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**General Session**

**Special Session**
Fieldwork Methodology

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# Contents

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# Foreword

This monograph contains a number of the talks given at the 41st Annual Meeting of the Berkeley Linguistics Society, held in Berkeley, California, February 7-8, 2015. The conference included a General Session and the Special Session *Fieldwork Methodology*. The 41st Annual Meeting was planned and run by the second-year graduate students of the Department of Linguistics at the University of California, Berkeley: Kenny Baclawski, Anna Jurgensen, Spencer Lamoureux, Hannah Sande, and Alison Zerbe.

The original submissions of the papers in this volume were reviewed for style by Anna Jurgensen and Hannah Sande. Resubmitted papers were edited as necessary by Anna Jurgensen and Kenny Baclawski, and then compiled into the final monograph by Anna Jurgensen. The final monograph was reviewed by Spencer Lamoureux. The endeavor was supported by Alison Zerbe's management of the Berkeley Linguistic Society's funds for publications.

The BLS 41 Executive Committee
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# Asymmetries in Long-Distance QR

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## 1 Introduction

A long-standing hypothesis in Generative Grammar is that reversal of quantifier scope is the result of a movement operation that does not feed the PF interface and is therefore invisible on the surface (May 1977, 1985). This movement is known as Quantifier Raising (QR). Since then, several differences between QR and *wh*-movement have been discovered that require a re-evaluation of the claim that QR is a covert form of Ā-movement. One of the well-known differences is that QR has been claimed to be clause-bounded, unlike *wh*-movement, which can span large distances through successive steps of local movement, as shown in (1). (1a) demonstrates that a finite clause boundary does not block *wh*-movement, whereas the absence of the inverse scope reading in (1b) (cited from Fox 1995: 336) suggests that it does block QR:

(1) a. $[_{\text{CP}}$ Who do you think $[_{\text{CP}}$ $t'_{\text{WH}}$ that $[_{\text{IP}}$ she might have been kissing $t_{\text{WH}}]]]$?

b. One girl said $[_{\text{CP}}$ that $[_{\text{IP}}$ John talked to every boy$]]$. $*\forall > \exists$

Fox (1995, 2000) argues that unlike *wh*-movement, QR is restricted by Scope Economy in addition to standard locality constraints such as phases (Chomsky 2000, 2001). Hence, QR across a finite clause boundary should be possible only if QR to Spec of the embedded CP creates a new scopal reading, in satisfaction of Scope Economy. In (1b), after obligatory QR to a vP node, optional QR to the lower Spec CP fails to satisfy Scope Economy, since this movement crosses a non-scopal complementiser (*that*), and therefore cannot give rise to a new scope interpretation. Long QR directly moving across the matrix subject without using intermediate landing sites is disallowed by locality constraints, too. Thus, Scope Economy along with locality restrictions predicts the unavailability of the inverse scope reading in (1b).

However, in the previous literature, it has been argued that the following two asymmetries could aid scope-shift out of a finite clause: (i) the indicative-subjunctive asymmetry and (ii) the subject-object asymmetry. This raises the question of whether the locality of QR is a consequence of these two factors rather than Scope Economy. If so, it is predicted that QR is clause-bounded only if the embedded clause is a non-subjunctive finite clause and / or the quantifier is in the embedded subject position.

First, subjunctive clauses have been argued to be relatively transparent for syntactic dependencies such as long-distance anaphoric binding and A-movement (see Quer 2006).

*This paper is based on Chapter 5 of my PhD dissertation (Tanaka 2015). I am grateful to Ad Neeleman for his insightful discussions and comments on the content of this paper. I would like to thank Klaus Abels, Matthew Gotham, Kriszta Szendroi, and Robert Truswell for their help and comments. Thanks also to the audiences at the 41st Annual Meeting of the Berkeley Linguistics Society.

Similarly, Wurmbrand (2013) reports that scope-shift out of subjunctive finite clauses is much more effortless than scope-shift out of indicative clauses (see also Farkas and Giannakidou 1996). For example, (1) is scopally ambiguous. The surface scope reading is that what she has requested is that they read not a single linguistics book, whereas the inverse scope reading is that she has made no request for them to read linguistic books. The availability of the inverse scope reading indicates that a negated expression *not a single linguistics book* in the embedded object position can take scope over the subjunctive verb *requested* (Wurmbrand 2013: cited from Kayne 1998: 128):

(2) She has requested that they read not a single linguistics book. *not* > *request*

Second, Kayne (1998) presents a subject-object asymmetry in the (un)availability of the wide scope readings of negation over a subjunctive matrix verb, as shown in (2) and (3) (Kayne 1998: 128-129). Unlike the scope ambiguity in (2), in which a negated expression is an object in the lower clause, if a negated expression is subject in the embedded clause, as in (3), the wide scope reading of the negated expression becomes highly degraded:

(3) She has requested that not a single student read our book. ??*not* > *request*

Kayne points out that the subject-object asymmetry found in (2) and (3) is similar to the asymmetry found in *wh*-movement; for instance, the case of *that*-trace effects on *wh*-movement of the embedded subject to the matrix Spec CP (see Chomsky 1986). The movement approach to scope inversion predicts that scope-shift of a quantifier in the embedded object position over the matrix subject should be easier than scope-shift of a quantifier in the embedded subject position.

If Scope Economy is responsible for the locality of QR, then even QR from an embedded object position in a subjunctive clause like (2) should be restricted and then give rise to a reduction in the acceptability of inverse scope. If it is not, QR of a quantifier in the embedded object position and / or out of a subjunctive clause would be permitted.

This squib reports on an online questionnaire study based on acceptability judgement tasks, which examined (i) the hypothesis that QR is restricted by Scope Economy and therefore clause-bounded and (ii) whether the two asymmetries above play a role in facilitating long-distance QR as independent factors. In conjunction with the two factors, the hypothesis makes the general prediction that QR out of a finite clause should be marginally acceptable at best, since Scope Economy always restricts long-distance QR independently of the effects of these factors.

In order to properly compare the acceptability of long-distance QR with that of local QR of a universal in an object position across an existential in subject position, we tested sentences involved QR of a universal in an embedded clause across an existential in the matrix subject position like (1b). In order to let the participants clarify the (un)availability of an inverse scope (distributive) interpretation, however, we used indefinite subjects with a modifier *different* and universal NPs with a determiner *each*, unlike (1b). It is not suitable to examine long-distance QR by using constructions like (1) and (3), where a negated expression in an embedded clause undergoes QR across a subjunctive matrix verbal predicate, since it is very difficult to construct their local QR counterparts as control items.

## 2 Experiment

### 2.1 Design, Predictions, and Materials

In the study, we manipulated the indicative-subjunctive asymmetry and the subject-object asymmetry as the main factors: *Clause Type* and *Grammatical Function*, respectively. *Clause Type* was either indicative (labeled as Ind) or subjunctive finite clauses (Sub). *Grammatical Function* was either embedded subject (Sb) or embedded object (Ob). The 2 × 2 design resulted in four test conditions, as exemplified in (4):

(4) a. **$\text{Ind}_{\text{Sb}}$:** Last year, a different student said that each professor dated Sue.

b. **$\text{Ind}_{\text{Ob}}$:** Last year, a different student said that Nancy dated each professor.

c. **$\text{Sub}_{\text{Sb}}$:** After the lecture, a different professor suggested that each student talk to Prof Chomsky.

d. **$\text{Sub}_{\text{Ob}}$:** After the lecture, a different professor suggested that Prof Dawkins talk to each student.

Table 1 shows possible rankings of the four conditions that we may find from the outcome in the leftmost column. Depending on which ranking emerges, we can conclude whether the *Clause Type* effect (in the second column from the left) is present or absent, and likewise for the *Grammatical Function* effect (third column), as indicated:

Table 1: Possible findings ($\surd$ = present, × = absent. X < Y indicates that Y is significantly more acceptable than X. X ≈ Y indicates a non-significant difference between X and Y.)

| | **Finding** | ***Clause Type*** | ***Grammatical Function*** |
|---|---|---|---|
| **1** | $\text{Ind}_{\text{Sb}} \approx \text{Ind}_{\text{Ob}} \approx \text{Sub}_{\text{Sb}} \approx \text{Sub}_{\text{Ob}}$ | × | × |
| **2** | $\text{Ind}_{\text{Sb}} \approx \text{Ind}_{\text{Ob}} < \text{Sub}_{\text{Sb}} \approx \text{Sub}_{\text{Ob}}$ | $\surd$ | × |
| **3** | $\text{Ind}_{\text{Sb}} \approx \text{Sub}_{\text{Sb}} < \text{Ind}_{\text{Ob}} \approx \text{Sub}_{\text{Ob}}$ | × | $\surd$ |
| **4** | $\text{Ind}_{\text{Sb}} < \text{Sub}_{\text{Sb}} \approx \text{Ind}_{\text{Ob}} < \text{Sub}_{\text{Ob}}$ | $\surd$ | $\surd$ |

In the first ranking shown in Table 1, QR from either indicative or subjunctive clauses is unacceptable. Whether a universal quantifier undergoes QR from either an embedded subject or object position does not make a difference. If this result emerges, we conclude that both effects are absent. In the second ranking, QR from a subjunctive clause is more acceptable than QR from an indicative clause due to the syntactic transparency of subjunctives. Here, again, from which position a quantifier undergoes QR does not make a difference. In this case, the *Clause Type* effect is present despite the absence of the *Grammatical Function* effect. In the third ranking, QR of a universal from an embedded object position is more acceptable than QR of a universal from an embedded subject position from either a subjunctive or indicative clause. This finding indicates that only the *Grammatical Function* effect is present. Finally, in the fourth ranking, QR from an embedded object position in a subjunctive clause is easiest, and QR from an embedded subject position in an indicative clause should be the most difficult. Meanwhile, QR from an embedded object position in an indicative clause and

QR from an embedded subject position in a subjunctive clause are intermediate between the other two cases, and there is no significant difference between these two. In this case, we conclude that both the effects are present.

The core hypothesis that QR is restricted by Scope Economy predicts that long-distance QR will be less acceptable than local QR, irrespective of other determining factors. In other words, long-distance QR facilitated by the *Clause Type* effect and / or the *Grammatical Function* effect should still be marginal at best. The hypothesis will be falsified if the best case of long-distance QR is as acceptable as local QR.

Suppose, for instance, that if QR out of a subjunctive clause is more acceptable than QR out of an indicative clause, as given in the second ranking in Table 1, but more degraded than local QR ($\text{Ind}_{\text{Sb}} \approx \text{Ind}_{\text{Ob}} < \text{Sub}_{\text{Sb}} \approx \text{Sub}_{\text{Ob}} <$ Local QR). This result would support the hypothesis and the *Clause Type* effect on QR, in that long-distance QR is facilitated by the syntactic transparency of subjunctives but is still constrained by Scope Economy independently from that effect. On the other hand, if QR out of a subjunctive clause is as acceptable as local QR ($\text{Ind}_{\text{Sb}} \approx \text{Ind}_{\text{Ob}} < \text{Sub}_{\text{Sb}} \approx \text{Sub}_{\text{Ob}} =$ Local QR), this would falsify the hypothesis, because Scope Economy would not restrict long-distance QR. In this case, we would conclude that the indicative-subjunctive asymmetry indeed gives rise to the clause-boundness of QR since QR is blocked by non-subjunctive clause boundaries.

The four conditions were examined in two groups of subjects (the subjects for each group were randomly chosen). This grouping was manipulated as an independent between-subjects variable: *Group*. Each condition was tested by five different indicative or subjunctive matrix verbal predicates, and comparison of the Sb and Ob conditions was helped by keeping the set of five indicative and five subjunctive verbs constant per group. In order to reduce the possibility that the choice of embedded verb could give rise to unwanted effects, we used completely different sets of embedded verbs in each group. Each group judged 20 (4×5) test sentences. So there were 40 test sentences in total. In order to control for illusive scope effects (Fox and Sauerland 1996), all the test sentences had an episodic tense and were presented in an episodic context.

In addition to the test items, there were 20 control items. The same set of 20 control items was used for both the groups. Half of the control items involved local QR taking place without a constraint (labeled as CG: Control Good), whereas the other half involved universal quantifiers contained in constructions restricting scope-shift (CB: Control Bad); for example, scope islands (e.g. the Complex NP Constraint), and scope freezing constructions, such as double object constructions (Bruening 2001), and verbs that lexically give rise to scope freezing such as *contain* (Neeleman and Van de Koot 2012).

Each test and control sentence was preceded by two to three line written contexts intended to facilitate an inverse scope reading. A context used for (4a) is given in (5):

(5) *Sue is an attractive post-doc. There are five male professors in the department. Rumours fly. At least one PhD student of each of the professors started one at some point...*

The participants were asked to grade how acceptable each of the sentences was relative to a preceding context by assigning it a numerical grade between 1 (completely unacceptable) - 5 (completely acceptable).

### 2.2 Subjects and Procedure

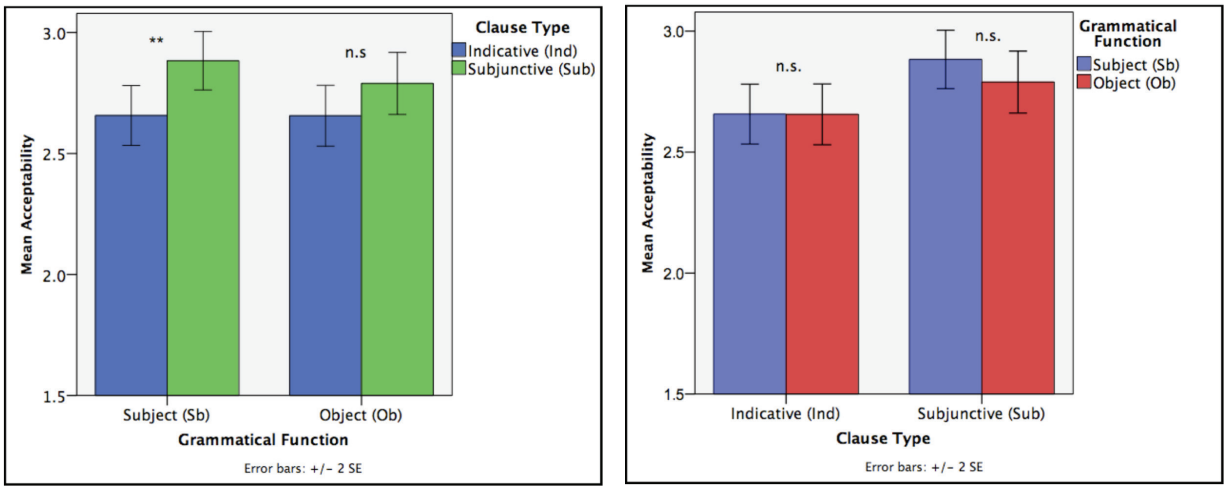
207 adult native speakers of British English participated in the study (Group A: 110 and Group B: 97). All the participants were UCL students. Once the subjects accessed the online questionnaire forms, we asked the subjects about themselves (e.g. age, gender, a linguist or not, etc.). After completing this part, the subjects were asked to read written instructions explaining how to grade each sentence and then allowed to proceed to the test. For each of the subjects, the ordering of 40 questions was completely randomized.

### 2.3 Results

Subjects' responses given as numeral grades between 1 and 5 were analyzed in terms of the mean acceptability of the test sentences in each test condition. LMM (*Group* × *Clause Type* × *Grammatical Function*) revealed a significant main effect of *Clause Type* (F(1, 800.632)=8.303; $p < 0.01$), no reliable effect of *Grammatical Function* (F(1, 800.632)=0.566; $p= 0.452$), and no reliable effect of *Group* (F(1, 800.632)=0.404; $p= 0.525$). No interaction of *Clause Type* and *Grammatical Function* (F(1, 800.632)=0.609; $p= 0.435$), no interaction of *Group* and *Clause Type* (F(1, 800.632)=0.018; $p= 0.893$), and no interaction of *Group* and *Grammatical Function* (F(1, 800.632)=0.006; $p= 0.939$) was observed.

The outcome with regard to *Group* suggests that the different sets of embedded verbs used for each of the groups did not give rise to different response patterns. Hence, we will take a look at the overall mean acceptability rather than the group means. Figure 1 displays the overall test condition means:

Figure 1: Test condition means (error bars represent standard error for each condition). A significance level of each difference between adjacent conditions is indicated as follows: n.s.= non-significant, * = $p < 0.05$, and ** = $p < 0.01$ (adjustment for multiple comparisons: Bonferroni by SPSS).




(a) Indicative vs. Subjunctive

(b) Subject vs. Object

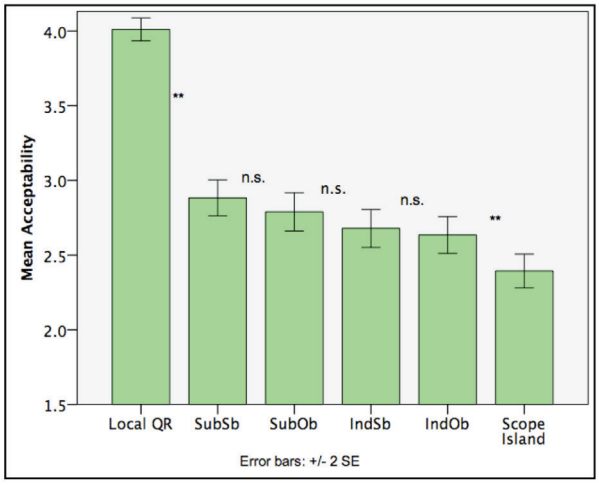
We now analyze the result of the F-test above on the basis of post-hoc multiple comparisons made by LMM. SPSS Bonferroni-adjusted $p$-values for pairwise comparisons are reported below (the conventional level of significance: $p < 0.05$).

The main effect of *Clause Type* is due to the fact that it was easier for the subjects to interpret inverse scope of a universal out of a subjunctive finite clause than out of an indicative clause ($p < 0.01$). As illustrated in Figure 1a, inverse scope out of a subjunctive clause was more likely to be accepted by the subjects than inverse scope out of an indicative clause in Sb condition ($p < 0.01$). The subjects were also able to interpret inverse scope out of a subjunctive clause more easily than that out of an indicative clause in Ob condition, but the difference fell somewhat short of significance ($p = 0.145$) due to Bonferroni Correction.

In contrast with the effect of *Clause Type*, the lack of reliable effect of *Grammatical Function* suggests that the acceptability of QR from the embedded subject position did not differ from that of QR from the embedded object position ($p = 0.452$). As shown in Figure 1b, the subjects were indeed more likely to obtain an inverse scope reading out of a subjunctive when a universal occupied the embedded subject position than when a universal occupied the embedded object position. However, this difference did not reach statistical significance after Bonferroni Correction ($p$= 0.279). Similarly, the location of a universal did not play a role at all in ease of inverse scope out of an indicative clause ($p$= 0.984). These facts resulted in the lack of the interaction between *Clause Type* and *Grammatical Function*.

Next, Figure 2 displays the overall result showing the mean acceptability of each of the test and control conditions:[1]

Figure 2: Test and control condition means (error bars represent standard error for each condition). A significance level of each difference between adjacent conditions is indicated as follows: n.s.= non-significant, * = $p < 0.004$ (0.05 / 12: adjusted by Bonferroni Correction), and ** = $p < 0.001$. The mean acceptability of Scope Freezing involved in the CB control items is excluded and not presented here.




[1]Note that we conducted two-tailed dependent T-tests twelve times for making further post-hoc multiple comparisons on the outcome including the control conditions. Therefore, the level of significance for the multiple paired T-tests has been manually adjusted to $p < 0.004$ (0.05 / 12) by Bonferroni Correction.

A two-tailed dependent T-test revealed that it was much easier for the subjects to accept scope-shift of a universal from an embedded subject position in a subjunctive clause than from an embedded object position in an indicative clause (SubSb versus IndOb: $t(206) = 4.603$, $p< 0.001$).[2] The subjects were more likely to accept scope-shift of a universal from an embedded object position in a subjunctive clause than that from an embedded subject position in an indicative clause, but as shown in Figure 2, the difference failed to reach the Bonferroni-adjusted level of significance (SubOb versus IndSb: $t(206) = 2.116$, $p= 0.036$).

Next, as displayed by Figure 2, the CG items involving local QR and the CB items involving QR out of a scope island function as good benchmarks for the acceptability of the test conditions. A two-tailed dependent T-test revealed that the subjects were more able to obtain inverse scope readings if scope-shift is a local operation not subject to any restriction, than if the universal is embedded in a finite clause (Local QR versus SubSb: $t(206) = 17.915$, $p< 0.001$). On the other hand, it was much harder for the subjects to scope the universal out of a scope island than out of a finite clause (Scope Island versus IndOb: $t(206) = -3.834$, $p< 0.001$). However, surprisingly, blocking effects of scope freezing environments were weaker compared with scope islands ($t(206) = 8.273$, $p< 0.001$) but comparable with SubSb ($t(206) = 1.106$, $p= 0.270$).[3]

## 3 Discussion

In summary, the outcome of the study confirms that Scope Economy (Fox 1995, 2000) indeed restricts long-distance QR out of a finite clause, as demonstrated by the comparison with local QR.

The fact that it was easier for the subjects to interpret the wide scope of a universal out of a subjunctive finite clause than out of an indicative clause confirms that the transparency of subjunctives for syntactic dependencies extends to QR.

In contrast with the effect of finite clause types, the syntactic position of the universal in the finite clause did not impact on the possibility of QR out of finite clauses. Hence, the second ranking in Table 1 mostly follows the outcome, except that QR of the embedded subject in a subjunctive clause was easier than QR of the embedded object in a subjunctive clause.

Critically, as predicted by the core hypothesis, QR from a subjunctive clause was at best marginal, since Scope Economy independently restricts QR even when the operation is facilitated by the syntactic transparency of subjunctives.

Thus, the overall outcome supports the hypothesis in that QR is restricted by Scope Economy. However, the fact that the clause-boundedness of QR was a less severe restriction compared with scope island effects indicates that Scope Economy does not perfectively block QR and therefore must be a weaker restriction on QR than scope islands. The degradedness

[2]The post-hoc multiple comparisons of the test conditions were provided by LMM and explained before on the basis of Figure 1. However, LMM did not run pairwise comparisons between SubOb and IndSb and between SubSb and IndOb.

[3]The scope freezing effect associated with verbs like *contain* is weaker than the scope freezing effect associated with specific syntactic structures like double object constructions ($t(206) = 3.398$, $p < 0.01$). Nonetheless, the scope freezing effect associated with verbs could be detected in comparison with local QR ($t(206) = -9.967$, $p < 0.001$).

of long-distance QR should be compatible with Scope Economy, as long as violations of this constraint lead to a reduction in acceptability rather than to absolute ungrammaticality. Otherwise, it is not possible to explain the contrast between long-distance QR and QR out of scope islands.

Finally, the lack of the subject-object asymmetry in long-distance QR could be construed as evidence against the movement theory of scope-shift, in that movement from the embedded subject position should be syntactically more constrained than movement from the embedded object position. This would be on a par with the *that*-trace effect that creates the subject-object asymmetry observed with *wh*-movement. Aoun et al. (1987) argue, however, that empty categories are subject to two different requirements that restrict their distribution at PF and LF, respectively. They also argue that the *that*-trace effect is a PF phenomenon. The same conclusion is reached by Ackema and Neeleman (2004), who base their argument on the fact that the *that*-trace effect disappears when an adverbial intervenes between *that* and a subject-trace, as originally noted by Culicover (1993: 557):

(6) Robin met the man {Op$_i$ that / who$_i$} Leslie said that *(for all intents and purposes) $t_i$ was the mayor of the city.

If this work is on the right track, it is actually predicted that QR, an LF phenomenon, should not display the *that*-trace effect.

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