

Supplements without Bidimensionality*

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New and entirely restructured version, May 18, 2020

Abstract. In seminal work, Potts 2005 claimed that the behavior of 'supplements' – appositive relative clauses (ARCs) and nominals – offers a powerful argument in favor of a multidimensional semantics, one in which certain expressions fail to interact scopally with various operators because their meaning is located in a new semantic dimension. Focusing on ARCs, with data from English, French and German (Poschmann 2019), we explore an alternative to Potts's bidimensional account in which (i) appositives may be syntactically attached with matrix scope, despite their appearance in embedded positions; (ii) they may also be syntactically attached within the scope of other operators, in which case they semantically interact with them; (iii) they are semantically conjoined with the rest of the sentence, but (iv) they give rise to non-trivial projection facts when they do not have matrix scope. In effect, our analysis accounts for most of the complexity of these data by positing a more articulated syntax and pragmatics, while keeping the semantics 'lean' and unidimensional.

Keywords: supplements, appositives, non-restrictive relative clauses, bidimensionality, parentheticals

* This is a descendant of a long manuscript by the same title written in 2013, which in turn had precedents in Schlenker 2010, 2013. At the time, several of the empirical claims pertaining to embedded scope of appositives were controversial. The impetus for the new version of the article came in part from Claudia Poschmann's experimental work on German, which vindicated several of our earlier claims. This version also incorporates recent results on ASL, which might provide independent evidence for a mechanism whereby a clause that is embedded on the surface can take high or intermediate scope *in situ*.

I am grateful to audiences at NELS 2009, the Amsterdam Colloquium 2009, the Venice Workshop 'Adjectives and Relative Clauses' (2010), NYU (seminar in 2010), UMass Amherst (seminar in 2010), UCLA (mini-course in 2011) and Rutgers (colloquium in 2012) for helpful suggestions. For comments and criticisms, I wish to thank Adrian Brasoveanu, Emmanuel Chemla, Viviane Déprez, Danny Fox, Vincent Homer, Richie Kayne, Todor Koev, Jeremy Kuhn, Tim Leffel, Paul Marty, Rick Nouwen, David Pesetsky, Chris Potts, Daniel Rothschild, Benjamin Spector, Dominique Sportiche, Adam Szczegielniak. I am particularly grateful to Emmanuel Chemla, Alexandre Cremers, Vincent Homer, Benjamin Spector and Dominique Sportiche for help with some French examples, to Heather Burnett, Jeremy Kuhn, Tim Leffel and Salvador Mascarenhas for help with some English examples, and to Adrian Brasoveanu for illuminating theoretical discussions. In addition, the following colleagues were very generous with their time to answer long surveys about English and French. *English:* Anna Alsop, Dylan Bumford, Heather Burnett, Simon Charlow, Jonah Katz, Nathan Klinedinst, Jeremy Kuhn, Tim Leffel, Matt Mandelkern, Robert Pasternak, Shane Steinert-Threlkeld, Tim Stowell, Lyn Tieu. *French:* Isabelle Charnavel, Keny Chatain, Alexandre Cremers, Paul Egré, Emile Enguehard, Vincent Homer, Léo Migotti, Dominique Sportiche. I am responsible for all remaining errors and shortcomings. Many thanks to Lucie Ravoux for help with the bibliography.

Parts of this research were supported over the years by a Euryi grant from the European Science Foundation ('Presupposition: A Formal Pragmatic Approach'), as well as an earlier NSF grant (BCS 0902671). Most recently, this research was supported by a grant from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (grant agreement No 788077, Orisem, PI: Schlenker). Recent research was conducted at Institut d'Etudes Cognitives, Ecole Normale Supérieure - PSL Research University. Institut d'Etudes Cognitives is supported by grant FrontCog ANR-17-EURE-0017.

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1 Introduction

1.1 Goals

In seminal work, Potts 2000, 2005, 2007 argued that supplements, the semantic contributions of appositive relative clauses (henceforth ARCs), motivate the postulation of a new dimension of meaning, the Conventional Implicature dimension.¹ We propose an alternative in which the peculiar behavior of ARCs is not due to their semantics, but to their syntax and to their pragmatics.

The contrast between (1)a and (1)b suggests that ARCs are ‘scopeless’, in the sense that they do not interact semantically with operators in whose scope they appear. Thus the underlined ARC in (1)a is somehow read outside the scope of negation, unlike the underlined conjunct in (1)b:

- (1) a. I doubt that John, who is smart, is competent.
 => John is smart.
 b. I doubt that John is smart and competent.
 ≠> John is smart

This behavior was taken by Potts 2005 and Nouwen 2007 to argue for a *bidimensional semantics*, one in which supplements are computed in a separate semantic dimension from assertive content. Their analysis is sketched in (2). Original debates took nominal appositives to share the behavior of ARCs, but recent research suggests that nominal appositives have ‘corrective’ readings that cloud the main issues, and thus we leave them out of the present discussion (see for instance Sæbø 2011, AnderBois et al. 2013, Nouwen 2014, Ott and Onea 2015 and Schlenker, to appear for discussion).

- (2) **Bidimensional Analysis** (Potts 2005; Nouwen 2007)
 (i) **Syntax:** Appositives are attached in their surface position.
 (ii) **Semantics:** Supplements are computed in a separate dimension, which has two effects.
 A. They appear to have ‘wide scope’.
Version 1 (Potts 2005): They do not interact scopally with other operators.
Version 2 (Nouwen 2007): They only interact scopally with operators *to the extent that unembedded E-type pronouns do* (e.g. in *John invited few people, who had a good time*, the ARC does interact with the quantifier; but the truth conditions are similar to those of the discourse *John invited few people. They had a good time*).
 B. Supplements have a special epistemic status (they are not ‘at issue’).

We develop an alternative account that does without Potts's additional dimension (there might be independent reasons to posit more than an at-issue dimension; our point is that supplements on their own do not necessitate an additional dimension²). On a syntactic level, we adopt a liberalized version of McCawley's analysis (1981, 1998): ARCs may in principle be attached to the root node even when their DP associate is embedded (= McCawley's claim), but in addition they may, with various levels of difficulty, be attached to any propositional node that dominates their DP associate (= our liberalization; the preference for matrix attachment will be seen throughout this piece in acceptability ratings). On a semantic level, they are conjoined to the propositional node they attach to, and they may thus interact with at-issue contributions; in particular, they may also take scope under operators if they are attached lower than them. On a pragmatic level, we assume that supplements must be non-trivial (as argued by Potts 2005), but that their content should be in a sense easy to accommodate. This predicts weakened projection patterns reminiscent of presuppositions. These assumptions are summarized in (3).

- (3) **Unidimensional Analysis** (related ideas in Schlenker 2010, 2013)
 (i) **Syntax** (see McCawley 1981, 1998, Del Gobbo 2003)
 -An ARC can be attached to any node of propositional type that dominates the position of its DP associate.

¹ Expressives (e.g. slurs) provided another argument for this dimension, but they have given rise to a somewhat different debate; see for instance Potts 2007 and responses in the same volume.

² For instance, Rooth 1996 has a multidimensional approach to focus meaning, and it goes without saying that our analysis is silent on this matter. Presuppositions are sometimes described in bidimensional terms, although on a technical level this isn't accurate for most contemporary treatments (see for instance Beaver and Geurts 2011 and Schlenker 2016 for surveys). Concerning expressives, see for instance Sauerland 2007 and Schlenker 2007 for an argument that they should be treated within a presuppositional framework.

-Preferences:³ matrix attachment >> lower attachment

(ii) Semantics (Del Gobbo 2003)

a. In an ARC, the relative pronoun can be interpreted as E-type or as referential.

b. An ARC is interpreted conjunctively.

(iii) Pragmatics

a. Relative to its local context, an ARC should be non-trivial (Potts 2005).

b. It should be 'easy' to add to the global context assumptions that make the ARC locally trivial.

We provide three main arguments in favor of our approach.

(i) Bidimensionality is undesirable because there are cases in which appositives can be attached *and interpreted* in the scope of other operators, with narrow or intermediate scope.

(ii) Bidimensionality is unnecessary because there are independent (syntactic) arguments for postulating that appositives may, like parentheticals, be attached much higher than their surface position would lead one to expect.

(iii) Some supplements give rise to patterns of projection reminiscent of presupposition projection. This suggests that there is a non-trivial interaction between the semantic contribution of some appositives and other operators.

Besides English, our discussion uses data from French because it has some moods (such as the subjunctive) which yield ungrammaticality unless they have narrow scope relative to some operators. We will also make reference to German data investigated with experimental means by Poschmann 2019; and we will provide independent evidence for our mechanism of liberal attach to various propositional nodes from a different construction in ASL (American Sign Language).

1.2 Background: scope and pseudo-scope in Potts 2005, 2007 and Nouwen 2007

The frameworks developed by Potts (2005, 2007) and Nouwen (2006) are designed to capture the generalization that *appositives never have genuinely narrow scope with respect to other operators*. We write 'genuinely' because it is explicit for both authors that whatever mechanisms allow expressions to be intuitively dependent on some operators without being in their syntactic scope should in principle be available for appositives as well. There are three cases in point.

(i) Nouwen 2007 observes that the nominal appositive in (4)a is semantically dependent on the indefinite *a Dutch boxer*; and the same observation holds of the ARC in (4)a'. But by itself this observation does not invalidate the main insight of the bidimensional approach: the same phenomenon arises in (4)b, where *he* is intuitively dependent on the indefinite. By contrast, neither dependency is possible when the indefinite is replaced with a universal quantifier, as in (4)c-d.

- (4) a. A Dutch boxer, a famous one, took part in the event.
 a'. A Dutch boxer, who is famous, took part in the event.
 b. A Dutch boxer took part in the event. He is famous.
 c. #Every Dutch boxer, a famous one, took part in the event.
 c'. #Every Dutch boxer, who is famous, took part in the event.
 d. #Every Dutch boxer took part in the event. He is famous. (expanded from Nouwen 2007)

The natural conclusion is that some mechanism allows a singular pronoun to be dependent on an indefinite (but not on a universal quantifier) without being in its syntactic scope; whatever this mechanism is, it probably applies in identical fashion to (4)a,a' and (4)b. Nouwen's system is designed to capture this generalization by allowing variables in an appositive to be dynamically bound by an existential quantifier that appears outside of it (Potts's system does not explicitly handle dynamic binding, but Nouwen's proposal is clearly congenial to the spirit of Potts's theory).

(ii) Potts 2005 observes that there are apparent exceptions to the claim that appositives are interpreted outside the scope of operators. In particular, he discusses the case of German ARCs in the 'Konjunktiv

³ We won't explain the attachment preferences. It is fairly clear that by default matrix attachment is preferred. Among lower attachments, we conjecture that attachment under an attitude verb is easier than attachment under other operators, but we have no hard data on this point.

I' (a form of the subjunctive specialized for indirect discourse) and are embedded under attitude operators:

- (5) Juan behauptet, dass Maria, die sehr schwach sei, krank sei.
Juan maintains that Maria who very weak be.konj sick be.konj.
 'Juan maintains that Maria, who is supposed to be really weak, is sick.' (Potts 2005)

In this case, the ARC is interpreted from the agent's rather than from the speaker's perspective: the claim that *Maria is sick* is naturally attributed to Juan, not to the speaker. But as Potts rightly observes, this does not show that the ARC must scopally interact with the attitude operator. As he writes, "when one studies the distribution of Konjunktiv I more broadly, one finds that it can occur in main clauses provided that the context includes an agent to whom the content of the clause can be relativized":

- (6) Juan behauptet, dass Maria krank sei. Sie sei sehr schwach.
Juan maintains that Maria sick be.konj She be.konj very weak
 'Juan maintains that Maria is sick. According to him, she is very weak.'

Here too, the intuitive dependency between the ARC and the attitude operator does not show that there is a scopal interaction between them.

(iii) This line of reasoning is extended by Harris and Potts 2009 to English examples in which an appositive appears to interact scopally with an attitude verb, as in (7)a.

- (7) My brother Sid hates school.
 a. He says that he puts off his homework, a complete waste of time, to the last minute.
 b. He puts off his homework, a complete waste of time, to the last minute.

They show with experimental means that in examples such as (7)a, the appositive can be interpreted from the agent's rather than from the speaker's perspective; but they also show that the same phenomenon arises in the absence of any attitude operator, as in (7)b, where it can be understood that it is Sid's opinion (rather than the speaker's) that homework is a complete waste of time. Harris and Potts conclude that an operation of 'perspectival shift', which crucially does *not* require genuine scopal interaction, is responsible for the data in (7)b, and presumably for (7)a as well.

Following the same logic (with clearly unembedded controls), but with opposite results, we will show that in several cases ARCs genuinely take narrow and intermediate scope relative to various operators.

1.3 Data

We should say at the outset that there seems to be some dialectal variation pertaining to the target phenomena, especially in French: some speakers freely accept narrow scope appositives in the subjunctives, others do not. In order to get a sense of the data, we conducted three long surveys with linguists (usually semanticists): two on American English, one on French. We report below averages and numbers of consultants, and occasionally flag issues of dialectal variation. In French, dialectal variation weakens but does not eliminate aggregate contrasts. While linguists' judgments make it possible to test numerous complex judgments and inferences with little risk of misunderstanding of the task, we believe that the data under investigation would warrant systematic experimental investigations in the future: our limited (if extremely time-consuming⁴) surveys are not intended to replace them.

The full survey and the raw data can be found in the Supplementary Materials. Suffice it to say here that two kinds of judgments were collected: acceptability, on a 7-point scale (with 1 = worst, 7 = best); and inferential strength, also on a 7-point scale (with 1 = no inference, 7 = strongest inference).

1.4 Structure

The rest of this article is organized as follows. We display evidence of narrow scope readings in English, French and German in Section 2-3. Evidence for high syntactic attachment in English and French is reviewed in Section 4, while cases of intermediate attachment are discussed in Section 5. In Section 6,

⁴ One consultant added in the comments of Survey B: "brain exhaustion is starting to set in..."

we provide recent evidence from ASL for a mechanisms of non-local attachment of clauses. We then turn to the pragmatics in Sections 7-8, with the emergence of a new problem of supplement projection for ARCs that take narrow scope.

2 The possibility of narrow scope I: English and French

We will display several cases across different languages (starting with English) that some ARCs genuinely give rise to scopal interactions. The logic will be as follows: (a) an ARC with a certain property P behaves semantically as if it had narrow scope under some operators; while (b) a clausal parenthetical that serve as controls are either unacceptable, or acceptable but with a different interpretation. The data will be explained by positing that the clausal parenthetical only have matrix scope but that the ARCs can get narrow scope.⁵

2.1 Modally interpreted past tense under if

We start with English data involving the modally interpreted past tense.⁶ This phenomenon arises within the scope of *if*-clauses but not in unembedded environments, and this will make it possible to force appositives to have narrow scope relative to an *if*-clause.

Consider the paradigms in (8):

- (8) *Context*: someone made a big mistake at the Department.

If tomorrow I called the Chair _____ then we would be in big trouble.

Target inference: if tomorrow I called the Chair, the Chair would call the Dean.

⁵ Two remarks should be made at the outset about the literature.

1. Importantly, Sæbø 2011 provides independent arguments for narrow scope interpretations of appositives based on embedding under the verb 'surprise'. Most of Sæbø's examples involve nominal appositives, but they can arguably be replicated with ARCs (see also Sæbø's fn. 1). Following the discussion of Schlenker, to appear, we include in (i) a modified version of Sæbø's example (18), and in (ii) a version of it with an ARC, as well as a control with a clausal parenthetical. A potential worry is that the facts might not be as different as one might wish in (ii)b, which presumably does not involve genuine scopal interaction. This is one of our motivations for investigating in the main text constructions in which parenthetical controls are degraded for grammatical reasons.

(i) In John 4 Jesus spoke with a Samaritan woman and asked for a drink. She had two things against her: she was a woman, and a Samaritan.

a. John was surprised that Jesus, a Jewish man, spoke to Ruth, a Samaritan woman.
 b. John was surprised that Jesus, a Jew, spoke to Ruth, a Samaritan.
 c. John was surprised that Jesus, a man, spoke to Ruth, a woman.

(ii) a. John was surprised that Jesus, who was a Jewish man, spoke to Ruth, who was a Samaritan woman.
 b. John was surprised that Jesus (he was a Jewish man) spoke to Ruth (she was a Samaritan woman).

2. Wang et al. 2005 argue that nominal appositives can take narrow scope relative to a variety of operators including attitude ones, as in (iii), but that ARCs cannot, as in (iv). We display below numerous cases in which, for several of the speakers we consulted, ARCs can in fact take narrow scope.

(iii) a. Mary wants to marry an Italian, a rich one.
 b. John believes that a professor, a quite famous one, published a new book.

(iv) a. Mary wants to marry an Italian, who is a rich one.
 b. John believes that a professor, who is a quite famous one, published a new book.

⁶ See for instance Iatridou 2000, Ippolito 2003 and Schlenker 2004 for discussion of the past tense-counterfactuality connection.

Construction filling ____ (survey with 8 consultants)	Acceptability (7 = best)	Inferential strength (7 = strongest)
a. , who in turn called the Dean,	6.6	3.8
b. (he in turn called the Dean),	1.9	3.4
c. and he in turn called the Dean,	6.9	2.5
d. , who would in turn call the Dean,	7.0	6.9
e. (he would in turn call the Dean),	6.3	7.0

We argue in three steps to show that the ARC in (8) is genuinely embedded.

(i) Unlike the parenthetical in (8)b, the ARC in (8)a is acceptable. This can be explained as follows: the modal interpretation of the past tense requires embedding under *if*, the parenthetical cannot be embedded, but the ARC can be. In principle, the parenthetical could allow for a temporal interpretation of the past tense, but this is blocked by *in turn*, which establishes a relation of succession between the speaker's calling the Chair and the Chair's calling the Dean.

(ii) Intuitively, the truth conditions of (8)a are roughly those of an embedded conjunction, i.e.: *if tomorrow I called the Chair and he called the Dean, then we would be in deep trouble* (this is not something that our survey directly addresses, but we take this point to be reasonably clear).

(iii) The *would*-parenthetical in (8)e (as well as the *would*-appositive in (8)d) is acceptable, but it yields a modal subordination reading, hence an inference that *if tomorrow I called the Chair, the Chair would call the Dean*.

It is worth noting for future reference that (8)a yields an intermediate result relative to this target inference: endorsement less strong than (8)e,d, but stronger than the conjunctive control in (8)c. We will explain this intermediate in Section 8 as a case of weak projection reminiscent of presuppositions.

The same reasoning can be conducted on the basis of the paradigm in (9), with related contrasts.

- (9) *Context*: A news channel has information about the identity of an American spy in Pakistan, Smith. The following is uttered by a journalist working for that channel:

If tomorrow we published information about Smith ____ we could kiss our jobs goodbye.

Target inference: if tomorrow we published information about Smith, Smith would get killed as a result.

Construction filling ____ (survey A, with 8 consultants)	Acceptability (7 = best)	Inferential strength (7 = strongest)
a. , who got killed as a result,	6.3	4.0
b. (he got killed as a result),	2.0	3.3
c. and he got killed as a result,	7.0	2.6
d. , who would get killed as a result,	6.8	6.8
e. (he would get killed as a result),	6.0	7.0

The same argument could in principle be constructed with a present tense that refers to a future event in the scope of a conditional, as in (10). The logic is the same as for the modally interpreted past tense, but the contrasts are less sharp, possibly due to the availability of 'futate' readings for the present tense in the parenthetical controls (see for instance Copley 2008 on futurate readings):

- (10) *Context*: someone made a big mistake at the Department.

If tomorrow I call the Chair _____ then we will be in big trouble.

Target inference: if tomorrow I call the Chair, the Chair will call the Dean.

Construction filling ____ (survey A, with 8 consultants)	Acceptability (7 = best)	Inferential strength (7 = strongest)
a. , who in turn calls the Dean,	7.0	3.5
b. (he in turn calls the Dean),	3.8	3.9

c. and he in turn calls the Dean,	7.0	2.6
d. , who will in turn call the Dean,	6.6	6.8
e. (he will in turn call the Dean),	5.8	6.9

2.2 Past under future

A similar logic can be applied to past tense interpreted with a forward shifted reading in the scope of a future tense. This builds on a peculiarity of the future, which can shift the point of evaluation of tenses that appear in its scope (Abusch 1997, Heim 1994). This logic is illustrated in (11).

(11) I will be wondering next Wednesday whether DSK ____ agreed to a settlement.

Target inference: DSK will meet with the judge next Tuesday

Construction filling ____ (survey B, with 8 consultants)	Acceptability	Inferential strength
a. , who met with the judge the day before,	5.4	5.8
b. (he met with the judge the day before)	4.0	5.6
c. (he will have met with the judge the day before)	6.8	6.8
d. met with the judge the day before and	7.0	1.3

There are two main facts to observe. First, the appositive with a forward shifted past tense in (11)a is relatively acceptable, and on average more so than the parenthetical in (11)b. Still, the latter has an intermediate level of acceptability, possibly due to a mechanism akin to Harris and Potts's 'perspectival shift'. Second, the full parenthetical with a future anterior ('will have met') in (11)c is acceptable, but it seems to be interpreted outside the scope of the attitude verb, hence an inference that DSK will in fact meet with the judge next Tuesday. In this respect, the appositive in (8)a yields a slightly weaker inference: not quite the strong inference obtained in (8)c, nor the absence of inference obtained in the conjunctive control in (11)d. Here too, we will explain this observation by way of a mechanism of supplement projection in Section 8, but we will need to consider more closely the judgments of those consultants that find a sharper contrast between (11)a and (11)b.⁷

⁷ Due to limitations of space and time (as the data are hard to investigate), we omit a related argument that could be made on the basis of Sequence of Tense rules, i.e. cases in which the temporal specifications of a past tense embedded under another past tense remain uninterpreted. A typical example appears in (i), where the time of the lunch and of the telling is tomorrow, and thus the underlined past tense remains uninterpreted.

(i) John decided yesterday that tomorrow he would tell his mother over lunch that they were having their last meal together. (slightly modified from Abusch 1997)

It is usually thought that the possibility of disregarding past tense for interpretive purposes only arises under embedding in the scope of an appropriate operator (typically, another past tense). This makes it possible to construct a further argument that some appositives take narrow scope.

A potential example appears in (ii). The underlined past tense is odd in (ii)b, presumably because the parenthetical can only take matrix scope; the time of Ann's presence in Vegas is tomorrow, and therefore an interpreted past tense is deviant to refer to that future moment. By contrast, (ii)a is more acceptable, which suggests that tense deletion can apply. But testing these facts systematically would require another survey.

(ii) *Situation:* John is in London and he is about to go to Vegas to meet his girlfriend Ann. He is planning to marry her there but his parents don't know it.

John decided yesterday that tomorrow he would call his parents from Vegas to tell them that he had just married Ann

- a. ok? , who was there with him.
- b. #(she was there with him).

In addition, one could seek to investigate the behavior of the English subjunctive, exemplified in (iii). Two consultants we asked a long time ago gave conflicting judgments on the acceptability of this sentence.

2.3 Summary of the French data

Related contrasts can be replicated in French, but in a weakened fashion because some of our consultants mostly disallow narrow scope ARCs. Specifically, if we give consultants an 'embedding score' based on the average acceptability of appositives in our three most simple tests (one involving the subjunctive, two the modally interpreted past tense), scores range between 7 and 1.7. Despite this variation, contrasts are obtained, but with smaller acceptability scores for narrow scope appositives than in English. The data are described in greater detail in Appendix I; here we just summarize the main results.

English paradigms with a modally interpreted past tense can be replicated using the French imperfect. Our clearest paradigm appears in (12), but as shown by the distribution of acceptability scores for (12)a, in (13), there is a rather clear split between 5 consultants that accept and 3 consultants that reject this sentence. Inferential judgments yield a small difference with our English paradigms, as there both the narrow scope appositive in (12)a and the conjunctive control in (12)c fail to yield an endorsement of the target inference (in our English paradigms, endorsement is a bit stronger for the narrow scope appositive than for the conjunctive control).

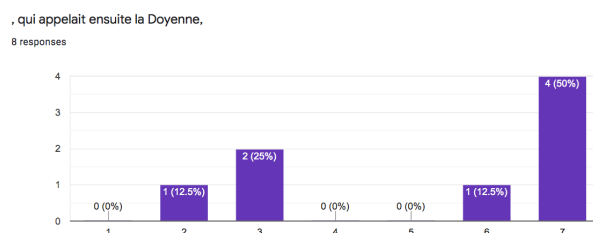
(12) *Context*: Someone made a grave mistake within our Department.

Si demain j'appelais le Directeur _____, nous aurions un sacré problème.
If tomorrow I called the Director-masc _____, we would-have a serious problem.

Target inference: if tomorrow I called the Director, he would then call the Dean.

Construction filling ____ (survey with 8 consultants)	Acceptability (7 = best)	Inferential strength (7 = strongest)
a. _____, qui appelait ensuite la Doyenne, , <i>who called then the Dean-fem</i>	5.3	2.9
b. (il appelait ensuite la Doyenne), (<i>he called then the Dean-fem</i>)	1.4	2.0
c. et qu'il appelait ensuite la Doyenne, <i>and that he called then the Dean-fem</i>	7.0	2.1
d. _____, qui appellerait ensuite la Doyenne, , <i>who would-call then the Dean-fem</i> ,	7.0	6.0
e. (il appellerait ensuite la Doyenne), (<i>he would-call then the Dean-fem</i>)	6.0	6.5

(13) Distribution of acceptability scores for (12)a



A second test is afforded by the subjunctive, a mood that is unacceptable unless licensed by an operator. The results are discussed in Appendix I. While acceptability of the narrow scope subjunctive ARC varies across consultants, on average it is more acceptable than parenthetical controls (it also gives rise to an intermediate endorsement of our target conditional inference). Finally, a third test is similar

(iii) *Context*: A news channel has information about the identity of an American spy in Pakistan, Smith. The following is uttered by a journalist working for that channel:

If tomorrow we published information about Smith, who were killed (or: who were to get killed) as a result, we could kiss our jobs goodbye.

to the past under future cases discussed for English in Section 2.2. We did not directly investigate it but we used it in our study of ellipsis in Section 4.3.

3 The possibility of narrow scope II: German (Poschmann 2019)

In our English and French data, we used tense or mood to force some ARCs to take narrow scope with respect to various operators. Poschmann 2019 argues with experimental means that even without these grammatical devices (which have no clear obvious counterparts in German), narrow scope readings of ARCs can be detected in German. Her strategy was to set up a story that was inconsistent with the assertion of the content of ARC, while being consistent with its *possibility*, as with story in (14): the underlined component makes it impossible to assert that Dr. Meier has or gives the appropriate antidote, although it leaves open that he might.

(14) Story [translation of the German original]

Gerd got bitten by a snake. There is only little chance that he will survive. The venom is quite deadly. His only chance is to reach Dr. Meier in time, who lives close by. But it's quite unlikely that Dr. Meier has got the antidote Gerd needs. Only if Dr Meier gives him the antidote in time can Gerd be saved.

The subjects' task is described in (15), and the target sentences are in (16). As in our earlier discussions, they involve target ARCs, and two kinds of controls: conjunctions (which should only have narrow scope), and parentheticals (which are expected to only have wide scope). But in addition, they come in two varieties, one involving an eventive construction, and the other a stative construction. The reason was that it was observed that the former facilitate narrow scope of appositives.

(15) Task

"The participants were told to imagine a scenario in which pupils were asked to summarize the information given by a story without leaving out or adding crucial information. The participants had to judge whether or not certain sentences of the pupils (the test-sentences) were appropriate as part of a summary of the respective context-stories."

(16) Part of the pupil's summary

Wenn Gerd rechtzeitig Dr. Meier erreicht
If Gerd reaches Dr. Meier in time

a. (ARC/event)

, der ihm das passende Gegengift verabreicht,
, who gives him the right antidote,

b. (and/event)

und der ihm das passende Gegengift verabreicht,
and he gives him the right antidote,

c. (parenthetical/event)

(der verabreicht ihm das passende Gegengift),
(he gives him the right antidote)

d. (ARC/state)

, der über das passende Gegengift verfügt,
, who has got the right antidote available,

e. (and/state)

und der über das passende Gegengift verfügt,
and he has got the right antidote available,

f. (parenthetical/state)

(der verfügt über das passende Gegengift),
(he has got the right antidote available),

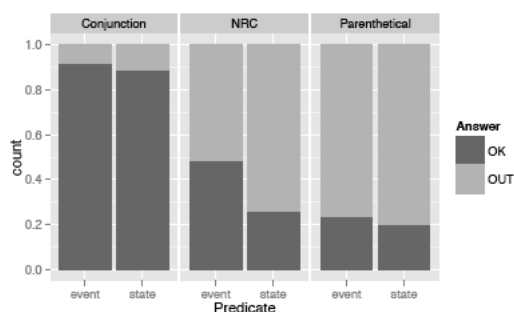
kann Gert gerettet werden.

Gert can be saved.

(Poschmann 2019, Experiment 1)

Poschmann's results appear in (17).

(17) Results of Experiment 1 in Poschmann 2019



Poschmann concludes this part of her experiment as follows:

The results confirm the observation made by Schlenker (...) that ARCs⁸, contrary to standard assumptions, can indeed get embedded interpretations, at least if they are of event predicate type. ARCs rated significantly higher than the corresponding parentheticals. This might indicate that there is a true structural difference between ARCs and parentheticals with respect to their embeddability. The fact that the ARCs got lower acceptance rates than the corresponding conjunctions can be accounted for if we consider that the former in contrast to the latter are ambiguous between an embedded and a wide scope (or modal subordination) reading.⁹ Unlike with parentheticals and conjunctions, the availability of embedded readings improved significantly if the ARC was of event-predicate type.

Poschmann also comments on the unexpectedly high acceptance rate for parentheticals, which are still below the acceptance rate for event-related ARCs. In a follow-up experiment, she shows that that when parentheticals are replaced with postposed matrix clauses with a similar content, these clearly resist an embedded interpretation, with acceptance rates near floor.

We conclude that discourse coherence can be used to force some ARCs to take narrow scope, even without resorting to the grammatical devices we used in English and French. Furthermore, it is reassuring that Poschmann brings experimental means to bear on these complex judgments, with fairly clear results.

4 The possibility of wide scope: English and French

At this point, we have found several cases in English, French and German in which ARCs take narrow scope, and minimally differ from clausal parentheticals, which take matrix scope. Still, there are numerous cases in which ARCs take matrix scope, and in fact we had to use a combination of grammatical and contextual cues to bring out narrow scope readings (in addition, some consultants in French only allowed for such matrix readings). How should matrix readings be analyzed?

There are two ways one could approach this problem.

1. We could start from a liberalized version of Potts's and Nouwen's framework, one in which supplements can either be part of the assertive dimension (in which case they have narrow scope), or of Potts's CI (= conventional implicature) dimension, in which case they have wide scope.
2. Alternatively, one could do without a CI dimension, and posit a syntactic mechanism to handle the wide scope data.

We believe that there are three main arguments against option (1). First, there might be independent *syntactic* reasons to posit that ARCs can be attached very high despite appearing to be low; they are based on the analysis of ellipsis and will be discussed in this section. Second, in some cases, narrow scope ARCs retain a special pragmatic status that is neither that of narrow scope conjunctions nor of wide scope parentheticals with modal subordination: in (8)a, (9)a, (10)a, (10)a, the narrow scope gave rise to an intermediate endorsement that will be captured in terms of 'supplement projection' in

⁸For terminological consistency, we replace Poschmann's terminology of 'NRCs' (non-restrictive relative clauses) with 'ARCs' (appositive relative clauses), as in the rest of this piece.

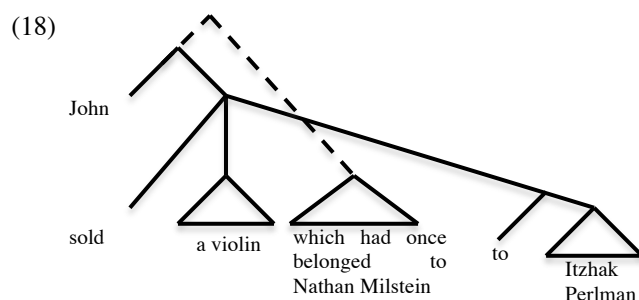
⁹It is worth noting that our English and French data were constructed so as to avoid ambiguities, but narrow scope ARCs were still somewhat degraded for some consultants.

Section 8. This means that a simple ambiguity between a CI and a non-CI reading won't quite do (for non-CI readings, we would still have to explain their non-at-issue discourse status). Third, we will discuss in the next section cases in which ARCs have neither matrix nor narrow scope: we need a mechanism to guarantee that they can be attached at a variety of scope sites, as we announced in (3)(i) (= "an ARC can be attached to any node of propositional type that dominates the position of its DP associate").

We now set out to develop option (2) by arguing for a syntactic theory that allows for a variety of scope attachments; it is a liberalized version of a seminal analysis by McCawley. (We do not discuss German data in this section, as to our knowledge data correlating attachment point and ellipsis have not been investigated yet.)

4.1 Ellipsis and McCawley's Analysis

McCawley 1981,1998 proposed that English ARCs must be attached high despite being apparently embedded. His proposal is illustrated in (18), 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 orthogonal to the issue at hand). Our understanding is that McCawley took high attachment to be the only possibility.¹¹ In view of data discussed above, we will want to liberalize his analysis: while high attachment is usually the preferred possibility, but it is not the only one.



McCawley's argument for positing such a structure was based on patterns on inference obtained in ellipsis resolution in (19):

- (19) a. John sold a violin, which had once belonged to Nathan Milstein, to Itzhak Perlman, and Mary did too. (McCawley 1998)
 b. Sam bought a pound of gold, which he expects to sell at a big profit, and so did Fred. (McCawley 1981)
 c. Tom sent Willie Nelson, who he admires deeply, a fan letter, and Bert did too. (McCawley 1981)

McCawley observed that the second sentence of (19)a does not imply that the violin that Mary sold to Perlman had once belonged to Nathan Milstein (analogous observations hold for (19)b,c). His argument can then be reconstructed as follows:

- (i) Ellipsis requires syntactic identity between the elided element and constituent which is antecedent.
 (ii) Since the elided clause in (19) does not give rise to the inference that Mary sold a violin which belonged to Milstein, the ARC must be absent from the elided clause; but then there must be a constituent in the antecedent clause which includes the VP while excluding the ARC.

McCawley 1981 discusses several further examples that behave in the same way:

This is not the only theoretical possibility, however. We could posit instead that ellipsis resolution is at bottom a *semantic* operation. If so, a Pottsian 'in situ' analysis of appositives could posit that supplemental contributions can systematically be regarded by ellipsis. Potts et al. 2009 discuss analogous facts involving expressives that can be disregarded under ellipsis, as in (20): the crucial

¹¹ This is 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 -our addition] even make up a constituent".

observation is that B's reply does not commit B to the attitude expressed by the modifier *fucking*. Esipova 2019 makes similar remarks about redundant modifiers more generally.¹²

- (20) A: I saw your fucking dog in the park.
B: No, you didn't—you couldn't have. The poor thing passed away last week.

In fact, in some theories devised to explain why some specifications of pronouns 'disappear' under ellipsis, one would *expect* all redundant elements to display this behavior.¹³

The debate is summarized in (21). As we will see, these two theories do not make the same predictions when it comes to supplements that have intermediate scope.

- (21) Appositive that are disregarded under ellipsis
a. McCawley's theory: ellipsis is licensed by syntactic parallelism; if an appositive can be disregarded when a string it belongs to is elided, this indicates that it is attached above the elided constituent.
b. Pottsian alternative: irrespective of syntactic parallelism, ellipsis can disregard the supplemental contributions made by antecedent.

We note for future reference that McCawley's argument can be replicated in French, as shown in (22).

- (22) *Context*: In each generation, the most famous cellist gets to meet the most talented young musicians.
a. Yo Yo Ma a présenté ses élèves préférés, qui vivent à Cambridge, à Rostropovitch. Paul Tortelier aussi, bien sûr.
Yo Yo Ma introduced his favorite students, who live in Cambridge, to Rostropovitch. Paul Tortelier did too, of course
≠> Tortelier has students in Cambridge.
b. Yo Yo Ma a présenté ses élèves qui vivent à Cambridge, à Rostropovitch. Paul Tortelier aussi, bien sûr.
Yo Yo Ma introduced his students who live in Cambridge to Rostropovitch. Paul Tortelier did too, of course.
=> Tortelier has students in Cambridge.

4.2 Correlating Attachment Tests: English

In the preceding sections, we argued that ARCs can be attached at a variety of syntactic sites. To further probe the reality of this analysis, it is worth testing the correlations we predict among various attachment tests. Focusing on ellipsis, we predict a refinement of McCawley's generalization: if we force an ARC to be attached sufficiently low, McCawley's generalization should be obviated, as is stated in (23).

- (23) **Prediction: ellipsis combined with narrow scope tests**
If an ARC is shown by tense/mood licensing or by truth conditions to be attached under an operator *O*, an ellipsis that includes *O* should be resolved as including the ARC as well.

Let us test this prediction, starting with English.¹⁴

¹² Esipova 2019 discusses the following example, and argues that speakers infer from (i) that Lucy has a dog, but that some of them need not infer that Lucy's dog is large.

(i) *Context*: Stephanie and Lucy went to the same party yesterday. Stephanie brought her ginormous dog to the party, but Lucy didn't.

¹³ Following the spirit of Sauerland 2013, Schlenker 2014 proposes the following principle:

(i) Liberal Erasure (informal version)

If within its local context a complex expression *E* has the same denotation as a structurally simpler expression *E'*, then *E* can be replaced with *E'* for purposes of ellipsis resolution and alternative computation.

¹⁴ We could just correlate the *readings* obtained in a sentence that allows for high and low attachment of an ARC, and those obtained in its elided counterpart; the prediction is that high attachment allows an ARC to escape ellipsis resolution, which in turn has consequences for the truth conditions of the elided clause. But such judgments are typically very complex. In the text, we follow this logic but add some morphological telltale signs of low attachment, which arguably simplifies the judgment task.

In (24), the meaning of the appositive (*who I hate*) invites a matrix scope attachment, and thus McCawley's prediction is that it should not be copied during ellipsis resolution: there should be no inference that the addressee hates his/her Chair. This prediction is borne out, as shown by the very low endorsement of Inference 2 (Inference 3 is expected to give rise to high endorsement because the appositive is not part of the *if*-clause).

(24) *Context*: There was an argument between a professor from your Department and one from mine. Each Department has its own Chair, who is responsible for both faculty and staff, including secretaries.¹⁵

–Me: My secretary says that if tomorrow she calls the Chair, who I hate, we will all be in deep trouble.
–You: My secretary does too!

Acceptability (7 = best) (survey A, with 8 consultants)	Inference 1: The speaker hates his/her Chair.	Inference 2: The addressee hates his/her Chair.	Inference 3: (according to your secretary) if your secretary calls your Chair, we will all be in big trouble.
6.4	5.6	2.6	6.9

If the appositive were copied in the elided clause, we would obtain a structure akin to (25):

(25) You: My secretary does too ~~say that if tomorrow she calls the Chair, who I hate, we will all be in deep trouble.~~

The context was set up to strongly invite a reading on which *the Chair* is interpreted on a bound variable reading, with each secretary talking about the salient Chair *for her*, i.e. her Chair. The very strong endorsement of Inference 3 suggests that this is in fact the reading the consultants obtained. Now if the elided *I* in the purported structure in (25) refers to the person who utters it, we should get an inference that the addressee hates his/her Chair, but this inference only gets a weak endorsement. If *I* were read strictly, as referring to the speaker of the first sentence (= Me), we would get the inference that that person hates the addressee's Chair. We have not formally tested the latter possibility, but we do not think that this reading is salient or even possible.

In (26), the modally interpreted present tense refers to a future event, which should facilitate attachment of the ARC in the scope of the *if*-clause. We would thus expect it to be obligatorily copied during ellipsis resolution, and thus we would expect that Inference 2 should give rise to a high endorsement and Inference 1 to a low endorsement. This is not what we find, as both are highly endorsed, although Inference 2 is endorsed a bit more highly than Inference 1.

(26) *Context*: There was an argument between a professor from your Department and one from mine. Each Department has its own Chair, who is responsible for both faculty and staff, including secretaries.

–Me: My secretary says that if tomorrow she calls the Chair, who in turn calls the Dean, we will all be in deep trouble.
–You: My secretary does too!

Acceptability (7 = best) (survey A, 8 consultants)	Inference 1: (according to your secretary) if your secretary calls your Chair, we will all be in big trouble.	Inference 2: (according to your secretary) if your secretary calls your Chair and in addition your Chair calls the Dean , we will all be in deep trouble.
6.0	4.9	5.8

This result could be taken to refute the prediction in (23). But the high endorsement of Inference 1 could also be explained in part by noting that in (10)a, copied as (27), we already had an intermediate rate of endorsement (one we will explain in terms of 'supplement projection' in Section 8). Our consultants might thus get Inference 2 because the appositive is copied, then get a weaker inference (due to supplement projection) that if the secretary calls the Chair, the Chair will call the Dean. In the presence of this additional inference, Inference 2 entails Inference 1.

¹⁵ The statement of the inferential questions was a bit unfortunate because it used 'the speaker' and 'the addressee' instead of 'me' and 'you', but consultants who commented on this point understood 'the speaker' to refer to 'me' and 'the addressee' to refer to 'you', as was intended.

(27) If tomorrow I call the Chair, who in turn calls the Dean, then we will be in big trouble.

Target inference: if tomorrow I call the Chair, the Chair will call the Dean.

Average endorsement: 3.5 (survey A, 8 consultants)

Be that as it may, in (28), by contrast, the narrow scope appositive does seem to get copied in the course of ellipsis resolution: it gives rise to a strong endorsement of the inference that your secretary will say that your Chair didn't pick up the phone (= the content of the narrow scope ARC of the antecedent clause).

(28) *Context:* There was an argument between a professor from your Department and one from mine. Each Department has its own Chair, who is responsible for both faculty and staff, including secretaries. There are faculty meetings in both departments tomorrow, but the Chairs are away.

–Me: At the beginning of the meeting tomorrow, my secretary will say that a few minutes earlier she called the Chair, who didn't pick up the phone.

–You: I am sure that my secretary will too!

Acceptability (7 = best) (survey A, 8 consultants)	Inference 1: (according to me) at the beginning of tomorrow's meeting, my secretary will say that my Chair didn't pick up the phone	Inference 2: (according to you) at the beginning of tomorrow's meeting, your secretary will say that your Chair didn't pick up the phone
6.6	7.0	6.9

While we didn't test this point for reasons of survey length, it seems to us clear that if this ARC is replaced with *who I hate*, which invites matrix scope attachment, no inference will arise to the effect that I hate your Chair.

4.3 Correlating Attachment Tests: French

Related conclusions can be obtained for French. In (29), the content of the appositive invites matrix attachment, and the appositive is not copied as part of ellipsis resolution, hence no inference that the interlocutor hates his/her secretary's supervisor. A bit of caution is needed, however: the context was less explicit than in the English example, and it's possible that some consultants obtained a strict reading for *son supérieur*, in which case Inference 2 would not be obtained irrespective of whether the appositive is copied. But the strength of Inference 3 suggests that a bound reading was generally obtained.

(29) *Context:* There was an altercation between a professor from my Department and one from yours.

–Moi: Ma secrétaire dit que si demain elle appelle son supérieur, que je déteste, nous aurons un sacré problème.

Me: my-fem secretary says that if tomorrow she calls her supervisor-masc, who I hate, we will-have a serious problem

–Toi: Ma secrétaire aussi!

You: my-fem secretary too!

Acceptability (7 = best)	Inference 1: The speaker hates his/her secretary's supervisor.	Inference 2: The interlocutor hates his/her secretary's supervisor.	Inference 3: (according to your secretary) if your secretary calls her supervisor, we'll have a serious problem.
6.8	7.0	1.8	5.6

In (30), by contrast, a modally interpreted present tense is used to refer to a future event within the scope of the *if*-clause, which should facilitate narrow scope attachment. It does seem to be copied under ellipsis resolution: Inference 2 is derived far more strongly than Inference 1 in this case (Inference 1 might to some extent be derived for the same reasons as in the analogous example in (26)).

(30) *Context:* There was an altercation between a professor from my Department and one from yours.

–Moi: Ma secrétaire dit que si demain elle appelle son supérieur, qui appelle ensuite la Doyenne, nous aurons un sacré problème.

Me: my-fem secretary says that if tomorrow she calls her supervisor-masc, who calls then the Dean-fem, we will-have a serious problem

– Toi: Ma secrétaire aussi!

You: my-fem secretary too!

Acceptability (7 = best)	Inference 1: (according to your secretary) if your secretary calls her supervisor, we'll have a serious problem.	Inference 2: (according to your secretary) if your secretary calls her supervisor and in addition the latter calls the Dean, we'll have a serious problem.
5.3	3.8	6.6

4.4 Interim conclusion

In its original form, McCawley's argument is insufficient: it could be that it is because of their semantic status rather than their point of attachment that appositives can be disregarded under ellipsis. Correlating attachment tests strengthens McCawley's argument: in our examples, narrow scope attachment below the ellipsis side forces the ARC to be copied. But our examples do not fully decide the issue. Two theories that could still be developed at this point.

- (i) Liberalized version of McCawley's theory: for syntactic reasons, appositive can be disregarded by ellipsis just in case they are attached above the ellipsis site.
- (ii) Pottsian alternative: some narrow scope appositives are at-issue and therefore cannot be disregarded by ellipsis.

What would be needed to settle the debate is an independent test of the epistemic status (at-issue or not) of narrow scope appositives. Without such a test, the debate cannot be fully adjudicated.

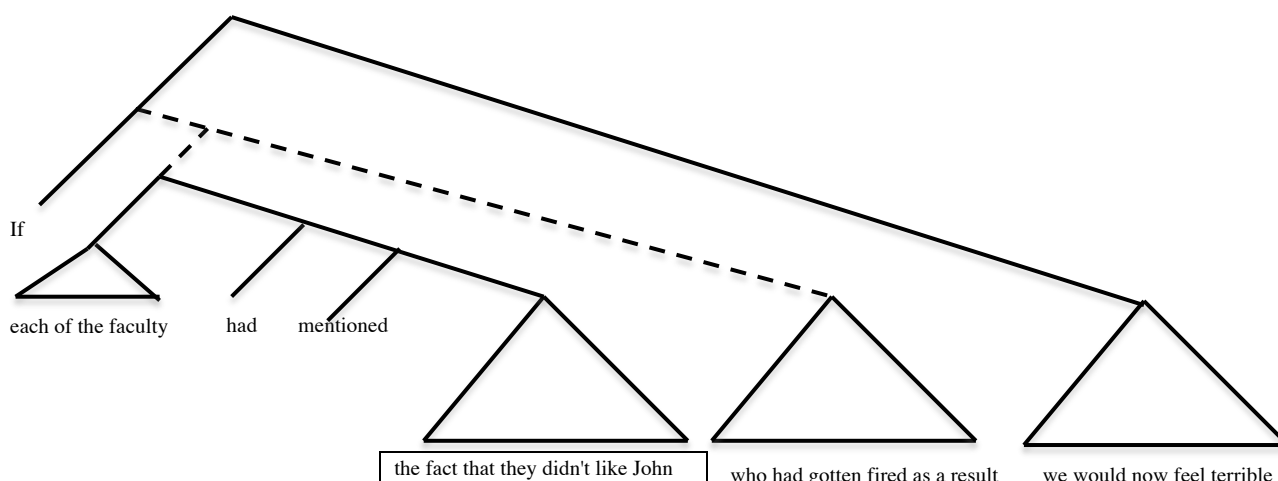
To further defend a Pottsian theory, one could advance that appositives are really ambiguous between two uses: a Pottsian use in which they make their contribution felt in a CI (conventional implicature) dimension; and an at-issue use in which they behave in essence as narrow scope conjuncts. This raises an important question: can there be intermediate scope appositives? These could not be dealt with by way of a Pottsian dimension, since this would predict that they fail to interact scopally with operators. Taking them to be at-issue and narrow scope would be equally insufficient to derive their intermediate scope behavior. Furthermore, if some mechanisms is needed to derive intermediate scope behavior, it can straightforwardly be extended to handle matrix attachment as well. Such intermediate scope readings are the topic of the next section.

5 The possibility of intermediate scope: English and French

5.1 Goal

In order to force intermediate scope readings, we will include a modally interpreted past tense which must be interpreted within an *if*-clause, as in (31) (the relevant verb is underlined) The target sentences include two further ingredients: a quantifier, here *each of the faculty* (boldfaced) to ensure that the ARC is not interpreted in its scope and thus has an intermediate point of attachment (under *if*, above the quantifier); and a complex noun phrase ('the fact that...', boxed) to make it unlikely that the ARC moves out of the scope of the quantifier by covert movement (since complex NPs are known to be islands to movement). A possible structure in the spirit of a liberalized McCawley analysis appears below: the ARC is attached above the quantifier but below *if*, and the operation does not involve movement.

- (31) If [**each of the faculty** had mentioned [complex NP the fact that they didn't like John]], [who had gotten fired as a result], we would now feel terrible.



As will be seen, the target examples have various degrees of acceptability, and thus the results need to be interpreted with some caution and would warrant experimental extensions (the question is whether their somewhat degraded character is due to their complexity alone, or to further constraints; there seems to be cross-individual variation in this respect). Still, the target sentences are more acceptable than matched parenthetical control, and hence the results are informative (if preliminary).

5.2 Intermediate scope in English

Our first target sentence, already discussed in (31), appears with its context, target inference and ratings in (32). Importantly, on the most plausible reading, the meaning forces the ARC to scope above *each of the faculty*: the condition is that [each of the faculty mentions the fact that he doesn't like the Chair] *and* the latter gets fired as a result of this unanimous opinion; attachment under *each of the faculty* yields implausible readings on which for each faculty *f*, the Chair could be fired on the strength of *f*'s particular opinion.¹⁶

(32) *Context*: there is discontent with the current Chair, John, but many people didn't say anything to the Dean for fear that she would take excessive action. I justify this course of action:

If each of the faculty had mentioned the fact that they didn't like John ____ we would now feel terrible.

Target inference: if each of the faculty had mentioned the fact that they didn't like John, John would have been fired as a result

Construction filling ____ (survey A, 8 consultants)	Acceptability (7 = best)	Inferential strength (7 = strongest)
a. , who had gotten fired as a result,	5.4	3.4
b. (he had gotten fired as a result)	2.0	3.0
c. and he had gotten fired as a result,	7.0	2.9
d. , who would have gotten fired as a result,	6.6	7.0
e. (he would have gotten fired as a result)	6.0	6.9

¹⁶ One consultant helpfully provided a paraphrase of the meaning he got: "IF the chair gets fired, it is as result of the collective action of all the faculty members calling the dean to complain and not as a result of each phone call. The chair can only be fired once, after all (it's highly unlikely that after each individual phone call, the dean fires him and then reinstates him, only to fire him again after another complaint comes in.)" (see the Supplementary Materials for the full comment).

While disliked by some consultants, the intermediate scope appositive in (32)a is on average far more acceptable than that parenthetical control in (32)b. The inferential judgments are primarily useful to highlight the difference between the intermediate scope appositive in (32)a and the future anterior appositive and parenthetical in (32)d,e, which presumably take matrix scope.

Acceptability of the intermediate scope appositive becomes less acceptable when it modifies a negative quantifier, as in (33).¹⁷ There still remains a contrast with the parenthetical control in (33)b, which is more degraded.

- (33) *Context*: there have been problems with the current Chair, John, but several faculty talked to the Dean to support John for fear that otherwise he might be fired (in the end, he wasn't fired). I justify this course of action:

If nobody had mentioned the fact that they liked John ____, we would now feel terrible.

Target inference: if nobody had mentioned the fact that they liked John, John would have been fired as a result

Construction filling ____ (survey A, 8 consultants)	Acceptability (7 = best)	Inferential strength (7 = strongest)
a. , who had gotten fired as a result,	4.6	3.3
b. (he had gotten fired as a result)	2.4	2.8
c. and he had gotten fired as a result,	6.8	3.1
d. , who would have gotten fired as a result,	6.3	6.8
e. (he would have gotten fired as a result)	5.9	6.8

One might want to treat the ARC as being attached low but being indexed with a world variable introduced by the *if*-clause, as in (34):

- (34) $if_w \lambda w$ nobody [mention_w the fact $\lambda w'$ they liked_{w'} John [who got fired_{w'}]], we would now feel terrible

This will not give rise to the correct truth conditions, however. The problem is that the ARC is in the scope of the negative quantifier *nobody*. In essence, the proposition *Nobody [... & John got fired in w]* is true in any world *w* in which John was not fired. For this reason, the *if*-clause isn't even predicted to be counterfactual, since John wasn't in fact fired. This is not at all the truth conditions we want. Rather, we need to derive a reading akin to: *if nobody had mentioned that they liked John, and as a result of this proposition John had been fired, we would have a serious problem*. This is straightforwardly derived in the ARC is attached as a conjunct above *nobody*... but below *if*.

We conclude that, in some cases at least, English ARCs can be attached to an intermediate position, including in cases with islands that make an analysis with covert movement implausible.

5.3 Intermediate scope in French

Turning to French, we replicate our findings from English, but once again with embedded ARCs that are degraded for some consultants. As in English, we use the modally interpreted past tense (here: the imperfect) to force an intermediate scope reading. (35) is analogous to (32), and (36) to (33).

- (35) *Contexte*: within our Department, the Director, Jeanne, became unpopular with the professors, but most didn't want to say anything to the Dean for fear that he would over-react. I justify this attitude in these terms:

Si chaque professeur avait mentionné le fait qu'il n'aimait pas Jeanne ____ nous nous sentirions mal.
if each professor had mentioned the fact that he NE liked not Jeanne ____ we ourselves would-feel bad

¹⁷ A consultant helpfully proposes an explanation: "For whatever reasons, it sounds strange to me to say that X happened as a result of Y being done by nobody, even if it makes sense logically. My gut reaction was "as a result of what?"

'If each professor had mentioned the fact that he didn't like Jeanne ____ we would feel bad.'

Target inference: if each professor had mentioned the fact that he didn't like Jeanne, Jeanne would have been fired

Construction filling ____ (8 consultants)	Acceptability (7 = best)	Inferential strength (7 = strongest)
a. , qui ensuite avait été virée, , <i>who then had been fired</i> ,	4.8	2.8
b. (elle avait ensuite été virée) (<i>she had then been fired</i>)	1.8	2.0
c. et qu'elle avait ensuite été virée, <i>and that she had then been fired</i> ,	6.6	2.1
d. , qui ensuite aurait été virée, , <i>who then would-have been fired</i> ,	6.9	6.1
e. (elle aurait ensuite été virée) (<i>she would-have then been fired</i>)	5.9	6.5

(36) *Contexte:* within our Department, there have been several conflicts with the Director, Jeanne, but several of us told the Dean that they supported Jeanne. I justify this attitude in these terms:

Si personne n'avait mentionné le fait qu'il appréciait Jeanne ____, nous nous sentirions mal.
si nobody NE had mentioned the fact that he liked Jeanne ____, we ourselves would-feel bad
'If nobody had mentioned the fact that he liked Jeanne, we would feel bad.'

Target inference: if nobody had mentioned the fact that he liked Jeanne, Jeanne would have been fired.

Construction filling ____	Acceptability (7 = best)	Inferential strength (7 = strongest)
a. , qui ensuite avait été virée, , <i>who then had been fired</i> ,	4.9	2.9
b. (elle avait ensuite été virée) (<i>she had then been fired</i>)	2.4	1.5
c. et qu'elle avait ensuite été virée, <i>and that she had then been fired</i> ,	7.0	2.5
d. , qui ensuite aurait été virée, , <i>who then would-have been fired</i> ,	7.0	6.1
e. (elle aurait ensuite été virée) (<i>she would-have then been fired</i>)	5.9	6.5

For completeness, we provide in Appendix I a related paradigm in which intermediate scope is forced by the presence of the subjunctive, but the combination of an intermediate scope appositive with the subjunctive and a negative quantifier makes the result rather degraded, albeit less so than a parenthetical control in the subjunctive.

5.4 Interim conclusion

In sum, in both English and French, ARCs can to some extent attach not just with matrix or narrow scope, but also with intermediate scope. Target sentences are less than perfect, to various degrees: our consultants accept our English example with *each* in (32)a a bit more readily than our example with *nobody* in (33)b. In French, related examples in (35)a and (36)a have the same intermediate status. In all cases, parenthetical controls (the b-sentences in each paradigm) are quite a bit more degraded.

Since the contrasts are real but subtle, caution is warranted in interpreting the results. If the contrasts are confirmed, they will provide an important argument against an analysis in which ARCs are ambiguous between a 'conventional implicature' and an 'at-issue' reading: such a theory would fail to explain the possibility of intermediate scope. Furthermore, an analysis of intermediate scope readings based on covert movement is implausible because our target constructions systematically involved a

'complex NP' island; and we saw that in some cases an indexing analysis just yields the wrong truth conditions.

With these disclaimers, we take the existence of intermediate scope readings to suggest that we need a mechanism of non-local attachment of ARCs. Once this mechanism is in place, it is hard to see how it could *fail* to yield some wide scope readings as well, making a bidimensional analysis unnecessary. (We will see another incarnation of our argument when we compare the present approach to that of AnderBois et al. 2013 in Section 9).

6 Non-local attachment of clauses: an argument from ASL (Schlenker 2020)

The crux of our proposal lies in a mechanism that allows some clauses to be attached to any propositional node that dominates their DP associate. But is there independent evidence for such a mechanism? To support McCawley's analysis, with matrix attachment only, one could have mentioned the behavior of clausal parentheticals. But our liberalized version of McCawley's mechanism cannot be motivated in this way since we argued at every juncture that appositives are more liberal than parentheticals. We now turn to independent data from ASL that seem to display evidence for a non-local attachment of clauses, in cases that do not involve ARCs.

In a nutshell, some clauses that are not distinguished from normal ones (i.e. clauses that have nothing restrictive- or appositive-like in their overt syntax) can be forced to take higher scope, including out of syntactic islands, and in a way that yields the expected correlations with ellipsis tests. Here we just summarize conclusions from Schlenker 2020, which is cautious to discuss several theoretical directions, but favors the present one.

In ASL, conjunction can be asyndetic, which yields narrow scope readings for some apparently independent clauses. Schlenker 2020 uses non-manual markers to force them to be interpreted outside the scope of various operators. The clearest version of the paradigm involved two non-manuals: Brow Raise, notated as \wedge , which marks the scope of an *if*-clause; and Role Shift, notated as *RS*, which marks the scope of an attitude verb with context shift (Quer 2005, 2013; Schlenker 2017a,b). Importantly, there are alternative analyses of Role Shift in terms of quotation rather than context shift (e.g. Davidson 2015); on these analyses, role-shifted clauses could potentially be treated as being root clauses. For this reason, all paradigms were replicated with normal indirect discourse replacing Role Shift (this is possible because ASL has both options: not just Role Shift, but also English-style indirect discourse without Role Shift). It is thus for reasons of clarity that we focus this summary on paradigms with Role Shift, as the non-manual makes the point of attachment of the clause particularly clear. Importantly, in all cases, the inferential tests performed were not indicative of anything but an at-issue contribution.

Let us sketch the logic of the argument; the data are summarized in Appendix II. Schematically, Schlenker 2020 considers the structures in (37), where $\&$ corresponds to the word *PLUS* (a standard way to mark conjunction in ASL), and where absence of Brow Raise (glossed as \wedge) leads to the insertion of Brow Lowering (glossed as \sim). Brow movement is indicated on the first line above the words, Role Shift on the second line above it.

- (37) a. RS_i _____
 \wedge _____
 ... SAY IF Clause-1 **Clause-2** & Clause-3, ...
- b. RS_i _____
 \wedge _____ \sim _____ \wedge _____
 ... SAY IF Clause-1 **Clause-2** & Clause-3, ...
- c. RS_i _____ RS_i _____
 \wedge _____ \sim _____ \wedge _____
 ... 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 (37)a, under Role Shift but without Brow Raise (and with Brow Lowering) in (37)b, and it is exempted from both in (37)c, with Brow Lowering again replacing Brow Raise when the latter is missing.

There are three main results. First, Clause-2 may take narrow, intermediate or wide scope depending on which non-manuals it has: narrow scope when it co-occurs with Brow Raise (^) and Role Shift (RS), as in (37)a: the two non-manuals indicate that Clause-2 is in the scope of two operators. Clause-2 has intermediate scope when it is exempted from Brow Raise but not from Role Shift, as in (37)b: in that case, it is interpreted in the scope of the conditional but not of the attitude verb. Finally, Clause-2 is interpreted with matrix scope when it is exempted from both Brow Raise and Role Shift, as in (37)c. Second, correlations with ellipsis yield results that are predicted by the liberalized McCawley analysis adopted in this piece: a clause can be disregarded by ellipsis when its attachment point is above the ellipsis site. Third, there is no evidence at all of 'projection' phenomena, unlike in the case of ARCs: in view of the current data, the target clauses behave like normal propositions that can be attached at various levels.

While Schlenker 2020 discusses alternative explanations, he finds them lacking.¹⁸ Since these constructions have not been the object of much study in ASL, conclusions might of course change in the future. But for present purposes, this study makes two relevant contributions: (i) there seems to be independent evidence for a mechanism that attaches clauses non-locally to propositional nodes that dominate their DP associate; (ii) unlike most ARCs, the contribution of the ASL clauses under study seems to be at-issue.

7 Pragmatics I: Translucency

7.1 Goals

At this point, then, we have justified in some detail the syntactic part of our proposal: in a liberalized version of McCawley's analysis, ARCs can be attached to any propositional node that dominates the position of their DP associate. The semantics is relatively straightforward, and it too is in the spirit of McCawley's analysis:

- (i) the content of ARC is conjoined to that of the propositional node to which it is attached;
- (ii) as argued by Del Gobbo 2003, the *wh*-pronoun behaves like a normal or E-type pronoun dependent the ARC's DP associate.
- (ii) would need to be made more formally precise, but this would take us too far afield, as there is still an essential component missing from the present analysis: the pragmatics.

It is an old intuition that ARCs must make a contribution that is in some sense incidental to that of the main clause, but this is not at all derived from the present analysis, which only contains syntactic and semantic assumptions. We propose to add a pragmatic component that takes the contribution of ARCs to share some but not all properties of presuppositions. On various theories coming out of dynamic semantics (e.g. Heim 1983, Schlenker 2009), a presupposition must be trivial or 'transparent' in its local context. Potts 2005 convincingly established that treating ARCs as being presuppositional is the wrong idea: presuppositions definitely can and usually must be locally trivial; by contrast, ARCs must be non-trivial:

- (38) Lance Armstrong survived cancer.
 - a. #When reporters interview Lance, a cancer survivor / who survived cancer, he often talks about the disease.
 - b. And most riders know that Lance Armstrong is a cancer survivor. (after Potts 2005)
- (39) a. Although he came home for Thanksgiving, John came home again for Christmas.
 - b. #Although he came home for Thanksgiving, John, who had come home before, came home (again) for Christmas. (Schlenker, to appear)

While fully accepting Potts's point, we develop an idea sketched in Schlenker 2013: supplements should be locally non-trivial, but it should be easy to accommodate (in the global context) assumptions

¹⁸ In particular, Schlenker 2020 discusses the possibility that the ASL clauses under consideration move by covert movement, or that they are evaluated *in situ* while being indexed with a non-local world variable. He argues that in some cases the latter solution doesn't yield the right truth conditions, while the former solution might share this problem, and also requires extraction in what is arguably a coordinate structure island.

that make them locally trivial. This predicts a strong connection between supplements and informative presuppositions.

7.2 *Translucency*

The theoretical analysis is stated in (40): while ARCs shouldn't be locally trivial (= 'transparent', they are presented as making a contribution that can easily be made trivial (= they are 'translucent'), in the sense that it should be 'easy' to strengthen the global context C into a context C^+ relative to which the ARC is locally trivial. We write 'easy' in scare quotes because we will not provide develop a theory of which assumptions can be added to the global context in this way. However we will draw a direct connection with an independent phenomenon, that of informative presuppositions, which involves related notions.

(40) **Hypothesis: Translucency**

a. Theory

(i) A supplement must make a non-trivial contribution in its local context relative to the global context C of the conversation. (cf. Potts 2005)

(ii) It should be 'easy' to accommodate assumptions that make a supplement locally trivial, i.e. to add assumptions to C to obtain a strengthened context C^+ relative to which the supplement is locally trivial.

b. Consequences

(i) The theory predicts a connection between supplements and informative presuppositions: if a content can be used as an informative presupposition in a given environment, it can be used as supplement in that environment as well.

(ii) The theory also predicts patterns of projection similar to presupposition projection with ARCs are attached under various logical operators.

(iii) The theory might explain why ARCs are unlikely to be targeted by negation in discourse.

To illustrate the main idea, consider the sentences in (41)a,b. The context is one in which one is awaiting the election results. It is thus hard to accommodate this piece of information, and as a result it is better to present this content as at-issue rather than as a supplement. We note that a related contrast holds when the content of the appositive is turned into a modifier within the definite description, as in (41)c,d, a point to which we return below.

(41) *Context*: Television viewers are anxiously awaiting the results of the presidential elections (they have not been announced yet). The TV anchor says:

a. ^{6.8}The Democratic candidate, who is 47 years old, has just won.

b. ^{4.6}The Democratic candidate, who has just won, is 47 years old.

c. ^{6.6}The 47-year-old Democratic candidate has just won.

d. ^{4.1}The victorious Democratic candidate is 47 years old.

(Survey A, 8 consultants)

When the context is changed so that the news about the election results is already out, the contrast disappears or gets reversed. Here too, turning the content of the appositive into a modifier within the definite description yields related contrasts.

(42) *Context*: The results of the presidential elections have just been announced by a TV anchor (and the results still appear in the background). Another TV anchor adds:

a. ^{4.8}The Democratic candidate, who is 47 years old, has just won.

b. ^{5.8}The Democratic candidate, who has just won, is 47 years old.

c. ^{4.9}The 47-year-old Democratic candidate has just won.

d. ^{6.6}The victorious Democratic candidate is 47 years old.

(Survey A, 8 consultants)

7.3 *The connection with informative presuppositions triggered by definite descriptions*

Since our theory does not derive from first principles what it means for an assumption to be one that is 'easy' to accommodate, we need at least some way to assess this notion on independent grounds. We believe that the case of redundant modifiers of definite descriptions can do precisely this: because of the semantics of definite descriptions, they trigger presuppositions; but to justify their presence, the

presupposition they trigger must often be informative. The similarity between (41)c,d and (41)a,b or between (42)c,d and (42)a,b suggests that this analogy might be on the right track.

In all the c-d examples, the linearly first modifier (47-year old, victorious) couldn't affect the denotation of the description and it is in this sense redundant: in a standard Presidential election in the US, there is exactly one Democratic candidate, and thus when there is no presupposition failure the denotation of *the victorious Democratic candidate* is the same as that of *the Democratic candidate*, as is that of *the 47-year-old Democratic candidate*. So all these supernumerary modifiers can do is trigger an additional presupposition. But to avoid violating a Gricean maxim of brevity, the presuppositions should have some function, such as being informative and/or relevant. A statement of this principle (from Schlenker 2005) appears in (43).

(43) Minimize Restrictors!

A definite description *the A B* (...) is deviant if *A* is redundant, i.e. if:

- (i) *the B* is grammatical and has the same denotation as *the A* (= Referential Irrelevance), and
- (ii) *A* does not serve another purpose (= Pragmatic Irrelevance).

To illustrate, (44)a violates (43) because *blond* is both referentially and pragmatically irrelevant. If John has two brothers, one of whom is blond, (44)b is denotationally relevant. In (44)c, *idiotic* is referentially irrelevant but triggers an informative presupposition, hence this is a way of informing the addressee that the speaker takes John's father to be an idiot (why expressive content makes good informative presuppositions is a further question, discussed for instance in Schlenker 2007).

- (44) a. ??John's blond father has arrived
 b. John's blond brother has arrived.
 c. John's idiotic father has arrived.

Being informative is one way in which a redundant modifier can be made acceptable. When a presupposition is informative and acceptable, the global C must be one that can be strengthened to a context C⁺ in which the presupposition is locally transparent. An ARC with the same content as the presupposition should thus be acceptable as well, as is stated in the following generalization:¹⁹

- (45) In a given environment, if a certain content can be used as an informative presupposition triggered by a redundant modifier in a definite description, it can also be used as a supplement in an ARC.

A possible difference between informative presuppositions and ARCs is that an informative presupposition presumably forces the rest of the discourse to be evaluated with respect to the strengthened context C⁺. We make no such claim about ARCs (and we revisit this point in Section 8). Another potential difference is that presuppositions might, possibly for this reason, be more demanding than ARCs, and thus we do not claim that all ARCs can be turned into informative presuppositions. There are arguably counterexamples to the latter claim. Thus (46)a, with an ARC, is a bit more acceptable than a near-equivalent version with an informative presupposition, as in (46)b:

- (46) *Context*: The following is the beginning of an email informing the author of a submitted abstract of the outcome of the selection procedure.

Dear Colleague,

This is to provide you with information about Sinn und Bedeutung 2020.

a. ^{5,4}Your contribution, which is accepted, will be presented on the first day of the conference.

b. ^{3,4}Your accepted contribution will be presented on the first day of the conference.

(Survey A, 8 consultants)

¹⁹ We remain cautious about cases in which redundant modifiers do not force accommodation of anything: it seems to us that their informativity requirements are weaker than those of supplements as suggested by the potential contrast in (i):

- (i) TEST a. <?> Little Johnny is happy, and this happy boy makes me smile.
 b. <#> Little Johnny is happy, and this boy, who is happy, makes me smile.

The reason for the contrast in (46) might be as follows: the difference between an informative presupposition and an appositive is that the former but not the latter forces accommodation of the target information. This is an odd thing to do at the beginning of a message that authors are eagerly awaiting to know whether their contribution was accepted.

Possibly sharper contrasts arise when an expression is used as a performative: this seems difficult to achieve with informative presuppositions, but it is clearly possible with ARCs.²⁰

- (47) *Context*: A colleague from another institution has badmouthed my Department, but he has just apologized to me. I reply to him as follows:
- a. ^{6.0}Your apology, which is accepted, will be conveyed to my colleagues.
 - b. ^{6.8}Your apology, hereby accepted, will be conveyed to my colleagues.
 - c. ^{3.3}Your accepted apology will be conveyed to my colleagues.
- (Survey A, 8 consultants)

We conclude that informative presuppositions triggered by redundant modifiers in definite description can help constrain what it means for an assumption to be one that can 'easily' be accommodated: if an assumption can be an informative presupposition, it can be easily accommodated for purposes of supplement theory. But there are good supplements that do not make good informative presuppositions.

One last question is whether informative presuppositions really tell us something independent from appositives. There have been attempts, such as Morzycki 2008, to treat related redundant modifiers as supplements. As explained by Leffel 2014, Morzycki's theory doesn't yield the right readings for redundant modifiers of definite descriptions.²¹ But in any event, there are conceptual and empirical arguments for not treating redundant modifiers as supplements. On the conceptual side, the standard theory of presuppositions triggered by definite descriptions is all we need for these cases (once one grants that some presuppositions can be informative). On the empirical side, redundant modifiers might not have the same scopal possibilities as ARCs: the latter can be attached to various propositional nodes, whereas the former must arguably be evaluated in tandem with the words they modify. A possible example of a contrast appears in (48):²²

- (48) *Context*: There was a lottery. Three players bet on 100, and none on 99. 99 came up. Nobody won, but if 100 had come up, ____
- a. ^{5.4}the three winners, who are unhappy, would have been happy instead.
 - b. ^{3.3}the three unhappy winners would have been happy instead.
- (Survey B, 8 consultants)

²⁰ It might be that by its very nature a performative expression must be presented as making a non-trivial contribution, but we leave a full analysis for future research.

²¹ Morzycki 2008 was interested in different cases, involving redundant modifiers such as those in (i), also discussed by and Leffel 2014. Importantly, Leffel 2014 treats them as being presuppositional in nature.

- (i) a. Every unsuitable word was deleted. (Larson & Marušič 2004)
 b. Every harmful toxin will be eliminated. (Leffel 2014)

As Leffel 2014 notes, Morzycki's account is intended to derive in (i)a the inference that the sum of contextually given words has the property of being unsuitable, and it's not clear how this will extend to singular descriptions such as *my sick mother* or *my wonderful assistant*.

²² We also tested the paradigm in (i), but the results do not display any contrast, contrary to our expectations:

- (i) *Context*: We are discussing what would happen if there still were a king of France. Jean d'Orléans, count of Paris, is heir to the French throne, which doesn't exist. But if France were still a monarchy,
- a. ^{4.3}the king, who is unknown, would be a celebrity.
 - b. ^{4.4}the unknown king would be a celebrity.
- (Survey B, 8 consultants)

To make sense, (48)b would have to involve a noun read De Re and an adjective read De Dicto. This kind of mixing seems to be impossible or very difficult, possibly because quite generally a noun and its modifiers must be evaluated with respect to the same world. The appositive in (48)a is more acceptable, presumably because it can be evaluated independently from the noun.

We conclude that informative presuppositions triggered by redundant modifiers in definite descriptions can help constrain what it means for an assumption to be 'easy' to accommodate, and that the explanation is not circular: redundant modifiers in definite descriptions are not just appositives in disguise.

7.4 *The importance of relevance (Marty 2020)*

Marty 2020 criticizes an earlier version of the analysis in (40)a in which condition (40)a(ii) (= ease of accommodation) reduces to the fact that the necessary assumptions aren't too surprising. Marty argues that this is incorrect: an ARC may or may not be acceptable depending on its relevance to the rest of the discourse.

- (49) a. #Bill, who has thirteen fingers, speaks faster than anybody else.
 b. Bill, who has thirteen fingers, plays arpeggios faster than anybody else.
- (50) a. #Sue, who has just won a huge lottery jackpot, was born in 1985.
 b. Sue, who has just won a huge lottery jackpot, bought a \$10 million yacht.

Marty 2020 discusses two possible analyses. On one, the rest of the sentence (not just the beginning) can be taken into account when determining if an ARC is 'unsurprising'. On the other, relevance: the contribution of an ARC "should be relevant yet less critical to the conversation than the contribution of the sentence in which it appears".

While we agree with Marty's judgments, our own attempt at eliciting these contrasts has failed, possibly due to minor changes we made to (49).²³ But let us grant the validity of his criticism. Our main point is that Marty's data have counterparts with informative presuppositions triggered by redundant modifiers of definite descriptions, as is shown by the following examples due to Leffel (2014):²⁴

- (51) a. I have to go take care of my sick wife.
 b. \approx My wife is sick, so/therefore I have to go take care of her.
 a'. #I have to go take care of my tall wife.
 b'. \approx My wife is tall, so/therefore I have to go take care of her. (Leffel 2014 p. 77)
- (52) a. Can you believe it—the black president gave a racist speech!
 b. \approx The president's blackness makes it surprising that he would give a racist speech.
 a'. #Can you believe it—the tall president gave a racist speech!

²³ Our failed attempt to elicit these contrasts is given in (i); it failed equally for appositives and for redundant modifiers of definite descriptions.

- (i) *Context*: I am discussing my family members with a friend:
 a. ^{6.5} My father, who has 6 fingers, speaks faster than anybody else.
 b. ^{7.0} My father, who has 6 fingers, plays arpeggios faster than anybody else.
 c. ^{6.5} My 6-fingered father speaks faster than anybody else.
 d. ^{6.9} My 6-fingered father plays arpeggios faster than anybody else.
 (Survey B, 8 consultants)

²⁴ While we have not formally tested these examples, we believe that Leffel's contrasts in (51)-(52) can be replicated with ARCs in (i)-(ii) (this contrast was confirmed by one of our consultants):

- (i) a. I have to go take care of my wife, who is sick.
 b. ?I have to take care of my wife, who is tall.
- (ii) a. Can you believe it – the President, who is black, just gave a racist speech!
 b. ?Can you believe it – the President, who is tall, just gave a racist speech!

b.' #≈ The president's height makes it surprising that he would give a racist speech.
(expanded from Isabelle Charnavel's p.c. to Leffel; Leffel 2014 p. 77)

In addition, it is worth asking whether relevance is enough to justify an ARC. First, it is not clear at all that the projection data we discuss in Section 8 follow from a 'relevance only' theory. Second, there might be cases in which, keeping relevance constant, ease of accommodation matters in its own right. Some speakers thus display a preference for (53)a over (53)b; the same contrasts hold more strongly) with informative presuppositions, as in (53)c and (53)d.

- (53) *Context*: Television viewers are anxiously awaiting the result of the World Cup final (they have not been announced yet). The TV anchor says:
- a. ^{7.0} The German team, which is extraordinarily talented, has just won.
 - b. ^{5.8} The German team, which has just won, is extraordinarily talented.
 - c. ^{6.9} The extraordinarily talented German team has just won.
 - d. ^{4.4} The winning German team is extraordinarily talented.
- (Survey B, 8 consultants)

7.5 *Discourse status of supplements*

In discourse, supplements often fail to be targeted by denials, as illustrated in (54), which denies that Lance won the Tour de France but grants that he survived cancer (we come back to exceptions in Section 10.2):

(54) Lance, who is a cancer survivor, won the Tour de France. –No!

Translucency on its own requires that it should be easy to add to C an assumption A (whose meaning we write as **A**) to obtain a context C^+ from which it follows that Lance is a cancer survivor. In many cases, this might be because the probability of A relative to C is high enough (in other words: A doesn't follow from C, for otherwise the ARC would be trivial; but A is fairly likely given C, which makes it easy to accommodate A and thus to make the ARC locally trivial). When this happens, the probability of the ARC (= Lance's being a cancer survivor) relative to the initial context is high, and the probability of its negation is low. This reasoning is summarized in probabilistic terms in (55). This makes it plausible that the addressee denied the speaker's utterance because of its at-issue component rather than because of the ARC.

- (55) a. By Translucency, for $C^+ = C \cap \mathbf{A}$, $C^+ \models$ Lance is a cancer survivor.
 b. By a., $C \models [A \Rightarrow \text{Lance is a cancer survivor}]$,
 and hence: $C \models [\text{not (Lance is a cancer survivor)} \Rightarrow \text{not A}]$
 c. Let ε be such that the conditional probability of A relative to C is above $1-\varepsilon$:
 $\text{Proba}(A \mid C) > 1-\varepsilon$. Since $C \models [A \Rightarrow \text{Lance is a cancer survivor}]$, $\text{Proba}(\text{Lance is a cancer survivor} \mid C) \geq \text{Proba}(A \mid C) > 1-\varepsilon$, and thus $\text{Proba}(\text{not [Lance is a cancer survivor]} \mid C) \leq \varepsilon$.

While this is not at all the final word on the discourse status of ARCs, this suggests that there is a connection between translucency and the fact that ARCs are not easily targeted by negation in discourse.²⁵

8 **Pragmatics II: the new problem of supplement projection**

On the present analysis, the fact that high attachment ARCs fail to interact scopally with semantic operators is due to their syntax: they are just attached to the root node despite being apparently embedded. But the fact that low attachment ARCs do not behave like conjuncts remains to be explained. The pragmatic part of our analysis leads us to expect that they should give rise to projection patterns reminiscent of presuppositions. The inferences should be weak, however: by default, one takes a presupposition to be trivial in its local context, which in turn provides information about the global context C. By contrast, a supplement should not be trivial in its local context. Rather, it should be easy

²⁵ To have a more complete analysis, we would need to compare the probability that the ARC is false to the probability that the at-issue content is false. We leave this issue for future research.

to imagine a strengthened context C^+ relative to which the supplement is locally trivial. Thus the inferential patterns obtained should be similar to presupposition projection, but their inferential strength should be weaker. Displaying them rigorously would require more fine-grained methods than we can muster in this paper, but we will provide preliminary data that go in that direction.

8.1 Consequent of conditionals: an example with turn out

Presuppositions give rise to complex patterns of projection, analyzed in several contemporary accounts by positing that a presupposition must be entailed by its local context, and that local context computation is determined by the global context combined with the linguistic environment.

An example is provided in (56); it is of the form *if p, qq'*?, where *qq'* triggers a presupposition (due to the description *DSK's meeting with the judge the day before*) that there was a meeting on a certain day. It gives rise to the inference that *if p, q*. It is important to embed the conditional in a question in order to tease apart entailments from presuppositions: when *q* is a normal entailment of *qq'* (rather than a presupposition), the assertion *if p, qq'* gives rise to the inference that *if p, q*, but the corresponding question does not.

- (56) *Context*: DSK, a French politician, is thought to be in discussions to settle a civil lawsuit against him. The speaker is talking to a journalist who might have information about how the procedure will unfold.

If the big event takes place on Tuesday, will it turn out on Wednesday that during DSK's meeting with the judge the day before, he agreed to a settlement?

Acceptability (7 = best) (survey B, 8 consultants)	Inference 1: DSK will meet with the judge on Tuesday	Inference 2: If the big event takes place on Tuesday, DSK will meet with the judge on that same day
6.1	3.9	6.4

With these facts in mind, we can seek to assess similar facts with ARCs and relevant controls as in (57), with the same inferential questions as in (57). Importantly, the ARC contains a past tense evaluated relative to a future moment, which should to some extent force it to be interpreted with narrow scope; this is essential to make sure that we are testing genuine projection effects rather than just high syntactic attachment. This forward shifted past tense had the desired effect for consultants who found the parenthetical in (57)b to be degraded. But others found no or little difference in acceptability between (57)a and (57)b, possibly because of a mechanism of 'perspectival shift' akin to that discussed by Harris and Potts 2009a,b. Inferences obtained by these consultants might be due to a matrix rather than to a narrow scope attachment of the ARC. To control for this possibility, we provide not just aggregate scores over all consultants, but also, italicized, average scores for those consultants that found that the target sentence in (57)a was at least 2 points better than the control in (57)b. Here and in later discussions, target inferential scores are boldfaced.

- (57) *Context*: DSK, a French politician, is thought to be in discussions to settle a civil lawsuit against him. The speaker is talking to a journalist who might have information about how the procedure will unfold.

If the big event takes place on Tuesday, will it turn out on Wednesday that DSK ____ agreed to a settlement?

Construction filling ____ (survey B, 8 consultants; 3 found a. at least 2 points better than b; average scores for these consultants are italicized)	Acceptability	Inference 1: DSK will meet with the judge on Tuesday	Inference 2: If the big event takes place on Tuesday, DSK will meet with the judge on that same day
a. , who met with the judge the day before,	5.9 <i>5.3</i>	4.0 <i>2.7</i>	5.9 <i>5.7</i>
b. (he met with the judge the day before)	4.1 <i>1.3</i>	5.5 <i>4.7</i>	4.5 <i>3.7</i>
c. (he will have met with the judge the day before)	6.4 <i>5.3</i>	3.4 <i>2.0</i>	6.9 <i>7.0</i>
d. met with the judge the day before and	6.8 <i>6.3</i>	1.0 <i>1.0</i>	2.4 <i>2.7</i>

The ARC in (57)a gives rise to a conditional inference akin to that in (56), including when one restricts attention to consultants who found the control in (57)b significantly worse. The small number of consultants and the subtlety of the effects makes it impossible to argue that the strength of Inference 2 is weaker in (57) than in (56): more powerful methods would be needed to test this.²⁶

8.2 Antecedent of conditionals: earlier examples

We discussed in Section 2.1 narrow scope appositives embedded in the antecedent (rather than in the consequent) of conditionals. The examples (8)-(10) all had the form *if p, who q, then r*, as illustrated in (58)a, and they gave rise to a weak inference *if p, q*. This should be compared to presuppositional examples of the form *if p and qq', r*, where *qq'*: these are predicted by dynamic semantics and related frameworks to trigger the conditional presupposition *if p, q* (e.g. Heim 1983, Beaver 2001, Schlenker 2009), and this is indeed found in some examples, as shown in (59) (not in all, due to what is called the Proviso Problem, to which we return).

(58) **if p, who q, then r**

gives rise in (8)-(10) to a weak inference: *if p, q*, e.g.

a. If tomorrow I called the Chair, who in turn called the Dean, then we would be in big trouble.

Target inference: if tomorrow I called the Chair, the Chair would call the Dean.

(= (8)a) Endorsement: **3.8**

b. If tomorrow I call the Chair, who in turn calls the Dean, then we will be in big trouble.

Target inference: if tomorrow I call the Chair, the Chair will call the Dean.

(= (10)a) Endorsement: **3.5**

(59) **if p and qq', then r**

gives rise (in some cases) to an inference that *if p, q*.

If Spaceman Spiff lands on Planet X and is bothered by the fact that his weight is greater than it would be on Earth, he won't stay long. (Example 156, Beaver 2001)

=> if Spaceman Spiff lands on Planet X, his weighter will be greater than it would be on Earth

The inferential force of the judgments we obtained in (8)a, (9)a and (10)a was of intermediate strength, but here too, it is far too early to tell whether this vindicates our claim that inferences triggered by narrow scope appositives are of weaker strength than presuppositional inferences.

8.3 A more complete paradigm with embedding under wonder

We turn to a more complete paradigm informing supplement projection under *wonder*. Our starting point is the observation that when *pp'* entails (rather than presupposes) *p*, *I wonder whether p* doesn't give rise to an inference that *I believe that p*, as seen in (60)a. But when *p* is a presupposition of *pp'*, the inference does go through, as shown in (60)b.

(60) a. I wonder whether Ann used to smoke and has stopped.

≠> Ann used to smoke

b. I wonder whether Ann has stopped smoking.

=> Ann used to smoke

Why these patterns arise is a separate question (see for instance Heim 1992 and Geurts 1999 (chapter 5) for presupposition projection under an attitude verbs).²⁷ Here we will be content to use them to determine whether narrow scope ARCs give rise to related inferential patterns.

²⁶ The data obtained with the *will*-parenthetical in (57)c suggest that modal subordination yields a stronger conditional than unconditional inference in his case. This is expected in view of other examples of modal subordination, as in (i), from Roberts

(i) If Edna forgets to fill the birdfeeder, she will feel very bad. The birds will get hungry.

²⁷ In Heim's (1992) treatment, *x believes that qq'* presupposes *x believes that q* in case *q* is the presupposition of the embedded clause. But as noted by Heim herself and Geurts 1999, out of the blue one gets a presupposition

The case of a simple assertion with *wonder* was already discussed in (11), but it is repeated in (61) with additional information about consultants that preferred the a-positive to the b-parenthetical by at least 2 points. Related data are provided in (62) for the case in which the target sentence appears in a question. Endorsement of the target inference is clear in (61)a, less so in (62)a, but still more than in the at-issue control in (61)d.

(61) I will be wondering next Wednesday whether DSK ____ agreed to a settlement.

Target inference: DSK will meet with the judge next Tuesday

Construction filling ____ (survey B, with 8 consultants; 4 found a. at least 2 points better than b; average scores for these consultants are italicized)	Acceptability	Inferential strength
a. , who met with the judge the day before,	5.4 <i>5.3</i>	5.8 6.5
b. (he met with the judge the day before)	4.0 <i>2.5</i>	5.6 <i>6.0</i>
c. (he will have met with the judge the day before)	6.8 <i>6.5</i>	6.8 <i>7.0</i>
d. met with the judge the day before and	7.0 <i>7.0</i>	1.3 <i>1.0</i>

(62) **Projection out of questions**

Will we be wondering next Wednesday whether DSK ____ agreed to a settlement?

Target inference: DSK will meet with the judge next Tuesday

Construction filling ____ (survey B, with 8 consultants; 4 found a. at least 2 points better than b; average scores for these consultants are italicized)	Acceptability	Inferential strength
a. , who met with the judge the day before,	5.6 <i>5.5</i>	4.4 3.3
b. (he met with the judge the day before)	4.1 <i>2.3</i>	5.3 <i>5.0</i>
c. (he will have met with the judge the day before)	6.5 <i>6.0</i>	6.8 <i>7.0</i>
d. met with the judge the day before and	7.0 <i>7.0</i>	1.3 <i>1.0</i>

Embedding under *I doubt that* yields similar inferences, as shown (63)a, as does embedding under *might*, illustrated in (64)a.

(63) **Projection out of scope of negative expressions**

I doubt we'll be wondering next Wednesday whether DSK ____ agreed to a settlement.

Target inference: DSK will meet with the judge next Tuesday

Construction filling ____ (survey B, with 8 consultants; 4 found a. at least 2 points better than b; average scores for these consultants are italicized)	Acceptability	Inferential strength
a. , who met with the judge the day before,	5.5 <i>5.5</i>	5.5 6.0
b. (he met with the judge the day before)	3.8 <i>2.5</i>	5.1 <i>6.0</i>
c. (he will have met with the judge the day before)	6.8 <i>6.5</i>	6.8 <i>7.0</i>
d. met with the judge the day before and	7.0 <i>7.0</i>	2.8 <i>3.0</i>

that in fact *q* is the case. In the first person present tense example in (60)b, the difference is nearly immaterial, as both inferences lead to an assumption that the speaker takes for granted that Ann used to smoke.

(64) **Projection out of the scope of *might***

We might be wondering next Wednesday whether DSK ____ agreed to a settlement.²⁸

Target inference: DSK will meet with the judge next Tuesday

Construction filling ____ (survey B, with 8 consultants; <i>5 found a. at least 2 points better than b; average scores for these consultants are italicized</i>)	Acceptability	Inferential strength
a. , who met with the judge the day before,	5.9 <i>5.8</i>	5.0 4.8
b. (he met with the judge the day before)	3.9 <i>2.6</i>	5.1 <i>5.2</i>
c. (he will have met with the judge the day before)	6.6 <i>6.4</i>	6.8 <i>7.0</i>
d. met with the judge the day before and	7.0 <i>7.0</i>	1.3 <i>1.0</i>

Finally, (65) tests the existence of projection in a conditional of the form *if p, q, who r*. Homologous examples with presuppositions, of the form *if p, qq'* (where the consequent presupposes *q*) are predicted by dynamic semantics and related frameworks to presuppose *if p, q*. But since a conjunctive control *if p, (q and q')* entails *if p, q*, we put the target clause in a question to determine whether this inference projects like a presupposition – a result that was obtained above in (56) and (57)a. As can be seen, the target construction in (65)a does trigger a strong conditional presupposition.

(65) **Projection out of the consequent of conditionals**

If the big event takes place on Tuesday, will we be wondering on Wednesday whether DSK ____ agreed to a settlement?

Construction filling ____ (survey B, with 8 consultants; <i>4 found a. at least 2 points better than b; average scores for these consultants are italicized</i>)	Acceptability	Inference 1: DSK will meet with the judge on Tuesday	Inference 2: If the big event takes place on Tuesday, DSK will meet with the judge on that same day
a. , who met with the judge the day before,	5.5 <i>5.3</i>	3.4 <i>3.8</i>	5.8 5.8
b. (he met with the judge the day before)	4.0 <i>2.5</i>	4.3 <i>5.3</i>	5.1 <i>4.8</i>
c. (he will have met with the judge the day before)	6.6 <i>6.3</i>	4.5 <i>4.8</i>	6.4 <i>6.0</i>
d. met with the judge the day before and	6.9 <i>7.0</i>	1.4 <i>1.3</i>	1.4 <i>1.3</i>

8.4 Interim conclusion

We conclude that in rather diverse embedding situations, narrow scope appositives give rise to projection effects reminiscent of presuppositions. Controls are tricky, however: to ensure that consultants attach the target appositive with narrow scope, we must ascertain that they do not accept parenthetical controls with analogous grammatical properties. This succeeded in some consultants and failed in others. It is reassuring that our conclusions hold when we restrict attention to those consultants that found a significant acceptability difference between targets and controls (at least two points). But these difficulties would warrant more systematic investigations in the future.

Another important issue should be kept in mind. In several cases in which dynamic semantics and related frameworks predict conditional presuppositions, unconditional ones are in fact obtained. This problem has been dubbed by Geurts (1996, 1999) the ‘Proviso Problem’. The problem arises in some environments but not others, as shown by the contrast between (66)a, which displays the

²⁸ There was a typo in (64)a: *agreed to a settlement* was missing from this item (as noted by a consultant in the comments). It seems that the consultants, all of them linguists, had no trouble making the correction since they rated this item very highly.

conditional presupposition predicted by dynamic semantics, and (66)b, which typically yields a stronger (unconditional) inference.

- (66) a. Peter knows that if the problem was easy / difficult, someone solved it. (Geurts 1999)
 ≠> Someone solved the problem.
 b. If the problem was easy / difficult, then it isn't John who solved it. (Geurts 1999)
 => Someone solved the problem.

Several theories have been entertained to explain this contrast; we will not review them here (see Geurts 1999 for a survey within Discourse Representation Theory, and Schlenker 2011a,b and Lassiter 2012 for some references to analyses broadly compatible with dynamic semantics). In addition, within contexts that sometimes give rise to strengthening, the content of the relevant constructions matters: strengthening is weakened or obviated when there is a clear probabilistic relationship between the *if*-clause and the presupposition, as in (67):²⁹

- (67) If this applicant is 64 years old, does he know that we cannot hire him?
 => if this applicant is 64 years old, we cannot hire him
 ≠> we cannot hire this applicant (Schlenker 2011a)

An important question is whether a Proviso Problem arises with ARCs.³⁰ Based on the belief that this is in fact the case, we constructed in (68) a paradigm that minimally differs from (57). In the latter case, there was a clear connection between the big event taking place on Wednesday and DSK meeting with the judge the day before. In (68), the connection between the antecedent of the conditional and the appositive is much weaker, which might lead one to expect a strengthening of the conditional inference. For our consultants, there is an effect, but a weak one: the unconditional inference is more strongly endorsed in (68)a than in (57)a, and the unconditional inference is less strongly endorsed (possibly because it comes with an implicature that the corresponding unconditional inference isn't know to hold, as is standard). But these effects are too weak to warrant a strong conclusion, and thus we can only state as a conjecture that a Proviso Problem will arise with narrow scope appositives.

- (68) *Context*: DSK is being sued, but his lawyers might not be entirely competent.

If DSK is nearing bankruptcy, it could conceivably turn out next Tuesday that his lawyers ____ are dropping their fees.

Construction filling ____	Acceptability	Inference 1: DSK's lawyers will bungle his plea bargain next Monday	Inference 2: If DSK is nearing bankruptcy, his lawyers will bungle his plea bargain next Monday
(survey B, with 8 consultants; 5 found a. at least 2 points better than b; average scores for these consultants are italicized)			

²⁹ Lassiter 2012 derives this generalization on the basis of a probabilistic semantics (see Mandelkern and Rothschild for a critique). Geurts's example (66)b with 'easy' was designed to show that this isn't all that's going on.

³⁰ Koev 2015 argues that there is an *anti-proviso* problem for supplements because (i) yields a conditional rather than an unconditional inference:

- (i) If Jack buys a car, which will probably be a Volvo, his wife will be upset.
 At-issue content: If Jack buys a car, his wife will be upset.
 Projective inference: If Jack buys a car, it will probably be a Volvo. (Koev 2015)

We agree with the facts but think they should be analyzed differently. The appositive is attached above the *if*-clause, as is likely mandated by the fact that *will* is deviant in the scope of an *if*-clause. (i) should thus be compared with the examples in (ii):

- (ii) a. If Jack buys a car (it will probably be a Volvo), his wife will be upset.
 b. If Jack buys a car, his wife will be upset. His car/It will probably be a Volvo.

The examples in (ii) involve modal subordination: what is asserted by the underlined clause is that *if Jack buys a car*, his car will be a Volvo. No supplement projection is needed to get this effect, and thus no anti-proviso problem is seen (note that strengthening would make little sense anyway since the relevant car is not asserted to exist in the actual world but just in some epistemically accessible worlds).

a. , who bungled his plea bargain the day before,	5.8 5.6	4.8 4.4	3.8 3.6
b. (they bungled his plea bargain the day before)	3.4 2.0	4.8 4.2	3.9 3.6
c. (they will have bungled his plea bargain the day before)	6.6 6.6	5.4 5.2	5.5 6.2
d. bungled his plea bargain the day before and	7.0 7.0	1.6 1.6	2.1 1.6

9 Comparison with appositive impositions (AnderBois et al. 2010, 2013)³¹

Potts's bidimensional theory was intended to make it impossible for the supplemental dimension to feed into the at-issue dimension. But AnderBois et al. 2010, 2013 display a variety of phenomena that 'cross' the supplemental/at-issue boundary:

- (69) a. John, who saw Mary, saw Susan.
b. Mary courts a semanticist at every conference party, where she always dances with him.

In (69)a, the presupposition triggered by the particle *too* is satisfied by the content of the appositive clause. Similarly, in (69)b the pronoun *him* can only be interpreted by reference to the quantificational dependency introduced in the appositive clause. These data are not a problem for our general analysis because our semantics treats ARCs as conjuncts (although their syntax and pragmatics is very different from that of conjuncts). But this raises the question how our account compares to that developed by AnderBois et al.

In dynamic semantics, a presupposition must be entailed by its local context, determined by combining the context of the conversation with the linguistic environment preceding the presupposition trigger (e.g. Heim 1983). AnderBois et al. 2010, 2013 propose to analyze appositives as making direct 'impositions' on the context set (thus without the intermediary of local contexts). In this, they remain in the spirit of a 'wide scope' analysis of supplements. But they take these impositions to interact freely with 'assertions' by way of Logical Forms that represent the context set and the assertive proposal as distinct propositional variables, p^{cs} for the context set and p for the assertive proposal.

An example that 'interleaves' constraints on the context set and on the assertive proposal is given in (70), with the logical analysis in (71). John_x, who nearly killed a_y woman with his_x car, visited her_y in the hospital.

- (70) John_x, who nearly killed a_y woman with his_x car, visited her_y in the hospital.

(71) Logical analysis of (70) for AnderBois et al. 2013.

- a. **New proposal:** $[p] \wedge p \subseteq p^{cs} \wedge$
- b. **Issue:** $[x] \wedge x = \text{JOHN} \wedge$
- c. **Appositive:** $[y] \wedge \text{WOMAN}_{p^{cs}}(y) \wedge \text{NEARLY-KILL}_{p^{cs}}(x, y) \wedge$
- d. **Issue:** $\text{VISIT}_p(x, y) \wedge$
- e. **Proposal accepted:** $[p^{cs}] \wedge p^{cs} = p$

New discourse referents (variables) are introduced by way of the notation $[p]$ (propositional variable) and $[x]$ (individual variable). Thus (71)a introduces the propositional variable p , corresponding to the assertive proposal, and constrained to refer to worlds within the context set (hence $p \subseteq p^{cs}$). (71)b introduces the new variable x whose value is John, (71)c contributes an appositive update that specifies that x nearly killed a woman y ; the fact that it is appositive is reflected in the use of the p^{cs} variable in $\text{WOMAN}_{p^{cs}}(x, y)$ and $\text{NEARLY-KILL}_{p^{cs}}(x, y)$. By contrast, (71)d contributes an at-issue update that x visited y : this is why p appears as a subscript on $\text{VISIT}_p(x, y)$. Importantly, the same individual variable can appear in formulas that carry different propositional variables: x appears both in (71)c and in (71)d. This yields the desired anaphoric link between the supplemental and the assertive dimensions.

On the compositional side, AnderBois et al. 2010, 2013 set up a dynamic semantics that distinguishes between a version of Potts's two dimensions, *while allowing them to interact*. For individual variables, a dynamic system keeps track of *all their possible values* given the linguistic information available at a certain point in the computation of the meaning of a sentence. Applying the same recipe to the propositional variables p^{cs} and p , AnderBois et al.'s system also keeps track of all the

³¹ This summary of AnderBois et al. 2013 closely follows that in Schlenker, to appear.

possible values that are compatible with what is known at a certain stage of a semantic computation. Since any number of constraints could lead to a further restriction of the context set, they initially take the values of p^{cs} and p to be all the possible subsets of the initial context set, with the constraint that $p \subseteq p^{cs}$ (since the assertive proposal is supposed to further restrict the context).

AnderBois et al. wish to derive the result that supplements do not take scope under other operators, and thus they provide a dynamic analysis for negation that leaves the value of the context set variable p^{cs} unchanged, while affecting the value of the at-issue variable p . While this might be correct for negation (a point to which we return below), this is not in general adequate for other operators, since as we saw some appositives can take narrow or intermediate scope relative to a variety of operators.

As A. Brasoveanu (p.c.) notes, one may liberalize the theory to allow some ARCs to constrain the at-issue variable p rather than the context set variable p^{cs} . This would in effect yield an ambiguity theory of ARCs: some are appositive impositions, others are just at-issue. Furthermore, AnderBois et al. make use of several propositional variables (p, p', \dots), so in principle one could even distinguish between narrow and intermediate scope readings by indexing ARCs with different propositional variables.

While the details would have to be explored in greater depth, we believe this line of analysis raises two broad questions. First, if narrow and intermediate scope ARCs constrain at-issue propositional variables, why couldn't wide scope readings be analyzed by the same mechanism? This would remove the motivation for having appositive impositions in the first place. Second, if at least some narrow scope ARCs give rise to projection phenomena, taking them to make pure at-issue contributions won't suffice: a projection mechanism will have to be posited.

In sum, the present account shares with AnderBois et al.'s proposal the goal of explaining how at-issue and supplemental contributions can interact. But AnderBois et al. remain closer to Potts's intuition that there should be a principled separation between at-issue and supplemental contributions. As a result, while dimensions can interact for purposes of anaphora resolution and related phenomena (such as presupposition and ellipsis resolution), in the 'official proposal, supplements cannot take narrow scope with respect to the operators considered by the authors. Taking ARCs to be ambiguous between at-issue and supplemental readings, with narrow scope and intermediate readings, would raise the question why something special must be said about wide scope readings, and how projection phenomena with narrow scope readings should be derived.

By contrast, our analysis treats appositives as being semantically conjoined to certain propositional nodes, which immediately allows for multiple interactions between at-issue and supplemental dimensions: not just anaphora and related phenomena, but also genuine scopal interactions in case ARCs are attached sufficiently low. The pragmatics adds constraints of its own to account for the peculiar behavior of supplements in discourse and, when they have narrow scope relative to some operators, for patterns of supplement projection. Finally, wide scope readings follow by the same mechanism that generate intermediate scope readings, since ARCs can be attached to any proposal node that dominates their DP associate.

10 Conclusion

10.1 Results

If the present analysis is on the right track, the behavior of ARCs should be explained by three modules. Their syntax should be analyzed along the lines of McCawley's proposal, but liberalized: while ARCs often prefer to be attached to the root node, they may (more or less easily) attach to any propositional node that dominates their DP associate. This predicts cases of narrow and intermediate scope that are not correctly handled by Potts's bidimensional theory, nor by (the official version of) AnderBois et al.'s appositive impositions. The semantic contribution of an ARC gets conjoined to the propositional node it attaches to. This immediately predicts multiple semantic interactions among dimensions, including those derived by AnderBois et al. Finally, the pragmatics of ARCs requires that they should be a non-trivial contribution, as Potts 2005 had argued; but it also requires that one can easily accommodate assumption in the global context that make the content of ARCs locally trivial. For narrow scope ARCs, this predicts weakened projection patterns reminiscent of informative presuppositions, and this might start to explain the behavior of supplements in discourse.

10.2 Open questions

This study leaves open multiple questions. First, there is enough variation across consultants that an experimental investigation of the data would be warranted. There are so many relevant data points that this will probably require several careful studies. Relatedly, even our small-scale surveys reveal important cross-individual variation, with some consultants allowing for multiple instances of narrow scope ARCs, while others are far more restrictive (this was in particular the case in French). These might be genuine cases of dialectal variation, which might have to be investigated as such.

On a theoretical level, each module of the analysis will require more work. Concerning the syntax: could our McCawley-inspired analysis be integrated to recent theories of multidominance (e.g. de Vries 2013, Bachrach and Katzir 2009)? Concerning the semantics: we have not attempted to be precise about the resolution of the denotation of the *wh*-pronoun, taking it to have some of the readings (referential, E-type) of standard pronouns, *modulo* the assumption that it must depend on its DP associate; this would need to be formally implemented. Concerning the pragmatics: what it means for an assumption to be one that is 'easy' to accommodate was left entirely open, although a connection with informative presuppositions helps constrain theoretical possibilities.

There are more specific issues to be addressed as well.

(i) We have not provided a theory of attachment preferences for ARCs: we noted that they prefer to attach to root nodes, but why this is so is unclear.

(ii) While some ARCs can take scope under some operators, such as *if*-clauses (as discussed above), it seems very difficult for ARCs to take scope under negative expressions, as illustrated in (72)b; this has yet to be explained.

(72) a. One of these women helped her son, which saved him.

b. #None of these women helped her son, which saved him.

More generally, we have provided an existence 'proof' that, for several consultants in French and in English (as well as for Poschmann's German-speaking subjects), ARCs can take narrow scope relative to diverse operators. But we have not claimed that ARCs can *always* take narrow scope with respect to operators, as this would seem to be incorrect. A typology and theory of embedding possibilities remains to be developed.

(iii) As discussed in Poschmann 2019, certain implicit discourse relations make narrow scope easier than others. This has yet to be derived.

(iv) As discussed in Koev 2012, the position of ARCs in a sentence or in a clause matters to their semantic and pragmatic behavior: clause-final ARCs are more easily interpreted as being at-issue than other ARCs. This too is left unexplained by the present theory.

(v) Despite our efforts, the correlation between height of attachment and ellipsis resolution can still be given two types of analysis: a syntactic one, à la McCawley; or a semantic one, whereby some narrow scope ARCs are copied by ellipsis because they make an at-issue contribution (and not because they are low in the syntactic structure). It would be important to provide systematic tests with ARCs that are is attached low but clearly make non-at-issue contributions.³²

³² Attitude verbs might be useful to construct examples in which an embedded ARC makes a non-at-issue contribution to a reported speech act. One could for instance investigate examples such as (i):

(i) Joe Biden hasn't selected a running mate yet, but he is expected to choose a woman. Right before the election, he will certainly say that his running mate, who brought an important female perspective to his campaign, would make a fantastic Vice President. Donald Trump will too.

The underlined appositive ought to be read with narrow scope relative to the future tense and plausibly relative to the attitude verb as well. If so, one would expect that it has no choice but to be copied in the course of ellipsis resolution, which should yield an odd reading on which Mike Pence brought a female perspective to Donald Trump's campaign. As in other cases, an important issue is whether a control parenthetical (= *she brought an important female perspective to his campaign*) is sufficient deviant to exclude the possibility that perspectival shift is responsible for the reading obtained in (i).

Appendix I. Additional data on French ARCs

We provide below additional French data that are only summarized in the main text.

◆ **More narrow scope ARCs**

We discussed in (12) a case of modally interpreted imperfect. Another one appears in (73), with a sharp split between 4 consultants who accept and 4 consultants who reject (73)a, as shown in (74).

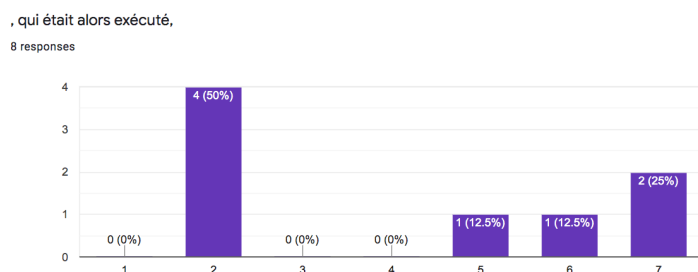
(73) *Context*: A new channel has obtained the name of a French spy in Pakistan, Martin. What follows is uttered by a journalist working for this channel:

Si demain nous décidions de publier le nom de Martin ____ nous aurions un sacré problème.
If tomorrow we decided to publish the name of Martin ____ we would-have a serious problem.

Target inference: if tomorrow we decided to publish Martin's name, he would then be executed.

Construction filling ____ (survey with 8 consultants)	Acceptability (7 = best)	Inferential strength (7 = strongest)
a. , qui était alors exécuté, , <i>who was then executed</i> ,	4.1	2.4
b. (il était alors exécuté), (<i>he was then executed</i>),	1.5	1.5
c. et qu'il était alors exécuté, <i>and that he was then executed</i> ,	7.0	2.3
d. , qui serait alors exécuté, , <i>who would-be then executed</i> ,	7.0	6.8
e. (il serait alors exécuté), (<i>he would-be then executed</i>),	5.9	6.5

(74) Distribution of acceptability scores for (73)a



We also sought to use the subjunctive to force narrow scope readings, as shown in (75) (we gloss the subjunctive with *subj*). The subjunctive parenthetical in (75)b is sharply degraded, and the target subjunctive appositive in (75) is far more acceptable, but with great variation across consultants, as shown in (76): 5 accept it, 3 reject it. The target inference is more strongly endorsed in the narrow scope appositive in (75)a than in the conjunctive control in (75)c. The conditional appositive and parenthetical in (75)d,e give rise to lower endorsement of the target inference that in analogous cases in English, possibly due to a reportative reading of the conditional (the conditional can be used in French with a meaning akin to: 'according to people...').

(75) *Context*: There was a grave problem at school, involving a student, Jean.

Il est possible que Jean ait appelé sa mère ____
It is possible that Jean has-subj called his mother ____

Target inference: If Jean called his mother, she then called her lawyer.

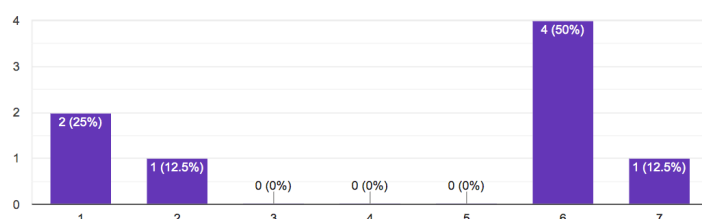
Construction filling ____ (survey with 8 consultants)	Acceptability (7 = best)	Inferential strength (7 = strongest)
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a. , qui ait alors appelé son avocat. , <i>who has-subj then called her lawyer.</i>	4.4	4.0
b. (elle ait alors appelé son avocat). (<i>she has-subj then called her lawyer.</i>)	1.1	2.4
c. et qu'elle ait alors appelé son avocat. <i>and that she has-subj then called her lawyer.</i>	7.0	4.3
d. , qui aurait alors appelé son avocat. , <i>who would-have then called her lawyer.</i>	6.4	4.4
e. (elle aurait alors appelé son avocat). (<i>she would-have then called her lawyer.</i>)	6.9	4.9

(76) Distribution of acceptability scores for (75)a

, qui ait alors appelé son avocat.

8 responses



◆ An intermediate scope appositive in the subjunctive

The following paradigm attempted to use the subjunctive to force intermediate scope of an appositive. Average acceptability for the target narrow scope ARC in (77)a is rather degraded, although less so than a subjunctive parenthetical (in (77)b). But as seen in (78), for (77)a there is a split between 3 consultants who accept it, 4 who reject it, and 1 consultant with intermediate acceptability.

(77) *Contexte*: There was a coronavirus case in the lab, and the Director seems to be furious. I formulate a hypothesis:

Il est concevable que personne ne se soit demandé s'il fallait prévenir la Directrice ____
it is conceivable that nobody NE SE be-subj wonder if it had-to warn the Director-fem
 'It is conceivable that nobody wondered whether one had to inform the Director ____'

Target inference: If nobody had wondered whether one had to inform the Director, she would have been greatly shocked (by this).³³

Construction filling ____ (survey with 8 consultants)	Acceptability (7 = best)	Inferential strength (7 = strongest)
a. , qui en ait été extrêmement choquée. , <i>who of-it has-subj been extremely shocked.</i> , who was extremely shocked by this.'	3.6	2.8
b. (elle en ait été extrêmement choquée). (<i>she of-it has-subj been extremely shocked.</i>)	1.9	1.9
c. et qu'elle en ait été extrêmement choquée. <i>and that she of-it has-subj been extremely shocked.</i> and that she was extremely shocked by this.'	7.0	3.5
d. , qui en aurait été extrêmement choquée. , <i>who of-it would-have been extremely shocked.</i> , who would have been extremely shocked by this.'	6.8	4.5
e. (elle en aurait été extrêmement choquée). (<i>she of-it would-have been extremely shocked.</i>) (she would have been extremely shocked by this).'	6.1	4.1

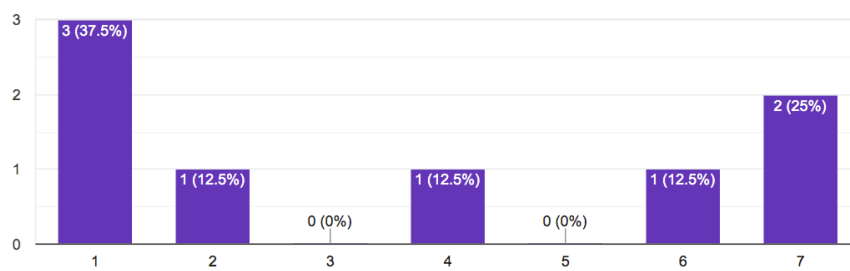
³³ French statement:

Inférence cible: Si personne ne s'est demandé s'il fallait prévenir la Directrice, elle en a été extrêmement choquée.

(78) Distribution of acceptability scores for (77)a

, qui en ait été extrêmement choquée.

8 responses



_____RS_b

IX-1 WILL WIN.

she 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

(81) 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 (80)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 popular nor that Ann believes that he is. In (80)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 (80)c, Clause-2 is exempted both from Role Shift and from Brow Raise, and we obtain the inference that John is in fact smart.

□ *Correlation with ellipsis*

Schlenker 2020 makes use of the liberalized version of McCawley's theory discussed in the present piece, and derives the predictions in (82); they mirror the discussion of Section 4.2 above.

(82) **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).

In McCawley's paradigm in (18), there was little doubt that the word *which* had to be bound locally, since non-relative pronouns never have non-local readings. But the ASL paradigm involves full clauses, not ARCs. 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. Schlenker 2020 thus focuses on a construction, involving an ASL version of *his field*, which can be independently determined to strongly prefer a bound variable reading.

The main result is that the predictions in (82) are 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 (83), when Clause-2 has intermediate scope (in (83)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 (84) and of the inferential ratings reported in the tables after (83).

(83) *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

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 $\overset{\wedge}{\text{[ECONOMICS PROFESSOR]}}_b$ 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 _____
 $\overset{\wedge}{\text{_____}} \sim \text{_____} \overset{\wedge}{\text{_____}}$

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 $\overset{\wedge}{\text{[ECONOMICS PROFESSOR]}}_b$ 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 _____
 $\overset{\wedge}{\text{_____}} \sim \text{_____} \overset{\wedge}{\text{_____}}$

c.^{5.3} IF IX-2 WORK WITH IX-1, FIELD REASONABLE³⁵, 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 $\overset{\wedge}{\text{[ECONOMICS PROFESSOR]}}_b$ 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

(84) Inferential questions for (83)

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)

As mentioned, similar results are obtained when Role Shift is replaced with normal indirect discourse.

³⁵ As our consultant mentioned upon checking the transcriptions, *FIELD REASONABLE* is signed closer to locus *b* than to a neutral locus.

Supplementary Materials

All surveys were administered through Google Surveys, with consultants who are either linguists (usually semanticists) or very close to linguistics. There were two English surveys, with some consultants answering both; all English-speaking consultants are speakers of American English.

Survey A (English)

Survey: https://drive.google.com/file/d/12dCRubnb113A1_G5MVqt_o9lJrGln7jK/view?usp=sharing

Results: https://drive.google.com/file/d/14cBJucqI_d_r2t2RWWoeDzj86ciq9xH2/view?usp=sharing

Survey B (English)

Survey: <https://drive.google.com/file/d/1r4uGGhmXKxULRA1rFRHKJu5tzZj8Kk/view?usp=sharing>

Results: https://drive.google.com/file/d/1-OARLF1RY3wJX2Bf3yrV7TMNLi6C215_/view?usp=sharing

(the 2nd sheet computes averages pertaining to consultants for whom the target a-sentence (ARC) was at least 2 points more acceptable than the control b-sentence (parenthetical))

Note: Survey B was modified after 2 consultant responses to make formatting more user-friendly (with full repetitions of sentences in long paradigms)

French survey

Survey: https://drive.google.com/file/d/1A98W1S-ZD5R_NNdnCdpFy99ErxeE_zU/view?usp=sharing

Results: <https://drive.google.com/file/d/1SOx-SfVUOvzi0DO7Bj9YrHB0yjTGZ3dr/view?usp=sharing>

Note: one French consultant had to re-enter his judgments a few days after taking the survey due to data loss on the author's part.

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