Disentangling Two Distinct Notions of NEG Raising

Chris Collins   Paul M. Postal

New York University

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Abstract: In this paper we consider two analyses of NEG raising phenomena: a syntactic approach based on raising NEG (as recently advocated in Collins and Postal 2014) and a semantic/pragmatic approach based on the Excluded Middle assumption (see Bartsch 1973). We show that neither approach is sufficient on its own to account for all the relevant phenomena. Although the syntactic approach is needed to explain the distribution of strict NPIs and Horn clauses, the semantic/pragmatic approach is needed to explain certain inferences where syntactic NEG raising is blocked.

Keywords: interclausal NEG raising, excluded middle assumption, strict NPIs, Horn clauses

1.   Introduction

Various linguists and philosophers long ago noticed a distinctive property of negative constructions in various languages involving a relatively small subset of main predicates taking complement clauses. An English instance of this phenomenon is seen in (1):

(1)   a. I don't think this course is interesting.

        b. I think this course is not interesting.

While (1a) has, given the presence of main clause negation (the syntactic element we call NEG), an expected reading which simply denies that I have a particular thought, the relevant characteristic is that it appears to have another reading equivalent to that of (1b). On that reading, it is stated that I do have a definite thought, namely, that represented by the negated complement clause in (1b). The restriction of this 'extra' reading to a limited class of main clause predicates is illustrated by the fact that no 'extra' reading is associated with the cases in (2a), none of which shares a meaning with the corresponding example of (2b):

(2)   a. I don't overlook/pretend/reaffirm/swear that that this course is interesting.

        b. I overlook/pretend/reaffirm/swear that that this course is not interesting.

We will call the facts involving the relations between main clause negation and the semantics of embedded complement clauses illustrated in (1) and (2) *NEG scope fixing*, in order to give them a label that does not prejudge the analysis. These phenomena include the fact that (1a) appears to be ambiguous, that on one interpretation (1a) is equivalent to (1b), and that none of (2a) is ambiguous in the same way as (1a).

Background history of the recognition of NEG scope fixing drawn from several languages and many relevant comments are found in Horn (1978: 129-131; 1989 [2001]: 308-312; 2014). Hereafter, we refer to readings like that of (1a), in which no thought about the complement proposition at all is attributed to the matrix subject as the *weak reading* and to those like that of (1a) equivalent to (1b) as the *strong reading*. And we freely extend these terms to verbs/predicates distinct from *think* like *believe*, *suppose*, etc.

A fundamental question about NEG scope fixing is, evidently, how can cases like

(1a), with only a main clause instance of NEG, have a reading involving a complement clause understanding of negation, that is, a strong reading.

Roughly two main descriptive and theoretical approaches to NEG scope fixing have been advanced. First, there is a syntactic approach, formally initiated in Fillmore (1963) and extensively defended in Collins and Postal (2014); hereafter: CP(2014). Under this conception, (1a), on the reading taken as equivalent to that of (1b), has been analyzed in terms of syntactic raising of a NEG from the embedded clause. We stress that this schematic specification by no means defines a *unique* syntactic approach. For instance, Collins and Postal (2017a) argues for a syntactic approach which, while also based on syntactic NEG raising, differs significantly from that in CP(2014). Since the analysis in CP(2014) is more or less equivalent to traditional syntactic analyses and is more widely known, for convenience's sake, we adopt it in this article.

Second, there is a semantic/pragmatic approach, proposed most influentially in Bartsch (1973), whereby (1a) is taken to logically entail (1b) under a particular assumption, the *excluded middle assumption* (hereafter EMA), analyzed by Bartsch as a 'pragmatic presupposition'. We elaborate her approach briefly in section 2.

One might be tempted to assume a priori that there is a unique correct conception of NEG scope fixing and that at least one of the theoretically distinct views represented by syntactic NEG raising and the EMA must simply be wrong. It could be claimed that theoretical simplicity concerns support this *exclusionist* position. The title of Bartsch's extremely influential article *Negative transportation gibt es nicht*, that is, 'NEG raising doesn't exist' (see section 2) clearly suggested an exclusionist position. And no doubt

other researchers, of both the syntactic and semantic/pragmatic schools, have also assumed exclusionist positions. There has essentially been debate over which unitary view is correct.

The position of CP(2014) on this matter was noncommittal. While that work contains no statement to the effect that EM inferences play no role in NEG scope fixing, there was also no explicit statement that they do. And the overwhelming emphasis in the monograph on the need for a syntactic treatment of a range of NEG scope fixing cases might have given the impression that we regarded appeal to the EMA as unnecessary *everywhere*.

Further, an idea that CP(2014) took an exclusionary position may also have been facilitated by the fact that CP(2014) not only does not make a strong explicit statement about the overall relation between EMA and syntactic NEG raising, it contains passages which might be read as implying an exclusionist *syntactic* position.

Consider the initial description of NEG scope fixing in CP(2014: ix). There we gave (1a, b) and claimed that such cases involve the syntactic raising of a NEG from the complement: "The central claim of this monograph is that examples like (1a) instantiate a kind of syntactic raising that we call Classical NEG Raising. Involved is the raising of a negation (NEG) from the embedded clause to the matrix clause on the interpretation where (1a) is equivalent to (1b)…" This quote implies that the only way that (1a) could be equivalent to (1b) is through syntactic NEG raising (and not because of EM inferences).

Our previewed later chapter justification for the syntactic claim in the quote

appealed (i) to the fact that NEG scope fixing is controlled by island constraints, (ii) to the properties of Horn clauses (see section 3) and (iii) to facts about negative parentheticals. We might have also mentioned, but did not at that point in the monograph, the properties of strict negative polarity items (NPIs). But one notes that pairs like (1) do not contain islands, Horn clauses, parentheticals or any strict NPIs. Thus none of the claimed support types we cited for a syntactic NEG raising approach in general actually showed that there was any NEG raising in (1a). And in fact we know of no direct evidence which does show that. But likewise, we are aware of no evidence that shows that syntactic NEG raising is *not* present in (1a). We return to the issue in section 5.

What can and should be said about cases like (1a) is this: *if* syntactic NEG raising is a real aspect of English grammar, as shown for other example types by the evidence in CP(2014), then nothing known blocks its existence in (1a). And if a NEG raising analysis of (1a) exists, it will correctly determine the existence of strong readings in cases like (1a). To say this, however, is not to claim that no other mechanism yields the strong reading when NEG raising is not present. We will see though that alongside the passage just discussed, CP(2014) contains claims that entail that some instances of strong readings cannot be due to syntactic NEG raising.

Although an exclusive, unitary view of NEG scope fixing is, we believe, widely shared, we are aware of no attempt from either conceptual point of view to argue the correctness of an exclusionary view. Such question-begging is theoretically critical since it facilitates incorrect overgeneralization. That is, it leads mistakenly from a supported

conclusion to the effect that case X of NEG scope fixing requires an analysis of one type to the conclusion that every case does, which is a non-sequitur. But what is needed at this stage of inquiry is to debate the appropriateness of one or the other types of mechanism for *particular subsets of NEG scope fixing data*. This was done in CP(2014) for specific subsets, e.g. Horn clauses, strict NPIs, islands, parentheticals, and combinations of these (e.g., Horn clauses in islands), etc. Only at some future point when every known instance of the phenomenon had been analyzed could a truly universal exclusionist position be justified.

In the present paper, we argue that even the *currently known* facts related to NEG scope fixing preclude any exclusionist view. That is, for each approach, there is good evidence that there are *some* instances NEG scope fixing that it *cannot properly characterize*.

To clarify matters, in this paper we argue in particular for the following theses, actually reargue for (3a, b d), heavily defended in CP(2014):

(3)   a.   There is syntactic NEG raising for various types of NEG scope fixing cases.

         b.   Specifically, syntactic NEG raising is needed to account for the distribution and properties of what are called *Horn clauses* in CP(2014).

         c.   EM inferences play a role in the interpretations of certain NEG scope fixing cases.

         d.   But EM inferences cannot account for the distribution or properties of strict NPIs or Horn clauses.

Claim (3c) of course agrees in part with other previous work, including in particular Bartsch (1973).

Section 2 outlines Bartsch's semantic/pragmatic proposal. Section 3 outlines the logic of Horn clauses from CP(2014). Section 4 gives a range of cases where EM inferences are needed, but syntactic NEG raising is not possible. Section 5 returns to the issues of the equivalence of (1a) and (1b). Section 6 is the conclusion.

2.   Bartsch's Proposal

To explain the distinction which we claim exists between two different types of phenomena within the overall NEG scope fixing domain, it is useful to briefly discuss Bartsch's (1973) proposal. Her position, contrary to that introduced in Fillmore (1963), was that the strong reading of (1) had nothing to do with syntax, that there was no syntactic NEG raising and that the NEG appearing in the main clause in (1a) was in no sense a syntactic constituent of the complement clause.

Bartsch's novel alternative non-syntactic account of the strong reading was that by associating predicates like *think*, but not those like any in (2), with a particular pragmatic presupposition, the relation between (1a, b) could simply be reduced to a question of logic. The presupposition was that for any individuals denoted by the subject x of the main predicate P and for any proposition p, x stands in the relation P to p or x stands in the relation P to not(p). Thus for (1a), the pragmatic presupposition would be that I either think the course is interesting or that I think the course is not interesting. This excludes the possibility that the subject denotation has no opinion, has not thought about

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the matter or has never heard of the course, etc. That is, it excludes the weak reading of (1a), that not shared with (1b).

Bartsch characterizes the pragmatic presupposition as follows (thanks to Christina Brehme for the translation):

(4)   Bartsch (1973)

 "But only recently have pragmatic factors been included in the determination of the meaning of sentences, so that in this way it can be formally shown how propositions which are not sentence and word equivalent still have the same model theoretic interpretation and transfer the same information when the context is also taken into consideration. In the case under consideration here we are not interested in the inclusion of context regarding indexical expressions or in the denotation of expressions that depend on the speech situation but in the general conditions for the use of certain kinds of expressions which are based on certain pragmatic presuppositions for the 'normal' use of these expressions. I use here 'pragmatic presuppositions' in the way suggested by Thomason [1973] who calls a presupposition for the use of an expression pragmatic as opposed to semantic when under normal conditions the presupposition must be fulfilled when the expression is used [not in cited form]; but when still exceptional conditions exist under which the expression can be also used [not in cited form] without those presuppositions. But a semantic presupposition must always be satisfied."

Two things to note about this characterization are that the pragmatic presupposition can be cancelled (as a conversational implicature) and that the pragmatic

presupposition is associated with a particular expression (e.g., a verb like *think*).

We call Bartsch's pragmatic presupposition the *Excluded Middle Assumption* (EMA). We need not take a stand on whether the assumption is a conversational implicature or a pragmatic presupposition or something else (for various views see Gajewski 2005, Romoli 2013 and Horn and Bayer 1984). Furthermore, we take no stance on whether the EMA is part of the definition of specific lexical items (e.g., *think*) or is just a general (non-lexically specific) assumption that can be invoked in certain contexts and with certain utterances to give rise to certain inferences. Under the lexical theory, one needs an account of which lexical items are associated with the EMA. Under the non-lexical theory, one needs an account of when the EMA is invoked to support EM inferences. Either way, additional assumptions are needed that need not concern us here.

Given the presence of EMA, the apparent equivalence of (1a) on a reading to (1b) follows via logic (disjunctive syllogism) from the fact that the main clause NEG, *interpreted exclusively in the main clause*, eliminates the possibility that the first disjunct of the EMA holds. The logic is symbolized as follows:

(5)   a. $F(x,p) \vee F(x,\neg p)$ (Excluded Middle Assumption)

      b. $\neg F(x,p)$ (matrix clause negation)

      c. $F(x,\neg p)$ logical consequence of (5a,b) by

                                                Disjunctive Syllogism

Given that examples like (1a) permit the weak reading not equivalent to (1b), the existence of EM inferences must be considered a mere option, as Bartsch (1973) explicitly recognized. Otherwise, (1a) would, wrongly, be claimed to have only the strong

reading equivalent to that of (1b) every time it is used.

However, the logical considerations Bartsch invoked by no means yield a determinative analysis of NEG scope fixing. As argued extensively in CP(2014) there are many kinds of data that require a syntactic account.

3.   Collins and Postal's (2014) Syntactic Evidence

3.1   Remark

While the literature claiming to support the syntactic character of NEG scope fixing has been dominated by appeal to strict NPIs, CP(2014) documents a broader range of syntactic evidence. Three other types of evidence were presented. These involved what were there called *Horn clauses*, island phenomena and parenthetical constructions (and combinations of these). Since analysis of each of these bodies of evidence involves considerable complication and need for detailed background discussion, the reader seeking a solid grasp of the syntactic support at issue should consult that work. Rather than provide a sketchy account of all four types of syntactic evidence, we will consider here only Horn clauses, permitting greater analytic depth than if we attempted to cover the other types as well. The purpose of this discussion is to provide a sense of the strength of the evidence for a syntactic treatment of some instances of NEG scope fixing.

3.2   Horn Clauses

Horn (1975: 283) cited example (6a) he had heard during a broadcast:

(6)   a. I don't think *that ever before have the media played such a major role in a*
        kidnapping.

        b. Horn (1975: 284)

        "The subj-aux inversion case of (16) [=(6a): CC/PMP] is even more problematical
        for an interpretive approach, since the syntactic nature of this rule [= syntactic
        NEG raising: CC/PMP] is presumably beyond reproach."

        c. Horn (1989 [2001: 315])

        "As it happens, there are ample grounds to doubt both the feasibility and the
        desirability of a grammatical treatment of the NRP [= NEG scope fixing:
        CC/PMP]."

Recognizing cases like (6a) amounted to the discovery of an English sentence type
involving a unique sort of complement clause we have called a *Horn clause*. The specific
instance in (6a) is highlighted. Horn clauses can be initially characterized as *that* clause
complements containing an extracted phrase, e.g. *ever before* in (6a), in the initial
position of a clause manifesting subject-auxiliary inversion. Moreover, critically, the
extracted phrase, is systematically based on a *negative polarity item*; in (6a) this is *ever
before*.

        As quote (6b) indicates, in 1975 Horn took Horn clauses to support a syntactic
view of NEG scope fixing. But (6c) reveals Horn's later work was part of the general
trend that rejected a syntactic view. However, to our knowledge, as the assumption that
NEG scope fixing is uniformly a nonsyntactic matter took hold, neither Horn nor any

other advocate of a nonsyntactic view gave, or even sought to give, an account of Horn clauses consistent with their properties.

Other instances of Horn clauses are seen in (7) and (8), where the negative polarity item in each is highlighted:

(7)   McCawley (1998: 598)

       a. I don't suppose that under *any* circumstances would he help me.

       b. We didn't anticipate that *any student* would our decision confuse.

(8)   a. I don't believe that at *any* time did traffic come to standstill.

          (theragblog.blogspot.com/.../police-state-amerikkka-right-in-my-own...)

       b. I didn't expect that for *any* reason would she agree to that.

Horn clauses can only be complement clauses; main clause versions of Horn clauses minus their initial complementizer are totally impossible:

(9)   a. *Either of them would she be anxious to marry.

       b. *A single thing has he actually contributed to the discussion.

       c. *E*ver* again would I agree to such a course of action.

       d. *Carvings of *any* respected deity had he destroyed.

Horn (1975: 283; 1978: 169) claimed that Horn clauses not only must be complements but furthermore, they must be complements of just those main clause predicates which manifest the existence of the strong reading for main clause negation, like that in (1a, b). This view was endorsed in McCawley (1998: 598). These elements were called *Classical NEG Raising Predicates* (CNRPs) in CP(2014), a term we retain here. However, like

NEG scope fixing, the term CNRP is here intended to be shorn of any question-begging implication as to the nature of the NEG scope fixing phenomenon.

Other than in Horn clauses, the combination of an extracted constituent with subject auxiliary inversion in an English embedded clause is found essentially only in uncontroversial embedded instances of the *Negative Inversion* construction illustrated in (10) (we leave aside discussion of quasi-Horn clauses and CU-predicates, see CP(2014) and Collins and Postal (in press)):

(10)   a. I believed that *at no time* had he lived in Portugal.

b. Sandra felt that none of the proposals could she really support.

c. Otto guessed that *none of the candidates* would they actually interview.

d. Victoria thought that in no sense was Pavil an ideal choice for mayor.

The superficial difference between clauses like those in (10) and Horn clauses is that the extracted phrases in the former are overtly negative phrases.

An obvious question then is whether the extraction type found in Horn clauses is an instance of Negative Inversion or represents a distinct English construction. A priori, simplicity considerations would favor the first disjunct if it can be maintained. And CP(2014: chapters 13 and 14) argued at length that the extracted phrase defining Horn clauses is an instance of Negative Inversion. The argument is of the following form. There are various constraints Q which block Negative Inversion in certain environments and Q manifest in Horn clauses; see CP(2014). Such arguments combined with the simplicity advantage of reducing Horn clauses to an otherwise existing construction show unmistakably that Horn clauses are a subtype of Negative Inversion clause. That

conclusion is fundamental to using Horn clauses to argue for the syntactic nature of one subdomain of NEG scope fixing.

To proceed with the argument, however, it is necessary to ask *how* Horn clauses can be instances of Negative Inversion. That is initially puzzling because under standard views, the fronted NPI phrases in Horn clauses are indefinites or existentials, and such phrases in general preclude Negative Inversion, even in complement clauses with main verbs allowing Horn clauses:

(11)   a. *(I don't believe that) some gorilla did they train.

        b. *(We didn't expect that) a certain letter would he copy.

        c. *(Jane didn't imagine that) an internship could she find.

        d. *(The reporter didn't think that) sometime had the media played such

           major role.

Given the general impossibility of Negative Inversion applying to existential/indefinite phrases, how can Horn clauses both be instances of Negative Inversion and yet involve extracted phrases like e.g. *ever before* in (6a), *any student*, *any time* or *any reason* in (7) and (8), forms almost universally now taken to be existential/indefinites?

CP(2014)'s answer is revealed in the following sketched analysis of the underlying representation of the complement clause of (6a) in (12a), given that it is identical to the proposed underlying representation of the uncontroversial Negative Inversion complement of (12b). In the following, as in CP(2014) and other later works of ours, the notation <NEG> denotes an unpronounced occurrence of NEG.

(12)   a. the media have [NEG_1 ever before] played such a major role.

b. I think that never before have the media have played such a major role.

(13) a. Underlying Representation of (6a):

I do think that the media have [NEG_1 ever before] played such a major role.

b. The result of Negative Inversion applied to (13a):

I do think that [NEG_1 ever before] have the media played such a major role.

c. The result of NEG raising applied to (13b):

I do NEG_1 think that [<NEG_1> ever before] have the media played such a

major role.

d. Surface Structure Resulting from the Morphophonemic Interpretation of (13c):

I don't think that ever before have the media played such a major role.

The key in (13a) is that the fronted phrase in the Horn clause is taken, under the sharply

nonstandard assumptions about NPIs argued for in CP(2014) and Collins and Postal

(2017a, 2017b, 2017c, in press), to contain an instance of NEG.

The most obvious consequences of the CP(2014) analysis of Horn clauses are,

first, that the view eliminates the mystery of how Horn clauses can be special cases of

Negative Inversion. More precisely, Negative Inversion is subject to very strict

conditions on the nature of the phrases which can be fronted, partially illustrated in (11);

see CP (2014, chapters 13 and 14). But the presence of the posited NEG as part of the

fronted NPI phrase in (13a) guarantees satisfaction of those conditions. Second, since,

under the proposed analysis, Horn clauses are instances of Negative Inversion, it follows

without special statement that the constraints Q mentioned above hold for Horn clauses

exactly as for corresponding uncontroversial Negative Inversion clauses.

Crucially, as CP(2014) show in detail, not all NPIs trigger Negative Inversion. Rather, only those NPIs that can be analyzed as unary NEG structures (of the form [[NEG SOME] NP]) do. Other homophonous NPIs do not. So it is not the case that all NPIs trigger inversion, but only those that are unary NEG structures. Any approach to Horn clauses must be able to account for this fact.

Evidently, the analysis of Horn clauses as Negative Inversion clauses via posits of NEG like that in (13a) creates a new potential mystery. Namely, why is the posited NEG, overt in the fronted phrase in (12b), not overtly present in the corresponding extracted phrase in the Horn clause in (6a)? The obvious answer, basically given in Horn (1975) and elaborated at length in CP (2014: chapters 13 and 14), is that the relevant NEG has raised into the main clause, whose defining predicate is a CNRP. That idea accounts for the generalization Horn offered that Horn clauses can only occur as complements of CNRPs. In effect then, the proper analysis of Horn clauses as based on phrases fronted under Negative Inversion is only feasible in combination with syntactic NEG raising, needed to account for the lack of the overt presence of the posited NEG in cases like (6a)/(13a). The fact that such an analysis simultaneously accounts for the fact that Horn clause structures manifest strong readings obviously further supports the assumptions made.

And it also follows from the proposals just gone over that (i) Horn clauses can only be complement clauses (because occurrence as main clauses would not allow the existence of an environment which would account for the covert status of the unpronounced NEG) and (ii) they can occur only subordinate to negative main clauses

(because NEG has raised from the embedded clause). And under the fundamental assumption of CP(2014) that syntactic NEG raising has no semantic consequences, the fact that pairs like (6a) and (12b) are identical in meaning follows from the overall system of ideas sketched.

Summarizing, the logic of our account of Horn clauses only makes sense under a view which recognizes that some instances of NEG scope fixing involve syntactic NEG raising. Only that permits an account of why the NEG which reduces the apparently nonnegative fronted form in cases like (6a) to the negative form in (12b) appears to occur in the main clause. That is, even granting that an approach like that due to Bartsch (1973) correctly captures the semantic facts associated with simple NEG scope fixing examples like (1a), it has never been shown that it can explicate key properties of the Horn clause examples.

4.   Strong Readings Where Syntactic NEG Raising Cannot Exist

4.1   Remarks

Consider again Bartsch's (1973) proposal and compare it to the conclusion of CP(2014). On the basis of her ability to reduce relations like those in (1) to logical inference based on appeal to EMA, Bartsch denied that NEG scope fixing facts represented a syntactic phenomenon. In contrast, on the basis of evidence including the Horn clause observations in section 3, CP(2014) concluded that NEG scope fixing had to be viewed as a syntactic phenomenon. Apparently, one view had to be right and the other wrong.

Since the distinct approaches each appear to have some motivation, one might fear the existence of a paradox. But such a theoretically unhappy conclusion can be avoided. As already alluded to in the introduction, arguments motivating Bartsch's approach involve one class of cases, while those supporting a syntactic view involve a distinct class of cases. Logically, there is no contradiction in claiming both approaches could be correct, only for at least partially different NEG scope fixing subdomains.

Thereby a possibility is raised that apparently has not been entertained by either side of the disagreement over the syntactic vs. semantic/pragmatic character of NEG scope fixing in general. This is that there are two distinct phenomena at issue, one syntactic, the other semantic/pragmatic. We now argue directly for this view.

4.2   *of the opinion*

The material claimed in CP(2014) to support the need for syntactic NEG raising in a range of cases all involved clauses based on main clause CNRPs, e.g. *think*. Further, our claim that Bartsch's approach fails to account for the evidence about Horn clauses sketched in section 3 also references CNRPs, the very predicates for which Bartsch's approach seems adequate in simple cases like (1a).

CP(2014) argued that over a wide range of data of different types, the properties of clauses based on CNRPs, predicates generally yielding strong readings, require appeal to syntactic NEG raising. But we failed to raise two other related questions. First, are there predicates which support the existence of syntactic NEG raising which do not permit the formation of strong readings? Second, are there predicates which permit the

formation of strong readings but which can be argued (by the same evidence types used in CP(2014) to argue for syntactic NEG raising), not to permit syntactic NEG raising.

To answer the first question, one would need a predicate which does not participate in equivalences such as (1a,b) above, but for which there is evidence of syntactic NEG raising. Collins and Postal (in press) argue that the CU-predicates discovered by Horn (2014b) represent such predicates. We leave aside such cases here.

Data bearing on the second question was in fact touched on four decades ago:

(14)   Horn (1978: 212)

??It is not my opinion that he will recover until he prays to St.Anselm.

Horn remarked:

(15)   "I find strict NPIs all but impossible embedded under such negated nominals…"

We agree and would affix a '*' to (14) and to parallel examples:

(16)   a. *It is not my opinion that he arrived until Friday.

b. *It is not my opinion that he has visited Lourdes in years.

Equally parallel facts are found for the alternate forms:

(17)   a. *I am not of the opinion that he arrived until Friday.

b. *I am not of the opinion that he has visited Lourdes in years.

And of course, the possibility of strict NPIs like these in complement clauses not containing local licensers was one of the arguments in CP(2014) for the existence of syntactic NEG raising.

But correlated with the facts in (14)-(17), it turns out that expressions like 'It is not my opinion'/'I am not of the opinion' permit the formation of strong readings. That

is, (18a) does justify the inference to (18b) on one reading, while (19a) justifies the inference to (19b) on one reading:

(18)   a. It is not my opinion that Mars can be colonized.

        b. It is my opinion that Mars can not be colonized.

(19)   a. I am not of the opinion that Mars can be colonized.

        b. I am of the opinion that Mars cannot be colonized.

Example (19a), for instance, has a strong reading equivalent to (19b) no less than (1a) has one equivalent to (1b).

        Significantly, the Horn clause phenomenon behaves exactly like strict NPIs with respect to expressions like 'It is not my opinion that….'/'I am not of the opinion that'. Horn clauses are impossible, yielding contrasts like:

(20)   a. I don't believe that at any time did he commit perjury.

        b. *It is not my opinion that at any time did he commit perjury.

        c. *I am not of the opinion that at any time did he commit perjury.

        An immediate inference from the combination of data like (14)-(16) and (18)-(20) is that the distribution of strong readings does not fully track that of the distribution of phenomena like strict NPIs and Horn clauses, phenomena, which support the existence of syntactic NEG raising. It follows that to the extent that strong readings justify an EMA approach, the latter mechanism cannot provide any insight into the distribution of strict NPIs and Horn clauses. More formally, (21) is false:

(21)   An expression V motivates the posit of an EMA if and only if V is an expression

        whose complement clauses K allow Horn clauses and strict NPIs lacking any

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overt licenser internal to K.

The falsity of (21) strengthens the argument in CP(2014) that semantic/pragmatic factors cannot be the basis for the strict NPI and Horn clause facts, domains which argue for the reality of syntactic NEG raising.

But the argument runs the other way as well. If the mechanism permitting strict NPIs and Horn clauses was the same as that permitting strong readings, the presence of strong readings in cases like (18) and (19) would entail incorrectly the possibility of strict NPIs and Horn clauses. But since the strong readings in (18) and (19)) are nonetheless incompatible with strict NPIs and Horn clauses in these cases, they cannot involve the same syntactic mechanism.

Arguably then, the properties of expressions like *I am not of the opinion* argue that neither semantic/pragmatic nor syntactic exclusionist views can be correct. In current terms, NEG scope fixing is not a unitary phenomenon. Some of it is a function of syntactic NEG raising, some of it of something else, plausibly something like Bartsch's EM inferences.

4.3   Island Cases

The claimed demonstration in CP(2014) that part of the NEG scope fixing domain involves syntactic NEG raising depended heavily on extensive evidence that strict NPI and Horn clause distribution is sensitive to clausal island boundaries. Such boundaries are in particular determined by topicalized clauses, illustrated in:

(22)   a. They did not believe that Barbara won some race.

b. That Barbara won some race, they did not believe.

That the distribution of strict NPIs and Horn clauses is subject to such island boundaries is illustrated in (23):

(23)   a. They did not believe that Barbara had seen her husband in weeks.

b. *That Barbara had seen her husband in weeks, they did not believe.

(24)   a. They did not believe that any of the kangaroos had Tod eaten.

 b. *That any of the kangaroos had Tod eaten, they did not believe.

Clearly then, syntactic NEG raising cannot function out of a topicalized clause.

Suppose then, as an *exclusionist* syntactic view of NEG scope fixing would have it, that *all* strong readings are a function of syntactic NEG raising. It would follow that such readings are impossible in analogs of cases like (22b) and (23b). But is that the case? Consider (see Zeijlstra 2017 for related data):

(25)   a. Even after carefully watching most of the election returns, Stella did not believe that Hillary had lost.

b. Even after carefully watching most of the election returns, that Hillary had lost, Stella did not believe.

While (25b) may be stylistically dispreferred, we find the inference from these examples to the proposition that Stella believed Hillary had not lost to be no more possible in (25a) than in the island case in (25b). That strong reading could depend on syntactic NEG raising in (25b) only if the NEG had raised across the clausal island boundary. But (23b) and (24b) show that to be impossible.

Consider too:

(26)   a. I have considered the infinity issue, reconsidered that issue and discussed it

with leading experts. And that infinite sets exist, I just do not believe.

 b. I do not believe that infinite sets exist.

To us, it seems that (26a) allows a strong reading to the same extent as (26b). And since

(26a) is in no way anomalous, that determines that it has a strong reading equivalent to

that of (26b).

The conclusion then is that the strong reading in (26a) is not a function of

syntactic NEG raising. Therefore, since some aspects of the NEG scope fixing

phenomenon are due to NEG raising and some are not, neither an exclusionist

semantic/pragmatic approach nor an exclusionist syntactic approach is viable. At least

two different sorts of things are involved in the full range of NEG scope fixing cases.

While CP(2014) did not deal in detail with the claim that strong readings were

possible for topicalized complement clauses of CNRPs, it contains a general statement

implying that was the case. CP(2014: 105) presented a set of data showing inter alia that

strict NPIs were not possible in topicalized and passivized complements of CNRPs, both

of which are islands. The data included:

(27)   a. Laura does not believe Sheila has prayed in years.

b. *That Sheila has prayed in years, Laura does not believe.

c. *That Sheila has prayed in years is not believed by Laura.

d. It is not believed by Laura that Sheila has prayed in years.

Grammatical cases like (27a, d) are instances where the complement clauses are

not islands. We then concluded:

(28)   CP(2014: 105-106)

"Facts like those in (1)-(9) [data set (27) was (6) on page 105] are highly problematic for non-syntactic views of Classical NR for the following reason...such views take the phenomenon to be based on the possibility of constructing inferences from the wide scope reading of negation in host main clauses based on a CNRP to the reading where negation scopes internal to the complement. Such a possibility depends on the semantic properties of the CNRPs and the excluded middle property...But as far as we can see, the relevant semantic properties of CNRPs in (4)-(9) do not vary depending on whether the complement clause is postverbal, a topic, a passivized subject, or a nonpassive subject. Nor, given the same main clause predicate in each set of cases, would one expect any variation in the excluded middle property. The conclusion is, then, that if the excluded middle property holds in any of these cases, it holds in all of them."

Given that, we were arguing that syntactic NEG raising could not be relevant to island cases like (25b), it followed that by claiming the EMA was available in e.g. topicalized clauses with CNRPs, we were in effect claiming that strong readings were not blocked by islands in topicalized clauses and hence that strong readings could not uniformly be attributed to syntactic NEG raising. We have in this section simply made that claim explicit and given supporting data.

Moreover, we then went on to state:

(29)   CP(2014: 123)

"The claim of the semantic/pragmatic approach is that the Classical NR reading

(and the licensing of strong NPIs) can be derived by logic from the combination of the excluded middle property and the meaning of a NEG scoping over the main clause. It is then difficult to discern any reason why the construction of Classical NR inferences should be controlled by island boundaries determined by topicalization of clauses, subject clauses, and so on."

The basic logic here was that strict NPIs and Horn clauses were impossible, even with main clause CNRPS, in certain environments where nothing in the EMA approach could entail that. The basis for the ungrammaticality in CP(2014)'s terms was that these phenomena only exist due to syntactic NEG raising and that is not possible across clausal island boundaries. Such reasoning was taken as the basis for facts like (27c) and for the following involving a Horn clause:

(30)   *That any of Frank's relatives did he help, I do not believe.

In terms of the analysis of CP(2014), the problem here was that the NEG has to have raised out of the topic island.

CP(2014) was a work concerned to demonstrate that syntactic NEG raising exists and is central to the NEG fixing phenomenon. We naturally focused on facts like (30) as an argument that appeal to EM inferences was not an alternative to syntactic NEG raising. We lent no weight to the more or less reverse implication. That is, implicit in this reasoning was that the EMA would, in cases not involving strict NPIs or Horn clauses, allow the same inferences as in corresponding *non-island* cases:

(31)   a.   I do not believe that Evelyn is a nurse.

         b.   That Evelyn is a nurse, I do not believe.

But if that is correct, as it seems to be, that is, if (31b) can have a strong reading just as much as (31a) can, then contrary to Fillmore's (1963) assumption, strong readings of CNRP cases cannot be *uniformly* attributed to syntactic NEG raising. One is led to conclude as follows. Just as the combination of topic/island and strong reading facts shows that EM inferences do not permit elimination of syntactic NEG raising, the existence of strong readings in island cases like (31b) shows that syntactic NEG raising does not eliminate the need to appeal to EM inferences. So, as the thesis of the present paper would have it, the semantic facts involving strong readings and the syntactic facts involving strict NPIs and Horn clauses, represent in part two distinct factual domains.

And what we have shown with various other cases is that regardless of the views of CP(2014), neither an exclusionist semantic/pragmatic approach nor an exclusionist syntactic approach to NEG scope fixing is tenable.

4.4   *only*

In this section we consider sentences whose subjects are of the form [only DP]. We show that these sentences do not involve syntactic NEG raising, but do involve EM inferences. Therefore, they provide another example where the phenomena handled by syntactic NEG raising and those handled by EM inferences are dissociated. This section has been inspired by reviewer comments on earlier papers of ours which brought up the topic of *only* phrases and NEG scope fixing.

Consider the following example:

(32)   Only Carol thinks that it is raining.

This sentence can be characterized in terms of its presupposition and truth conditions as follows:

(33)   a.   Presupposition: Carol thinks that it is raining.

        b.   Truth Conditions: Nobody other than Carol thinks that it is raining.

Now, consider (32) with respect to whether there is an EM inference or not. If there is no EM inference, then the people different from Carol have no opinion, perhaps because they have not thought about the issue or having thought about it, have reached no conclusion. But if there is an EM inference, (32) is equivalent to (34c) (via the inference steps in (34a-c)):

(34)   a.   Nobody other than Carol thinks that it is raining.   (via logic)

        b.   Everybody other than Carol does not think it is raining.   (via EMA)

        c.   Everybody other than Carol thinks it is not raining.

It is clear that (32) does have the EM inference interpretation in (34c) (as well as the non-EMA interpretation). But even though (32) has that interpretation, it arguably cannot be brought about via NEG raising. For example, sentences parallel to (32) preclude strict NPIs or Horn Clauses.

(35)   a.   *Only Carol thinks that Mike has seen his mother in years.

        b.   *Only Carol thinks that Mike will get here until midnight.

        c.   *Only Carol thinks that ever before has Mike been arrested.

Of course, one could claim that there is in fact NEG raising, and that (35a-c) are ruled out in some other manner (perhaps related to the fact that the negation only appears in the presupposition and not the assertion). However, there is no reason to appeal to

further conditions to block cases like (35). Under the approach in the current paper, the sentences in (35) are unacceptable because they do not involve NEG raising. And the interpretations of (32) are not due to syntactic NEG raising, but rather to EM inferences. A question we cannot discuss here is *why* cases like (35) do not permit NEG raising. In the framework of CP(2014) this will have to follow from a constraint on NEG deletion which determines that *only* phrases are not proper general NEG deleters.

Paradigms involving *only* phrases make the case that EM inferences do exist independently of syntactic NEG raising. They thus support our view that no exclusionist approach to NEG scope fixing can be correct.

5.   Equivalences Revisited

The basic claim in the early literature on NEG raising, e.g. in Fillmore(1963), is that syntactic NEG raising accounted for the semantic equivalence of sentences like (36a,b):

(36)   a.   Stephanie doesn't think that it is raining.

         b.   Stephanie thinks that it is not raining.

The logic of the account runs as follows. One structure for (50a) involves syntactic NEG raising, as in (37):

(37)   Stephanie does NEG_1 thinks that it is <NEG_1> raining.

On the standard syntactic analysis elaborated in CP(2014), the NEG is interpreted in its original (embedded clause) position, but pronounced in its matrix clause position. Therefore, on syntactic structure (37), (36a) has the interpretation of (36b).

However, having now clarified that EM inferences exist independently of syntactic NEG raising, (36a) could be interpreted as equivalent to (36b) for a distinct reason. On the Bartschian account of NEG scope fixing, (36a) can only have structure (38), with no NEG in the embedded clause:

(38)   Stephanie does NEG$_1$ think that it is raining.

But under such a view, structure (38) can have the same interpretation as (36b) because of the EM inference.

And if, as we have argued, one is motivated to posit a conception of NEG scope fixing with both syntactic NEG raising and EM inferences, then nothing known prevents (36a) from having ambiguously either structure (37) and (38) and from being equivalent to (36b) with either one.

More precisely, (36a) may have at least three separate analyses:

(39)   a.   One with an underlying matrix NEG associated with neither syntactic
             NEG raising nor any EM inference.

        b.   One with an underlying matrix NEG associated with an EM inference but not
             with any NEG raising.

        c.   One with no underlying matrix NEG but with syntactic NEG raising, in
             which case, there can be no EM inference since the main clause is
             semantically positive.

We showed in CP(2014: 180) that case (40a) permits no strict NPIs (highlighted) in the embedded clause:

(40)   a.   *I don't think that Vincent knows *jackshit$_A$* about physics,

because I have never heard of him.

b.   *I don't think that Marilyn has seen her mother *in ages*,

because I don't know Marilyn.

These are unacceptable in the framework of CP(2014) because the highlighted strict NPIs signal the presence of syntactic NEG raising while the *because* continuations signal that the matrices are semantically positive. Therefore, the pre-continuation part of (40a) has the following structure:

(41)   I do NEG_1 think that Vincent knows [$<NEG_1>$ $jackshit_A$] about physics.

Since the matrix clause is then, at the level of semantic interpretation, a positive clause, the continuation *because I have never heard of him* is anomalous. The anomaly exists because (40a) jointly states both that I have thought about Vincent and that I have never heard of him.

While we have shown that for various cases (e.g. those involving topic islands, *of the opinion* phrases and *only* phrases), EM inferences can be genuine without any concomitant syntactic NEG raising, cases like (36a) remain recalcitrant. This holds since no direct evidence exists that such simple examples can have an analysis that is free of syntactic NEG raising and yet permits the EM inference yielding reading (36b). The possibility remains open since no known evidence supports the contrary view either. We leave this issue to further work, but there may be languages that mark the analogs of the different structures we are proposing for (36a) morphologically (e.g., in terms of subjunctive mood in the NEG raising case).

7. Conclusion

In this paper we have expanded on previous work including our own to argue that neither an exclusionist syntactic approach (based on NEG raising) nor an exclusionist pragmatic/semantic approached based on EM inferences can provide viable accounts of the known domain of NEG scope fixing. This means that we have in effect argued that there are two distinct sorts of phenomena within the NEG raising domain, although the two subdomains overlap extensively, e.g. in the complements of CNRPs which are not islands.

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