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Disentangling two distinct notions of NEG raising

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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 & Postal 2014](#), and a semantic/pragmatic approach based on the Excluded Middle Assumption; see [Bartsch 1973](#). We show that neither approach alone is sufficient 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 examples in (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 prejudice 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, Horn 1989: 308-312, Horn 2014a. Hereafter, we refer to readings like that of (1a), in which no thought about the complement proposition is attributed to the matrix subject, as the *weak reading* and to readings like that of (1a) equivalent to (1b) as the *strong reading*. 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 & 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. This schematic specification by no means defines a unique syntactic approach. For instance, Collins & Postal 2017a presents and justifies a syntactic view 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. But our conclusions would also apply to any account involving syntactic NEG raising, such as that of Collins & Postal 2017a. Even more than that in CP (2014), the analysis in Collins & Postal 2017a appeals heavily to NEG deletion; see the cited works for details.

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. Other related approaches include those of [Gajewski 2005](#) and [Romoli 2013](#).

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 appealing to 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 suggests 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 some the impression that we regarded appeal to the EMA as unnecessary *everywhere*.

Although an exclusive, unitary view of NEG scope fixing is, we believe, widely shared (see [Crowley 2016](#) for one recent non-exclusionist proposal), we are aware of no attempt from either conceptual point of view to argue for 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, 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 of NEG scope fixing that

it *cannot properly characterize*. Specifically, even if one accepts the CP (2014) arguments that a syntactic account of NEG scope fixing is required for certain phenomena, one must still grant that a unitary exclusionist account of all the facts is not viable.

The remainder of the present paper is organized as follows.

First, Section 2 reviews Bartsch's (1973) exclusionist semantic/pragmatic view of NEG scope fixing. Section 3 sketches a limited portion of the arguments in CP (2014) that, contra Bartsch 1973 and other exclusionist non-syntactic views of NEG scope fixing, appeal to syntactic NEG raising is needed in English grammar. We concentrate on the CP (2014) discussion of what we call Horn clauses. Section 4 cites three cases where EM inferences are needed, but where evidence shows that 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 and non-syntactic account of the strong reading was that simply 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 idea 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 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. We give both the original German and the English translation (thanks to Christina Behme for the latter):

Aber erst in neuerer Zeit wurden pragmatische Faktoren in die Bestimmung der Bedeutungen von Sätzen einbezogen, so dass auf diese Weise formal dargestellt werden kann, wie Aussagen, die satz- und wort-semantisch nicht äquivalent sind, doch zusammen mit Sprechsituationsbestimmungen dieselbe modell-theoretische Interpretation haben können und damit dieselbe Information übermitteln können. In dem hier zu betrachtenden Fall geht es jedoch nicht um die Einbeziehung der Sprechsituationsbestimmungen hinsichtlich der indexikalischen Ausdrücke, d.h. der in ihrer Denotation von der Sprachsituation abhängigen Ausdrücke sondern um generelle Anwendungsbedingungen für bestimmte Arten von Ausdrücken die darin liegen dass für die 'normale' Verwendung diese Ausdrücke bestimmte pragmatische Präsuppositionen gemacht werden. Ich gebrauche hier 'pragmatische Präsupposition' im Sinne von R. THOMASON(1973), der eine Präsupposition für die Verwendung eines Ausdrucks 'pragmatisch' im Gegensatz zu 'semantisch' nennt, wenn normalerweise diese Präsupposition erfüllt sein muss, wenn der Ausdruck [in nicht zitierter Weise] verwendet wird, wenn es aber doch Ausnahmesituationen gibt, in denen der Ausdruck auch ohne diese Präsupposition [in nicht zitierter Weise] verwendet werden kann. Dagegen muss eine semantische Präsupposition stets erfüllt sein.

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-semantically and word-semantically 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, however, we are not interested in the inclusion of context regarding indexical expressions, i.e. 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 (just as a conversational implicature can

be cancelled) and that the pragmatic presupposition is associated with a particular expression (e.g., a verb like *think*).

We call such assumptions the *Excluded Middle Assumption*. We need not take a stand on whether the EMA is a conversational implicature or a pragmatic presupposition or something else; for various views see Gajewski 2005, Romoli 2013 and Horn & 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 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. Given the presence of EMA, the apparent equivalence of one reading of (1a) 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 EMA holds. The logic is symbolized as follows:

- | | | | |
|-----|----|---------------------------|-----------------------------------------------------------|
| (3) | 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 (3a,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) 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 conclusion about NEG scope fixing. As argued extensively in CP (2014) many kinds of data 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.

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 (4) he had heard during a broadcast:

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

Recognizing cases like (4) 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 (4) is highlighted. Horn clauses can be initially characterized as *that* clause complements containing an extracted phrase, e.g. *ever before* in (4), 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 (4) this is *ever before*.

Horn (1975: 284) took Horn clauses to support a syntactic view of NEG scope fixing. But Horn (1989: 315) shows that his 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 non-syntactic matter took hold, neither Horn nor any other advocate of a non-syntactic view gave, or even sought to give, an account of Horn clauses consistent with their properties.

Other instances of Horn clauses are seen in (5) and (6), where the negative polarity item in each is highlighted:

- (5) 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.

- (6) 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:

- (7) a. **Either of them* would she be anxious to marry.
 b. **Ever again* would I agree to such a course of action.
 c. *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 manifesting the existence of the strong reading for main clause negation, like those 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 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 English embedded clauses is also found in uncontroversial embedded instances of the *Negative Inversion* construction illustrated in (8).

- (8) 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 (8) and Horn clauses is that the extracted phrases in (8) are overtly negative phrases.

However, the above remarks ignore what CP(2014: chapter 14) called *quasi-Horn clauses*. These are illustrated by the highlighted clause in cases like (9a):

- (9) a. The States couldn't provide us with evidence *that at any time had there been a request for road closure*.
 b. *The States couldn't provide us with evidence that she left until Friday.

CP(2014: Chapter 14.5) took the key contrast between true Horn clauses and cases like (9a) to lie in the fact that the scope of the fronted quantifier phrase is systematically in the complement clause in true Horn clauses but in the main clause in examples like (9b). Moreover, although not noted in CP (2014), as (9b) illustrates, quasi-Horn clause environments contrast with Horn clause environments in the distribution of certain strict NPIs, here *until*.

The remark above (8) also ignores the discovery of a class of *apparent* Horn clauses occurring as complements of a class of expressions distinct from CNRPs. Such examples, illustrated in (10), are discussed in Horn (2014b):

- (10) I can't say that at any time did he show signs of great agitation.

The challenge Horn (2014b) claims cases like (10) provide to the argument from Horn clauses in CP (2014) is responded to in Collins & Postal (in press).

An obvious question 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 favor the first option 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 stands on a number of instances 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: 142-144). 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, 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.

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 *ever before* in (4), *any circumstances*, *any student*, *any time* and *any reason* in (5) and (6), forms almost universally taken to be existential/indefinites?

CP (2014)'s answer is revealed in the sketched analysis of (4) in (12). In the following, as in CP (2014) and other later works of ours, the notation <NEG> denotes an unpronounced occurrence of NEG.

- (12) a. Underlying Representation of (4):
 I do think that the media have [NEG₁ ever before] played such a major role.
 b. The result of Negative Inversion applied to (12a):
 I do think that [NEG₁ ever before] have the media played such a major role.
 c. The result of NEG raising applied to (12b):
 I do NEG₁ think that [<NEG₁> ever before] have the media played such a major role.
 d. Surface Structure Resulting from the Morphophonemic Interpretation of (12c):
 I don't think that ever before have the media played such a major role.

The key in (12a) 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 & Postal (2017a,b), Collins, Postal & Yevudey (2017), Collins & Postal (in press), to contain an instance of NEG. (12a) is also the underlying structure for the following example of Negative Inversion:

- (13) I think that never before have the media played such a major role.

In (13), NEG does not undergo raising from the embedded clause to the main clause. As a consequence, [NEG ever before] is spelled out as *never before*.

The most obvious consequences of the view of Horn clauses represented by (12) are, first, that the view eliminates the mystery of how Horn clauses can be special cases of Negative Inversion. That is, very strict conditions,

partially illustrated in (11), govern the choice of phrases frontable under Negative Inversion; see CP (2014: Chapters 13 and 14). But the presence of the posited NEG as part of the fronted NPI phrase in (12a) guarantees satisfaction of those conditions. Second, since Horn clauses are, under the proposed analysis, instances of Negative Inversion, it follows without special statement that constraints Q mentioned above hold for Horn clauses exactly as for corresponding uncontroversial Negative Inversion clauses.

Evidently, the analysis of Horn clauses as Negative Inversion clauses in (12a) creates a new potential mystery. Namely, why is the posited NEG not overtly present in the extracted phrase in the Horn clause in (4)? 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 true Horn clauses (i.e. non-quasi-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 overt presence of the posited NEG in cases like (4)/(12a). The fact that such an analysis simultaneously accounts for the fact that Horn clause structures manifest the strong readings obviously further supports the assumptions made.

The proposals just gone over also determine (i) that Horn clauses can only be complement clauses (because occurrence as main clauses would not allow the existence of an environment accounting for the covert status of the unpronounced NEG) and (ii) that Horn clauses can occur only subordinate to negative main clauses (because NEG has raised from the embedded clause). The fundamental assumption of CP (2014), that syntactic NEG raising has no semantic consequences, accounts for the fact that (4) is identical in meaning to *I think that never before have the media played such a major role in a kidnapping*.

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 relates the apparently non-negative fronted form in cases like (4) to the negative form in (13) appears to occur in the main clause. 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 Horn clause examples.

4 Strong readings where syntactic NEG raising cannot exist

4.1 Remarks

Compare Bartsch's (1973) proposal to the conclusion of CP (2014). On the basis of her ability to reduce relations like those in (1) to logical inference based on an appeal to the EMA, Bartsch denied that NEG scope fixing facts represented a syntactic phenomenon. In contrast, given 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. 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 for at least partially different NEG scope fixing subdomains.

This raises a possibility apparently not previously entertained by either side of the disagreement over the syntactic vs. semantic/pragmatic character of NEG scope fixing in general. Namely, 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 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 supporting 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 in CP (2014)), 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 & Postal *in press* argue that the CU-predicates discovered by Horn 2014b are 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 strict NPI 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 strong readings. That is, on one reading, (18a) does justify the inference to (18b) while (19a) justifies the inference to (19b):

- (18) a. It is not my opinion that Mars can be colonized.
b. It is my opinion that Mars cannot 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’. They 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 data like (16)-(20) is that the distribution of strong readings does not fully track 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 just 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 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.

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:

Disentangling

- (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, 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 (23b) and (24b). 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). The 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 it and discussed it with leading experts. And that infinite sets exist, I just do not believe.
 b. And I just do not believe that infinite sets exist.

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

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.

Consider the following example:

(27) Only Carol thinks that it is raining.

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

- (28) a. Presupposition: Carol thinks that it is raining.
 b. Truth Conditions: Nobody other than Carol thinks that it is raining.

Now, consider whether there is an EM inference in (27). 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, (27) is equivalent to (29d) (via the inference steps in (29a-d)):

- (29) a. Only Carol thinks that it is raining.
 b. Nobody other than Carol thinks that it is raining. Truth Conditions of (a)
 c. Everybody other than Carol does not think it is raining. By Logic
 d. Everybody other than Carol thinks it is not raining. By EMA

It is clear that (27) does have the EMA inference interpretation in (29d) (as well as the non-EMA interpretation). But even though (27) has that interpretation, it arguably is not due to NEG raising. For example, sentences parallel to (27) preclude strict NPIs and Horn Clauses.

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- (30) 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 (30a-c) are ruled out in some other manner (perhaps related to the fact that the negation only appears in the assertion, not the presupposition). However, there is no reason to appeal to further conditions to block cases like (30). Under the approach in the current paper, the sentences in (30) are unacceptable because they do not involve NEG raising. And the interpretations of (27) are not due to syntactic NEG raising, but rather to EM inferences.

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 (31a,b):

- (31) 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 (31a) involves syntactic NEG raising, as in (32):

- (32) Stephanie does NEG₁ think that it is <NEG₁> 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 (32), (31a) has the interpretation of (31b).

However, having now clarified that EM inferences exist independently of syntactic NEG raising, (31a) could be interpreted as equivalent to (31b) for a distinct reason. On the Bartschian account of NEG scope fixing, (31a) can only have structure (33), with no NEG in the embedded clause:

(33) Stephanie does NEG₁ think that it is raining.

But under such a view, structure (33) can have the same interpretation as (31b) 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 (31a) from having ambiguously either structure (32) or (33) and from being equivalent to (31b) with either one.

More precisely, (31a) may have at least three separate analyses:

- (34) a. The matrix NEG is associated with neither syntactic NEG raising nor any EM inference.
 b. The matrix NEG is associated with an EM inference but with no NEG raising.
 c. There is no underlying matrix NEG but there is syntactic NEG raising. In this case, there can be no EM inferences since the main clause is semantically positive.

We showed in CP (2014: 180) that case (35a) permits no strict NPIs (highlighted) in the embedded clause, effectively illustrating (34c):

- (35) 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 matrix clauses are semantically negative. Therefore, the pre-continuation part of (35a) has the following structure:

(36) I do NEG₁ think that Vincent knows [_{<NEG₁>} 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 (35a) jointly implies 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 *of the opinion* phrases, topic islands and *only* phrases), EM inferences can be genuine without any concomitant syntactic NEG raising, the status of cases like (31a) remains undetermined. This holds since no direct evidence exists that such

simple examples have an analysis free of syntactic NEG raising but permit the EM inference yielding reading (31b). The possibility remains open since no known evidence supports the contrary view either.

6 Conclusion

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

Our results can be stated conditionally: even if one subscribes to the CP (2014) arguments that a syntactic account of NEG scope fixing is required for some cases, one should recognize that a unitary exclusionist account of the facts is not viable.

A reviewer raises the question of whether all languages exhibit both syntactic NEG raising and EM inferences. Even from the heavily syntactic perspective of CP (2014) there is no reason to believe that *every* language has syntactic NEG raising. Languages differ greatly as to the presence of many syntactic features, e.g. as to whether they have passive constructions, relative clauses with overt wh-movement, noun incorporation, etc. So there is no known reason why certain languages could not lack syntactic NEG raising. However, given the present study, it is entirely possible that such languages would still admit some EM inferences.

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