On the interpretation of *non**

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1 Introduction

- in this handout I show and provide an explanation for the fact that *non*'s denotation depends not only on the polarity of its antecedent, but also on the scope of negation w.r.t other scope-bearing operators in the antecedent
- this informs our understanding of the meaning of *non*

- I only consider embedded bare Polar Response Particles (not clause-peripheral PRPs)
- In answer to a negative question $\neg p?$, answering with *non* asserts the questioned proposition $\neg p$ without negating it (keeping pronunciation and the position of negation constant (Holmberg, 2013; Goodhue and Wagner, tted))

(1) A: Est -ce que Tom n' a pas été au travail à l'heure cette
is it that John NEG has NEG been at work on time this
année ?
year

Has John not shown up for work on time this year?

B: Je crois que non.
I believe that no

I believe that he has not shown up for work on time this year.

(2) Meaning of *no*/*non* as a function of polarity of the question (B responses)

	¬p?
Subject = Tom	$\boxed{\neg p}$ (1)

- The next question is exactly the same except that the adverb *souvent* 'frequently' has been added: notice that now answering with *non* asserts the negation of the questioned proposition $\neg p$[1]

(3) A: Est -ce que Tom n' a souvent pas été au travail à l'heure
is it that John NEG has frequently NEG been at work on time
cette année ?
this year

Has John frequently not shown up for work on time this year?

B1. Je crois que oui.
I believe that yes

I believe that he has frequently not shown up for work on time this year.

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[1] This data point was first noticed in English in Thoms 2012. Similar patterns were reported in Brasoveanu et al. 2013.

B2. #Je crois que non.
I believe that no

Int. I believe that he has frequently not shown up for work on time this year

B3. Je crois que non.
I believe that no

I believe that he has not frequently not shown up for work on time this year.

(4) Meaning of *no/non* as a function the scope-bearing operators it contains (B responses)

	¬p?
No-scope bearing operator	$\boxed{\neg p}$ (1)
Scope-bearing operator = souvent	$\neg\boxed{\text{svt}\neg}$ (3)

- Why does *non* negate the questioned proposition in examples (13), (14), (3) but not in (1)?
- I'm going to show you that the following generalizations hold:

(5) Generalization about the interpretation of *non*

a. if ¬ is the outermost scope-bearing operator in the prejacent, *non* does not contribute negation

b. if ¬ is NOT the outermost scope-bearing operator in the prejacent, *non* contributes negation

- Aside on a different kind of negative questions that I will not consider in this handout
  - There are cases where the negation in a negative question seems to be a case of meta-negation: the question is not asking whether the addressee finds that the shirt is not too small, but whether the addressee finds that the shirt is too small (would you deny that his shirt is a little too small?)

(6) Context: Christian is trying on a shirt. Laurence asks the salesman the following question.

A: Est -ce qu' elle n' est pas (un peu) trop petite
is it that she NEG is NEG a little too small

sa chemise ?
his shirt

Isn't his shirt a little too small?

B: Il me semble que oui.
it to.me seems that yes

I think it is too small.

- Compare with the following example where the questioned proposition is negative and answering with embedded *oui* 'yes' is not possible

(7) Context: Christian is playing the part of a man who became a giant overnight. The costume designer needs to find a shirt and a pair of pants in two sizes: one normal fitting set and one set that appears obviously too small for the actor. Christian is trying out the too-small set. The costume designer is afraid it does not look too small enough.

A: Est -ce qu' elle n' est pas (du tout) trop petite
is it that she NEG is NEG at all too small

sa chemise ?
his shirt

Isn't his shirt at all too small?

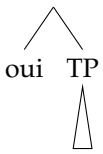
B: ?? Il me semble que oui.
it to.me seems that yes
I think it is too small.

- Outline:
  - background assumptions on structure of embedded bare PRPs
  - we make sure that the generalization is accurate
  - we look at neg-raising to see whether the generalization should be stated over the LF or the denotation of a sentence
  - I propose two analyses of the data

2 Embedded bare PRPs have an elided prejacent

- Work on polar response particles has taken mainly two strategies: some accounts (Kramer and Rawlins, 2011; Holmberg, 2011) analyze polarity particles as having an elidable full clause as their sister (8) while Krifka 2013 analyzes them as being purely anaphoric sentential proforms (9) .

(8) Ellipsis analysis



(9) Proform analysis

- I argue that in French embedded bare PRPs involve an elided clause
- One of the main pieces of evidence comes from obviation:
  - a subset of the attitude verbs that select for a finite clause with subjunctive mood are so-called 'obviation verbs' (e.g. *vouloir* 'want')
  - they impose a restriction on the overt expression of the arguments in the clause they embed: an argument in the embedding clause cannot be coreferential with a designated overt argument in the embedded clause

(10) *vouloir* 'want' is + obviation

a. Je veux venir.
I want come.SUBJ
I want to come.

b. *Je veux que je vienne.
I want that I come
Int. I want to come.

c. Je veux que tu viennes.
I want that you come
I want you to come.

  - this restriction is active with embedded *oui* but not with the sentential proform *le*
  - this follows if *oui* comes with an elided clause
  - in the examples below, *souhaiter* 'hope/want/wish' is +obviation whereas *espérer* 'hope' is -obviation

(11) +obviation V: *[subject$_i$ ... V$_{+obv}$ ... [subject$_i$

a. *Je ne sais pas si je viendrai demain mais je souhaite
I neg know neg if I go.FUT tomorrow but I SOUHAITE
que je vienne
that I come.subj
Int. I don't know whether I'll be able to come tomorrow but I want to.

b. *Je ne sais pas si je viendrai demain mais je souhaite
I neg know neg if I go.FUT tomorrow but I SOUHAITE
que oui.
that yes
Int. I don't know whether I'll be able to come tomorrow but I want to.

c. Je ne sais pas si je viendrai demain mais je le souhaite.
I neg know neg if I go.FUT tomorrow but I it SOUHAITE

I don't know whether I'll be able to come tomorrow but I want to.

– notice that this is not the case with a verb that does not impose such a restriction on co-reference between embedded and embedding arguments

(12) -obviation V: [subject$_i$ ... V$_{-obv}$ ... [subject$_i$

a. Je ne sais pas si je viendrai demain mais j' espère que
I neg know neg if I go.FUT tomorrow but I hope that
je viendrai.
I come.*fut*

I don't know whether I'll come tomorrow but I hope I will.

b. Je ne sais pas si je viendrai demain mais j' espère que
I NEG know NEG if I go.FUT tomorrow but I hope that
oui.
yes

I don't know whether Tom will come tomorrow but I hope I will.

c. Je ne sais pas si je viendrai demain mais je l' espère.
I NEG know NEG if I go.FUT tomorrow but I it hope

I don't know whether Tom will come tomorrow but I hope I will.

3 Checking that the generalization holds

3.1 Negative answers to positive questions

- In answer to a positive/non-negative question *p?*, answering with *no*/*non* asserts the negation of the questioned proposition ¬*p* whether *p* contains a scope-bearing operator or not

(13) A: Est -ce que Tom a fini son assiette ?
is it that Tom has finished his plate

Did Tom finish his plate?

B: Je crois que non.
I believe that no

I believe that he didn't.

(14) A: Est -ce que John a souvent été au travail à l'heure cette
is it that John has frequently been at work on time this
année ?
year

Has John frequently shown up for work on time this year?

B: Je crois que non.
I believe that no

I believe that he has not frequently shown up for work on time this year.

- We therefore have the following more complete picture

(15) Meaning of *non* as a function of the polarity of the question and the scope-bearing operators it contains (B(2) responses)

	p?	¬p?
No scope-bearing op. (S=Tom)	¬ $\boxed{\text{p}}$ (13)	$\boxed{\neg\text{p}}$ (1)
Scope-bearing op. = *souvent* 'often'	¬ $\boxed{\text{souvent}}$ (14)	¬ $\boxed{\text{souvent}\neg}$ (3)

3.2 ⟦*non*⟧ as a function of the scopal relation in Q

- I have looked at three kinds of responses containing *non*: bare *non*, clause-peripheral *non*, and emphasized NON with descending-rising tones

- in the next example I look at a negative question containing the ∀ quantifier in the DP *tout le monde* 'everyone'

(16) Context: There has been a terrorist attack but a rumor says that by chance no one has died. I ask a policeman:

A: Est -ce que tout le monde n' est pas mort ? (∀¬)
is it that every the world NEG is NEG dead

Has everybody not died?

B: Je crois que non (¬ ∀¬)
I believe that no

I think that some people died.

- Compare with a minimally different example in which the non-referential subject *tout le monde* 'everyone' has been replaced with a referential one *Marc*: *non* does not contribute negation

(17) Context: There has been a terrorist attack, a rumor says that everyone has died except for one security guard possibly called Marc. My brother Marc happened to be working there as a security guard. I ask a policeman:

A: Est -ce que Marc n' est pas mort ? (¬p)
is it that every the world NEG is NEG dead

Has Marc not died?

B: Je crois que non. (¬p)
I believe that no

I think that some people died.

- With the same question involving *tout le monde* 'everyone', another easier scope relation, ¬∀, yields a different response pattern with *non*: ¬ is higher and agrees with *non*, thereby providing only one semantic negation

(18) Context: I know there are people who died, but last time there were many survivors, so I wonder if this time too, everybody did not die.

A: Est -ce que tout le monde n' est pas mort ? (¬∀)
is it that every the world NEG is NEG dead

Has everybody not died?

a. Je crois que non. (¬∀)
I believe that no

I think that not everybody is dead.

b. ?Je crois que NON. (¬ ¬∀)
I believe that no.

I believe that everybody is dead

- If the generalization is accurate, we expect that a *non* answer to a negative question with PPI *quelqu'un* 'someone' will be different from a *non* answer to a negative question with N-word *personne* 'nobody' (where N-words are existential quantifiers obligatorily in the scope of negation)
- This is what we find:
- A negative question with subject *quelqu'un* 'someone' necessarily has the scope ∃¬ and as per the generalization, a *non* answer asserts ¬ ∃¬

(19) Est -ce que quelqu'un n' a pas fini
is it that someone NEG has NEG finished

son assiette ? (∃¬, *¬∃)
his plate

Has someone not finished their plate?

a. B1: Je crois que oui. (∃¬)
I think that yes

I think that someone has not finished their plate.

b. B2: Je crois que non. ($\neg\boxed{\exists\neg}$)
I think that no

I think that everybody has finished.

- A negative question with subject *personne* 'nobody' necessarily has the scope $\neg\exists$ and as per generalization 2, a *non* answer asserts $\boxed{\neg\exists}$

(20) Est -ce que personne n' a fini
is it that nobody NEG has finished

son assiette ? (*$\exists\neg$, $\neg\exists$)
his plate

Has nobody finished their plate?

B1. #Je crois que oui. ($\boxed{\neg\exists}$)
I believe that yes

B2. Je crois que non. ($\boxed{\neg\exists}$)
I believe that no

I believe that no one finished.

- I have tested several scope-bearing operators (in subject, object, oblique positions where applicable), here is the summary

(21) Summary table

Operator=	non	non, C	NON
Marie	$\boxed{\neg p}$	$\boxed{\neg p}$	
		$\neg\boxed{\neg p}$	$\neg\boxed{\neg p}$
N-word ($\neg\exists$)	$\boxed{\neg\exists}$	$\boxed{\neg\exists}$	
		$\neg\boxed{\neg\exists}$	$\neg\boxed{\neg\exists}$
tout DP 'every NP' $\neg\forall$	$\boxed{\neg\forall}$	$\boxed{\neg\forall}$	
		$\neg\boxed{\neg\forall}$	$\neg\boxed{\neg\forall}$
$\forall\neg$		$\#\boxed{\forall\neg}$	
	$\neg\boxed{\forall\neg}$	$\neg\boxed{\forall\neg}$	
qn 'someone' ($\exists\neg$)		$\#\boxed{\exists\neg}$	
	$\neg\boxed{\exists\neg}$	$\neg\boxed{\exists\neg}$	
devoir 'must' $\neg\forall$	$\boxed{\neg\forall}$	$\boxed{\neg\forall}$	
		$\neg\boxed{\neg\forall}$	$\neg\boxed{\neg\forall}$
$\forall\neg$	$\neg\boxed{\forall\neg}$	$\neg\boxed{\forall\neg}$	
souvent 'often' $\neg$svt	$\boxed{\neg\text{svt}}$	$\boxed{\neg\text{svt}}$	
		$\neg\boxed{\neg\text{svt}}$	$\neg\boxed{\neg\text{svt}}$
svt$\neg$		$\#\boxed{\text{svt}\neg}$	
	$\neg\boxed{\text{svt}\neg}$	$\neg\boxed{\text{svt}\neg}$	

3.3 Focus and clefting

- Focussing or clefting a referring subject seems to have the same effect on *non* as non-referential subjects

(22) Context: Everybody's gone from the table. All the plates are empty except one.
Est-ce que c'est MARIE qui n'a pas fini son assiette ? ($\iota\neg$?) cleft

a. B1: Je crois que oui. ($\boxed{\iota\neg}$)

b. B2: Je crois que non. ($\neg\boxed{\iota\neg}$)

(23) Context: Everybody's gone from the table. All the plates are empty except one.
A: Est-ce que MARIE n'a pas fini son assiette ? ($\iota\neg$?) subject focus

a. B1: Je crois que oui. ($\boxed{\iota\neg}$)

b. B2: Je crois que non. ($\neg\boxed{\iota\neg}$)

- It seems that the descriptive generalization repeated in () accurately captures the pattern of data I have shown you so far

(24) Generalization about the interpretation of *non*

a. if $\neg$ is the outermost scope-bearing operator in the prejacent, *non* does not contribute negation

b. if $\neg$ is NOT the outermost scope-bearing operator in the prejacent, *non* contributes negation

- From the examples above and the generalization, we know that the scope relation that matters is not the one that holds semantically in the denotation of the question since after all $\forall\neg=\neg\exists$ and yet those scope relations yield different response patterns with *non*
- Neg-raising predicates are a case where we see again that the scope relations are calculated at LF

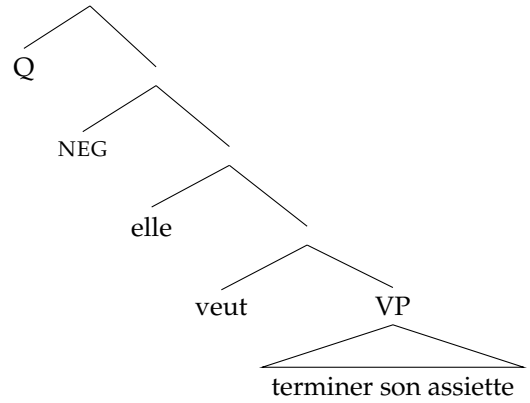
4 Neg-raising: syntactic negation matters

- If we assume the excluded-middle analysis of neg-raising, a sentence with a neg-raiser like () has the LF in () where negation has scope over the higher verb and it is only semantically that the lower verb is negated

(25) Est -ce qu' elle ne veut pas terminer son assiette ?
is it that she NEG want NEG finish her plate

Does she not want to finish her plate?

a. LF



b. $[\![Q]\!]$={$\forall$w'$\in$BOUL$_{w,x}$ $\neg$ x finishes x's plate in w', $\forall$w'$\in$BOUL$_{w,x}$ x finishes x's plate in w'}

- Does negation at LF matter or negation in the denotation? According to our generalization...
  - If negation at LF matters, we expect the *non* answer to mean *she wants not to come* (after the excluded-middle presupposition has been taken into account)
  - If semantic negation matters, we expect the *non* answer to mean *it is not the case that she wants not to come*

(26) Je crois que non.
I believe that no

I think that she wants not to.

- The meaning of the *non* answer is predicted if the descriptive generalization is stated over the LF representation

5 Towards an analysis

- Currently I see two ways of analyzing the data: one consists in putting conditions on what can be copied and used as the (elided) prejacent of

PRPs (we'll see that this analysis runs into a problem), the other consists in saying that *non* takes part in negative concord under certain conditions

- Assumptions:
  - *non* lexicalizes negation (in the syntax or the semantics)
  - I assume (following Farkas and Bruce 2009) that when a speaker asks a question, both the syntax/LF and the denotation of the question are available in the context

(27) A: Est -ce que Marie n' a pas réussi son examen ?
is it that Marie NEG has NEG passed her exam
Has Marie not passed her exam?

  - ∗ The effect of A's move:
    - · to place LF of sentence with the interrogative marker on the table with its denotation
    - · to project a future cg where either p or $\neg p$ is accepted
  - ∗ the difference with making an assertion is that no commitment is made by A (and the projected set is different)
  - ∗ but both assertion and question have in common that they propose to add a proposition to the common ground

(28) Context after the question (27) has been asked

A	Table	B
	<Marie n'a pas réussi son examen[I]; {p, ¬p}>	
Common ground	**Projected set**	
s_1	$ps_1 = \{s_1 \cup \{p\}, s_1 \cup \{\neg p\}\}$	

5.1 Ellipsis-based analysis

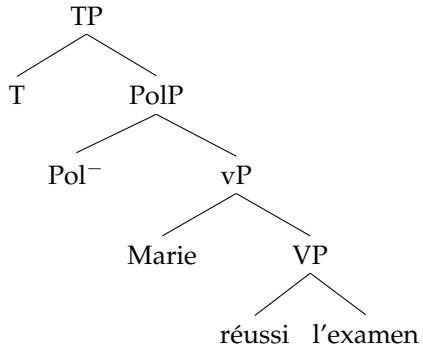
- *non* targets the smallest well-formed constituent (see definition below), this is why we find that *non* can reverse the polarity of a positive antecedent or agree with it if it is negative
- *non* always takes highest scope (in polarity fragments)

(29) Smallest well-formed constituent hypothesis
The smallest well-formed (i.e. no free variable) constituent of type <t> is copied into the prejacent and *non* negates it.

- In the following example, at LF, the smallest well-formed constituent of type <t> is vP

(30) A: Est -ce que Marie n' a pas réussi son examen ?
is it that Marie NEG has NEG passed her exam
Has Marie not passed her exam?

(31) ⟦LF⟧= ¬(Marie passed her exam)



- In the next example, the smallest well-formed constituent of type <t> in the LF of the question is TP

(32) Context: I graded 6 exams for a colleague and they were all terrible. My colleague graded the rest of the exams and tells me that his students did brilliantly except a few. I'm afraid the only students who did not do well are those I graded.

A: Est -ce que exactement 6 étudiants n' ont pas réussi leur
is it that exactly 6 students NEG have NEG passed their
examen ?
exam

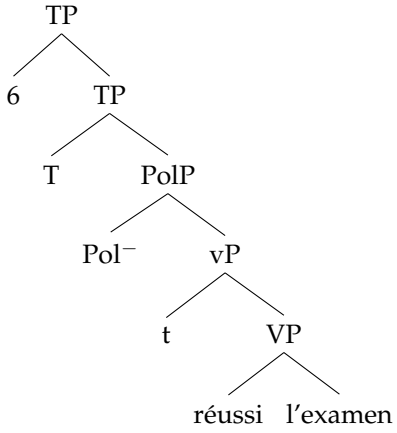
Have exactly 6 students not passed their exam?

B: Il me semble que non.
it to.me seems that no

I think that it's not the case that exactly 6 students did not pass their exam.

- vP is not well-formed: it contains an unbound variable

(33) $[\![LF]\!] = \exists_6 x.$ student(x) & ¬(x passed x's exam)



- *non* negates this whole TP which already contains a negative PolP
- the only reading that *non, p* has in response to A is one where the negation contributed by *non* takes scope over the whole TP:
¬[$\exists_6 x.$ student(x) & ¬(x passed x's exam)]

- What about the previous example with *souvent* 'often' repeated in (34)?

(34) A: Est -ce que Tom n' a souvent pas été au travail à l'heure
is it that John NEG has frequently NEG been at work on time
cette année ? (often¬)
this year

Has John frequently not shown up for work on time this year?

B1. Je crois que oui. (often¬)
I believe that yes

I believe that he has frequently not shown up for work on time this year.

B2. #Je crois que non.
I believe that no

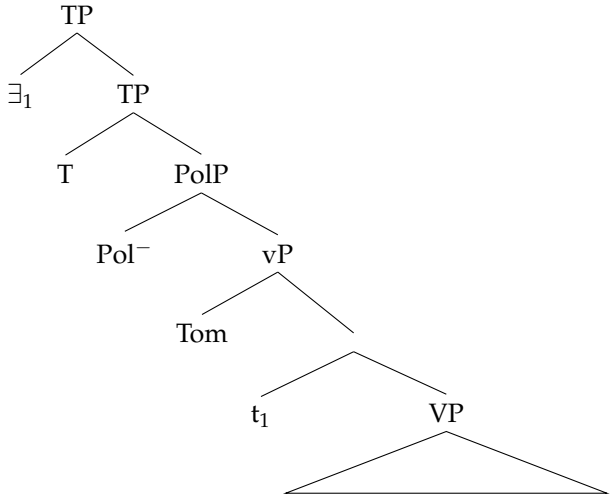
Int. I believe that he has frequently not shown up for work on time this year

B3. Je crois que non. (¬ often¬)
I believe that no

I believe that he has not frequently not shown up for work on time this year.

- It is potentially a problem for the smallest well-formed constituent hypothesis:
- IF we assumed that *souvent* 'often' merges low (below Pol) and gets to where it's interpreted via movement, the hypothesis correctly predicts that smallest well-formed constituent is TP and that responding *non* yields a double negation
- This assumption seems very dubious though given the evidence against movement of *souvent* 'often' (no reconstruction)

(35) $[\![\text{LF}]\!]^{c(n)}$= ∃e. |e|>n & ¬(Tom went$_e$ to work on time)



- IF *souvent* 'often' merges above Pol, then the hypothesis would predict that vP is the small well-formed constituent which would make a wrong prediction
- Even if *souvent* 'often' specifically merges below Pol, I need to look at adverbs that are base-generated high in the structure and see whether those are copied into the prejacent of *non* or left out
- More generally, I should see what material (if any) can be not copied into the prejacent, left out of it
- This could be decisive in advocating between the smallest well-formed constituent hypothesis and the negative-concord hypothesis

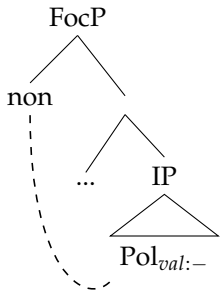
5.2 Negative-concord analysis

5.2.1 Version A

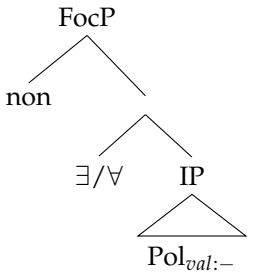
- if *non*'s prejacent has clausal negation, *non* agrees with it, unless a scope-bearing operator intervenes between *non* and clausal-negation
- if *non*'s prejacent does not contain negation, *non* is interpreted

- Following Holmberg 2013, I assumed that *non* agrees with the closest Pol head in its scope

(36) Concord



(37) Intervention

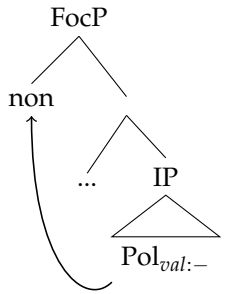


- When intervention occurs, *non* and Pol$_{val:-}$ are interpreted separately
- In answer to a positive question, *non* shares its value with the Pol head thus valuing it negatively

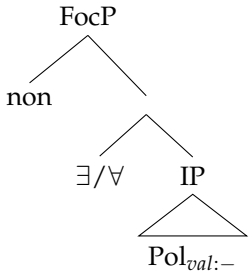
5.2.2 Version B

- What surfaces as *non* corresponds to two potential underlying structures/origins
- If the prejacent has negation, it raises to a focus position where it is spelled out as *non*, *unless* a quantifier intervenes
- If a quantifier intervenes in neg-movement OR the prejacent does not contain negation, a *non* can be inserted in [Spec, Foc]

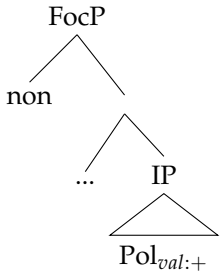
(38) Movement of neg



(39) $\exists/\forall$ intervention + *non* insertion



(40) positive prejacent + *non* insertion



- Analyzing *non* has having two origins would be a way to 'hardwire' the observation that *non* does two things: it can reverse the polarity of its antecedent to - (*non* is inserted), or indicate that the polarity of its prejacent is - (*non* is the spell-out of negative polarity focus) (Pope, 1972; Roelofsen and Farkas, 2014)
- An issue for this version of the concord account is that clause-peripheral *non* can be followed by a negative coda (41) but the denotation of the whole structure contains one negation: if we derive concord cases by assuming that a lower negative polarity head has moved to a focus position and is spelled out as *non*, then how can it still be pronounced in the coda of clause-peripheral *non*?

(41) A: Est -ce que Marie n' a pas réussi son examen ?
is it that Marie NEG has NEG passed her exam

Has Marie not passed her exam?

a. Je crois que non.
I think that no

I think that she has not.

b. Je crois que non, elle n' a pas réussi son examen.
I think that no she NEG has NEG passed her exam

I think that no, she has not passed her exam.

- A major difficulty for this analysis (both versions), not anticipated in Holmberg 2013, is why any quantifier intervenes whatever its strength or syntactic category
- The only phenomenon I know of where, regardless of syntactic category, the only thing that matters is the quantifiers is modal concord Grosz 2010

6 Conclusion

- *non* lexicalizes a negative head at (least sometimes)
- we can derive the interpretation of *non* answers as a function of the scope relations in the question if we assume that the (elided) prejacent of *non* is obtained by copying the smallest well-formed constituent contained in *non*'s antecedent
- this is then a further argument that bare *non* has an elided constituent
- the least problematic account is the concord account version A although a major challenge is understanding why any occurrence of $\forall$ or $\exists$ intervenes

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