does not exist.

## 5 Arguments Against Lowering

The key technical innovation of the present analysis is to allow the equivalent of "lowering" or "reconstruction" in A-chains. This is achieved through the combination of two other processes. Movement leaves behind copies -(3c)/(39b)- and all but one copy in a chain must delete - (5)/(39c). The fact that deletion is unconstrained allows for reconstruction effects when higher copies are deleted and lower ones retained. We have proposed that interpretive considerations might prevent the deletion of certain copies e.g. Spec Topic might have to be filled at LF for interpretive reasons at the CI interface.<sup>42</sup> However, there is no grammatical restriction on what can or must delete and, as a result, there is no principled prohibition against "lowering" operations.<sup>43</sup> However, there have been some empirical arguments raised against allowing reconstruction in A-chains. It is the purpose of this section to defuse them.

Chomsky and Lasnik (1991) argue against A-lowering rules based on the following data.

- (43) a. Everyone didn't leave  
 b. Everyone seems not to have left

They argue that 'everyone' in (43a) can be interpreted as in the scope of matrix negation. In contrast 'everyone' cannot be interpreted as in the scope of the embedded negation in (43b). If lowering/reconstruction were available, however, we would expect the latter to support this interpretation as after lowering the relation between the reconstructed 'everyone' and the embedded 'not' is analogous to the one that the matrix 'everyone' in (43a) has to the matrix negation. In effect, we would expect (44) to be a possible LF.

- (44) [(everyone) seems [ everyone not to [have [(everyone) left]]]]

This argument has an empirical flaw. Consider (45).

- (45) a. John would prefer for everyone not to leave  
 b. John wants very much for everyone not to leave

These sentences don't support interpretations in which 'not' scopes over 'everyone'. It appears that a non-reduced neg in an embedded clause does not scope over an adjacent 'everyone'. Thus, even if lowering were permitted in (43b), we do not expect the interpretation that Chomsky and Lasnik observe to be absent.<sup>44</sup>

Chomsky (1995a, note 27) provides two further arguments. He observes that (45) can only be understood as condition B violation.

(45) John<sub>i</sub> expected [ him<sub>i</sub> to seem to me [ t to be intelligent]]

However, were reconstruction possible the violation should be obviated with 'him' appearing in the position of 't' c-commanded by 'me'. The relevant LF is (46).

(46) John expected [(him) to seem to me [him to be [(him) intelligent]]]

There are two responses to this argument. First, it is empirically suspect. Chomsky does not state which version of the binding theory he has in mind but he seems to be assuming that 'me' in (46) can function like an intervening subject to block principle B. This assumption is unsupported. Were it true, we would expect that 'him' could be co-indexed with 'John' in (47) as 'Mary' c-commands it (as indicated by the principle C violation in (48)). However, it is marginal (at best) for 'John' to antecede 'him' in (47). But if so, then the fact that the same holds in (46) is what we expect.

(47) John expected it to be preferred by Mary for him to be intelligent

(48) \* John expected it to be preferred by her<sub>i</sub> that Mary<sub>i</sub> to be intelligent

There is a second reply to this argument even assuming that the data are unequivocal. There are resources within MP for dealing with Chomsky's observations if we adopt two assumptions about the interpretation of LFs at the CI interface.

- (50) a. A definite argument must be outside the lexical shell at LF  
 b. Intermediate chain links are invisible at the CI interface

(50a) is a version of the mapping hypothesis advocated by Diesing (1992) building on work by Heim and Kratzer. It prevents definites from receiving an interpretation at the CI interface if they

reside within the VP shell.<sup>45</sup> Chomsky (1995:300ff) proposes (50b) and provides both theory internal and empirical motivation for it. The proposal gains naturalness if one thinks of chains on analogy with X' projections. Both are constructed objects within MP. Both have "tops", "bottoms" and "middles". In both cases the "middles" are invisible at the CI interface. If X' structure is functionally interpreted then it is very natural to think of chain structure in this way as well. In effect then, the head of a chain is analogous to XP while the tail is similar to X<sup>0</sup>. This makes intermediate links similar to X's. In MP, X's are invisible at the CI interface (Chomsky (1995a). By parity of reasoning, intermediate chain positions should be invisible as well. (50b) makes this assumption explicit.

Let's now return to the LF of (45) prior to deletion.

(46) John expected [<sub>IP</sub> him to seem to me [<sub>IP</sub> him to be [<sub>AP</sub> him intelligent]]]

'him' moves twice resulting in a three member chain. (50b) renders the second copy in Spec IP' invisible at the CI interface. (50a) requires the lowest copy to delete as it is definite. This leaves only the head of the chain as a viable candidate for interpretation at the CI interface. However, this copy cannot be anteceded by John without violating principle B. In short, (50) directly accomodates Chomsky's observation.

It similarly handles Chomsky's other case. He observes that the PRO in (51) has the "quasi-agentive status commonly conferred on the "surface subject" position" (Chomsky 1995a:436,n.27).

(51) PRO to appear [t to be [t intelligent]] is harder than one might think

The PRO originates inside the lexical shell of 'intelligent' whence it receives its theta role. It then raises twice. On the assumption that arbitrary PRO is definite, and that intermediate links are invisible, the only palce that PRO can appear and get an interpretation at the interface is the head position of the A-chain, as Chomsky suggests.

It is reasonable to treat arbitrary PRO as definite. It's meaning is roughly equivalent to the impersonal pronoun 'one'. (52) is a close paraphrase of (51).

(52) For one to appear to be intelligent is harder than one might think

Note that neither 'one' nor PRO can appear in 'there' constructions, which follows if both are

definite.

- (53) a. One might be indicted for this  
 b. \* There might be one indicted for this  
 c. \* John expects there to be PRO indicted for this

In sum, given that arbitrary PRO and pronouns are definites and assuming (50) we can fully account for the examples noted by Chomsky and still allow reconstruction in A-chains.

Consider one further set of arguments against reconstruction in A-chains.<sup>46</sup> If reconstruction is free what prevents the binding of anaphors in overt subject position?<sup>47</sup>

- (54) a. \* Himself likes John  
 b. \* Each other like the men

In other words, what prevents an LF like (55) after lowering?<sup>48</sup>

- (55) [<sub>IP</sub> (himself) [<sub>Agro</sub> John [<sub>VP</sub> himself likes (John)]]]

In (55), the anaphor is c-commanded by an appropriate antecedent and so should be acceptable.

It's evident unacceptability follows since anaphors are definites. Due to this, (50a) requires that the copy inside the VP shell delete. This leaves (56) as the only interpretable LF of (54). In (56), the anaphor c-commands its antecedent.

- (56) [<sub>IP</sub> himself [<sub>Agro</sub> John [<sub>VP</sub> (himself) likes (John)]]]

If (54) is embedded in a raising construction we face similar unacceptability.

- (57) \* himself seems to Bill to be intelligent

(57) has the LF (58) in which licit binding of the anaphor is impossible.

- (58) [himself seems to Bill [(himself) to be [(himself) intelligent]]]

The most deeply embedded copy is deleted by (50a). The copy in the embedded subject position is invisible by (50b). Thus, the only copy that is licit at the CI interface is the one in matrix subject position. This copy, however, c-commands its antecedent.

Note that we find licit binding if the strictures in (50) are respected. For example, if we raise an indefinite NP containing an anaphor, binding is acceptable.

- (59) pictures of himself seem to Bill to be beautiful
- (60) [[(pictures of himself) seem to Bill [(pictures of himself) to be [pictures of himself beautiful]]]

(60) is a possible licit LF. The matrix copy of the chain is deleted and the embedded subject is invisible by (50b). The deepest member of the chain inside the lexical shell is retained. This is licit as the NP is indefinite and so adheres to (50a).<sup>49</sup>

This section has considered various arguments against reconstruction in A-chains and has shown them to be either empirically suspect or accomodatable while still permitting A-chain reconstruction. I conclude, therefore, that A-chain reconstruction is a licit process.

## 6 Conclusion

I argued in the introduction that MP does not easily embrace LF A'-movement rules like QR and that A-movement has certain charms given minimalist assumptions. Further, I argued that the quantifier scope effects that motivated QR in GB theories could be handled with the sorts of A-movements that MP makes central if we assume that reconstruction in A-chains is possible. In my view there is an additional strong conceptual reason for thinking that this treatment of QSIs is right for a minimalist theory. I mentioned it above briefly but I would like to stress it here again. A key feature of MP is that it divorces the domains of thematic role assignment and feature checking (and in this regard contrasts with GB-style theories). The former take place inside the lexical shell. Objects typically receive roles in complement positions while external arguments typically get them in a spec-head configuration. Features, in contrast, are generally checked outside the lexical shell in spec-head configurations or adjunction to  $X^0$ s depending on which vintage minimalist theory one consults. This division of grammatical labor suffices a story like that in §1 to get off the ground. Without it, QSIs can only be integrated into the grammar by means of operations like QR. The fact that the present story critically exploits such deep seated MP assumptions speaks to the naturalness of the present approach given minimalist concerns. Combined with its theoretical virtues (mooted in the introduction) and its empirical advantages (displayed in section §2-§4) the viability of an A-chain approach to QSIs makes any resort to QR like operations an unwanted encumbrance to a Minimalist theory.



## Notes

1.

Some of the material in this paper is further elaborated in Hornstein 1995. A somewhat similar approach to QSIs is proposed in Kitahara 1996.

2. See, for example, May 1985 or Chierchia and McConnell-Ginet 1990.

3. For a contrasting vision of how grammars integrate quantifiers see Beghelli and Stowell (1994).

4. This assumption holds in most of the theories of QR in the GB literature. See, for example, May (1985) and Aoun and Li (1993). These two influential works allow (and require) QPs to adjoin to any XP.

5. Of course it will also be necessary to eliminate the other A'-movement operations at LF such as WH-raising. See Hornstein 1995 for some suggestions. For alternatives see Reinhart 1995, Tsai 1994.

6. The clause boundedness of QR has been widely observed. Cf. Aoun and Hornstein 1985, Chomsky 1975, Chierchia 1995, Cooper 1983, May 1977.

7. This point was brought to my attention by Alan Munn.

8. Putting things at LF does not explain why the condition is what it is however. From an MP perspective it is incumbent to understand why the PG licensing condition is what it is; i.e. why do certain gaps require c-commanding local antecedents to license them. This question is addressed in Nunes (1995) where an elegant theory of PGs is developed. Nonetheless, if one accepts that PGs are phenomena to be dealt with grammatically, it appears

that the only level at which this can be achieved in MP is at LF.

9.I emphasize "roughly" for not all case positions are thematic.

10.Chomsky, adverting to Hale and Keyser, suggests that this in turn follows from an interpretation of thematic roles as essentially relational.

11.Uriagereka 1995 argues that MP does not require that LF and PF be levels. The analysis presented below survives using his alternate assumptions.

12.(4) is not a principle of grammar. Rather it is a correspondence rule relating grammatical structure to semantic interpretation. It observes that there is a correlation between semantic scope and syntactic c-command and states what the relation is. Why this relation obtains is an interesting question. A natural answer to this question is that semantic interpretation rules exploit syntactic structure e.g. interpretation is bottom up using LF trees. Why c-command is the relevant notion is addressed in Epstein 1995 and Uriagereka 1995.

13. This means that it rejects the view that "reconstruction" can be reduced to some yet to be specified property of operator-variable structures as Chomsky suggests.

14. There have been persistent claims that the reading in which the object scopes over the subject is in some ways marked. Cf. Chomsky 1995, Pica and Snyder 1994, Reinhart 1995. Even if this is so, which I believe is unclear at best, it is quite easy to force the "marked" readings. Thus, the avored reading of (i) has each poem recited by a different girl, i.e. the object scoping over the subject.

(i) A different girl recited every poem

The substantive points argued for in this section can be made using 'a different N' in place of the simple indefinite.

15.I abstract away from possible V-movement at LF. See §4 for discussion.

16.

Juan Uriagereka has pointed out to me that the fact that the subject is interpreted as scoping over the object in three out of four of the grammatical LFs could be the source of the reported preference for interpreting the subject as having wide scope.

17. Several theories of QSI have this character, e.g. May 1985, Aoun and Li 1993. This said, a grammatical theory is more empirically exposed, and thus more interesting, to the degree that it structurally disambiguates interpretation. Of course, this demand might have other untoward consequences. However, methodologically, it is the one to start with.

18. QNPs inside PPs also enter into QSIs in English. The approach outlined above can be extended to accommodate these cases as well. For details see Hornstein (1995:175-177).

19. It is not chains that have scope but members of chains. This contrasts with approaches in terms of "chain" scope cf. Aoun and Li 1993 and Barss 1986.

20. This is an important point. The structure of case (A-)chains is motivated quite independently of the theory of quantifier scope. The fact that it suffices to handle an interesting range of QSIs as well puts a considerable methodological burden on those who wish to augment the theory of grammar by including QR; a rule whose sole purpose is to integrate quantificational data into linguistic theory.

21. See Aoun and Hornstein 1985 for example.

22. See Higginbotham 1980 for the standard discussion of this.

23. We can interpret this LF as follows. Assume propositions are interpreted post-LF in a Heimian tri-partite fashion, i.e. the proposition is divided into quantifiers, restrictors and nuclei. This puts the quantifiers out on the left, followed by the restrictors and then the nuclear scope. This gives an LF like (17) the interpretation (I).

(i) every x, some y [(musician y) & (x piece of music y knew)] ---> y played x]

24. This is contra Larson. It is consistent with the assumptions in Chomsky (1995, chapter 4).

25. GB theories that determine scope at S-structure similarly predict interactions of scope and binding. The problem with these theories is that they are incapable of accommodating the basic quantifier scope facts unaided. In effect QR like rules are introduced. See Williams 1986, Hornstein and Weinberg 1990 for discussion. More recent proposals in Reinhart 1995 suffer from similar failings see §4 below.

26. I assume in what follows that scrambling is indeed movement to the scrambled position. See Saito 1992, Ura 1994 for discussion. However, there is another option explored in Boscovic and Takahashi 1995 in which the "scrambled" expression is lowered at LF. Their analysis is compatible with the proposal in §1 so I consider the implications of the more standard treatment here.

27. See Aoun and Li 1993 for the most elaborate discussion of this. For a reanalysis of their results in a framework similar to the one outlined in §2 see Hornstein 1995 chapter 8.

28. Data from Boscovic and Takahashi 1995.

29. See Kiss 1991, Szabolcsi 1995. I use examples from the latter.

30. The '\*' indicates that one can get several of these expressions here. Szabolcsi notes that (36) is inspired by work by Beghelli and Stowell.

31. These judgements are somewhat idealized. There appears to be quite a bit of idiolectal variation here.

32. This was first suggested by O. Jaeggli 1982.

33. Barbosa distinguishes French from the other Romance languages. However, French, like the others, cannot scope subjects under objects. This would follow if here too French subjects were in a topic position. If so the various differences that Barbosa records in terms of which French patterns differently from the other Romance languages is not purely a function of topichood. There is one fact that might possibly also follow on the assumption that subjects in French are also topics. French differs from English in prohibiting adverbs between subjects and predicates but allowing them between predicates and objects.

- (i) a. Jean (\*stupidement) a (stupidement) mangé un orange
- b. John (stupidly) was (stupidly) eating an orange
- (ii) a. Jean mange rapidement un orange
- b. \* John is eating quickly an orange

The contrast in (ii) is generally attributed to verb raising in French and its absence in English (Emonds, Pollock). However, there is no currently very good account for why adverbs are forbidden between verbs and subjects in French but allowed there in English. Assuming that French subjects are actually topics can fill this gap. Assume that adverbs cannot modify Topic Phrases. Assume, further, that verbs in French raise to the head of this phrase. This will prevent any adverb from interceding between the verb and the subject in a language like French in which the subject is actually a topic.

34. It does not matter here why this is so and what reasons Chomsky provides in favor of this assumption. Nor does it matter for current purposes whether or not Chomsky is correct and that this theory is preferable to one that moves categories rather than features. I here adopt Chomsky's assumptions to see whether it can support an empirically adequate account of QSl's. The interested reader is referred to Chomsky (1995, Ch. 4).

35. In fact, Chomsky (1995:270ff) goes further. If LF only moves feature bundles then, he argues, the only permissible operation is adjunction. If so, movement to Spec Agr positions is impossible.

36. As the data in §3 all involve overt movement the analysis mooted there remains the same given the revised assumptions in (39).

37. Note that this requires FF(D) to check case, not FF(N). The reason is that it is Ds not Ns that have quantificational force. If scope piggy backs on case chains, therefore, it must be D-features that check case.

38. One is tempted to go further. Epstein 1995 argues that c-command is not a grammatical primitive. It rather reflects the history of derivation of the string. If so, then Spec TP must asymmetrically c-command  $T^0$  as it is adjoined to T' which dominates  $T^0$ . If we assume that the overt relations are preserved at LF, then elements that adjoin to  $T^0$  or adjoin to elements adjoined to  $T^0$  must remain asymmetrically c-commanded by Spec TP. In effect, what covert movement does is allow elements that move at LF to receive c-command domains by participating in the derivational history of the overt elements to which they have adjoined and become parts of. Chomsky has recently suggested (class lectures 1995) that feature bundles actually become integrated into the feature matrix of the head to which they adjoin. If this is so, they cannot have scope greater than that of the head of which they are a part. Combined with Epstein's account, this would restrict the c-command domain of FFs moving at LF to the heads that they combine with as the definition in (39)/(40) states.

39. Chomsky actually proposes that it adjoins to T or v, the verbal element that licenses external arguments. Presumably FF(v) can host the Q feature as well.

40. This is also problematic. As stated it should permit unbounded QR. For example, it should be possible to scope the 'every' phrase over the matrix subject if the matrix T or V has this affix feature.

- (i) Someone said that Bill talked to everyone about Mary

QR should also freely violate the ECP, contrary to fact.

41. The specific version of the Agr-less approach developed here relies on raising V-features at LF. If Vs are not in TP at LF however, (c.f. Lasnik 1995 Hornstein 1995 chapter 5) then there seems little hope of covering the data reviewed here. It seems necessary to raise D/NP expressions out of the VP shell if QSIs are to be accounted for. This can be done by exploiting Agr projections, adjoining to raised Vs, or overtly raising objects prior to Spell Out. If lowering is involved in QSIs, as argued above, there are no other plausible alternatives.

42. It is unclear at this point whether this implies that the derivation converges but it receives a "gibberish" interpretation or that it fails to converge because it receives no adequate interpretation. As the former is conceptually the better option I assume it until there is evidence that the stronger version is required.

43. Hornstein (1995:ch9) argues that there is no principled reason within MP for prohibiting the operations that would yield "lowering" rules in the grammar and that their existence argues against anything like the ECP within the grammar. Chomsky 1993 suggests that lowering/reconstruction is actually a function of being chain interpreted as an operator/variable construction. Chomsky does not say how he envisages relating these two features. The present account denies any intrinsic relationship between A'-chains, their interpretations and reconstruction.

44. A variant of this argument is provided by Lasnik and Saito (1992). See Hornstein (1995:244, n54) for discussion.

45. There is no reason for threatening the mapping hypothesis as a convergence condition. I assume here that LF structures that fail to respect it result in gibberish.

46. These were brought to my attention by Joseph Aoun and Howard Lasnik.

47. The case mismatch in (54a) is irrelevant to the main point as a similar problem arises with (I).

- (i) \* I expect for himself to like John

48. I represent this using AgrO as it is easier to visualize. The same structure can be recreated in an Agr-less structure.

49. Hornstein (1995:ch 8) discusses effects of (50a) in the context of WCO constructions. The anaphoric cases were a big problem for that analysis. These are resolved if (50b) is assumed.

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