Non-local Attachment of Clauses: Evidence from ASL[*]

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Abstract: We argue that some parenthetical-like clauses in ASL can take both intermediate and maximally wide scope outside of *if*-clauses and attitude verbs. Specifically, we investigate embedded coordinations, of the form … *SAY [IF Clause-1 Clause-2 PLUS Clause-3, …]*, and argue that Clause-2 may in some cases be interpreted with wide and intermediate scope (above *SAY*, or between *SAY* and *IF*). The key to our paradigm is that we mark the scope of *IF* and *SAY* with non-manual markers (Brow Raise and/or Role Shift); by exempting Clause-2 of these non-manuals, we force it to scope out of the relevant operator, including when it might be expected to create a syntactic island. Wide scope replicates the behavior of parentheticals and appositives in other languages. Intermediate scope is particularly interesting because it mirrors with full clauses the behavior predicted by some theories for some English appositives (Schlenker 2010, to appear); the ASL data might thus lend support to the existence of a mechanism of high attachment *in situ* (McCawley 1998); alternatives in terms of island-escaping covert movement or in situ indexing face significant challenges.

Keywords: non-manuals, appositives, parentheticals, supplements, scope, bidimensionalism

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1   Introduction

1.1   High attachment of parentheticals and appositives?

McCawley 1998 proposed that English appositive relative clauses are attached at the matrix level despite being apparently embedded.[2] His proposal is illustrated in (1), which gives rise to a discontinuous constituent *sold a violin to Itzhak Perlman* (McCawley's analysis countenanced ternary branching for ditransitive verbs; this assumption is immaterial to the issue at hand).

(1)
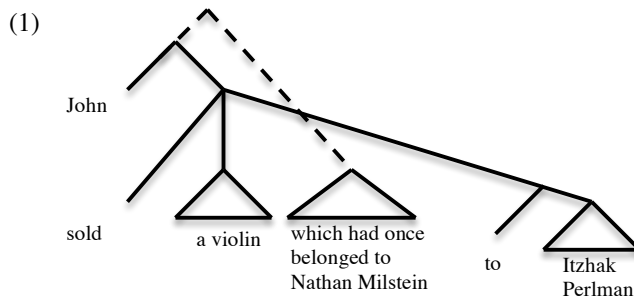
McCawley motivated his proposal by patterns of ellipsis resolution, as in (2):

(2)   John sold a violin, which had once belonged to Nathan Milstein, to Itzhak Perlman, and Mary did too.

As McCawley noted, the second sentence does not imply that the violin that Mary sold to Perlman had once belonged to Nathan Milstein. On the assumption that ellipsis targets a constituent, this suggests that the appositive can be attached outside the constituent which is the antecedent of the elided VP, with the result that the VP can be copied without the appositive.

An alternative was articulated by Potts 2005 and subsequent work. First, the 'high scope' behavior of appositives is not due to an exceptional syntax but to an exceptional semantics: their semantic contribution is made in a separate (non-at-issue) dimension of meaning, which just fails to interact scopally with the 'at-issue' dimension, hence the wide scope behavior. Second, ellipsis resolution might be a *semantic* operation, one that might ignore elements that are in Potts's non-at-issue dimension. If so, McCawley's facts might not speak against Potts's in situ analysis of appositive clauses, but rather *for* Potts's bidimensional semantics (see Potts et al. 2009 for a related discussion pertaining to expressives that can be disregarded under ellipsis).

In the spirit of McCawley's analysis, Schlenker 2010, 2013b, to appear argued for the hypotheses in (3) for appositive relative clauses in English and other languages; while it adopts McCawley's analysis for clausal parentheticals, it allows for more liberal attachment possibilities for appositive relative clauses: these are allowed to attach not just to the matrix node, but also to any propositional node that dominates their surface position.

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[2] Schlenker 2010, 2013b proposes a theory in which matrix attachment is just one possibility: attachment to intermediate propositional nodes is possible as well. It seems to us that McCawley 1998 took high attachment to be the only possibility, as suggested by his remark that "a nonrestrictive clause accomplishes a separate **speech act** from the sentence in which it appears" (p. 448), and that "this sketch is neutral with regard to whether the two Ss [i.e. the main clause and the appositive -PS] even make up a constituent".

(3) **Non-local attachment possibilities for clausal parentheticals and appositive relative clauses**
    a. An appositive relative clause can be attached to any propositional node that dominates its surface position (with a preference for highest node attachment).
    b. A parenthetical clause can only be attached to the highest node.
    c. While narrow scope readings of appositives are usually dispreferred, they can be forced by certain grammatical constraints, such as the licensing of the counterfactual imperfect under *if* (see (4)a); doing so with a parenthetical is impossible (see (4)b).

A large part of the empirical debate centered on the availability of narrow scope readings of appositives, illustrated in (4)a: a counterfactual imperfect in the appositive forces it to be interpreted in the scope of the *if*-clause; this option is unavailable in the parenthetical in (4)b, which has matrix scope.

(4) *Context:* someone made a big mistake at the Department.
    a. If tomorrow I called the Chair, who in turn called the Dean, then we would be in deep trouble.
    ≠> If I called the Chair, he would call the Dean
    b. *If tomorrow I called the Chair (he in turn called the Dean) then we would be in deep trouble.
    c. If tomorrow I called the Chair and he in turn called the Dean, then we would be in deep trouble.
    ≠> If I called the Chair, he would call the Dean (Schlenker 2013b)

Poschmann, to appear, provides experimental evidence from German to the effect that even without morphological markers forcing narrow scope, such readings are available in some contexts.

Still, an important question was left open: is the liberal syntactic mechanism in (3)a real and independently motivated? It allows an appositive to attach (possibly at some cost) to any propositional node that dominates its surface position. While narrow and wide scope have been discussed in the literature, there are few attempts at testing intermediate scope, in large part because the relevant sentences tend to be rather complicated (see Schlenker 2013 for some examples).

We investigated sentences in ASL (American Sign Language) that might provide evidence for such liberal attachment possibilities. By using non-manual markers to indicate the scope of the target clauses, we construct examples in which a clause is attached with intermediate scope; as we will see, the mechanism in (3)a is a serious contender to explain the data, and alternative mechanisms face non-trivial challenges.

1.2 *Elicitation methods and transcription conventions*[3]

ASL data were elicited from a native signer (a Deaf child of Deaf, signing parents) using the 'playback method' (described for instance in Schlenker et al. 2013, Schlenker 2014), with repeated acceptability judgments and inferential (i.e. semantic) judgments (on separate days) on videos involving minimal pairs. We also used a 7-point scale to assess (i) acceptability (with 7 = best) and also (ii) the strength of the inferences triggered, with 1 = no inference and 7 = strongest inference.[4]

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[3] This discussion of elicitation methods and transcription conventions is also similar to one that appears in Schlenker 2018.

[4] The playback method involves two steps (see for instance Schlenker 2018). First, the sign language consultant signs sentences of interest on a video, as part of a paradigm (e.g. often with 2 to 8 sentences) signed as minimal pairs. Second, the consultant watches the video, provides quantitative acceptability ratings and inferential judgments, enters them in a computer, and redundantly signs them on a video. The second step can be repeated on other days. This method has the advantage of allowing for the precise assessment of minimal pairs (signed on the same video), in a quantitative, replicable fashion; its obvious limitation is that it solely assesses one individual's idiolect. Still, the repetition of the task makes it possible to assess the stability of the judgments; and if necessary, this method could be turned into an experimental

For readability, in normal cases only average judgments are provided. Acceptability judgments appear as superscripts before the sentences. Complete quantitative judgments are given when there is more than a 2-point difference in the judgments obtained for a given sentence. Unless otherwise noted, sentences that appear in the same numbered example were assessed as part of the same video. Raw data (obtained during elicitation sessions) are provided in the Supplementary Materials. Notations such as *ASL, 34, 1550, 3 judgments* indicate that the relevant sentences appeared in ASL video 34, 1550, and that averages are computed on the basis of 3 judgments. Inferential scores of 5 or more are highlighted (to indicate relatively strong inferences).

Sign language sentences are glossed in capital letters, as is standard.[5] Expressions of the form *WORD–i*, *WORD$_i$* and *[…EXPRESSION…]$_i$* indicate that the relevant expression is associated with the locus (= position in signing space) *i*. A suffixed locus, as in *WORD–i,* indicates that the association is effected by modulating the sign in such a way that it points towards locus *i* (this is different from the addition of a pointing sign *IX-i* to a word); a subscripted locus, as in *WORD$_i$* or *[…EXPRESSION…]$_i$*, indicates that the relevant expression is signed in position *i*. Locus names are assigned from right to left from the (right-handed) signer's perspective; thus when loci *a*, *b*, *c* are mentioned, *a* appears on the signer's right, *c* on the left, and *b* somewhere in between. *IX* (for 'index') is a pointing sign towards a locus, while *POSS* is possessive; they are glossed as *IX-i* and *POSS-i* if they point towards locus *i*; the numbers *1* and *2* correspond to the position of the signer and addressee respectively (*IX-i* is a standard way of realizing a pronoun corresponding to locus *i*, but it can also serve to *establish* rather than to *retrieve* one). Agreement verbs include loci in their realization – for instance the verb *a-ASK-1* starts out from the locus *a* and targets the first person locus *1;* it means that the third person individual denoted by *a* asks something to the signer. When no locus is assigned to a Noun Phrase, this is because it was signed in neutral space (in front of the signer, sometimes towards the dominant side).

We only seek to encode three non-manuals: Role Shift, Brow Raise, Brow Lowering (also called 'raised eyebrows' and 'furrowed eyebrows' respectively). Role Shift is notated as *RS$_i$* if the signer shifts his body to adopt a perspective associated with locus *i*. Brow Raise and Brow Lowering are iconically notated as ^ and ~ respectively, as in Schlenker et al. 2016.[6] They appear above the beginning of the string they co-occur with, with a line marking the span of the non-manual. (We occasionally repeat *RS$_i$*, ^ and ~ at the end of the line to forestall ambiguities in case of line breaks.)

2   High and intermediate attachment of clauses under Attitude Role Shift

2.1   *Target structures and non-manuals*

In (4)a above, narrow scope of the appositive was forced by the counterfactual imperfect, which is only licensed in the scope of an *if*-clause. We use a different mechanism, non-manuals, to force different attachment sites in ASL. Sandler and Lillo-Martin 2006 note that "some parentheticals are found interrupting sentences, including WH-questions", and

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one in the future, assessing the same videos with other signers.

[5] This paragraph recapitulates transcription conventions that are found elsewhere, and it is thus similar to homologous paragraphs in the literature.

[6] Role Shift and Brow Raise are typically easer to perceive, but Brow Lowering may be much more subtle, and our transcriptions are correspondingly less secure in the latter case.

that "when such an element is used, it is clear that the non-manual markings must change" (p. 469).[7] We investigated related facts with respect to two non-manuals: Brow Raise, which can appear on an *if*-clause (and more generally in topic- and focus-related constructions); and Attitude Role Shift, an operation whereby the signer shifts his or her body to adopt the perspective of a character. These non-manuals have the advantage of spanning an entire string of words; as a result, signing one subgroup *without* the non-manual helps indicate that it should be exempted from the scope of the relevant operator.

Schematically, we will consider the structures in (5), where & corresponds to the word *PLUS* (a standard way to mark negation in ASL), and where absence of Brow Raise (^) leads to the insertion of Brow Lowering (~). (Our discussions will not determine whether the absence of Role Shift and Brow Raise is sufficient to trigger the relevant readings, or whether Brow Lowering plays a role *per se*; but this won't affect our general point that non-manuals make some wide and intermediate scope readings clearly available.[8])

(5)   a.   RS_i_____
                            ^_____
            … SAY   IF Clause-1   **Clause-2**   & Clause-3, …

      b.   RS_i_____
                            ^_____   ~_____   ^_____
            … SAY   IF Clause-1   **Clause-2**   & Clause-3, …

      c .   RS_i_____   RS_i_____
                            ^_____   ~_____   ^_____
            … SAY   IF Clause-1   **Clause-2**   & Clause-3, …

The clause of interest is Clause-2 (boldfaced): it appears under Role Shift and Brow Raise in (5)a, under Role Shift but without Brow Raise in (5)b, and it is exempted from both in (5)c, with Brow Lowering replacing Brow Raise when the latter is missing.

Some authors have argued that ASL Attitude Role Shift involves context shift in attitude reports, with additional iconic conditions that have not been described for context shift in spoken language (Quer 2005, 2013; Schlenker 2017a,b); other authors have taken ASL Attitude Role Shift to be a species of quotation (Davidson 2015). The choice will matter a bit later. As for Brow Raise, it has been variously analyzed in prosodic terms (as a sign language counterpart of a high boundary tone, e.g. Sandler 2011), or in morphosyntactic or semantic terms (Neidle et al. 2002, Wilbur and Patschke 1999, Wilbur 2011); the choice won't matter, as we solely use Brow Raise to indicate whether a word is or isn't dependent on *IF* (see Quer 2016 for a useful survey of theories of Brow Raise); inferential judgments will show that the attempt is indeed successful. Brow

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[7] As Sandler and Lillo-Martin 2006 note, "if the parenthetical indicates the speaker's viewpoint, there will be a body shift as well as a change in facial expression to the signer's opinion, with a return to the original position and WH-question expression following the parenthetical", as shown in their example in (i):

(i)   _____whq   _____shift   _____whq
           WHY IX-a STUDENT –   STUDENT TRUE^BUSINESS HUH –   FAIL CLASS (WHY)
           'Why did that student - if he can be called a student - fail the class?'

[8] Liddell 1986 argues that the consequent of ASL conditionals is marked by another non-manual, head thrust. Since we do not aim to provide an exhaustive transcription of non-manuals, and this one does not interact with our goals (since the action will be in the antecedent clause), we disregard this point in what follows.

Lowering has been studied in less detail. While Wilbur 2000 takes it to "occur uniquely and exclusively with wh-questions and embedded wh-complements", Liddell 1986 finds (a version of) Brow Lowering in some examples in which a "conditional is followed by another clause that describes what will occur if the condition is met, and in which the eyebrows are lowered". He adds with respect to these data that Brow Lowering "is what signers do when the second clause is to be signed without raised brows", a description that seems consistent with our data (we occasionally find Brow Lowering on wh-words as well). Still, we won't take a stand on the correct analysis of the non-manuals we use, since our goal is not to understand them in detail, but rather to use them in order to bring out readings that might be otherwise unavailable or hard to access.

In ASL, *and* can be expressed with the words *AND* or *PLUS*, but parataxis suffices to express ('asyndetic') conjunction, and thus a narrow scope reading is expected to obtain in (5)a. By exempting Clause-2 from Brow Raise and Role Shift, we can force it to be interpreted outside the scope of the *IF*-clause and of the attitude report. This just replicates the behavior of appositives and parentheticals in English (e.g. McCawley 1998, Potts 2005, Schlenker to appear). What is more interesting is what happens when Clause-2 is exempted from Brow Raise but not from Role Shift: it then takes scope outside of the *IF*-clause but within the attitude report. This behavior is not expected for English parentheticals, which only take matrix scope, and it is expected in only limited cases for appositive relative clauses, and only on some theories (Schlenker, to appear).

2.2 Basic phenomenon

The basic phenomenon is introduced in (6), with Clause-2 corresponding to *PEOPLE LIKE IX-a*, where *IX-a* denotes John. We note that this is a fully normal (but possibly parenthetical) clause, and certainly not a restrictive relative clause, which would not be expected to modify a proper name.[9] We include with the paradigm the strength of crucial inferences, assessed by way of the questions in (7). These were designed to determine whether Clause-2 is interpreted (i) outside the *IF*-clause but within the scope of the attitude verb, or (ii) outside the scope of the attitude verb (and thus also outside the *IF*-clause).

(6)   *Context:* There is a research competition by pairs.

ANN$_b$ TELL-1
'Ann tells me that

RS$_b$_____
^_____ ^_____ ^_____
a. [7]   IF IX-1 WORK WITH JOHN$_a$ PEOPLE LIKE IX-a PLUS GOOD INTERACTION
           if I work with John, and people like him, and there is a good interaction

RS$_b$_____
^_____ ~_____ ^_____
b. [7]   IF IX-1 WORK WITH JOHN$_a$ PEOPLE LIKE IX-a   PLUS GOOD INTERACTION
           if I work with John (she says that people like him) and there is a good interaction

RS$_b$_____   RS$_b$_____
^_____ ~_____ ^_____
c. [5,7]   [IF IX-1 WORK WITH JOHN$_a$][INFORM-2 PEOPLE LIKE IX-a][PLUS GOOD INTERACTION]
           if I work with John (I inform you that people like him) and there is a good interaction

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[9] In addition, as summarized in Wilbur 2017, ASL restrictive relative clauses are expected to involve Brow Raise, as well as pronominal *SELF* or a post-clausal *THAT* (Wilbur 2017 and Liddell 2003 also mention tensed lips and back head tilt).

_____RS_b

IX-1 WILL WIN.
I will win.' (ASL 35, 0462, 3 judgments)

Inferential judgments:	John is in fact popular	Ann thinks that John is popular
a.	1	2.3
b.	1	**6.7**
c.	**6.3**	1.7

(7)   Do you derive the inference that (i) John is in fact popular? (ii) Ann thinks that John is popular? (Indicate with which strength you derive the relevant inference: 1 = no inference; 7 = strongest inference)

In (6)a, Clause-2 is signed under Role Shift and with Brow Raise associated with the *IF*-clause. We thus expect that the clause is interpreted as a conjunct in the scope of both operators; this explains why we neither obtain the inference that John is smart nor that Ann believes that he is. In (6)b, Clause-2 is exempted from Brow Raise and hence from the *IF*-clause, but not from Role Shift, and we obtain the inference that Ann thinks that John is smart. In (6)c, Clause-2 is exempted both from Role Shift and from Brow Raise, and we obtain the inference that John is in fact smart.

The sentence in (8)a provides a control that shows that Brow Raise alone isn't enough to suspend the inference that the attitude holder believes Clause-2. Specifically, when Clause-2 appears under Role Shift and Brow Raise, but in a separate clause *outside* the conditional, its content is assigned to the attitude holder, with no trace of a conditional meaning. On the other hand, this separate instance of Role Shift does attribute these further thoughts/claims to the attitude holder (rather than to the signer).

(8)   Context: There is a research competition by pairs.
ANN_b TELL-1
'Ann tells me that
RS_b_____
^_____   ^_____   _____
IF IX-1 WORK WITH JOHN_a PLUS [GOOD INTERACTION],   IX-1 WILL WIN.
if I work with John and there is a good interaction, I will win.

                    _____RS_b
                    ^_____
a. [7]   PEOPLE LIKE IX-a.
She says that people like him.'

                    _____RS_b
                    ~_____
b. [7]   PEOPLE LIKE IX-a.
She says that people like him.'

                ~_____
c. [7]   INFORM-2 PEOPLE LIKE IX-a.
I inform you that people like him.'
(ASL 35, 0464, 3 judgments)

Inferential judgments:	John is in fact popular	Ann thinks that John is popular
a.	1	**6**
b.	1	**6.3**
c.	**7**	1.3

2.3   *Analytical directions*[10]

The examples with intermediate scope interpretation schematically represented in (5)b and illustrated in (6)b could be analyzed along two directions. One is that a *syntactic operation* is responsible for intermediate scope: this could involve the operation posited for appositives in (3)a, whereby a clause can be attached to a higher propositional node; or it could involve an operation of covert movement. Alternatively, a *pragmatic operation* might be responsible for the impression that Clause-2 is interpreted within the scope of the attitude verb.

This second line was explored Potts 2005, who observed that his claim that supplements are never semantically embedded has apparent counterexamples. Thus in the German sentence in (9)a, the appositive is interpreted as if it were in the scope of the attitude verb. In addition, the appositive verb takes the 'Konjunktiv I', a mood that is characteristic of reported speech in German (see Fabricius-Hansen and Sæbø 2004).

(9)   a. Juan   behauptet,   dass   Maria,   <u>die</u>   <u>sehr</u>   <u>schwach</u> <u>sei</u>,
          Juan   *maintains*   *that*   *Maria*   *who*   *very*   *weak*   *be*.konj
       krank   sei.
       sick   *be*.konj
       'Juan maintains that Maria, who is supposed to be really weak, is sick.' (Potts 2005)

       b. Juan   behauptet,   dass   Maria   krank   sei.   <u>Sie</u>   <u>sei</u>
       Juan   *maintains*   *that*   *Maria*   *sick*   *be*.konj   *She*   *be*.konj
       <u>sehr</u>   <u>schwach</u>.
       very   *weak*
       'Juan maintains that Maria is sick. According to him, she is very weak.' (Potts 2005)

But as Potts points out, this is not a genuine counterexample to his analysis: as (9)b shows, an independent clause in the Konjunktiv I can be understood *as if* it were semantically embedded, possibly by a mechanism akin to 'modal subordination' or 'perspectival shift'. Harris and Potts 2009a,b argue with experimental means that such a mechanism is also available in English. Thus their subjects accepted to attribute to the agent (= Sid, rather than the speaker) the content of the nominal appositive *a complete waste of time* both in (10)a and in (10)b.

(10)   My brother Sid hates school.
          a. He says that he puts off his homework, <u>a complete waste of time</u>, to the last minute.
          b. He puts off his homework, <u>a complete waste of time</u>, to the last minute.

The idea, then, is that these appositives fail to interact scopally with operators, but that an independent, possibly pragmatic operation of perspectival shift blurs the picture.

2.4   *Embedding under* **none**-*type quantifiers*

One key property of perspectival shift as a pragmatic operation is that it should not take scope under further operators. But we will now show that precisely this type of scopal interaction is found with intermediate scope clauses in ASL, suggesting that their behavior should be explained by the syntax/semantics, not by the pragmatics.

In (11), an *IF*-clause is embedded under Role Shift, which is itself embedded under a *none*-type quantifier, *NO GOOD STUDENT*. The semantic questions in (12) help diagnose the scope of Clause-2, with quantitative results that appear in the table in (12).

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[10] We follow in part the discussion of Schlenker, to appear.

(11) *Context:* There is a research competition by pairs.
[NO GOOD STUDENT]$_b$ a-TELL-1
'No good student tells me that

RS$_b$_____
^_____ ^_____ ^_____
a. ^{6} IF IX-1 WORK WITH JOHN$_a$ PEOPLE LIKE IX-a PLUS   GOOD INTERACTION,
if he works with John, and people like him, and there is a good interaction,

RS$_b$_____
^_____ ~_____ ^_____
b. $^{6.2}$ IF IX-1 WORK WITH JOHN$_a$ PEOPLE LIKE IX-a PLUS   GOOD INTERACTION,
if he works with John (adding that people like him) and there is a good interaction,

RS$_b$_____   _____
^_____ ~_____ ^_____
c. $^{5.2}$ IF IX-1 WORK WITH JOHN$_a$ INFORM-2 PEOPLE LIKE IX-a PLUS   GOOD INTERACTION,
if he works with John (I inform you that people like him) and there is a good interaction,

_____RS$_b$

IX-1 WILL WIN.
he (= the student) will win.'
([35, 0468](#), 4, judgments)

Meaning contribution of *PEOPLE LIKE IX-a*:	**Wide scope** John is in fact popular	**Intermediate scope** No good students said that John is popular, and that if they were to work well with him, they would win.	**Narrow scope** No good students said that if John is popular and they were to work well with him, they would win
a.	1	2	**6**
b.	1	**6.7**	1
c.	**6.5**	1.7	1

(12) What is the meaning contribution of *PEOPLE LIKE IX-a*? (i) that John is in fact popular [according to the signer]; (ii) that no good students said that John is popular, and that if they were to work well with him, they would win; (iii) that no good students said that if John is popular and they were to work well with him, they would win; (iv) something else (if so, say what). Indicate with which strength you derive the relevant inference: 1 = no inference; 7 = strongest inference.

As expected, Clause-2 (= *PEOPLE LIKE IX-a*) displays an unexceptional, narrow scope behavior in (11)a. In (11)c, which is a bit less acceptable, it displays a wide scope behavior, as parentheticals do in English. What is of interest is that in (11)b Clause-2 is interpreted within the scope of *NO GOOD STUDENT* and of the attitude verb (because of Role Shift), but outside the *IF*-clause. Since Role Shift is in this case embedded under a negative quantifier, a pragmatic operation of perspectival shift cannot be responsible for the observed reading: a genuine scopal interaction is needed.

In the literature on intermediate scope appositives, it is not entirely clear whether these are interpreted as being at-issue, or give rise to some projection phenomena. Schlenker, to appear argues in favor of such effects: "although *wonder* introduces an intensional construction, [(13)a] leads to a relatively strong inference that DSK will meet with the judge next Tuesday, whereas no such effect is found in [(13)d]. If these data are correct, they suggest that some [appositives] that are in the semantic scope of some operators can give rise to projection phenomena." Schlenker, to appear further takes these projection phenomena to display characteristic properties of presupposition projection (although he takes supplements to differ sharply from presuppositions in their epistemic conditions: supplements should make a non-trivial contribution, presuppositions should make a trivial contribution).

(13) *Context:* Former French minister DSK is thought to be in discussions to settle the civil lawsuit against him. The speaker is talking to a journalist who has information about how the procedure will unfold.

I will be wondering next Wednesday whether DSK

a. , who met with the judge the day before,
=>(?) DSK will meet with the judge next Tuesday
b. ? (he met with the judge the day before)
c. (he will have met with the judge the day before)
=> DSK will meet with the judge next Tuesday
d. met with the judge the day before and
≠> DSK will meet with the judge next Tuesday

agreed to a settlement.

In the scope of *none*-type quantifiers, presuppositions are usually thought to project universally (Chemla 2009), although some have argued for existential projection instead (Beaver 2001). To assess the existence of projection effects (reminiscent of presuppositions) in (11)b, we added *post-hoc* another judgment task involving the questions in (14). No universal or even existential projection is observed in (11)b, suggesting that the contribution of Clause-2 is at-issue even when it has intermediate scope.[11]

(14) Do we get an inference that (i) every good student (ii) at least one good student says/thinks people like John? (1 = no inference; 7 = strongest inference) (2 judgments)

Projection	Universal projection Every good student says/thinks people like John	Existential projection At least one good student says/thinks people like John
a.	1	1
b.	1	1.5
c.	2	4

2.5   *Summary and limitations*

In sum, we have seen that Clause-2 in (5) can have a narrow scope, a wide scope or an intermediate scope interpretation. In our initial example in (6)b, the data are structurally similar to those that lead Potts 2005 to posit a pragmatic operation of perspectival shift for German (as in (9)) and other languages. But in our ASL data, intermediate scope behavior continues to arise upon embedding under *none*-type quantifiers as in (11)b, which suggests that genuine scopal interaction is obtained.

Our data have one key limitation, however: some theories, such as Davidson 2015, take Attitude Role Shift to be a species of quotation. Schlenker 2017a,b argued against a purely quotational theory, in part on the basis of *wh*-extraction data (which are complex to interpret), and in part due to the availability of Role Shift outside of attitude reports. But it is fair to say that a quotational analysis is a serious contender. If so, the 'intermediate scope' phenomena we discussed are in fact root phenomena within quoted (role-shifted)

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[11] The stronger endorsement of the inferences in (11)c seems to be due to the wide scope interpretation of Clause-2 combined with plausibility reasoning. As the consultant wrote in the first of the two additional judgments bearing on these questions, "it is likely that the students would know how the others feel, but not necessarily" ([JL 18.10.19]).

clauses. This is an important limitation, because on this view our findings do not support the controversial part of the proposal in (3): wide scope readings of parentheticals in root sentences were already known to be a grammatical possibility in several languages, and and it need not be surprising that this behavior can be replicated in quoted sentences.

3   High and intermediate attachment of clauses under normal indirect discourse

To address this problem, we now extend our findings to ASL examples that are uncontroversially in indirect discourse, and yet continue to allow Clause-2 to display an intermediate scope behavior. This will genuinely establish the controversial part of the proposal in (3).

3.1   The basic phenomenon without Role Shift

The basic phenomenon is illustrated in (15), which has no Role Shift, and an overt complementizer *THAT*.[12]

(15)   *Context:* There is a research competition by pairs.
         ANN$_b$ TELL-1   THAT
         'Ann tells me that

         ^_____
         a. [7] IF IX-b WORK WITH JOHN$_a$ PEOPLE LIKE IX-a   PLUS   GOOD INTERACTION
         if she works with John, people like him, and there is a good interaction,

         ^_____ ~_____ ^_____
         b. [7] IF IX-b WORK WITH JOHN$_a$ PEOPLE LIKE IX-a   PLUS GOOD INTERACTION
         if she works with John (she says that people like him) and there is a good interaction,

         ^_____ ~_____ ^_____
         c. [6.7] IF IX-b WORK WITH JOHN$_a$ INFORM-2 PEOPLE LIKE IX-a] PLUS GOOD INTERACTION
         if she works with John (I inform you that people like him) and there is a good interaction,

         _____
         IX-b WILL WIN.
         she will win.'
         (ASL, 35, 0352, 3 judgments)

Inferential judgments:	John is in fact popular	Ann thinks that John is popular
a.	1.7	3
b.	2.3	**6**
c.	**6.3**	2

The narrow scope case in (15)a is as before. In earlier paradigms, the interruption of Role Shift was enough to signal that Clause-2 was endorsed by the signer, but this mechanism is inapplicable in standard indirect discourse. To bring out the wide scope reading, we include the word *INFORM-2* ('I inform you that') right before Clause-2 (as was already the case in (11)): this makes clear that Clause-2 is endorsed by the signer. What is of interest for our purposes is that in (15)b Clause-2 is exempted from Brow Raise and is

---

[12] Wilbur 2017 writes that "a sentence with an overt 'that' complementizer is usually branded as 'Englishy' by native signers, reflecting the influence of the dominant spoken language; the literature suggests similar situations across better-studied SLs". There is no trace of this effect in our consultant's judgments: not only are the sentences rated very highly, but the consultant did not make use of the option (which is systematically available in our elicitation material) of writing 'E' for 'English influence'.

interpreted outside the *IF*-clause, but still within the scope of the attitude operator: this is the intermediate scope behavior we were looking for.

In the absence of Role Shift, the control paradigm in (16) involves a second sentence that is uniformly interpreted from the signer's perspective. Unsurprisingly, adding Brow Raise on it fails to yield a conditional meaning: if Brow Raise on the second sentence yielded an *if*-clause, it would be one without a consequent.

(16)   *Context:* There is a research competition by pairs.

                ^_____   _____
ANN$_b$ TELL-1 THAT IF IX-b WORK WITH JOHN$_a$ PLUS GOOD INTERACTION,   IX-b WILL WIN.
'Ann tells me that if she works with John and there is a good interaction, she will win.

      ^_____
a. [7] PEOPLE LIKE IX-a.
People like him.'

      ~_____
b. [7] PEOPLE LIKE IX-a.
People like him.'

       ~_____
c. [7] INFORM-2 PEOPLE LIKE IX-a.
I inform you that people like him.'
(ASL **35, 0354**, 3 judgments)

Inferential judgments:	John is in fact popular	Ann thinks that John is popular
a.	**6.3**	2.3
b.	**6.3**	2
c.	**7**	1

3.2   *Embedding under* **none**-*type quantifiers*

The same facts can be replicated under *none*-type quantifiers, as in (17). Here too, the wide scope interpretation of Clause-2 in (17)c is forced by the addition of *INFORM-2* to make it clear that it is endorsed by the signer. Semantic questions were the same as in the quantified examples with Role Shift discussed in (11). Importantly, Clause-2 in (17)b is interpreted outside the scope of the *IF*-clause but within the scope of the attitude report and of *NO GOOD STUDENT*, making it implausible that a pragmatic operation of perspectival shift is responsible for this scopal interaction.

(17)   *Context:* There is a research competition by pairs.

NO GOOD STUDENT TELL-1 THAT
'No good student tells me that
      ^_____
a. [6.3] IF IX-a WORK WITH JOHN$_b$ PEOPLE LIKE IX-b PLUS THE-TWO$_{a,b}$ GOOD INTERACTION
if he works with John, people like John, and the two of them have a good interaction,
      ^_____ ~_____^_____
b. [6.3] IF IX-a WORK WITH JOHN$_b$ PEOPLE LIKE IX-b PLUS THE-TWO$_{a,b}$ GOOD INTERACTION
if he works with John (adding that people like John), and the two of them have a good interaction,

      ^_____ ~_____^_____
c. [6.3] IF IX-a WORK WITH JOHN$_b$ INFORM-2 PEOPLE LIKE IX-b PLUS THE-TWO$_{a,b}$ GOOD INTERACTION
if he works with John (I inform you that people like John), and the two of them have a good interaction,

_____
IX-a WILL WIN.
he (= the student) will win.'

(ASL, **35, 0342**, 3+2 judgments[13])

Meaning contribution of *PEOPLE LIKE IX-a*:	**Wide scope** John is in fact popular	**Intermediate scope** No good students said that John is popular, and that if they were to work well with him, they would win.	**Narrow scope** No good students said that if John is popular and they were to work well with him, they would win
a.	1	2.7	**5.7**
b.	1.7	**6.3**	1
c.	**6.7**	2	1

As was the case for (11), we added a judgment task (identical to that in (14)) to determine whether an inference projected to the effect that (i) every good student, or (ii) at least one good student says/thinks people like John. No evidence of projection was found in the crucial, intermediate scope case in (17)b.

(18) Do we get an inference that (i) every good student (ii) at least one good student says/thinks people like John? (1 = no inference; 7 = strongest inference) (2 judgments)

Projection	**Universal projection** Every good student says/thinks people like John	**Existential projection** At least one good student says/thinks people like John
a.	1	1
b.	1	1.5
c.	2	3.5

3.3 Intermediate conclusion

The data discussed in this section show that all the interpretive facts obtained with Role Shift in Section 2 can be replicated with standard indirect discourse, which involves genuinely embedded clauses. In particular, Clause-2 continues to display an intermediate scope behavior when it is exempted from Brow Raise. This suggests that intermediate scope is a genuine possibility.

4   Behavior under ellipsis

McCawley's original argument leads us to expect that Clause-2 could be ignored in the course of ellipsis resolution when it is attached above the ellipsis site. This might also be expected if Clause-2 is syntactically moved by covert movement. This prediction appears to be borne out, both in our paradigm involving Role Shift and in the variant involving standard indirect discourse.

Let us first state the prediction in greater detail:

(19) **Predictions about ellipsis**
In the following configuration (with or without Role Shift under *SAY*),

… [SAY   IF Clause-1   **Clause-2**   & Clause-3], …

if the constituent that includes both *SAY* and the embedded clause is elided, then:
Clause-2 can fail to be copied under ellipsis when it is attached above *SAY*;
Clause-2 must be copied under ellipsis when it is attached under *SAY* (including when it is attached above the *IF*-clause).

---

[13] The last two judgments solely pertained to the projection effects mentioned in (18).

There is an important difficulty, however. In McCawley's paradigm in (2), there was little doubt that the word *which* had to be bound locally, since non-relative pronouns never have non-local readings. But our ASL paradigm involves full clauses, not appositive relative clauses. As a result, the pronoun *IX-a* in Clause-2 could have a strict or a bound variable reading. On the bound variable reading, copying Clause-2 (i.e. *PEOPLE LIKE IX-a*) with matrix scope would indeed be expected to have a semantic effect on the elided clause. But on the strict reading, copying Clause-2 would yield an effect that is redundant with the antecedent clause, and hence it would be undetectable by inferential means.

To test the crucial prediction, we need a construction that strongly favors a bound variable reading. We used the term *FIELD* to refer to the salient scientific field under discussion. It can be checked by way of inferential judgments that *FIELD* without an overt possessive pronoun (in (20)a) gives rise to a strongly bound reading, whereas a strict reading became somewhat more available with the possessive *POSS-a FIELD*, especially when the possessive is emphasized/focused (in (20)c).[14]

(20)   [LINGUISTICS PROFESSOR]$_a$ FINISH STUDY UNIVERSITY POPULAR WITHIN
        'The linguistics professor completed his studies at a university that's popular within
        a.$^{6.7}$ FIELD. [ECONOMICS PROFESSOR]$_b$ SAME.
        his field. The economics professor did too.' (= bound variable reading)
        b.^{7} POSS-a FIELD. [ECONOMICS PROFESSOR]$_b$ SAME.
        his field. The economics professor did too.' (= bound variable reading)
           ^_____
        c.^{7} POSS-a_emphatic FIELD. [ECONOMICS PROFESSOR]$_b$ SAME.
        his field. The economics professor did too.' (= slightly weaker bound variable reading)
        (ASL **35, 0550**; 4 judgments)

Inferential judgments:	The economics professor studied at a university that's popular **in linguistics**	The economics professor studied at a university that's popular **in economics**
a.	1	**7**
b.	1.5	**6.5**
c.	3	**5**

Since possessive-free *FIELD* strongly prefers a bound variable reading, we can test the crucial prediction in (19). It is borne out: Clause-2 can be disregarded under ellipsis when it is attached above *SAY*, but not when it is attached under *SAY*. Specifically, in the paradigm in (21), when Clause-2 has intermediate scope (in (21)b), it yields a strong inference that the linguistics professor thinks that linguistics is a reasonable field, and also that the economics professor thinks that economics is a reasonable field. This is expected on the assumption that (i) *FIELD* is understood with a bound reading, and (ii) Clause-2 is preserved under ellipsis. By contrast, when Clause-2 is attached above *SAY*, it yields the inference that linguistics is a reasonable field, and no inference that economics is a reasonable field. These conclusions are drawn on the basis of the inferential judgments in (22) and of the inferential ratings reported in the tables after (21).

(21)   *Context:* There is a science competition by pairs. The linguistics professor and the economics professor don't know each other.
           ^_____
        TODAY   [LINGUISTICS PROFESSOR]$_a$ WILL TELL-2
        'Today the linguistics professor will tell you that

---

[14] The inferential question was: Do you derive the inference that the economics professor studied at a university that's popular (i) in linguistics? (ii) in economics? (Indicate with which strength you derive the relevant inference: 1 = no inference; 7 = strongest inference)

RS_a_____

^_____ ^_____ ^_____

a. [6.3] IF IX-2 WORK WITH IX-1, FIELD REASONABLE, PLUS GOOD INTERACTION, IX-2 WIN.

if you work with him, and the field [= linguistics] is reasonable, and there is a good interaction, you will win.

^_____

TOMORROW [ECONOMICS PROFESSOR]_b WILL SAME.

Tomorrow, the economics professor will, too [= tell you that if you work with him, and the field [= economics] is reasonable, and there is a good interaction, you will win].'

RS_a_____

^_____ ~_____ ^_____

b. [6.3] IF IX-2 WORK WITH IX-1, FIELD REASONABLE, PLUS GOOD INTERACTION, IX-2 WIN.

if you work with him (he says the field [= linguistics] is reasonable) and there is a good interaction, you will win.

^_____

TOMORROW [ECONOMICS PROFESSOR]_b WILL SAME.

Tomorrow the economics professor will, too [= tell you that if you work with him (he says the field [= economics] is reasonable) and there is a good interaction, you will win].'

RS_a_____   RS_a_____

^_____ ~_____ ^_____

c. [5.3] IF IX-2 WORK WITH IX-1, FIELD REASONABLE, PLUS GOOD INTERACTION, IX-2 WIN.

if you work with him (the field [= linguistics] is reasonable) and there is a good interaction, you will win.

^_____

TOMORROW [ECONOMICS PROFESSOR]_b WILL SAME.

Tomorrow the economics professor will, too [= tell you that if you work with him and there is a good interaction, you will win].'

(ASL, **35, 0574**; 3 judgments)

Inferential judgments 1 (Antecedent clause):	**Wide scope** Linguistics is a reasonable field	**Narrow scope - matched** The linguistics professor thinks/says that linguistics is a reasonable field	**Narrow scope - mismatched** The linguistics professor thinks/says that economics is a reasonable field
a.	1.3	2.7	1
b.	2.3	**6.3**	1
c.	**6**	3	1

Inferential judgments 2 (Elided clause):	**Wide scope** Economics is a reasonable field	**Narrow scope - matched** The economics professor thinks/says that economics is a reasonable field	**Narrow scope - mismatched** The economics professor thinks/says that linguistics is a reasonable field
a.	1	1.3	1
b.	1.7	**6**	1
c.	1.3	1.7	1

(22) Inferential questions for (21)-(23)

Meaning1: Do you derive the inference that (i) linguistics is a reasonable field? (ii) the linguistics professor thinks/says that linguistics is a reasonable field? (iii) the linguistics professor thinks/says that economics is a reasonable field? (Indicate with which strength you derive the relevant inference: 1 = no inference; 7 = strongest inference)

Meaning2: Do you derive the inference that (i) economics is a reasonable field? (ii) the economics professor thinks/says that economics is a reasonable field? (iii) the economics professor thinks/says that linguistics is a reasonable field? (Indicate with which strength you derive the relevant inference: 1 = no inference; 7 = strongest inference)

The same contrasts are obtained in (23), which involves an embedded clause in standard indirect discourse rather than under Role Shift.

(23) *Context:* There is a science competition by pairs; each field makes separate decisions. The linguistics professor and the economics professor don't know each other.

^_____

TODAY [LINGUISTICS PROFESSOR]_a WILL TELL-2 THAT

'Today the linguistics professor will tell you that

    ^_____   ^_____   ^_____

a. [7] IF IX-2 WORK WITH IX-a,   FIELD REASONABLE, PLUS GOOD INTERACTION, IX-2 WIN.

if you work with him, and the field [= linguistics] is reasonable, and there is a good interaction, you will win.

          ^_____   ~___

TOMORROW   [ECONOMICS PROFESSOR]$_b$ WILL SAME.

Tomorrow, the economics professor will, too [= tell you that if you work with him, and the field [= economics] is reasonable, and there is a good interaction, you will win.'

    ^_____   ~_____   ^_____

b. [7] IF IX-2[15] WORK WITH IX-1, FIELD REASONABLE,   PLUS GOOD INTERACTION, IX-2 WIN.

if you work with him (he says the field [= linguistics] is reasonable) and there is a good interaction, you will win.

          ^_____

TOMORROW   [ECONOMICS PROFESSOR]$_b$ WILL SAME.

Tomorrow the economics professor will, too [= tell you that if you work with him (he says the field [= economics] is reasonable) and there is a good interaction, you will win.'

    ^_____ ~_____ ^_____ _____

c. [6] IF IX-2 WORK WITH IX-1,   INFORM-2 FIELD REASONABLE[16], PLUS GOOD INTERACTION, IX-2 WIN.

if you work with him (the field [= linguistics] is reasonable) and there is a good interaction, you will win.

          ^_____

TOMORROW   [ECONOMICS PROFESSOR]$_b$ WILL SAME.

Tomorrow the economics professor will, too [= tell you that if you work with him and there is a good interaction, you will win].'

(ASL, **35, 0558**; 3 judgments)

Inferential judgments 1 (Antecedent clause):	**Wide scope** Linguistics is a reasonable field	**Narrow scope - matched** The linguistics professor thinks/says that linguistics is a reasonable field	**Narrow scope - mismatched** The linguistics professor thinks/says that economics is a reasonable field
a.	1.7	2.7	1
b.	2.7	**6.7**	1
c.	**7**	2.7	1

Inferential judgments 2 (Elided clause):	**Wide scope** Economics is a reasonable field	**Narrow scope - matched** The economics professor thinks/says that economics is a reasonable field	**Narrow scope - mismatched** The economics professor thinks/says that linguistics is a reasonable field
a.	1.3	1.7	1
b.	1.7	**6**	1
c.	1.7	1	1

We conclude that, *modulo* some limitations due to the conceivable (but unlikely) possibility of a strict reading of *FIELD*, the prediction in (19) appears to be borne out.

5   Problems with a movement-based account

While the existence of intermediate scope readings calls for a scopal analysis of some sort, the previous sections have left open whether it should be developed *à la McCawley* along the lines of (3), or by way of covert movement. We now consider two potential objections against a movement-based analysis: it might involve movement out of syntactic islands; and it might not yield the right meanings.

---

[15] There was a speech error, with a superfluous *IX-a* preceding *IX-2*. This was clearly disregarded in the judgments, since the sentence got a maximal score.

[16] There might be a head nod on *REASONABLE*.

5.1 Syntactic islands

A movement account of intermediate (or wide) scope readings is initially implausible because the movement would need to cross a classic island, i.e. an *IF*-clause. But as we now show, our consultant tends to accept *wh*-extraction out of the relevant *IF*-clauses. On the other hand, extraction out of coordinate structures is sharply degraded. Thus if we take the extraction in (5)b (and possibly (5)c) to be out of a coordinate island *in addition* to an *IF*-clause, a movement analysis will prove implausible.

      In (24)b and (25)b, *wh*-extraction out of an *IF*-clause is only minimally degraded relative to the controls, including one with a resumptive pronoun in (24)d-(25)d. We do not know why this is, but note that the constructions we picked are *not* agreement verbs, which are independently known to obviate some binding-theoretic effects (Lillo-Martin 1991).

(24)   *Context:* There is a research competition by pairs.

      a. [7] IX-1 WONDER WHO IX-1 SHOULD WORK WITH.
      'I wonder who I should work with.'

                         ^_____
      b. [5.7] IX-1 WONDER WHO   IF IX-1 WORK WITH, IX-1 WIN.
      'I wonder who is such that, if I work with this person, I will win.'

      c. [6] IX-1 WONDER WHO IX-a IX-1 SHOULD WORK WITH IX-a.
      'I wonder who I should work with.'

                         ^_____
      d. [6.7] IX-1 WONDER WHO IX-a   IF IX-1 WORK WITH IX-a,   IX-1 WIN.
      'I wonder who is such that, if I work with this person, I will win.'
      (ASL, **35, 0426**, 3 judgments)

(25)   *Context:* There is a research competition by pairs. The signer considered several potential partners.
      a. [7] IX-1 WONDER WHO IX-1 SHOULD KEEP.
                         ^_____
      b. [6] IX-1 WONDER WHO   IF IX-1 KEEP, IX-1 WIN.
      c. [6] IX-1 WONDER WHO IX-a IX-1 SHOULD KEEP IX-a.
                        ^_____
      d. [7] IX-1 WONDER WHO IX-a   IF IX-1 KEEP IX-a, IX-1 WIN.
      (ASL **35, 0592**, 3 judgments)

      By contrast, extraction out of a coordinate structure with an overt *AND* is sharply deviant, as seen in (26)a,b and (27)a,b. These contrast with the acceptable versions involving resumptive pronouns in (26)c,d-(27)c,d.

(26)   *Context:* There is a research competition by triples.
      a. [4] IX-1 WONDER WHO IX-1 SHOULD WORK WITH JOHN AND.
                         ^_____
      b. [2] IX-1 WONDER WHO   IF IX-1 WORK WITH JOHN AND, IX-1 WILL WIN.
                         ~___
      c. [6] IX-1 WONDER   WHO IX-a IX-1 SHOULD WORK WITH JOHN AND IX-a.
      'I wonder who is such that I should work with John and this person.'
                         ^_____
      d. [6.7] IX-1 WONDER WHO IX-a IF IX-1 WORK WITH JOHN AND IX-a, IX-1 WILL WIN.
      'I wonder who is such that if I work with John and this person, I will win.'
      (ASL **35, 0430**, 3 judgments)

(27)   *Context:* There is a research competition by triples. The signer considered several potential partners, including John and Bill.
      a. [4.3] IX-1 WONDER WHO IX-1 SHOULD KEEP JOHN AND.
                         ^_____
      b. [2.3] IX-1 WONDER WHO   IF IX-1 KEEP JOHN AND, IX-1 WILL WIN.
      c. [6.3] IX-1 WONDER WHO IX-a IX-1 SHOULD KEEP JOHN AND IX-a.
      'I wonder who is such that I should keep John and this person.'

    ^_____

d. [7] IX-1 WONDER WHO IX-A   IF IX-1 KEEP JOHN AND IX-a, IX-1 WILL WIN.
'I wonder who is such that if I keep John and this person, I will win.'
(ASL **35, 0596**, 3 judgments)

The same results are obtained with asyndetic conjunctions as in (28)b,c and (29)b,c (we do not know why (28)b is slightly more acceptable than (29)b).

(28)   *Context:* There is a research competition by triples.

      ~_____

a. [7] IX-1   SHOULD WORK WITH JOHN BILL.
'I should work with John and Bill.'

         ~___

b. [4.3] IX-1 WONDER   WHO IX-1 SHOULD WORK WITH JOHN.

               ^_____

c. [2.3] IX-1 WONDER WHO   IF X-1 WORK WITH JOHN, IX-1 WILL WIN.

       ~___

d. [5.7] IX-1 WONDER   WHO IX-a [IX-1 SHOULD WORK WITH JOHN IX-A].
'I wonder who is such that I should work with John and this person.'

               ^_____

e. [6.7] IX-1 WONDER WHO IX-a   IF IX-1 WORK WITH JOHN IX-a, IX-1 WILL WIN.
'I wonder who is such that if I work with John and this person, I will win.'
(ASL **35, 0438**, 3 judgments)

(29)   *Context:* There is a research competition by triples. The signer considered several potential partners, including John and Bill.

a. [7] IX-1 SHOULD KEEP JOHN BILL.
'I should keep John and Bill.'

b. [3] IX-1 WONDER WHO IX-1 SHOULD KEEP JOHN.

               ^_____

c. [2.3] IX-1 WONDER WHO   IF IX-1 KEEP JOHN, IX-1 WILL WIN.

d. [6] IX-1 WONDER WHO IX-a IX-1 SHOULD KEEP JOHN IX-a.
'I wonder who is such that I should John and this person.'

               ^_____

e. [7] IX-1 WONDER WHO IX-a   IF IX-1 KEEP JOHN IX-a, IX-1 WILL WIN.
'I wonder who is such that if keep John and this person, I will win.'
(ASL **35, 0598**, 3 judgments)

In sum, no clear island effects are obtained with *wh*-extraction out of *IF*-clauses alone, but clear violations are obtained for *wh*-extraction out of conjunctions, with or without an overt *AND*.

5.2   *Meaning*

A movement analysis faces another potential problem: it is not entirely clear that it yields the right meaning. Consider for instance the wide scope reading obtained in (15)c, a sentence schematically represented in (30)a. Let us take Clause-2 to be (as is natural) of propositional type, i.e. $<s, t>$, where s is the type of worlds and t is the type of truth values. On the standard assumption that movement leaves behind a trace interpreted by way of λ-abstraction (Heim and Kratzer 1998), the resulting structure could be interpreted as in (30)b, where the trace is of intensional type, i.e. $<s, t>$, or as in (30)c, where the trace just denotes a truth value, and is thus of type t (we assume that parataxis of propositional expressions is interpreted as conjunction).

(30) Wide scope reading of Clause-2
    a. Ann says [[if Clause-1   **Clause-2** & Clause-3], Consequent]
    b. **Clause-2** $\lambda p_{<s, t>}$ [Ann says [[if Clause-1 p & Clause-3], Consequent]]
    c. **Clause-2** λp_t [Ann says [[if Clause-1 p & Clause-3], Consequent]]
    c'. Schematic paraphrase of c. with *say* treated as a universal modal
    The value t of Clause-2 in the actual world is such that, for each world compatible with what Ann

says in the actual world, w satisfies: if Clause-2 and t and Clause 3, Consequent.
   d. **Clause-2** [Ann says [[if Clause-1 & Clause-3,   Consequent]

The problem is that movement in (30)b won't affect interpretation at all. Turning to (30)c, on the assumption that Clause-2 denotes the truth value it has in the world of evaluation, movement *will* affect interpretation, as we will obtain truth conditions akin to those in (30)c. But it won't necessarily yield the right meaning. On the intended reading, (30)a should entail Clause-2, hence (30)a couldn't be true while Clause-2 is false. But within a bivalent analysis of conditionals (i.e. one that just posits two truth values), (30)c *can* be true when Clause-2 is false in the actual world. The predicted meaning is akin to: *Ann says that if Clause-1 and falsity and Clause-3, Consequent*. On standard bivalent analyses of conditionals (e.g. Stalnaker 1968), a conditional whose antecedent is false is trivially true, hence (30)a would have Ann assert a trivially true proposition. In a possible worlds framework, yielding the paraphrase in (30)c', (30)a should be trivially true as well, as it is always the case that *every world compatible with Ann's statement satisfies a tautology*.

To get out of this problem, one would need to posit, with various analyses (e.g. Schlenker 2004, among others), that a conditional whose antecedent is trivially false yields a presupposition failure. The presupposition failure of the conditional could then be expected to percolate to the matrix sentence (Heim 1992). Thus from the assumption that the asserted sentence is true, one would get the inference that Clause-2 is true in its world of evaluation – on a wide scope reading, the actual world. The full repercussions of this analysis would need to be investigated, however.

An alternative is to posit that Clause-2 moves out *without* leaving behind an interpreted trace, as schematized in (30)d (with the continued assumption that parataxis is interpreted as conjunction). This might conceivably explain why this movement does not display the hallmarks of the coordinate structure constraint, since no trace is left within the syntactic island. But it remains mysterious how this operation fits with standard views on the syntax/semantics interface for movement structures.

Finally, we note that the same problems and solutions are relevant for the intermediate scope reading of Clause-2, as illustrated in (31). On the intended reading, what Ann says entails Clause-2. But on bivalent analyses of conditionals, (31)a may be true on the analysis in (31)c even though in each world compatible with what Ann says, Clause-2 is false, as this makes the embedded conditional trivially true. The presuppositional solution discussed above could presumably be applied to this case as well.[17]

(31) Intermediate scope reading of Clause-2
   a. Ann says [[if Clause-1 **Clause-2** & Clause-3],   Consequent]
   b. Ann says [**Clause-2** $\lambda p_{<s,t>}$ [[if Clause-1 p & Clause-3],   Consequent]]
   c. Ann says [**Clause-2** λp_t [[if Clause-1 p & Clause-3],   Consequent]]
   d. [Ann says [**Clause-2** [[if Clause-1 & Clause-3,   Consequent]]

In sum, a covert movement analysis of intermediate (and wide) scope readings has two problems to address: the movement might have to be out of a coordinate island;

_____

[17] Standardly, presupposition presupposition under attitude verbs such as *say* and *believe* works by requiring that every world compatible with what the agent says/believes satisfies the presuppositions of the embedded clause (Heim 1992). On the presuppositional analysis on which the conditional yields a failure if its antecedent contains a contradiction, the requirement for (31)c will imply that every world compatible with what Ann says makes Clause-2 true.

and it might or might not yield the right inferences depending on the details of one's analysis.

6 Theoretical possibilities

What do our ASL data show about interpretive possibilities of clauses whose scope is made explicit by way of non-manuals?

6.1 Non-local attachment: in situ vs. wih movement

The existence of intermediate scope readings of Clause-2 shows that an analysis based on Potts's bidimensional semantics combined with a pragmatic operation of perspectival shift is insufficient to account for the data. This leaves two initial possibilities. One is an account *à la* McCawley with intermediate scope attachment as in (3). An alternative is that Clause-2 is moved by covert movement, but this comes at a price: one might have to posit that this movement operation is not sensitive to the Coordinate Structure Constraint, and in addition it might not necessarily predict the right truth conditions.

6.2 Local attachment with non-local indexing?

One additional theoretical direction should be mentioned, although on closer inspection it might not be entirely appealing. It is based on indexing by way of world variables, rather than on movement.

The main idea comes from the analysis of nominal readings in intensional contexts, which argues for the presence of world variables in English and other languages (e.g. Heim 1991, Percus 2000); this contrasts with the intensional treatments we have been assuming so far. Once available, these world variables make it in principle possible to index a Verb Phrase relative to a non-local world variable, as illustrated in (32): *SAY* is evaluated with respect to a world variable $w*$ and introduces ('binds') a world variable w; *IF* introduces a world variable w' (and is evaluated with respect to a world variable w); and *LIKE* could in principle take one of three world variables as argument: w' (local binding, by *IF*), w (intermediate binding, by *SAY*), or another world variable, e.g. $w*$, which denotes the actual world – which would yield a version of matrix binding.[18]

(32) X   SAY$^{w*}_{w}$ IF$^{w}_{w'}$ Clause-1   **[PEOPLE LIKE$_{w/w*}$ IX-a]**   & Clause-3, …

Schematically, this approach makes it possible to emulate the readings represented by way of movement in (30)c (wide scope) and (31)c (intermediate scope), but with *in situ* indexing, as shown in (33); importantly, Clause-2 is indexed with a variable $w*$ denoting the actual world in (33)a, while it is indexed with a world variable w bound by the attitude operator *SAY* in (33)b.

(33) a. 'Wide scope':   Ann SAY$^{w*}_{w}$ [[IF$^{w}_{w'}$ Clause-1$_{w}$ **Clause-2$_{w*}$** & Clause-3$_{w}$], …]
      b. 'Intermediate scope':   Ann SAY$^{w*}_{w}$ [[IF$^{w}_{w'}$ Clause-1$_{w}$ **Clause-2$_{w}$** & Clause-3$_{w}$], …]

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[18] For *X SAY$^{w*}_{w}$ F*, the intended truth conditions are: *all worlds w compatible with what X believes in w* satisfy F*.   Similarly, for *IF$^{w}_{w'}$ F, G*, the intended truth conditions are: *every accessible world w' from w which satisfies F satisfies G,* or alternatively: *the closest worlds w' from w which satisfy F also satisfy G* (see for instance Stalnaker 1968 and Schlenker 2004 for the latter, non-monotonic semantics).

This analysis inherits the semantic issues we discussed in relation with the movement analysis: obtaining the right inferences is difficult in a bivalent framework but might be possible in a presuppositional framework. But there is a further difficulty. A key insight of Percus 2000 was that Verb Phrases differ from Noun Phrases in requiring *local* binders for their world variables. For instance, on the non-contradictory reading of the embedded clause in (34)a, we interpret *poor person* as indexed with respect to the actual world (thanks to a distinguished variable w^*), whereas the embedded Verb Phrase is dependent on the world variable w' introduced by the *if*-clause; this is illustrated in (34)b. The sentence cannot mean that I would be happy if at least one person who is in fact rich were poor instead – and this restriction appears in other languages than English (e.g. French); but precisely this reading should be available if the embedded Verb Phrase could be bound non-locally, as illustrated in (34)c.

(34) a. I would be happy if at least one poor person were rich instead.
 b. Possible reading: I would be happy if$^{w^*}_{w'}$ at least one [poor person]$_{w^*}$ were$_{w'}$ rich
 c. Impossible reading: I would be happy if$^{w^*}_{w'}$ at least one [poor person]$_{w'}$ were$_{w^*}$ rich

Crucially, it is precisely this non-local reading of the world variable of *LIKE* that would be needed to get intermediate or wide scope readings in (32); we know of no evidence that ASL verbs differ from English verbs with respect to such indexing possibilities, nor do we know of other languages in which verbs display such a behavior.

6.3 *Neither non-local attachment nor non-local indexing?*

Intermediate scope readings of appositivies are typically difficult to obtain in French or in English. The ease with which intermediate scope readings are obtained in our data might give one pause. One possibility, in line with our discussion, is that this is due to the unambiguous marking afforded by non-manuals, combined with the fact that unlike appositives the target clauses seem to be at-issue (as they fail to yield projection phenomena, at least ones we could detect). A radical alternative is that we are in fact dealing with very different structures from the ones we discussed throughout. To be concrete, consider again (15)b, repeated as (35).

(35) *Context:* There is a research competition by pairs.
 [7] ANN$_b$ TELL-1 THAT
 'Ann tells me that

 $\overset{\wedge}{\underline{\text{IF IX-b WORK WITH JOHN}_a}}$ $\overset{\sim}{\underline{\text{PEOPLE LIKE IX-a}}}$ $\overset{\wedge}{\underline{\text{PLUS GOOD INTERACTION}}}$
 if she works with John (she says that people like him) and there is a good interaction,

 $\underline{\text{IX-b WILL WIN.}}$
 she will win.'
 (ASL, 35, 0352b, 3 judgments)

We could try a completely different analysis of the purported *if*-clauses, one that does not require Clause-2 to be extracted at all. To play the devil's advocate, we provide a candidate analysis in (36)a, where we take Brow Raise to just indicate that certain clauses are possible – hence the appearance in our Logical Form of possibility operators.

(36) a. Ann says$^{w^*}_w$ [possible $^w_{w'}$ Clause-1$_{w'}$]$_i$ (and) Clause-2$_w$ (and) [possible $^w_{w''}$ Clause-3$_{w''}$]$_k$, (and) Clause-4$_{i+k}$
 b. Purported truth conditions of a.:
 Every world w compatible with what Ann says in w* is such that some worlds w' accessible from

w satisfy Clause-1, and Clause-2 satisfies w, and some worlds w" accessible from w satisfy Clause-3, and Clause-4 satisfies the accessible worlds from w that satisfy Clause-1 and Clause-3.

On this analysis, then, *IF* and Brow Raise to just indicate the possibility of Clause-1 and Clause-3, hence the presence of the existence modals *possible*$^w_{w'}$ and *possible*$^w_{w''}$ in the Logical Form. These modals introduce discourse referents *i* and *k* for *accessible worlds in which Clause-1 holds*, and *accessible worlds in which Clause 3 holds*. The consequent then says that Clause-4 holds in (the sum of) those worlds (i.e. *i+k*), as paraphrased in (36)b. To analyze this reading explicitly, we would need the world index of Clause-4 to be an E-type pronoun that refers to *those accessible worlds that satisfy Clause-1 and Clause-2*, or we would need a semantics with dynamic existential modals, possibly along the lines of Brasoveanu 2010[19]. This arguably gives the right truth conditions, and no extraction or non-local indexing is needed. But at this point this analysis is entirely stipulative.[20]

7   Conclusion

While more work will be needed (especially with further consultants), we note that the behavior of Clause-2 dovetails with a generalization of the McCawley-inspired account in (3), according to which some clauses can be attached non-locally, and without movement, to propositional nodes that dominate them. While we have considered alternative accounts, with movement, or with non-local indexing, or with a completely non-standard analysis of *IF*-clauses, each comes at a significant price, and thus the McCawley-inspired account can be taken as the most serious contender in view of the present data.

Still, our results raise two further questions, which we leave for future research. First, why do ASL full clauses have, for our consultant at least, such possibilities, whereas in English only appositive relative clauses and not parentheticals have been claimed to display this behavior – and to a rather limited extent? Second, why do the projection effects illustrated with appositives in (13) fail to materialize in our ASL data, as discussed in Sections 2.4 and 3.2?

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[19] One important requirement is that the consequent Clause-4 must be predicted to hold in *all* the accessible worlds from *w* that satisfy Clause-1 and Clause-3.

[20] In addition, we do not know of evidence that Brow Raise marks possibility. For instance, its uses to mark focus (e.g. Schlenker et al. 2016) do not fall under that description.

Supplementary Materials

Raw ASL data can be downloaded at the following URL:

https://drive.google.com/file/d/1xo7U59MoiZhbZ_nBHQ---rkXg3ZoVI1j

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