# Supplements Within a Unidimensional Semantics I: Scope[1]

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**Abstract.** Potts (2005, 2007) claims that Grice's 'conventional implicatures' offer 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 separate dimension. Focusing on Non-Restrictive Relative Clauses (= NRRs), we explore an alternative to Potts's bidimensional account. In our analysis, (1) NRRs can be syntactically attached with matrix scope, despite their appearance in embedded positions; (2) NRRs can in some cases be syntactically attached within the scope of other operators (whether attitudinal or not), in which case they semantically interact with them; (3) NRRs are semantically conjoined with the rest of the sentence, but (4) they are subject to a pragmatic rule that requires that their content be relatively easy to accommodate – hence some non-trivial projection facts when NRRs do not have matrix scope. In this paper, we only develop (1) and (2), which pertain to the scopal behavior of NRRs. (1), which is in full agreement with the classic 'high attachment' analysis of NRRs, shows that Potts's semantic machinery is not necessary: its effects follow from more conservative semantic assumptions once an adequate syntax is postulated. Because of (2), Potts's machinery makes incorrect predictions when NRRs have a non-matrix attachment and interact scopally with other operators. Semantic arguments for (2) were given in Wang et al. 2005 and Amaral et al. 2007, but were re-analyzed in pragmatic terms in Harris and Potts 2009a, b; we provide new evidence that suggests that in some cases the latter analysis is implausible.

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## 1 Bidimensional vs. Unidimensional Analyses

The contrast between (1)a and (1)b suggests that appositive relative clauses are 'scopeless', i.e. that they do not interact semantically with operators in whose scope they appear.

(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 2000, 2005 and Nouwen 2006 to argue for a *bidimensional semantics*, one in which 'supplements' (= the semantic content of appositives) are computed in a separate dimension from assertive content. Their analysis is sketched in (2)

(2)     **Bidimensional Analysis (**Potts 2000, 2005; Nouwen 2006)
        **(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 2000): They do not interact scopally with other operators.
        *Version 2* (Nouwen 2006): 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 NRR 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 explore an alternative account within a unidimensional semantics. In brief, we suggest that syntactically NRRs are preferably attached to the matrix level, but that lower attachments are also possible; we take them to have a conjuntive semantics; and we assume that they are subject to a pragmatic constraint that requires that their content be both non-trivial and not too surprising. These assumptions are stated more precisely in (3).

(3)     **Unidimensional Analysis**
        **(i) Syntax** (see McCawley 1988, Del Gobbo 2003)
        -A NRR can be attached to any node of propositional type that dominates its associated NP.
        -Preferences: highest attachment >> lower attachment – attitudinal >> lower attachment – non attitudinal
        **(ii) Semantics** (Del Gobbo 2003)
        a. In a NRR, the relative pronoun can be interpreted as E-type or as referential.
        b. A NRR is interpreted conjunctively.
        **(iii) Pragmatics**
         The content of  a NRR must be 'easy to accommodate', but non-trivial –
        which gives rise to non-trivial pattern of projection.

We provide three arguments in favor of our approach ((iii) is discussed in Part II).
    **(i) Bidimensionalism is unnecessary** because there are independent arguments for postulating that high syntactic attachment is possible.
    **(ii) Bidimensionalism is undesirable** because there are other cases in which low attachment is possible (though often dispreferred).

**(iii) Some supplements give rise to non-trivial patterns of projection which are formally similar to presupposition projection.** This suggests that there is a non-trivial interaction between the content of NRRs and other operators.

We do not attempt in this short piece to discuss *expressives* (e.g. the expression *honky*, which indicates that the speaker has a derogatory attitude towards white people). These were taken by Potts (2000, 2005) to provide an important argument in favor of a bidimensional analysis; a key argument was that expressives always appear to have 'wide scope'. Other researchers (e.g. Sauerland 2007, Schlenker 2003, 2007) have argued that expressives can in fact take scope under attitude operators. Harris and Potts (2009a, b) show with experimental means that this is indeed possible, but that the phenomenon is broader: even in the absence of attitude operators, the content of an expressive can sometimes be attributed to someone other than the speaker. They conclude that all such data can be dealt with by a pragmatic mechanism of 'perspectival shift' that works *on top* of a bidimensional semantics: expressives are *bona fide* wide scope expressions, but sometimes perspectival shift gives the impression that they interact scopally with attitude operators. Their account also applies to NRRs that appear to take scope within attitude reports. While we leave expressives out of the present study, we will argue below that Harris and Potts's analysis is implausible for *some* narrow scope NRRs.

In the rest of this paper, we focus on French, for two reasons (besides expediency).

First, Cinque 2008 has argued that there are two types of nonrestrictive relative clauses, only one of which is present in English:
-'Integrated NRRs' are according to him 'essentially identical to the ordinary restrictive construction (as such part of sentence grammar)'; in other words, they are closely integrated to the sentence they appear in. Such NRRs are not available in English. In French, they are exemplified by relative clauses introduced by *qui*.
-'Non-integrated NRR' are 'distinct from the ordinary restrictive construction (with characteristics of the grammar of discourse)'. All English NRRs are of this type. In French, this class is represented by relative clauses introduced by *lequel*.
By focusing on French, we will show that *even* integrated NRRs have the ability to attach syntactically at the matrix level when their surface position appears to be embedded. In this way, we show that not just NRRs that belong to the 'grammar of discourse', but even those that are part of 'sentence grammar' display unexpected attachment possibilities.

Second, French has some moods – notably, the subjunctive – which are obligatorily syntactically and semantically embedded. This will be crucial to show that some NRRs have narrow scope (both syntactically and semantically).


## 2   The Possibility of High Syntactic Attachment

Following and extending arguments developed in McCawley 1988, we start by arguing that NRRs *can* be attached to the matrix clause even when they appear to be embedded.

### 2.1. Ellipsis

Our first argument replicates in French a paradigm discussed by McCawley 1988 for English:

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

McCawley 1988 observed that the second sentence does not imply that the violin that Mary sold to Perlman had once belonged to Nathan Milstein. On the assumption that ellipsis targets a constituent, this suggests that the NRR can be attached outside the constituent which is the antecedent of the elided VP. This reasoning lead McCawley to posit the structure in (5), which crucially involves a discontinuous constituent. (We do not need to adopt McCawley's ternary branching structure for the VP; all that matters for present purposes is that the NRR can be attached much higher than its surface position, which implies that the VP within which it appears forms a discontinuous constituent).

(5)   McCawley's Structure (McCawley 1988)
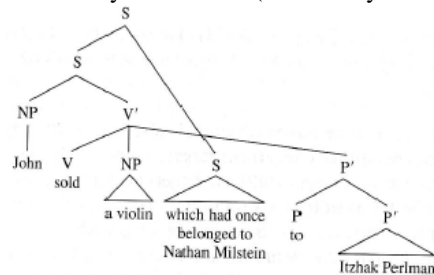


The same conclusion must be reached about NRRs introduced by *qui* in French; in this respect, they contrast rather clearly with restrictive relative clauses:

(6)   *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 Rostropovich. 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 Rostropovich. Paul Tortelier did too, of course.*
=> Tortelier has students in Cambridge.[2]

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[2] C. Potts (p.c.) notes that the same patterns of 'disappearance under ellipsis' hold of expressive adjectives, which certainly don't appear to be attached with matrix scope. This point is discussed in Potts et al. 2009:

## 2.2. Condition C Effects

Our second argument concerns Condition C effects, which are weakened or obviated in cases that involve NRRs, as in (7).

(7)    [Le Président]$_i$ est si compliqué qu'
*[The President]$_i$ is so complicated that*

        a. * il$_i$ a donné au ministre qui n' aime pas Sarkozy$_i$ une tâche impossible.
        *he$_i$ gave the minister who doesn't like Sarkozy$_i$ an impossible task.*

        b. (?) il$_i$ a donné au ministre de la Justice, qui n'aime pas Sarkozy$_i$, une tâche impossible.
        *he$_i$ gave the minister the minister  of Justice, who doesn't like Sarkozy$_i$, an impossible task.*

(8)    [Le Président]$_i$ est si compliqué qu'
*[The President]$_i$ is so complicated that*

        a. *il$_i$ n'a envoyé qu'à un seul journaliste qui adore Sarkozy$_i$ son$_i$ dernier livre.
        *he$_i$ sent to only one journalist who loves Sarkozy$_i$ his$_i$ latest book.*

        b. il$_i$ n'a envoyé qu'à un seul journaliste, qui adore Sarkozy$_i$, son$_i$ dernier livre.
        *he$_i$ sent to only one journalist,  who loves Sarkozy$_i$, his latest book.*

In (7)a and (8)a, restrictive relative clauses give rise to Condition C effects, as is expected in configurations in which a pronoun c-commands a coreferential proper name. The examples in (7)b and (8)b involve non-restrictive rather than restrictive relative clauses; the Condition C effects are weakened or obviated. This can be explained if the NRRs are attached at the matrix level, so that the pronoun *he* does *not* c-command *Sarkozy* in the end.

## 2.3. Weak Crossover Effects

I would like to suggest that Weak Crossover effects might also argue that NRRs can attach much higher than their surface position would lead one to expect. In (9)a-a', we find a standard Weak Crossover effect with a restrictive relative clause and a possessive; but this effect appears to be absent in (9)b, just as it is in discourse anaphora such as (9)b' (we gloss the pronoun *l'* as *her* because *star* is grammatically feminine in French, though it can apply to a male individual):

(9)    a. ?[Quelle star]$_i$ est-ce que le chirurgien qui l$_i$'a opérée a failli faire mourir?
        *[Which star]$_i$ did the surgeon who operated (on) her$_i$ almost kill?*

        a'. ?[Quelle star]$_i$ est-ce que son$_i$ chirurgien a failli faire mourir?

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(i)      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.

The crucial observation is that B's reply does not commit B to the attitude expressed by the modifier *fucking*. Whatever mechanism is at play here could defuse McCawleys's syntactic argument. We leave this debate for future research.

*[Which star]$_i$ did her$_i$ surgeon almost kill?*

b. [Quelle star]$_i$ est-ce que ton chirurgien, qui l$_i$'a fort mal opérée, a failli faire mourir?
*[Which star]$_i$ did your surgeon, who operated very badly on her$_i$, nearly kill?*

b'. [Quelle star]$_i$ est-ce que ton chirurgien failli faire mourir? Apparemment, il l$_i$'a fort mal opérée.
*[Which star]$_i$ did your surgeon nearly kill? Apparently, he operated very badly on her$_i$.*

All Weak Crossover judgments are subtle, and the sentences at hand are also quite complicated. But this paradigm might provide additional evidence in favor of an analysis in which the *wh*-interrogative does not c-command the pronoun contained within the NRR. On a low attachment view, one might expect a Weak Crossover effect because the pronoun is directly bound by the *wh*-interrogative. On a high attachment view, no Weak Crossover effect is expected (as is desired) because the pronoun is not c-commanded by the interrogative.

### 2.4. The similarity between NRRs and clausal parentheticals

Finally, we note that with respect to the tests discussed here NRRs share the behavior of clausal parentheticals. This is relevant *if* one thinks that the syntactic similarity between non-restrictive and restrictive relative clauses is an argument for postulating that the former, like the latter, must be attached at the level which is indicated by their surface position. In the case of clausal parentheticals, no such argument holds: they certainly do seem to interrupt the continuity of a syntactic structure. Whatever syntactic rule allows for discontinuous constituents in this case might be applicable to NRRs too.

As is shown in (10) and (11), the facts concerning ellipsis and Condition C are indeed the same for clausal parentheticals as for NRR[3].

(10) **Ellipsis**
Yo Yo Ma a présenté ses élèves préférés (ils vivent à Cambridge) à Rostropovitch. Paul Tortelier aussi, bien sûr.
*Yo Yo Ma introduced his favorite students (they live in Cambridge) to Rostropovich. Paul Tortelier did too, of course*
≠> Tortelier has students in Cambridge.

(11) **Condition C effects**[4]
(?)[Le Président]$_i$ est si compliqué qu'il$_i$ a donné à la ministre de la Santé

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[3] I believe this generalization extends to Weak Crossover effects, but I find it hard to think of a context in which one would utter (i); since Weak Crossover judgments are very subtle in the first place, I leave such examples for future research.

(i) Quelle star est-ce que ton chirurgien (on dit qu'il l'a fort mal opérée) a failli faire mourir?
*Which star did your surgeon (one says that he treated her badly) nearly kill?*

> *[The President]$_i$ is so complicated that he$_i$ gave the minister of Health*
>
> (elle n'aime pas Sarkozy$_i$) une tâche impossible.
> *(she doesn't like Sarkozy$_i$) an impossible task.*

In sum, the data involving high syntactic attachment show that an analysis that posits a separate semantic dimension in order to handle the apparent 'wide scope' behavior of NRRs is not necessary, since these are sometimes *syntactically* attached to the matrix level[5].


## 3   The Possibility of Low Syntactic Attachment

We will now suggest that the bidimensional analysis in its usual form – which implies that NRRs *always* display wide scope behavior – is not just unnecessary, but also undesirable because there are cases in which NRRs display a *narrow* scope behavior.

Proving this is usually difficult if one accepts the hypothesis that the *wh*-pronoun of a NRR has the semantics of a donkey pronoun. This hypothesis, developed by Del Gobbo 2003, is certainly compatible with a bidimensional approach, and it was in fact implemented in great detail in Nouwen 2006. The difficulty is that E-type pronouns that have wide scope can often 'imitate' the behavior of variables that are bound under other operators. Thus an example such as (12)a cannot show that NRRs may scope under a quantifier, because the control sentence in (12)b doesn't sound too bad, and suggests that some semantic or pragmatic mechanism (call it 'quantificational subordination') allows the pronouns in the second sentence to be interpreted as if they had scope under the universal quantifier in the first sentence.

(12)    a. On Mother's day, every little boy calls his mother, who tells him she loves him.
        b. On Mother's day, every little boy calls his mother. She tells him that she loves him.

Furthermore, cases of embedding under attitude operators were taken by Harris and Potts 2009a to be explained by a pragmatic mechanism of 'perspective shifting', which is available even when no attitude operator is present. Thus their subjects accepted to attribute to the agent (= the roommate, rather than the speaker) the content of the supplement *a possible government spy* both in (13)a and in (13)b.

(13)    I am increasingly worried about my roommate. She seems to be growing paranoid.
        a. The other day, she told me that we need to watch out for themailman, a possible government spy.

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[4] To avoid an undesirable ambiguity in the resolution of the antecedent of the masculine pronoun in the parenthetical, we make *minister* feminine.

[5] Another question is *why* such high syntactic attachments – which violate standard syntactic constraints – are possible in the first place. We leave this question for future research.

b. The other day, she refused to talk with the mailman, a possible government spy.

Special care must thus be exercised to argue that a NRR can indeed take narrow scope.

### 3.1. Subjunctive

A helpful test-case is provided by the subjunctive, which in French is a dependent mood. The first thing to observe is that this mood normally gives rise to very sharp judgments of ungrammaticality unless it is syntactically embedded under an expression that licenses it. In (14)a, both subjunctive conjuncts are in the scope of *conceivable*, which is a licenser. In (14)b, the second conjunct appears as a separate sentence, and the result is sharply ungrammatical. Importantly, (14)c shows that this is a case in which modal subordination is arguably possible – but it requires a different mood (an epistemic future, or a conditional).

(14)    Context: There was incident at school.
a. Il est concevable que Jean ait appelé sa mère, et qu'elle ait appelé son avocat.
*It is conceivable that Jean has-subj called his mother, and that she has-subj called her lawyer.*
b. \*\*Il est concevable que Jean ait appelé sa mère. Elle ait appelé son avocat.
*It is conceivable that Jean has-subj called his mother. She has-subj called her lawyer.*
c. Il est concevable que Jean ait appelé sa mère. Elle aura / aurait appelé son avocat.
*It is conceivable that Jean has-subj called his mother. She will-have / would-have called her lawyer*

With this background in mind, we turn to the paradigm in (15), which involves NRRs.

(15)    Context: There was incident at school[6].
a. Il est concevable que Jean ait appelé sa mère / Anne, qui ait appelé son avocat.
*It's conceivable that Jean has-sub called his mother / Anne, who had-subj called her lawyer.*
≠> If Jean had called his mother / Anne, she would have called her lawyer.
b. \*\*Il est concevable que Jean ait appelé sa mère / Anne . Elle ait appelé son avocat.
*It's conceivable that Jean has-sub called his mother. She had-subj called her lawyer.*
a'. Il est concevable que Jean ait appelé sa mère, qui aurait appelé son avocat.
*It's conceivable that Jean has-subj called his mother, who would have called*

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*her lawyer.*
=> If Jean had called his mother, she would have called her lawyer.
b'. Il est concevable que Jean ait appelé sa mère. Elle aurait appelé son avocat.
*It's conceivable that Jean has-subj called his mother. She would have called her lawyer.*
=> If Jean had called his mother, she would have called her lawyer.

First, we note that the subjunctive can appear in a NRR embedded under a subjunctive licenser, as in (15)a. As before, the subjunctive is sharply ungrammatical if it appears in an independent sentence, as in (15)b. This suggests that (15)a is not a case in which the NRR has wide scope. Second, the truth conditions of the sentence suggest that the NRR really is interpreted within the scope of the existential modal. This can be seen by contrasting the truth conditions of (15)a with those of (15)a'-b': the latter imply that *if John had called his mother, she would have called her lawyer*; this, in turn, is unsurprising if the mood corresponding to *would* is interpreted like an E-type world pronoun, which picks out *those (relevant) worlds in which John calls his mother*. But no such effect is obtained in (15)a, where the NRR genuinely appears to be interpreted within the scope of the existential modal.

Since French subject relative clauses sometimes have a peculiar semantics (as in: *J'ai vu Jean qui courait* 'I saw Jean who ran', which means: *I saw Jean running*), it is worth checking that the same pattern holds with non-subject relative clauses; this is indeed the case, as is shown in (16).

(16)   a. Suppose que Jean ait épousé Anne, à qui il ait fait des enfants.
       *Suppose Jean had-subj married Anne, to whom he had-subj given her children.*
       ≠> Jean has children
       b. ** Suppose que Jean ait épousé Anne. Il lui ait fait des enfants.
       *Suppose Jean had-subj married Anne. He had-subj given her children.*


### 3.2. NPI Licensing

We also note that if we force a NRR to be in the scope of a conditional-like construction, which creates a downward-monotonic environment, NPIs can be licensed in the NRR – as one would expect if these are indeed interpreted within the scope of their licenser. Thus the NPI in (17)b is as acceptable as its non-NPI counterpart in (17)a. If the NRR is in the indicative, which forces the NRR to have wide scope, the facts change and the NPI becomes unacceptable, as is shown in (17)c.

(17)   A supposer que Jean ait parlé à Sarkozy,
       *Assuming (= if)  Jean had-subj talked to Sarkozy,*

       a. qui lui ait dit quelque chose d'intéressant,
       *who had-subj told him something interesting,*
       b. qui lui ait dit quoi que ce soit d'intéressant,
       *who had-subj told him anything interesting,*
       c. *qui lui a dit quoi que ce soit d'intéressant,
       *who has told him anything interesting,*

il nous en aurait dit un mot.
*he would have told us about it.*

<center>***</center>

The preceding discussion has tried to establish two facts: (i) In some cases, NRRs are syntactically attached with very wide scope – which makes a separate semantic dimension unnecessary to account for their interpretation in such cases. (ii) In other cases, NRRs are syntactically attached *and interpreted* with narrow scope. A standard bidimensional semantics makes undesirable predictions in such cases. (The special pragmatics of NRRs, and the associated patterns of projection, will be discussed in Part II).

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