Domains of Polarity Items

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December 8, 2010

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1 Introduction

This article deals mainly with the acceptability conditions of the polarity items *some* and *any.* These items have two things in common: they are existential quantifiers[1] and their occurrence is restricted to certain configurations. They differ though in that their distribution obeys different requirements, as can be best appreciated when they are placed in the scope of a clausemate negation: while *some* cannot be interpreted in the semantic scope of a clausemate negation, but can appear in a positive unembedded sentence, *any* shows the opposite properties.

(1) a. *John didn't understand something.[2]
b. John understood something.
c. John didn't understand anything.
d. *John understood anything.

This paradigm seems to call for a simple unifying explanation, whereby *some* and *any* have opposite requirements vis-à-vis *negation*, and are therefore in complementary distribution (such an idea has been put forward in the early days of the study of polarity items by Klima (1964)). Unification is, I think, a desideratum of any theory of polarity. But the complementary distribution hypothesis is plagued by so many apparent counterexamples—(2), where negation is in a superordinate clause with respect to the polarity items, is one of them—that many if not all researchers have long discarded it.

(2) a. It's not the case that John understood something.
b. It's not the case that John understood anything.

[1]There is a debate about the quantificational force of the Negative Polarity Item *any:* some, e.g. Quine (1960), argue that it is a wide-scope universal quantifier, but I consider that Fauconnier's (1978) arguments for analyzing it as a narrow-scope existential quantifier are compelling. For example, (i) can be used truthfully in a situation in which there are four men among the ten under discussion about whom the speaker has no uncertainty (because he knows Susan didn't marry them):

(i) I wonder if Susan married any of those ten men. [modified from Fauconnier 1978, ex. 34]

[2]The asterisk is meant to exclude the reading where *some* is interpreted in the semantic scope of negation; the sentence is grammatical with *some* interpreted above negation.

In fact, it is a primary goal of this article to show that despite numerous and compelling appearances to the contrary, *some* and *any* are indeed in complementary distribution in the specific sense that they cannot be licensed[3] on the same constituent. I emphasize the term *constituent*, as the theory developed herein shows that constituents are checked for the acceptability of the Polarity Items (PIs) they contain, and that this checking procedure is recursive. I call 'domain' of a PI a constituent upon which its licensing is evaluated: not all domains of a PI are domains on which it is acceptable, but in order to be licensed, a PI must be acceptable on at least one domain. Licensing occurs once such a domain is found; *some* and *any* cannot be licensed on the same domain but can surface in the same position, albeit through different derivational histories.

I will follow—and substantiate—the generally accepted view that polarity items are sensitive to some semantic property: it is standardly assumed, at least for NPIs, that this property is a generalized notion of negativity, namely downward-entailingness, the capacity to reverse the direction of entailments.[4] My claim that PIs are sensitive to the monotonicity of the constituents they find themselves in might seem trivial, as it follows naturally from the popular assumption that negativity and generalized notions thereof are operative in the acceptability of PIs, but many researchers prefer to view licensing in terms of a structural relation between a PI and an operator equipped with certain features (negativity and downward-entailingness are seen, in this strand of theories, as features); in that sense, the actual logico-semantic properties of syntactic environments are deemed immaterial by those researchers. In a word, this article is a defense of a conservative view, where monotonicity w.r.t. a PI is the controlling factor of its licensing.

The structure of the article is the following. Section 2 shows that the monotonicity of environments, i.e. of constituents, is the property that PIs are sensitive to (the evidence comes from cases of so-called flip-flop, i.e. cases where the addition of a downward-entailing expression licenses (anti-licenses) a PI which would be anti-licensed (licensed) without it): this fact is established for NPIs and PPIs alike. In section 3, I bring to light novel data about the relations between PIs and show that a PI can only be licensed on a given domain if the other PIs contained in that domain are licensed within it: this is what I call 'dependency'. Section 4 further substantiates this claim: it deals with the monotonicity disruption caused by scalar implicatures, and it uses the various loci of interpretation of the PPI *must* as an indicator that the licensing of a PPI can be checked on various constituents; this section also establishes that PPIs of the *some*-type are anti-licensed in the complement of the environments where NPIs of the *any*-type are licensed. The cyclic procedure that this article shows to be at work is analyzed in detail in section 5. Given that *some* can only be licensed in the environments where *any* is anti-licensed and vice versa, the way is paved for a unification of the PPI and the NPI phenomena (section 6): I propose that the latter reduces to the former, i.e. that NPIs are just PPIs licensed by modification in hostile environments.

[3] In this article, I use the term *license* for NPIs and PPIs alike, and in so doing, I depart somewhat from standard usages which reserve the term *license* for NPIs. In my usage, *license* means 'mark as grammatical'; to be licensed, a PI must be acceptable on some constituent (further conditions apply, which are analyzed in this article); once a PI is licensed, it can no longer be unlicensed.

[4] I do not discuss alternative proposals which don't rely on downward-entailingness, such as Linebarger 1980 and Giannakidou 2002.

The next two sections argue against other accounts (some hypothetical in 7, others real in 8). The last section 9 deals with some problems that the article leaves open.

2 Reviving Flip-flop

In this section I lay the groundwork for the rest of the article. To clarify the discussion, I am going to distinguish two kinds of approaches, the operator-based one and the environment-based one.

1. Hypothesis 1 (H1): The operator-based approach: the acceptability of a given PI π depends on a structural relationship between π and an operator, e.g. negation, i.e. the bearer of a negative feature. This hypothesis is disqualified in section 2.2.1.

2. Hypothesis 2 (H2): This is the environment-based approach, which takes the controlling factor of the acceptability of PIs to be the monotonicity (upward vs. downward-monotonicity) of their syntactic environment w.r.t. them.

The evidence against H1 and in favor of H2 comes from flip-flop with all kinds of PIs (weak and strong NPIs, PPIs).

2.1 Operators or Environments?

Any can occur in the scope of negation and of a number of other expressions. A prominent idea since the mid-seventies (i.e. since work by Fauconnier (1978) and Ladusaw (1979, 1980)) is that NPI licensing expressions share the property of reversing the direction of entailment in their argument. Since these arguments need not be of type $<$t$>$, we need a generalized notion of entailment:

(3) **Cross-Categorial Entailment ($\Rightarrow$)**
   a. For p, q of type $<$t$>$: p $\Rightarrow$ q iff p = 0 or q = 1.
   b. For *f, g* of type $<\sigma$, t$>$: $f \Rightarrow g$ iff for all x of type σ: f(x) $\Rightarrow$ g(x).

Next, we can define downward-entailingness as follows:

(4) A function f of type $<\sigma$, t$>$ is downward-entailing (DE) iff for all x, y of type σ such that x $\Rightarrow$ y: f(y) $\Rightarrow$ f(x).[5]

Negation is a DE function; the determiner *at most three* is a DE function too (as we verify for its left argument):

(5) a. $[\![$ red car $]\!] \Rightarrow [\![$ car $]\!]$
   b. At most three people own a car $\Rightarrow$ At most three people own a red car.

[5] Similarly, we define upward-entailingness:

(i) A function f of type $<\sigma$, t$>$ is upward-entailing (UE) iff for all x, y of type σ such that x $\Rightarrow$ y: f(x) $\Rightarrow$ f(y).

Under the standard DEness-based account, *any* is only acceptable (in other words is licensed) in a given sentence *S* if it is in the syntactic scope of a DE function (this condition holds at LF):

(6) **Fauconnier-Ladusaw's Licensing Condition:** An NPI is only grammatical if it is in the scope of an α such that $[\![\alpha]\!]$ is DE.

The condition correctly predicts that *any* is licensed in the nuclear scope of *at most three:*

(7) At most three people understood anything.

The operator-based account of licensing is widely accepted (von Fintel 1999, Guerzoni 2006, Szabolcsi 2004, Gajewski 2009 a.o.). On this view, downward-entailingness is a characteristic property of a class of expressions in the scope of which weak NPIs are licensed; this doesn't mean—this distinction is important but is not always made explicitly—that downward-entailingness itself is operative in licensing. In other words, operator-based licensing is not tied up with entailment reversal in the position of the NPI: it only commits itself to a structural relationship between an item and an operator (a natural way to think about this is in terms of agreement; Guerzoni (2006) fully endorses this perspective, and claims that weak NPIs check an NPI feature with a licenser either by feature movement or by QR).

Gajewski (2005) proposes an alternative DEness-based account, whereby syntactic constituents themselves can be DE:

(8) A constituent A is DE with respect to the position of α ($[\![\alpha]\!] \in D_\sigma$) iff the function $\lambda x.[\![\ A[\alpha/v_\sigma]\ ]\!]^{g[v_\sigma \rightarrow x]}$ is DE.[6]

Gajewski replaces the operator-related requirement by the requirement that *any* appear at LF in an environment that supports downward entailments (I will henceforth refer to accounts which require DEness of syntactic environments as environment-based accounts).

(9) **Environment-related Licensing Condition (after Gajewski 2005):** An NPI α is licensed in sentence *S* only if there is a constituent A of *S* containing α such that A is DE w.r.t. the position of α.

This move makes room for NPIs licensed by a combination of expressions which, without denoting DE functions themselves, create a DE environment (as argued for e.g. in Heim 2003 about NPIs in *than*-clauses); it also takes into account the potential disruptive effect of expressions whose presence in the same constituents as the NPI might disrupt its licensing by interfering with the downward-monotonicity of the constituents

[6] We straightforwardly define upward-entailingness for constituents:

(i) A constituent A is UE with respect to the position of α ($[\![\alpha]\!] \in D_\sigma$) iff the function $\lambda x.[\![A[\alpha/v_\sigma]]\!]^{g[v_\sigma \rightarrow x]}$ is UE.

	tie?	color?			tie?	color?	
α	yes	yellow	no red tie	α	yes	red	
β	yes	black		β	yes	red	
γ	yes	black		γ	yes	red	
δ	yes	black		δ	yes	red	
ε	yes	pink		ε	yes	red	
ζ	yes	black		ζ	yes	red	
η	yes	blue		η	yes	red	
θ	yes	black		θ	yes	red	
ι	yes	black		ι	yes	red	
κ	yes	yellow		κ	yes	yellow	no red tie
λ	no	—	no tie	λ	no	—	no tie
μ	no	—		μ	no	—	
ν	no	—		ν	no	—	

Table 1: Intuitive verification of DEness

in question.[7] The reader might have noticed that the licensing condition encompasses an existential quantification: this is because checking the licensing of *any* globally (i.e. on the maximal constituent containing the NPI) makes incorrect predictions with regard e.g. to the following sentence:

(10) It is not possible that John didn't understand anything.

The whole sentence (10) is upward-entailing (the two negations cancel each other out) w.r.t. the position of the NPI *anything.* Yet the NPI is licensed. Similarly, the co-occurrence of the DE-function denoting expression *at most five* and of *n't* creates a UE environment. But *anything* is licensed:

(11) At most five people didn't understand anything.

To see that the global environment created by the composition of the two DE functions is UE, suppose that at most 5 people are not wearing a tie, as illustrated in the left-hand side Table 1 (the domain contains 13 people); it doesn't follow that at most 5 people are not wearing a red tie ($[\![\text{red tie}]\!] \Rightarrow [\![\text{ tie }]\!]$), therefore the context is not DE. Whenever at most 5 people are not wearing a red tie, as illustrated in the right-hand side Table 1, at most 5 people are not wearing a tie: the context is UE.

In order for the environment-related approach to be empirically adequate, the licensing condition cannot require that *any* be licensed on the maximal constituent. It must require that it be licensed on *some* constituent, in other words that there be some constituent which is DE w.r.t. the position of the NPI.

The observation of sentences such as (10) has prompted the near consensus that the presence of two DE expressions can never give rise to flip-flop: it doesn't seem that an NPI is licensed when it is outscoped by an even number of DE expressions and anti-

[7] The disruptors I have in mind are scalar implicatures, cf. Chierchia 2004 and section 4 of this paper, as well as presuppositions, cf. Homer 2008, 2010c.

licensed when it is outscoped by an odd number of DE expressions. Put differently, it is generally assumed that evenness doesn't matter to the licensing of NPIs.

The claim that I defend in this article runs counter to this consensus: I argue that flip-flop does exist. However it is hard to detect since an NPI only needs to be acceptable in one constituent. Cases where flip-flop emerges are cases in which some constraint imposes that the licensing of the NPI be checked on some constituent which fails to be DE w.r.t. the NPI (due to the presence of an even number of DE expressions).

From an operator-based perspective, flip-flop is a rather obscure notion. Grammar normally doesn't count, i.e. there are no known instances where grammaticality is determined by a number, e.g. the number of occurrences of a given item.

The environment-based approach is best suited to account for flip-flop, as it naturally takes into account the contribution of all the expressions in the syntactic context of a polarity item. It also derives in a straightforward way the disruption effects caused by certain expressions which co-occur with the NPI. In the next section, I present evidence for the first of the two phenomena, namely flip-flop (the second phenomenon, disruption, is dealt with in section 4.1) and I examine the following formulation of the environment-based hypothesis:

> Hypothesis 2a (H2a): Global acceptability: In order for PI π to be acceptable (therefore licensed) in sentence *S*, *S* must have the appropriate monotonicity w.r.t. the position of π.

This hypothesis is immediately challenged by (2) (a PPI and an NPI are equally acceptable in the same position) and I complete the case against it in the next section.

2.2 Flip-flop with Weak NPIs

2.2.1 French Weak NPIs

In this article, I mainly deal with weak NPIs (with the exception of section 2.3). I use the term *weak*, as everybody else in the literature, to refer to polarity items that appear in a relatively large number of contexts. *Strong* NPIs (i.e. (i.) strict NPIs e.g. *in years, yet, either* and (ii.) minimizers e.g. *a red cent*) are licensed in a proper subset of the contexts where weak NPIs are licensed: for example, they are not licensed in the scope of strictly DE expressions such as *at most five people.* In this article I want to keep the terms *weak* and *strong* as theory-neutral as possible (as it is not clear at this stage what underlies this weak-strong distinction) and use them in a relative sense.

No French NPIs appear in more contexts than *[wh-phrase] que ce soit, quelque NP que ce soit* and *quiconque*:[8] therefore they jointly form the category of French weak NPIs, per the convention I'm following.

It is sometimes claimed that minimizers (e.g. *lift a finger, sleep a wink, bat an eyelash, a single thing,* etc.) are not genuine NPIs, and that their distribution reflects the demands of the presupposition of a hidden *even* co-occurring with them, rather than the desiderata of the items themselves. With well-accepted NPIs e.g. *ever* and

[8]These three items or templates of items have some obvious morphological family resemblance. I touch upon it in section 6.

any on the other hand, it seems clear that there is something intrinsic to their meaning or their syntactic features that governs their distribution. I will not try to settle this question in this article. My strategy is the following: I will study weak and strong NPIs (including minimizers), but separately. Minimizers deserve to be included in this investigation as they are subject to flip-flop (2.3), which indicates that grammar checks their acceptability on constituents (the ultimate target of licensing is irrelevant to us).

We can show that *[wh-phrase] que ce soit* is not a minimizer, and therefore is instructive about weak NPIs. There are two tests that serve to detect minimizers (also known as *even*-NPIs): they can be associated with an overt *even* (Rullmann 1996) and they give rise to a negative bias in yes-no questions (Ladusaw 1979, Heim 1984, Guerzoni 2003, 2004):

(12) (Did John do something to help?)
  a. No, not even [a single thing]$_F$.
  b. *No, not even anything$_F$.

(13) a. Did John do a single thing to help?
  Expected answer: he didn't.
  b. Did John do anything to help?
  No negative bias.

By those two criteria, *quoi que ce soit* is not a minimizer:

(14) (Did Jean do something to help?)
  a. *Non, pas même [le plus petite chose]$_F$.*
  no NEG even the most small thing
  b. **Non, pas même [quoi que ce soit]$_F$.*
  no NEG even what that this be.SUBJ

(15) a. *Jean a-t- il fait la plus petite chose pour aider ?*
  Jean has he done the most small thing to help
  'Did Jean do a single thing to help?'
  Expected answer: he didn't.
  b. *Jean a-t- il fait quoi que ce soit pour aider ?*
  Jean has he done what that this be.SUBJ to help
  'Did Jean do anything to help?'
  No negative bias.

The functions that create licensing contexts for *quoi que ce soit* are the same as for English weak NPIs *any* and *ever:* i.e. they are DE-function denoting expressions. Negation is the prototypical DE function:[9]

[9]For some speakers, including me, (16b) is not optimal, but it improves with a modification by a relative clause:

(i) *Jean n' a pas critiqué quoi que ce soit de ce que j' ai dit.*
Jean NEG has NEG criticized what that this be.SUBJ of this that I have said
'*Jean didn't criticize anything I said.*'

What seems to be the problem for those speakers is that *quoi que ce soit* dislikes clausemate negations, as

(16) a. **Jean a critiqué quoi que ce soit.*[10]
Jean has criticized what that this be.SUBJ
b. *Jean n' a pas critiqué quoi que ce soit.*
Jean NEG has NEG criticized what that this be.SUBJ

The DE expressions in the scope of which *quoi que ce soit* (like English *any*) is licensed include negative quantifiers (over individuals and times) and DE determiners. It is also licensed in antecedents of conditionals and yes-no questions:

(17) a. *Jean n' a jamais critiqué quoi que ce soit.*
Jean NEG has ever criticized what that this be.SUBJ
b. *Personne n' a critiqué quoi que ce soit.*
nobody NEG has criticized what that this be.SUBJ
c. *Au plus cinq personnes ont critiqué quoi que ce soit.*
at most five people have criticized what that this be.SUBJ
d. *Jean critique rarement quoi que ce soit.*
Jean criticizes rarely what that this be.SUBJ
e. *Si tu critiques quoi que ce soit, tu seras renvoyé.*
if you criticize what that this be.SUBJ you be.FUT fired
f. *A-t- il critiqué quoi que ce soit ?*
has he criticized what that this be.SUBJ

Downward-entailingness can be provided by a superordinate negation (18a)-(18b) or by an embedding verb (18c):

(18) a. *Il n' est pas possible que Jean ait critiqué quoi que ce soit.*
it NEG is NEG possible that Jean have.SUBJ criticized what that this be.SUBJ
'It is not possible that Jean criticized anything.'
b. *Je ne prétends pas que Jean ait critiqué quoi que ce*
I NEG claim NEG that Jean have.SUBJ criticized what that this

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it is perfectly acceptable in the scope of a superordinate negation (18). The fact that modification improves *wh-phrase que ce soit* significantly suggests that it is sensitive to what goes by the name of *subtrigging*, which refers to the licensing of an item by modification, cf. LeGrand 1975, Dayal 2004 and section 6. Although it poses what looks like a 'doughnut' problem, I will use *[wh-phrase] que ce soit* throughout my examples, because unlike *le moindre* ('the slightest')—which has superficially the same distribution—it has no appearance of belonging to the category of minimizers.

Notice that negation in French can be expressed using two negative markers, *ne* and *pas*, which I gloss as NEG. Only *pas* is necessary.

[10]Here I am describing the dialect of European French that I and my consultants are native speakers of. In a recent article, Francis Corblin (2010) describes what appears to be another dialect, in which *quoi que ce soit* doesn't need a downward-entailing environment: it is licit under non negated *critiquer* 'criticize' (see the article for details).

(i) a. *Jean mange quoi que ce soit.
b. Jean critique quoi que ce soit.

In my dialect (ia) and (ib) are both completely impossible.

soit.
be.SUBJ
'I don't claim that Jean criticized anything.'

c. *Marie dément que Jean ait critiqué quoi que ce soit.*
Marie denies that Jean have.SUBJ criticized what that this be.SUBJ
'Marie denies that Jean criticized anything.'

The DE function can be separated from the licensee by more than one layer of embedding:

(19) *Il est impossible que Marie pense que Jean ait critiqué quoi que ce soit.*
it is impossible that Marie thinks that Jean have.SUBJ criticized what that this be.SUBJ
'It is impossible that Marie thinks that Jean criticized anything.'

By itself, the latter fact might suggest that locality plays no role in licensing. However, a closer inspection reveals that the opposite is true.

To show this, I propose that we place an NPI in the scope of two DE expressions instead of one. The globalist version of the environment-based approach H2a on p. 7 makes a prediction: it holds that the maximal constituent containing the NPI must be DE w.r.t. its position, therefore the co-occurrence of an even number of DE expressions above the NPI creates an upward-entailing environment in its position, leading to anti-licensing. We have seen that the globalist version is too strong (page 6). But there are certain configurations of two DE expressions which have exactly this anti-licensing effect in French (the predicate *impossible* 'impossible' denotes a DE function; it licenses *quoi que ce soit,* as shown in (20)):

(20) *Il est impossible que Jean ait fait quoi que ce soit pour aider la Mafia.*
it is impossible that Jean have.SUBJ done what that this be.SUBJ to help the Mafia

(21) **Il n' est pas impossible que Jean ait fait quoi que ce soit pour aider la Mafia.*
it NEG is NEG impossible that Jean have.SUBJ done what that this be.SUBJ to help the Mafia

So far the French facts are compatible with the hypothesis that licensing of *quoi que ce soit* is computed on the whole sentence, i.e. what I propose to label the 'global licensing' hypothesis (aka global flip-flop). But anti-licensing only obtains when two DE expressions are too 'close', in a sense to be determined. To see this, let us keep the DE predicate *impossible* 'impossible', but let us change the second inducer of DEness from negation into the restrictor of *si* 'if', a yes-no question or a negation in a higher clause. We observe that the NPI is licensed:

(22) a. S'il est impossible que Jean ait fait quoi que ce soit pour aider la Mafia, je lui présenterai mes excuses.

'If it is impossible that Jean did anything to help the Mafia, I will apologize to him.'

b. Est-il impossible que Jean ait fait quoi que ce soit pour aider la Mafia ?
'Is it impossible that Jean did anything to help the Mafia?'

c. Non pas qu'il soit impossible que Jean ait fait quoi que ce soit pour aider la Mafia.
'Not that it is impossible that Jean did anything to help the Mafia.'

Likewise, adding a DE-function denoting expression to the embedding verb *démentir* 'deny' (which denotes a DE function and licenses NPIs on its own, cf. (18c)) can lead to anti-licensing:

(23) (*Context:* Jean is being accused of having connections with the Mafia. Neither the speaker nor the addressee has any certainty about the facts. His wife Marie is being interrogated and so far, she refuses to answer the questions about her husband's alleged mob connections. . .)[11]
**Pour le moment, Marie ne dément pas que Jean ait fait quoi*
for the moment Marie NEG denies NEG that Jean have.SUBJ done what
que ce soit pour aider la Mafia.
that this be.SUBJ to help the Mafia
'So far, Marie doesn't deny that Jean did anything to help the Mafia.'

(24) (Same context except that all the people being interrogated refuse to answer the questions about Jean's alleged mob connections. . .)
**Pour le moment, personne ne dément que Jean ait fait quoi que*
for the moment, no one NEG denies that Jean have.SUBJ done what that
ce soit pour aider la Mafia.
this be.SUBJ to help the Mafia
'So far, no one denies that Jean did anything to help the Mafia.'

If we keep the DE verb *démentir* 'deny' but change the second inducer of DEness from negation into the restrictor of *si* 'if', *aucun* 'no', a yes-no question, or a negation in a higher clause, we observe that the NPI is licensed:

(25) a. Si Marie dément que Jean ait fait quoi que ce soit pour aider la Mafia, elle ment.
'If Marie denies that Jean did anything to help the Mafia, she is a liar.'

b. Aucun avocat qui dément que Jean ait fait quoi que ce soit pour aider la Mafia n'est sincère.
'No lawyer who denies that Jean did anything to help the Mafia is sincere.'

c. Marie dément-elle que Jean ait fait quoi que ce soit pour aider la Mafia ?
'Does Marie deny that Jean did anything to help the Mafia?'

d. Non pas que Marie démente que Jean ait fait quoi que ce soit pour aider la Mafia.

[11] This situation is set up in this particular way because I want to control for the interference of a semantic strengthening phenomenon, whereby [not deny that *S*] is reanalyzed as [admit that *S*].

'*Not that Marie denies that Jean did anything to help the Mafia.*'

Therefore the global licensing hypothesis, which appeared to be inadequate for English, cannot be maintained for French either. A natural interpretation of the above two contrasts ((i.) between (21) and (22); (ii.) between (23)-(24) and (25)) is that licensing is indeed checked on constituents, but the nature of the eligible constituents (therefore their size) is not arbitrary. Going back to the ungrammatical (21) and (23), the NPI is anti-licensed, which means that it finds no constituents which are DE w.r.t. its position. Recall that I use the term 'domain' to refer to a constituent upon which the licensing of an NPI is checked; I will say that NPI α has at least one DE (or UE) domain in sentence *S* to mean that there is at least one constituent of *S* which is DE (UE resp.) w.r.t. the position of α. In the embedded clause of (21) and (23), *quoi que ce soit* has no DE domain. There is however one constituent of the sentence which provides the desired context, namely the main VP. The data allow us to hypothesize that VP is not an eligible domain—i.e. not an eligible constituent for the purposes of the checking of licensing—of *quoi que ce soit.* It appears—this is simply a fact, that nothing yet allows us to derive—that licensing has to be checked on a constituent which cannot be smaller than PolP, for negation is necessarily included in the smallest possible domain. Notice that I use the term PolP (Polarity Phrase) instead of the more common NegP: I assume that positive sentences contain a PolP too; the operator that sits in the specifier of this phrase determines the polarity of the clause, positive vs. negative.[12] Although PolP is an eligible constituent, we don't know (yet) whether the smallest possible domain of *quoi que ce soit* is not in fact larger than PolP. If we trust that (i.) the environment-related approach is correct, (ii.) speakers are infallible at computing the monotonicity of contexts with more than one DE function in them and (iii.) *au plus cinq personnes* 'at most 5 people' sits in Spec,TP in (26), then we must say that the smallest possible domain of *quoi que ce soit* is smaller than TP: if it were not, then the DE quantifier *au plus cinq personnes* would necessarily co-occur with negation in the smallest possible domain of the NPI, leading to anti-licensing.

(26) *Au plus cinq personnes démentent que Jean ait fait quoi que ce*
at most five people deny that Jean have.SUBJ done what that this
soit pour aider la Mafia.
be.SUBJ to help the Mafia
'At most five people deny that Jean did anything to help the Mafia.'

The NPI has an eligible DE domain in (27): this confirms (i.) that PolP is a subconstituent of TP and (ii.) that it can be the smallest possible domain of *quoi que ce soit.* I will from now on assume that it is.

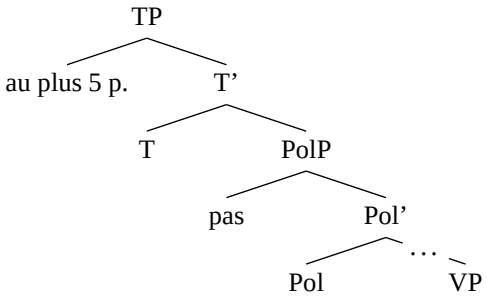
(27) *Au plus cinq personnes n' ont pas fait quoi que ce soit pour*
at most five people NEG have NEG done what that this be.SUBJ to

[12] There is no decisive evidence that negation is a head that attaches to the spine of the sentence rather than a phrase sitting in the specifier of a Pol head.

I assume that there is only one negation per clause, and that it cannot move; I further assume that the morphemes *not* and *n't* are not necessarily the spell-outs of negation itself, but instead markers which agree with the actual (silent) negation, therefore their surface position may not be an indication of where negation is interpreted.

aider la Mafia.
help the Mafia
'At most five people didn't do anything to help the Mafia.'

(28)



This is a highly simplified representation of clausal architecture; but I will assume that it is correct. On any given clause γ, the subconstituents of PolP, to the exclusion of subconstituents contained in clauses embedded under γ, are not accessible to the system that checks for the acceptability of *quoi que ce soit:* this explains why the presence of exactly two DE expressions in a superordinate PolP (21) anti-license it.

Against the backdrop of the assumptions defended here, the fact that (24) (repeated as (29) below) is ungrammatical, indicates that negative quantifiers are interpreted within PolP.

(29) *Pour le moment, personne ne dément que Jean ait fait quoi que ce soit pour aider la Mafia.

This assumption is in line with the conclusion (Jacobs 1980, Ladusaw 1992, Geurts 1996, de Swart 2000, Zeijlstra and Penka 2005, Penka 2007, Iatridou and Sichel 2008), inspired by cases of so-called Neg-split reading in Dutch, German and English,[13] that 'negative quantifiers' spell out negation and an existential quantifier in its scope. In other words, the negative element in a negative quantifier is no other than negation (what is often referred to as sentential negation).

Given the anti-licensing brought about by two DE expressions in PolP in French, I modify the environment-related licensing condition (9) slightly:

[13]With a modal verb (a quantifier over possible worlds) negative quantifiers give rise to so-called Neg-split whereby the negative component is interpreted above negation, while the restriction is interpreted below the modal:

(i) a. *Ze mogen geen eenhoorn zoeken.*
they are allowed no unicorn seek
(Dutch; Rullmann 1995, cited in Iatridou and Sichel 2008)
b. There is no unicorn x such that they are allowed to seek x. (wide scope)
c. What they are allowed to do is seek no unicorn. (narrow scope)
d. They are not allowed to seek a unicorn. (split scope)

(ii) No doctor has to be present.
a. There is no doctor x such that x has to be present. (wide scope)
b. It is not required that a doctor be present. (split scope)

(30) **Environment-related Licensing Condition (modified):** An NPI α is licensed in sentence *S* only if there is an *eligible* constituent A of *S* containing α such that A is DE w.r.t. the position of α.

The contrasts observed above are now explainable. There are two PolPs in (21) (likewise in (23)); but both are UE w.r.t. the position of *quoi que ce soit:* the larger one because it contains both the predicate *impossible* and negation, the smaller one because it contains no DE expression. In (22) (likewise in (25)), the two DE expressions are not contained in all the same PolPs: the smaller PolP, which contains only one DE expression, provides a DE context and is therefore favorable to *quoi que ce soit.* Now consider (31), where two PolPs are again available.

(31) a. Il est impossible que Jean n'ait pas fait quoi que ce soit pour aider la Mafia.
'It is impossible that Jean didn't do anything to help the Mafia.'

b. (*Context:* Jean claims that he didn't do anything to help the Mafia; his wife Marie, who will do anything to send him in jail, testifies against him…)
Marie dément que Jean n'ait pas fait quoi que ce soit pour aider la Mafia.
'Marie denies that Jean didn't do anything to help the Mafia.'

The NPI is licensed in the scope of two DE functions if one is in the superordinate clause while the other is a clausemate: this indicates that its licensing can be checked on the smaller PolP, which contains a negation. On the larger PolP, the NPI is anti-licensed, for the same reason that it is anti-licensed in (21) and (23)-(24). Since there is at least one favorable eligible domain (embedded PolP), the NPI ends up licensed. Let us sum up the observations about (21), (22a), and (31a) in the LFs below. A word about notation: the label YP ↗x used in the representation of logical forms indicates that YP is UE w.r.t. the position where the bearer of index *x* is interpreted; YP ↘x indicates that YP is DE w.r.t. the position where the bearer of index *x* is interpreted.[14]

(32) a. (21): *[$_{TP}$ T [PolP ↗1 **pas impossible** [$_{CP}$ que Jean T [PolP ↗1 [quoi que ce soit]$_1$ faire t$_1$]]]]

b. (22a): [TP ↗1 [CP ↗1 **Si** T [PolP ↘1 **impossible** [$_{CP}$ que Jean T [PolP ↗1 [quoi que ce soit]$_1$ faire t$_1$]]]] T]

c. (31a): [TP ↗1 T [PolP ↗1 **impossible** [$_{CP}$ que Jean T [PolP ↘1 **pas** [quoi que ce soit]$_1$ faire t$_1$]]]]

Let us now consider a case with three DE expressions. Our hypothesis rightly predicts that *quoi que ce soit* is licensed in (33), because both the larger and the smaller PolP provide a DE context for *quoi que ce soit* (each contains an odd number of DE expressions above the NPI):

[14] Caveat: several objects might share the same index (due to the existence of traces), but the position that the labels target is the position where the object gets effectively interpreted.

(33) Il n'est pas impossible que Jean n'ait pas fait quoi que ce soit pour aider la Mafia.
'It is not impossible that Jean didn't do anything to help the Mafia.'

(34) [TP ↘1 T [PolP ↘1 **pas impossible** [$_{CP}$ que [$_{TP}$ Jean T [PolP ↘1 **pas** [quoi que ce soit]$_1$ faire t_1]]]]]

Lastly, our hypothesis predicts that *quoi que ce soit* is acceptable in (35) because it is in a DE environment in the entire sentence (due to an odd number of DE expressions in that constituent). The sentence is fairly hard to judge, therefore it is imprudent to build much on it. It seems clear however that it is better than (21), in which all eligible domains that contain the NPI are UE w.r.t. its position.

(35) *Non pas qu' il ne soit pas impossible que Jean ait fait*
NEG NEG that it NEG be.SUBJ NEG impossible that Jean have.SUBJ done
quoi que ce soit pour aider la Mafia.
what that this be.SUBJ to help the Mafia

(36) [TP ↘1 [PolP ↘1 **pas** [CP ↗1 [$_{TP}$ T [PolP ↗1 **pas impossible** [$_{CP}$ que [TP ↗1 Jean T [quoi que ce soit]$_1$ faire t_1]]]]]]]

To conclude this section on French weak NPIs, there is evidence that certain weak NPIs are sensitive to the monotonicity of their syntactic environments; the evidence comes from configurations where two DE expressions co-occur in PolP, giving rise to flip-flop.[15] The data support the hypothesis that an NPI is licensed only if it is acceptable in some eligible constituent. We can now discard the operator-based approach (H1 on p. 4), as it is not suited to account for flip-flop. The globalist version of the environment-related approach (H2a on p. 7) is also disqualified.

2.2.2 English Weak NPIs

The French facts are—to some extent only—replicated in English. There are clear cases where for some speakers, *any* is anti-licensed due to flip-flop, e.g. (37b).[16]

(37) a. It is impossible that John did anything to help the Mafia.
b. %It is not impossible that John did anything to help the Mafia.
c. Not that it is impossible that John did anything to help the Mafia.

(37b) and (37c) form a pair that confirms the prediction of the environment-related approach relativized to eligible constituents: both sentences contain two DE expressions outscoping the NPI, but they differ in the position of the negation: while *not* and *impossible* are contained in all the same PolPs in (37b), there is a PolP in (37c) which contains one and not the other. Similarly with the verb *doubt:*

[15] Thus far, we have no explanation for the existence of what we have described as a smallest possible domain of the NPI. Let us assume that this is a lexical requirement.

[16] Similar facts are noted in passing by Schueler (2005): the dialect he describes is obviously the one I label dialect B below.

(38) a. I doubt that John did anything to help the Mafia.
b. %I don't doubt that John did anything to help the Mafia.[17]
c. %No one doubts that John did anything to help the Mafia.
d. Not that I doubt that John did anything to help the Mafia.

The evidence is mixed for the existence of domains of NPIs in English, since there seem to be two dialects, one that accepts (37b), (38b) and the like (dialect A), and one (dialect B) which rejects them. But it is natural to assume that the unacceptability of (37b) (and (38b)) is incompatible with operator-related licensing (H1). In order to explain the variation about (37b) and (38b), I propose that in the dialect of the speakers who accept those sentences, the smallest possible domain of *any* is smaller than the smallest possible domain of *any* in the dialect which rejects them (and also smaller than the smallest possible domain of *quoi que ce soit*). In the former dialect, this domain can be VP, but it can actually be arbitrarily small. Suppose indeed that any constituent qualifies as a domain for *any:* then there is at least one eligible constituent which is DE w.r.t. the position of *anything* in (37b) and (38b), namely matrix VP.[18]

Summing up, flip-flop does occur with English weak NPIs. The lack of flip-flop in one dialect doesn't invalidate the environment-approach, because it is possible that in that dialect the smallest possible domain of *any* is smaller than in other dialects (or even arbitrarily small).

2.3 Flip-flop with Strong NPIs

The claim made in this article that flip-flop exists in English is not unprecedented, but it was made using strong NPIs. As far as I know, Schmerling (1971) was first to provide evidence for it (*a thing* is an NPI of the minimizer kind):[19]

(39) a. *There was someone at the scene of the accident who did a thing to help.
b. There wasn't anyone at the scene of the accident who did a thing to help.

[17] A semantic strengthening usually takes place with the verb *doubt: 'John doesn't doubt that p'* is usually not interpreted literally, rather, it is taken to mean that John is certain that p. Even when strengthening is neutralized, the NPI is anti-licensed for the speakers who reject (38b):

(i) %I don't particularly doubt that John did anything to help the Mafia.

[18] Notice that *any* is licensed under negated *deny:*

(i) a. So far, Mary denies that John did anything to help the Mafia.
b. So far, Mary doesn't deny that John did anything to help the Mafia.

Unsurprisingly, *any* is also licensed when the two DE expressions are not in all the same PolPs.

(ii) Not that Mary denies that John did anything to help the Mafia.

This is an interesting puzzle: even in the dialect in which *any* has a smallest possible domain at least as large as PolP, the NPI is licensed under negated *deny.* The most promising avenue to account for this fact seems to be that *deny* is ambiguous and can mean *make a negative statement about* (and that this ambiguity doesn't exist for French *démentir*). In this sense, it denotes a UE function. The composition of a DE function with a UE function is a DE function.

c. There was someone at the scene of the accident who didn't do a thing to help.
d. *There wasn't anyone at the scene of the accident who didn't do a thing to help. [Schmerling 1971, ex. 14]

(40) a. There was no one in the huge lecture hall who uttered a peep when the distinguished linguist suggested that post-Bloomfieldian structuralist phonology and the theory presented in *The Sound Pattern of English* were notational variants.
b. *There was no one in the huge lecture hall who didn't utter a peep when the distinguished linguist suggested that post-Bloomfieldian structuralist phonology and the theory presented in *The Sound Pattern of English* were notational variants. [Schmerling 1971, ex. 16]

Oddly enough, it has not been noticed, to the best of my knowledge, that the NPIs that Schmerling used in her examples, e.g. *a thing, a peep*, etc., are strong NPIs, specifically minimizers. This fact is important, as the smallest possible domain of a PI seems to be lexically determined, and we expect to witness different smallest possible domains with different PIs or classes of PIs.

As a matter of fact, the intuitions of the speakers I have polled are not very robust about those sentences which all involve an existential *there*-construction. But they are very clear when it comes to more commonplace embeddings (the speakers of the two dialects I distinguished in section 2.2.2 on p. 15 agree):

(41) a. It's impossible that John did a single thing to help the Mafia.
b. *It's not impossible that John did a single thing to help the Mafia.

(42) a. I doubt that John did a single thing to help the Mafia.
b. *I don't doubt that John did a single thing to help the Mafia.

When the higher DE expression doesn't sit in the same PolP as the embedding verb, the minimizers are acceptable:

(43) a. Not that it is impossible that John did a single thing to help the Mafia.
b. Not that I doubt that John did a single thing to help the Mafia.

Other strong NPIs exhibit the same behavior, for example *yet:*

(44) a. It's impossible that John can understand this yet.

[19] In light of this paradigm (and of the rescuing facts with PPIs), Krifka (1992) builds a theory of PI-licensing whereby an NPI and a DE operator above it form a PPI, and a PPI forms with a DE expression above it an NPI: it is a theory where non-lexical PIs are created recursively. There is a further condition which requires that the result of this recursive PI-formation process is not an NPI: in other words, every sentence that contains a PI must not be a (non-lexical) NPI. This approach can be seen as an implementation of the globalist environment-related approach H2a. Alas, the usual fatal objections carry over: it is not true that a PPI cannot find itself in a global DE environment (witness (ia)) and it is equally false that an NPI cannot find itself in the scope of two DE expressions (witness (ib)).

(i) a. It's impossible that John understands something.
b. It's impossible that John doesn't understand anything.

b. *It's not impossible that John can understand this yet.
c. Not that it's impossible that John can understand this yet.

These facts suggest that the acceptability of strong NPIs is not computed on the entire sentence, but rather on smaller constituents (no smaller than PolP). It is natural to extend the proposal defended in this paper to those items and claim that their licensing is computed on syntactic domains too, and that not all constituents are eligible for this computation. By the size of their smallest possible domain, they differ from weak NPIs of the A dialect (p. 16).[20]

2.4 Flip-flop with PPIs

Positive Polarity Items are another category of items for which there is evidence—although this claim has never commanded a firm consensus—that syntactic domains play a role in the computation of their licensing. While NPIs need to be licensed, PPIs must not be anti-licensed. The indefinite *some* is a PPI because it cannot be interpreted in the scope of a clausemate negation. Note that it is also anti-licensed in the scope of a clausemate negative quantifier e.g. *no one* (the second generalization follows from the first, under the assumption that negative quantifiers are made up of negation and an existential quantifier):

(45) a. When Fred speaks French, Jean-Paul doesn't understand something.
*NEG $>$ SOME
b. When Fred speaks French, no one understands something.
*NEG $>$ SOME
c. When Fred speaks French, Jean-Paul never understands something.
*NEG $>$ SOME

I show in the next two sections that genuine flip-flop exists with PPIs: a DE function undoes the anti-licensing created by another DE function, just like a DE function ruins the licensing created by another DE function in the case of NPIs, cf. (21).

2.4.1 No Anti-licensing by a Superordinate Negation

A superordinate negation doesn't anti-license PPIs:

(46) a. I don't claim that when Fred speaks French, Jean-Paul understands something. ✓NEG $>$ SOME
b. It is impossible that when Fred speaks French, Jean-Paul understands something. ✓NEG $>$ SOME
c. No one claims that when Fred speaks French, Jean-Paul understands something. ✓NEG $>$ SOME

[20] Note that they also differ from weak NPIs of all dialects by the logical property that they are sensitive too, if standard accounts, which claim that they are sensitive to anti-additivity, are correct (but see Gajewski 2009 for an interesting attempt at dispensing with anti-additivity in natural language). I define anti-additivity on p. 35. Further research is needed to determine whether there is a connection between the strength of a polarity item and the size of its smallest possible domain.

d. I never claim that when Fred speaks French, Jean-Paul understands something. ✓NEG > SOME

The comparison of the above two paradigms (45)-(46) is very suggestive: it suffices that negation be located in a distinct clause for *some* to be licit under it, otherwise it is illicit. Therefore *some* is clearly sensitive to the locality of the potential anti-licenser. The local environment relevant for licensing cannot be arbitrarily small, though. Otherwise *some* would never be anti-licensed, contrary to fact, since it would always be possible to find a constituent A such that *some* occupies the highest terminal node of A and is therefore not c-commanded by negation or by a negative quantifier in A. Therefore not all constituents are eligible for the computation of acceptability. I propose the following provisional condition:

(47) **Licensing Condition of *some:*** *Some* is licensed in sentence *S* only if it is contained in at least one eligible constituent A of S which is not Downward-entailing w.r.t. its position.

This condition bears a striking family likeness to (30). Let us generalize:

(48) **Licensing Condition of Polarity Items *(to be revised):*** A PI π is licensed in sentence *S* only if it is contained in at least one eligible constituent A of S which has the monotonicity properties required by π w.r.t. to the position of π.

We need to determine what constituents are eligible. We know that the smallest possible eligible domain of *some* must contain negation (if the domain approach is correct), otherwise *some* would be licensed under a clausemate negation contrary to fact (cf. (45)): therefore I propose that the smallest possible domain of *some* is PolP. *Some* is anti-licensed when outscoped by a clausemate negative quantifier (45b) because negation is present in the smallest PolP that contains *some* (recall that we consider negative quantifiers as the spell-out of negation and an existential quantifier). The contrast between (45a) and (46a) is explained away once constituency is taken into account:

(49) a. (45a): *[$_{\boxed{\text{TP}\ \searrow 1}}$ Jean-Paul T [$_{\boxed{\text{PolP}\ \searrow 1}}$ **not** some$_1$ understand t$_1$]]

b. (46a): [$_{\text{TP}}$ T [$_{\boxed{\text{PolP}\ \searrow 1}}$ **not** sure [$_{\text{CP}}$ that [$_{\text{TP}}$ Jean-Paul T [$_{\boxed{\text{PolP}\ \nearrow 1}}$ some$_1$ understand t$_1$]]]]]

The next section provides further evidence that the acceptability conditions of *some* are environment-related. It also furthers our understanding of eligible domains of *some* (evidence is put forward which shows that superconstituents of PolP are eligible domains of *some*).

2.4.2 Rescuing

Also consonant with the hypothesis defended here are the cases where the narrow scope of *some* is licit under a clausemate negation if another DE expression outscopes both negation and *some.* This is what Szabolcsi (2004) calls 'rescuing'; it is, I submit,

genuine flip-flop as the higher DE expression makes available a constituent that is UE w.r.t. the position of the PPI (the facts were already described in Jespersen 1909–1949, Jackendoff 1969):

(50) a. I'm not sure that, when Fred speaks French, Jean-Paul doesn't understand something. ✓NEG > SOME

b. If Jean-Paul doesn't understand something, he has no notion of French at all. ✓NEG > SOME

c. Everyone who doesn't understand something has no notion of French at all. ✓NEG > SOME

d. When Fred speaks French, at most 5 people don't understand something. ✓NEG > SOME

(51) a. (50a): [TP ↗1 I T [PolP ↗1 **not** sure [$_{CP}$ that Jean-Paul T [PolP ↘1 **not** some$_1$ understand t$_1$]]]]

b. (50b): [TP ↗1 [CP ↗1 **if** Jean-Paul T [PolP ↘1 **not** some$_1$ understand t$_1$]] he T…]

c. (50c): [TP ↗1 [DP ↗1 **everyone** [$_{CP}$ who [PolP ↘1 **not** some$_1$ understand t$_1$]]] T …]

d. (50d): [TP ↗1 **at most 5 people** T [PolP ↘1 **not** some$_1$ understand t$_1$]]

These data allow us to hypothesize that PolP is not the only kind of constituent that is eligible for the computation of the acceptability of PPIs: larger constituents are eligible. (50a) is not decisive, since it contains at least two constituents which are UE w.r.t. the position of *some*, one of which is a PolP. But (50b), (50c) and (50d) are. In (50b) and (50c) *some* is rescued because it is contained in the restrictor of *if* and *every* respectively, and these are DE environments. Neither *if* nor *every* however is located in a PolP. In (50d), *at most 5 people* doesn't sit in PolP but in Spec,TP: therefore some constituent, at least as large as TP, provides the environment on which the acceptability of *some* is computed successfully.

Let us hypothesize that any superconstituent of (i.e. any constituent which asymmetrically contains) PolP is an eligible constituent but no subconstituent of PolP is eligible; this condition applies to every clause, i.e. in a given clause γ, the system that checks for *some* cannot scan a constituent that is asymmetrically contained in PolP (to the exclusion of clauses embedded under γ). We correctly predict that *some* is not rescued when there are two DE expressions in the superordinate PolP (instead of one, as in e.g. (50a)).

(52) a. It is impossible that John doesn't understand something. ✓n.s. of SOME

b. It is not impossible that John doesn't understand something.[21] *n.s. of SOME

c. Not that it is impossible that John doesn't understand something. ✓n.s. of SOME

(53) (52b): *[$_{TP}$ T [$_{\boxed{\text{PolP}\ \searrow 1}}$ **not impossible** [$_{CP}$ that John T [$_{\boxed{\text{PolP}\ \searrow 1}}$ **not** something$_1$ understand t_1]]]]

Summary

In our view, rescuing is nothing but flip-flop applied to PPIs. We reach two conclusions: (i.) licensing is computed on syntactic environments (i.e. constituents), (ii.) the monotonicity of the constituents w.r.t. the position of PIs is what matters rather than some structural relationship (precisely because flip-flop exists).

Interestingly, the environment-related approach is corroborated by the investigation of the two kinds of PIs, which suggests that there exist deep commonalities between them. The acceptability conditions of *any* and *some* are very similar: it suffices that they are acceptable in some eligible constituent to be licensed. Both the operator-related approach (H1) and the globalist environment-related approach (H2a) are disconfirmed by these data.

In the next section, I continue the exploration of the licensing of PIs and discard another formulation of the environment-based hypothesis, i.e. the hypothesis that licensing of a given PI is done independently of the licensing of other PIs in its domain.

3 Dependency

A question that we have left unanswered so far is the following: is the acceptability of a given PI independent from the acceptability of other PIs in the same sentence? This is what I call the 'local and separate acceptability' hypothesis:

> Hypothesis 2b (H2b): Local and separate acceptability: For each PI π in sentence *S*, there is an eligible constituent A such that π is acceptable in A, i.e. A has the appropriate monotonicity w.r.t. the position of π (the condition is restricted

[21] This example is important because other theories, in particular Szabolcsi's (2004), make an opposite prediction: her theory is operator-based, and as such it predicts that constituency doesn't affect licensing. Szabolcsi reports the following judgment (i) (her ex. 70) about a sentence with two DE expressions outscoping a PPI in need of rescuing;

(i) I don't regret that John didn't come up with something. ✓n.s. of SOME

The speakers I polled either disagreed with it or agreed with it but also accepted the benchmark sentence (iia) (for a reason that might have to do with the presence of the particle *up*):

(ii) a. John didn't come up with something. %n.s. of SOME
b. I regret that John didn't come up with something. ✓n.s. of SOME
c. I don't regret that John didn't come up with something. %n.s. of SOME

It bears also saying that narrow scope of *some* in (52b) is rejected by all speakers, even the speakers of A who accept (iii). The discrepancy suggests that the idea that a PPI under a clausemate negation forms a non-lexical weak NPI with negation (as Krifka 1992 and Szabolcsi 2004 have it) is empirically unwarranted.

(iii) It is not impossible that John understands anything.

by the proviso—motivated by the unavailability of *some* in (1a)—that certain constituents are not eligible for the verification of the acceptability of *some*).

This section shows that this hypothesis is not correct, using novel observations: a PI is only acceptable in a given constituent if all other PIs in that constituent are acceptable *within* that constituent. This fact not only corroborates the existence of domains, it also reveals the cyclicity of licensing.

3.1 Multiple NPIs

Sentences which contain multiple NPIs raise an interesting issue: the following sentence contains two NPIs, one in the embedded clause, the other in the matrix, and the NPIs are separated by a DE expression; it is perfectly grammatical (in abstract representations, I write an NPI as π^- and a PPI as π^+).

(54) a. Mary didn't tell anyone that John didn't do anything to help the Mafia.
b. $[\ldots \textbf{not} \ldots \pi_1^- \ldots [\ldots \textbf{not} \ldots \pi_2^- \ldots]]$

Although *anything* is acceptable on the embedded PolP (PolP1), it is not on the matrix PolP (PolP2) or any superconstituent thereof. The NPI *anyone* on the other hand is only acceptable on superconstituents of the matrix PolP (PolP2).

(55) (54a): $[_{TP}$ Mary T [PolP2 ↗1 ↘2 **not** anyone$_2$ tell t_2 $[_{CP}$ that John T [PolP1 ↘1 **not** [anything]$_1$ do t_1]]]]

We don't know a priori which of the following two branches of the alternative is correct:

1. Either the system checks the licensing on an item-per-item basis (this is Hypothesis H2b on p. 21). For example, suppose it checks for the licensing of PI π_k; suppose constituent A contains the PIs π_k and π_l; when scanning constituent A, the system only checks the licensing of π_k and ignores π_l; when the licensing of π_l is checked, the licensing of π_k can be ignored (this hypothesis is discarded in section 3.2.1);

2. Or the acceptability of PI π in constituent A is contingent upon the acceptability of other PIs in A. This in fact amounts to saying that there exist constraints on the acceptability of constituents themselves (a constituent that contains unacceptable PIs is not acceptable). Hypotheses H2c, H2d and H2e are three possible instantiations of this idea:

   - Hypothesis 2c (H2c): Local and joint acceptability: There is an eligible constituent A of *S* such that A has the appropriate monotonicity w.r.t. the positions of all PIs in *S*;
   - Hypothesis 2d (H2d): Local, dependent, and non-cyclic acceptability: For each PI π in *S*, there is an eligible constituent A of *S* containing π such that π is acceptable in A and every PI π' in A is acceptable in A too;

- Hypothesis 2e (H2e): Local, dependent, and cyclic acceptability: For each PI π in *S*, there is an eligible constituent A of *S* containing π such that π is acceptable in A and every PI π' in A is licensed *within* A (which means that π' is acceptable in A itself or in some other cycle, i.e. in some subconstituent of A). I show that this hypothesis is correct in 3.2.1.

Sentences such as (54a) make a decisive case against the 'local and joint acceptability' hypothesis H2c and the 'local, dependent and non-cyclic' hypothesis H2d. The former (H2c) requires that there be a constituent which has the appropriate monotonicity w.r.t. all PIs, and this is not the case in the impeccable (54a): every constituent which contains both NPIs is UE w.r.t. the position of the lower NPI; the latter hypothesis (H2d) requires that for each PI π, there is a constituent A which has the appropriate monotonicity w.r.t. the position of π and all other PIs in A: if this condition is enforced, then the higher NPI can never be licensed.

The 'local, dependent and cyclic' hypothesis H2e on the other hand is empirically adequate. It requires that for each PI π there be a constituent A in which π is acceptable and all other PIs in A are licensed *within* A: this is indeed the case because (i.) the lower NPI can be licensed on the embedded PolP (PolP1); (ii.) the higher NPI can be licensed on the matrix PolP (PolP2) without violating the acceptability condition. When the licensing of the higher NPI is evaluated on PolP2, all that matters is that the lower NPI be licensed *within* PolP2, which is indeed the case (it is licensed on a subconstituent of PolP2): the licensing is cyclic in (54a) because the lower NPI is licensed first, on a subconstituent of the constituent where the higher NPI is subsequently licensed. We are thus left with two hypotheses, H2b and H2e. It is now time to break the tie. This section achieves this goal by producing new data about the interaction of PIs: the licensing of a given PI is indeed *dependent* on the licensing of other PIs in the same sentence. The data therefore substantiate the 'local, dependent and cyclic' hypothesis.

3.2 Multiple PPIs

Let *S* be a sentence and let *S'* be a sentence embedded in *S*. Both *S* and *S'* contain a negation. To simplify matters, let us first consider cases where there is only one occurrence of *some* in the structure. We know that *some* is licit in the embedded PolP, i.e. under the negation of *S'* (56) (it is rescued).

(56) ✓[$_S$ . . . **not** . . . [$_{S'}$ . . . [**not** . . . some . . .]]]

We predict that *some* is also licit when interpreted higher than the negation of *S'* (if there is no other occurrence of *some* in the structure) since there is at least one constituent where its position is UE, e.g. *S'*.

(57) ✓[$_S$ . . . **not** . . . [$_{S'}$ some . . . **not** . . .]]

The prediction is borne out. *Some* can be interpreted in *S'* higher than negation (if there is no other clausemate occurrence of *some* lower than negation): this is demonstrated by the coherence of the discourse in (58).

(58) a. —A: Everyone is hiding.

b. —B: That's exactly true, it's impossible that someone isn't hiding.

In other words, the licensing of *some* in B's reply is checked on some constituent larger than the embedded PolP but smaller than the matrix PolP, e.g. the embedded TP. *Some* can also be interpreted lower than the negation of *S'* whether it is an *in situ* object as in (50a) or a subject reconstructed under negation. The latter possibility is evidenced by the coherence of the discourse in (59).

(59) a. —A: Someone is hiding.
b. —B: That's exactly true, it's impossible that someone isn't hiding.

The licensing of *some* in (59b), where *some* reconstructs under negation, is checked on a constituent at least as large as the matrix PolP:

(60) a. (58b): [$_{TP}$ T [PolP ↘1 **impossible** [$_{CP}$ [TP ↘1 someone$_1$ T [$_{PolP}$ **not** t$_1$ hiding]]]]]
b. (59b): [$_{TP}$ T [PolP ↘1 **impossible** [$_{CP}$ [TP ↘1 t$_1$ T [PolP ↘1 **not** someone$_1$ hide]]]]]

The reconstruction of subject *some* under negation is not possible if the landing position is one in which it is not rescued:

(61) Someone isn't hiding. *NEG>SOME
$[\![(61)]\!] \neq \neg\exists x[\text{hide'}(x)]$

3.2.1 Two PPIs with Two Negations

Let us now move to a more complex case, in which there is more than one occurrence of *some:* we are going to observe that the presence of a second occurrence of *some* under the negation of *S'* constrains the locus of interpretation of subject *someone* in the same clause. This configuration is represented in (62): every constituent in which the lower *some* is licensed is a superconstituent of the PolP of *S* and is therefore a constituent in which the higher *some* is anti-licensed (it is DE with respect to its position):

(62) [$_S$ ... **not** ... [$_{S'}$ some$_2$ ... [**not** ... some$_1$ ...]]]

The 'local and separate acceptability' hypothesis H2b predicts that this configuration is perfect: according to it, *some*$_1$ can be licensed on *S* and *some*$_2$ can be licensed on *S'*. The 'cyclic acceptability' hypothesis H2e predicts that it is ill-formed. In effect, *some*$_1$ is not licensed on or within *S';* it cannot be licensed on *S* either—although *S* is UE w.r.t. its position—because *some*$_2$ is not licensed on or within *S: S* is DE w.r.t. the position of *some*$_2$, and *some*$_2$ cannot be licensed on any of the eligible subconstituents, for they are all DE w.r.t. *some*$_1$. In other words, for each PI, there is no constituent A such that it is acceptable in A and all other PIs in A are licensed within A.

Let us check the predictions. First of all, observe that the narrow scope of *somewhere* in (63a) under negation is excluded (the wide scope is possible but pragmatically odd because it is extremely uninformative): there is no constituent where *somewhere* is acceptable and pragmatically felicitous.

(63) a. #Someone isn't hiding somewhere. *NEG > SOMEWHERE
b. (63a): *[TP ↘1 ↗2 someone$_2$ T [PolP ↘1 **not** somewhere$_1$ t$_2$ hide]]

Let us now embed (63a). We obtain a minimal pair: compare (58b) and (64b).

(64) a. —A: Everyone is hiding.
b. —B: #That's exactly true, it's impossible that someone isn't hiding somewhere.[22]

The only difference between (58b) and (64b) is that the latter contains an occurrence of clausemate *some* under negation and is infelicitous: the only possible meaning of B's reply is paraphrasable as *'there has to be someone hiding somewhere'*, which is pragmatically deviant in context since it is weaker than A's assertion: therefore B's declared claim of total agreement is out of place. This indicates that the co-occurrence of two *some* in the embedded clause, one being in the embedded PolP and the other being higher than negation (this configuration would yield the reading *'it is necessary that everyone is hiding somewhere'*), is precluded (it is exactly as degraded as the baseline (63a)).

We are thus in a position to discard the 'local and separate acceptability' hypothesis H2b. The 'cyclic' hypothesis H2e is corroborated: the system that checks the licensing of the two PPIs is subject to irreconcilable demands: the only constituents where *somewhere* is licensed (i.e. superconstituents of matrix PolP) are constituents in which *someone* is anti-licensed, and *vice versa*.

(65) (64b): *[$_{TP}$ [PolP ↗1 ↘2 **impossible** [$_{CP}$ [TP ↘1 ↗2 someone$_2$ T [PolP ↘1 **not** somewhere$_1$ t$_2$ hide]]]]]

(66b) however is perfectly felicitous: it contains two occurrences of *some*, both under the embedded negation (the subject *some* is reconstructed under negation). Reconstruction is the only viable option for subject *some* when there is a clausemate *some* under negation. Superconstituents of the matrix PolP are constituents in which both PPIs are licensed (on any smaller constituent they are anti-licensed):

[22] Baker (1970) gives the following example (ii) with two PPIs (*someone* and *still*) on either side of the embedded negation. He doesn't notice that the only reading of this sentence is one in which subject *someone* reconstructs under negation. The sentence is formally parallel to my (64b), and the explanation that I provide holds for both sentences.

(i) a. John is still holed up in the cave.
b. #John isn't still holed up in the cave.

(ii) You can't convince me that someone isn't still holed up in this cave. [Baker 1970, ex. 20]
Paraphrasable as: I'm sure that someone is still holed up in the cave.
Not paraphrasable as: I'm sure that everyone is still holed up in the cave.

McCawley (1998), p. 594, notes, about (iii), that *some* must be interpreted in the scope of the lower negation and concludes that negation 'acts as if it is not within the subordinate S except for appearing on the tensed auxiliary verb of that S'.

(iii) You can't convince me that someone hasn't already solved this problem.

(66) a. —A: Someone is hiding.
b. —B: That's exactly true, it's impossible that someone isn't hiding somewhere.

(67) (66b): [$_{TP}$ T [PolP ↗1 ↗2] **impossible** [$_{CP}$ [TP ↘1 ↘2] t_2 T [PolP ↘1 ↘2] **not** someone$_2$ somewhere$_1$ t_2 hide]]]]]

Summarizing, of these two configurations, only the second one is well-formed, in accordance with the prediction made by the cyclic hypothesis H2e:

(68) a. *[$_S$ ... **not** ... [$_{S'}$ ... some$_2$ ... [**not** ... some$_1$ ...]]]
b. [$_S$ ... **not** ... [$_{S'}$ t_2 ... [**not** ... some$_2$ ... some$_1$ ...]]]

3.2.2 Adding a Level of Embedding

So far, we have considered cases where one of the occurrences of *some* is in need of rescuing. What happens if this is not the case, e.g. if we add a layer of embedding as schematized below?

(69) [$_S$ ... **not** ... [$_{S'}$ ... some$_2$ ... [**not** ... [$_{S''}$ ... some$_1$ ...]]]]

For concreteness consider the acceptable (70a):

(70) a. Someone isn't trying to hide somewhere.
b. (70a): [TP ↘1 ↗2] someone$_2$ T [PolP ↘1 **not** try [$_{CP}$ [$_{TP}$ T [PolP ↗1] somewhere$_1$ hide]]]]

Somewhere is not in the scope of a clausemate negation since the control predicate *try* creates a biclausal structure. The licensing of *somewhere* is secured on at least one constituent, namely the most deeply embedded PolP. There is no constituent where *someone* and *somewhere* are licensed simultaneously, but the lower PPI is licensed on some constituent contained in the constituent where the higher one is licensed. This is a configuration which the cyclic hypothesis H2e predicts to be well-formed (*some*$_1$ is licensed *within* the constituent in which *some*$_2$ is licensed). By the same token, if we embed the sentence under a negation, we obtain a sentence which is coherent with A's statement in the following discourse (B's replies forms a minimal pair with (64b)):

(71) a. —A: Everyone is trying to hide.
b. —B: That's exactly true, it's impossible that someone isn't trying to hide somewhere.

(72) (71b): [$_{TP3}$ T [PolP3 ↗1 ↘2] **impossible** [$_{CP}$ [TP2 ↘1 ↗2] someone$_2$ T [PolP2 ↘1 **not** try [$_{TP1}$ PRO$_2$ T [PolP1 ↗1] somewhere$_1$ hide]]]]]]

We are thus led to hypothesize that the system can proceed cyclically: the lower PPI in (71b) is licensed in PolP1 first, then the higher *some* is licensed in TP2 (all PIs contained in TP2 are licensed *within* it).

In (65) on p. 25 on the other hand, there is no room for such a cyclic procedure: on all eligible constituents where *somewhere* is the only PPI present, it finds itself in a DE

environment (and is therefore anti-licensed and cannot be licensed on another cycle). And it cannot be licensed anywhere else, because every domain where it is acceptable is a domain where *someone* isn't.[23]

Summary

We have created ungrammatical configurations with two PPIs which all other known accounts predict to be separately acceptable (one is in the scope of a clausemate negation but is rescued, the other is not in the scope of a clausemate negation). I propose that the following condition be adopted:

(73) **Licensing Condition of Polarity Items (*final*):** A PI π is licensed in sentence *S* only if it is contained in at least one eligible constituent A of *S* which has the monotonicity properties required by π w.r.t. the position of π and all other PIs in A are licensed within A.

The data confirm that the acceptability of PPIs is computed on constituents in a cyclic fashion. There is no reason to think that the licensing of NPIs works any differently; but we cannot extend to NPIs the method that we used (having two PIs separated by two anti-licensers), simply because it is a matter of logic that two UE expressions do not compose into a DE expression (there is no flip-flop with UE expressions).

3.3 Co-occurrence of NPIs and PPIs

In this section, I present a new argument in favor of the environment-related approach to the acceptability conditions of both NPIs and PPIs. Remember that the evidence for domains of NPIs in English is mixed. There clearly exists a dialect of English in which (38b) repeated as (74) below is acceptable:

(74) I don't doubt that John did anything to help the Mafia.

Such facts have prompted general caution, if not skepticism, towards environment-based approaches in the past. My own conclusion in section 2.2.2 p. 16 was that a localist environment-related approach was not necessarily threatened by this example: one could indeed hypothesize that *any,* like French *quoi que ce soit,* has a smallest eligible domain, but this domain is smaller than the one of its French counterpart, and might even be minimally small (i.e. it is the smallest constituent which contains the NPI; the NPI is never licensed on this domain for want of a DE expression creating the appropriate context, but the system is allowed to check it nonetheless).

[23] The minimally different (ib) is grammatical and felicitous: this is explained in section 3.3.3 p. 31.

(i) a. —A: Everyone is hiding.
b. —B: That's exactly true, it's impossible that anyone isn't hiding somewhere.

3.3.1 A PPI above an NPI, with One Negation

There is one prediction that follows from the 'cyclic' hypothesis H2e—the version of the environment-related approach which has so far passed muster. If there exists some procedure for checking the acceptability of polarity items on the basis of constituents, one expects to find constituents in which the opposite requirements of positive and negative polarity items create a tension that the system is unable to solve in any satisfying way. Let me map out in an abstract and simplified way the kind of situations that I have in mind. Assume that PPI π^+ is anti-licensed in a DE environment and NPI π^- is licensed in a DE environment. Suppose that the checking procedure applies to constituent XP and that there is no other constituent in the structure where licensing can be checked. Suppose further that XP is UE w.r.t. the positions of both π^+ and π^-.

(75) *[XP ↗1 ↗2 $\ldots \pi_1^+ \ldots \pi_2^- \ldots$]

On this constituent, the NPI π^- is anti-licensed: this, by virtue of the general licensing condition (73) p. 27, suffices to rule out the outcome, although the PPI $\pi+$ is acceptable (by hypothesis π^- cannot be licensed on another cycle). A symmetric situation arises if XP is DE w.r.t. the positions of both polarity items: this time the requirement of the PPI is left unsatisfied, leading to unacceptability, while the NPI is acceptable. Notice that in this situation the NPI can have an arbitrarily small minimal domain: it needs to find at least one constituent in which its position is DE. Finding such a constituent won't suffice if this constituent happens to also contain a PPI (per the licensing condition (73)).

(76) *[XP ↘1 ↘2 $\ldots \pi_1^+ \ldots \pi_2^- \ldots$]

If English *any,* as I claim, is licensed on a domain, we should be able to witness the clashes that the theory predicts. We actually do. Observe what happens in a sentence e.g. (77b) which contains only one DE expression (namely negation) outscoping the PPI *some* and the NPI *any* in that order (in paradigm (77) the a., b., and d. sentences are controls). The output is unacceptable, as predicted: the constituents on which *anything* is possibly acceptable contain an unacceptable *someone;* conversely, the constituents on which *someone* is potentially acceptable contain an unacceptable *anything.* Neither PI can be licensed on a separate cycle (this is an instantiation of the abstract (76)).

(77) a. It is impossible that John stole anything.
b. *It is impossible that someone stole anything.
c. It is impossible that someone stole something.
d. It is impossible that anyone stole anything.

(78) (77b): *[$_{TP}$ T [PolP2 ↘1 ↘2 **impossible** [$_{CP}$ that [TP ↗1 ↗2 someone$_2$ T [PolP1 ↗1 anything$_1$ t$_2$ steal t$_1$]]]]]

Adding a level of embedding doesn't salvage the sentence, because the sources of the unacceptability of (77b) carry over to (79b) (in paradigm (79) the a., b., and d. sentences are controls):

(79) a. It is impossible that Fred thinks that John stole anything.
b. *It is impossible that someone thinks that John stole anything.
c. It is impossible that someone thinks that John stole something.
d. It is impossible that anyone thinks that John stole anything.

(80) (79b): [$_{TP}$ T [PolP2 ↘1 ↘2] **impossible** [$_{CP}$ that [TP ↗1 ↗2] someone$_2$ T t$_2$ think [$_{CP}$ [$_{TP}$ John T [PolP1 ↗1] anything$_1$ steal t$_1$]]]]]]]

In brief, dependency leads to ungrammaticality when all the eligible domains of NPI π_k^- which are DE w.r.t. π_k^- contain PPI π_l^+ and all the eligible domains of PPI π_l^+ which are UE w.r.t. π_l^+ contain NPI π_k^-.[24]

3.3.2 A PPI above an NPI, with Two Negations

We are now going to add a negation; this will provide other cases where dependency restricts the possible readings that obtain with an NPI and a PPI. Preliminary to this, observe that the PPI *someone* can reconstruct under negation only if in this reconstructed position the PPI is in a UE environment, which happens e.g. if there is a DE expression in the superordinate clause (compare (81b) and (82b)).

(81) a. —A: No one is eating.
b. —B: #That's exactly true, someone isn't eating. *NEG>SOME

(82) a. —A: Someone is eating.
b. —B: That's exactly true, it's impossible that someone isn't eating.
NEG>NEG>SOME

The string *'it's impossible that someone isn't eating'* is ambiguous: the PPI need not be interpreted in its reconstructed position; when it isn't, the constituent on which the PPI is licensed is e.g. the embedded TP.

(83) a. —A: Everyone is eating.
b. —B: That's exactly true, it's impossible that someone isn't eating.
NEG>SOME>NEG

In light of this consider (84), which we are going to embed under a negated attitude:

(84) Someone isn't eating anything.

(85) (84): [TP ↘1 ↗2] someone$_2$ T [PolP ↘1] **not** anything$_1$ t$_2$ eat t$_1$]]

The string *'it's impossible that someone isn't eating anything'* is not ambiguous (unlike the equivalent sentence without object *anything*). The reconstruction of the subject

[24]Merchant (2000) notes that an NPI in the restrictor of *some* cannot be licensed by a negation above *some.* He ascribes this anti-licensing to a conflict between the need of *some* to be interpreted (together with its restriction) above negation and the antagonistic need of *any* to be interpreted below. The facts are easily derived in my theory, because *some* is anti-licensed in its smallest possible domain.

(i) *Robin didn't read some books that any students read. [Merchant 2000, p. 148]

someone is impossible, for licensing reasons: when the NPI and the PPI co-occur in PolP (as is the case when the subject PPI reconstructs), their conflicting demands lead to a polarity clash (being in PolP, the PPI is in its smallest possible domain and thus cannot be licensed on a separate cycle).[25]

(86) a. (i) —A: Someone is eating.
(ii) —B: #That's exactly true, it's impossible that someone isn't eating anything.
(iii) —A: Everyone is eating.
(iv) —B: That's exactly true, it's impossible that someone isn't eating anything.[26]

(87) a. (86aii): *[$_{TP}$ T [PolP ↗1 ↗2] **impossible** [$_{CP}$ [$_{TP}$ t_2 T [PolP ↘1 ↘2] **not** someone$_2$ anything$_1$ t_2 eat t_1]]]]]
b. (86aiv): [$_{TP}$ T [PolP ↗1 ↘2] **impossible** [$_{CP}$ [TP ↘1 ↗2] someone$_2$ T [PolP ↘1] **not** anything$_1$ t_2 eat t_1]]]]]

These data are enlightening because they confirm the existence of domains of *some* as well as *any* (even for dialect A, in which flip-flop could not be evidenced directly).[27]

3.3.3 An NPI above a PPI

Some important refinement is in order: we need to consider what happens when the NPI and the PPI are flipped.

(88) [$_{XP}$ ... π^- ... π^+]

(89b), where the PIs are clausemates, is far better (it is perfect for some speakers, for others it is marked but acceptable) than (77b). (90b) is universally accepted without

[25] The opposite situation obtains when the PI under negation is a PPI instead of an NPI (cf. (64b) and (66b)).

[26] Notice that a PPI and an NPI can co-occur in the same clause, therefore the clash that I'm describing cannot be due to some general incompatibility between NPIs and PPIs within the same clause.

[27] After Baker (1970), Ladusaw (1979) considered cases of so-called 'double negatives', i.e. rescued PPIs.

(i) a. You can't convince me that someone hasn't already finished the exam.
*NEG>SOME>NEG; NEG>NEG>SOME
b. You can't convince me that someone hasn't finished his exam yet.
NEG>SOME>NEG; *NEG>NEG>SOME
[Ladusaw 1979, ex. 24, p. 181]

He noticed that the only available interpretation of (ia) is one in which, in modern terms, the subject is reconstructed under negation. He also noticed that replacing the PPI with an NPI, as in (ib) has the opposite effect: this time the subject cannot reconstruct under negation. To account for these facts, Ladusaw resorts to a special form of negation, $\underline{\text{not}}_2$ found only in double negatives:

> '$\underline{\text{Not}}_2$ carries a conventional implicature that someone has believed until recently that the proposition in its scope was true' (e.g. in (ia) '*someone has already finished*').

Positing a special form of negation (with maximal scope over the embedded clause) predicts that NPIs should not be allowed in 'double negatives' (but they are, as shown in this section), and doesn't explain the scope pattern of subject *some.* These facts however follow naturally from the hypothesis developed herein.

reservations (compare with (79b)).

(89) a. It is impossible that anyone stole a camera.
b. It is impossible that anyone stole something.

(90) a. It is impossible that anyone thinks that John stole a camera.
b. It is impossible that anyone thinks that John stole something.

The sentences are grammatical provided that the PPI is licensed on its local PolP, before the licensing of the NPI is checked. This option is what differentiates the grammatical (89b) and (90b) on the one hand from the ungrammatical (77b) and (79b).

(91) a. (89b): [$_{TP}$ T [PolP ↘1 ↘2] **impossible** [$_{CP}$ [$_{TP}$ anyone$_2$ T [PolP ↗1] something$_1$ t$_2$ steal t$_1$]]]]]
b. (90b): [$_{TP}$ T [PolP ↘1 ↘2] **impossible** [$_{CP}$ [$_{TP}$ anyone$_2$ T think [$_{CP}$ John T [PolP ↗1] something$_1$ t$_2$ steal t$_1$]]]]]]

We correctly predict that replacing *some* with *any* in (64b) on p. 25 produces a grammatical and felicitous sentence: there is at least one domain on which the NPI is acceptable, namely the matrix PolP and the same is true of the PPI (licensed in the same domain).

(92) a. —A: Everyone is hiding.
b. —B: That's exactly true, it's impossible that anyone isn't hiding somewhere.

(93) (92b): [PolP ↗1 ↘2] **impossible** [$_{CP}$ [TP ↘1 ↗2] anyone$_2$ T [PolP ↘1] **not** somewhere$_1$ t$_2$ hide]]]]

Summary

This section has established that the acceptability of PIs is *dependent* on the acceptability of other PIs in the same domain. We have also provided evidence for the existence of a cyclic checking mechanism. In the next section, I provide further evidence in favor of domains and cyclicity, using scalar implicature triggers (and their (anti)-licensing effects on NPIs and PPIs) and the scope of deontic *must*.

4 Further Evidence for Domains

4.1 Monotonicity Disruption

4.1.1 NPIs and Monotonicity Disruption

Prior to this article, some have argued that the licensing of weak NPIs is sensitive to the meaning of constituents. This is the case of Chierchia (2004) in particular, who provides a semantic/pragmatic explanation of so-called intervention effects on weak NPIs. It has been known since Linebarger 1980, 1987 that the presence of certain

quantifiers (e.g. *every, always*), of numerals, of *because*-clauses and of conjunction between an NPI and the closest DE expression above it causes the anti-licensing of the NPI.

(94) a. *When Fred speaks French, John doesn't always understand anything.
b. *When Fred speaks French, not everyone understands anything.
c. *When Fred speaks French, it's not the case that everyone understands anything.
d. *John didn't understand anything because it was easy but because he is smart.
e. *John didn't drink wine and any soda.

Compare with:

(95) a. I doubt that anyone understood anything.
b. John didn't drink wine or any soda.

Chierchia observes that the interveners form a natural class: they are strong scalar items. For example, *or* belongs to the scale <or, and>, and *every*, to the scale <some, every>. In light of this generalization, he proposes that these items trigger scalar implicatures (SIs), and that these inferences, when computed in conjunction with the literal meaning, are monotonicity-breakers, hence the observed anti-licensing of NPIs. What is important about this analysis is that it explicitly uses the meaning of constituents (a strengthened meaning which corresponds to the truth-conditional meaning augmented with scalar implicatures) for the computation of the licensing of weak NPIs, in line with this article's proposal.

Here is how the disruption effect arises, according to Chierchia's analysis. First of all, scalar implicatures are computed on constituents, recursively and in a bottom up fashion. For any expression E, $[\![E]\!]^{ALT}$ is the set of alternatives to E. If E doesn't contain any scalar terms, then $[\![E]\!]^{ALT}=[\![E]\!]$; in principle, E can contain more than one scalar term, but scalar implicatures, Chierchia claims, are computed locally as soon as their trigger appears; once a given scalar item enters the recursion, the alternatives it induces are computed; as the recursion proceeds, if another scalar term appears, the alternatives it induces do not compose with the alternatives of any previously introduced items.[28] Therefore for all E, $[\![E]\!]^{ALT}$ only yields the alternatives induced by the topmost scalar item in it. Let A be a set of alternatives and β a member of that set: Chierchia writes as $S_\beta(A)$ the weakest member of the set A which asymmetrically entails β.

Second, alongside the plain meaning of a given constituent γ, written as $[\![\gamma]\!]$, grammar provides a strengthened meaning, written as $[\![\gamma]\!]^s$, which is the conjunction of truth-conditional meaning and of scalar implicatures:

[28] Chierchia provides an example:

(i) a. some student smokes or drinks
b. LF: [some student$_i$ [t$_i$ smokes or t$_i$ drinks]]
c. $[\![$[t$_i$ smokes or t$_i$ drinks]$]\!]^{ALT}$ = { [smoke'(x_i) $\vee$ drink'(x_i)], [smoke'(x_i) $\wedge$ drink'(x_i)]}
d. $[\![$[some student$_i$ [t$_i$ smokes or t$_i$ drinks]$]\!]^{ALT}$ = {some'(student')(smoke' $\vee$ drink'), many'(student')(smoke' $\vee$ drink'), every'(student')(smoke' $\vee$ drink')}

(96) $[\![\gamma]\!]^s = [\![\gamma]\!] \wedge \neg S_{[\![\gamma]\!]}\,[\![\gamma]\!]^{ALT}$

If it is the strengthened meaning that is relevant to the computation of NPI licensing, we straightforwardly derive the disruption effects. In effect, strong scalar items in downward-entailing contexts trigger *indirect* scalar implicatures (elsewhere, they don't trigger scalar implicatures).[29]

(97) Not everyone understands.

a. $[\![(97)]\!] = \neg\forall x$ [person'(x) $\rightarrow$ understand'(x)]
b. Scale: <some, every>
c. $[\![(97)]\!]^{ALT} = \{[\neg\forall x$ [person'(x) $\rightarrow$ understand'(x)]], [$\neg\exists x$ [person'(x) $\wedge$ understand'(x)]] $\}$
d. Implicature: $\neg S_{[\![(97)]\!]}[\![(97)]\!]^{ALT} = \neg\neg\exists x$ [person'(x) $\wedge$ understand'(x)] ('Someone understands.')
e. $[\![(97)]\!]^s = \neg\forall x$ [person'(x) $\rightarrow$ understand'(x)] $\wedge\ \exists x$ [person'(x) $\wedge$ understand'(x)]
('Not everyone but someone understands.')

The position of α in (98a) is DE if the plain meaning is taken into account:

(98) Not everyone understands α.

a. [[Not everyone] α_1 understands t_1]
b. $[\![$ simple thing $]\!] \Rightarrow [\![$ thing $]\!]$
c. Not everyone understands a thing.
d. Not everyone understands a simple thing.
e. Not everyone understands a thing $\Rightarrow$ Not everyone understands a simple thing.

But it is non-monotonic, hence not DE, when the strengthened meaning is taken into account:

(99) a. $[\![(98c)]\!]^s = \neg\forall x$ [person'(x) $\rightarrow$ understand'(x,thing')] $\wedge\ \exists y$ [person'(y) $\wedge$ understand'(y,thing')]
b. $[\![(98d)]\!]^s = \neg\forall x$ [person'(x) $\rightarrow$ understand'(x,simple-thing')] $\wedge\ \exists y$ [person'(y) $\wedge$ understand'(y,simple-thing')]
c. $[\![(98c)]\!]^s \not\Rightarrow [\![(98d)]\!]^s$
d. $[\![(98d)]\!]^s \not\Rightarrow [\![(98c)]\!]^s$

The following LF shows that *any* has no DE domain if, as Chierchia claims, indirect scalar implicatures are obligatorily factored into the computation (a remark about notation: the label YP $\not\succeq$x indicates that YP is non-monotonic w.r.t. the position in which

[29] Chierchia derives the distribution of NPIs from a semantic property and from a pragmatic principle which rules the use of the items that have this semantic property: he builds on Kadmon and Landman's (1993) idea that the domain of quantification of *any* is a widened one and argues that *any* is acceptable on a given constituent γ only if the strengthened meaning of γ is logically stronger than the strengthened meaning of the constituent in which the plain indefinite *some* replaces *any.* This happens in exactly those cases in which *any* is in a DE context. For the sake of simplicity, my presentation doesn't contain a comparison of the strengthened meanings of the alternatives with *any* and the ones with *some*.

the bearer of index *x* is interpreted):[30]

(100) (94b): *[$_{\text{TP}\ \succ 1}$ T [$_{\text{PolP}\ \succ 1}$ **not** everyone anything$_1$ understand t_1]]

4.1.2 PPIs and Monotonicity Disruption

Just like *any,* PPI *some* is sensitive to the effect of so-called interveners. *Some* is licit under a clausemate negation if a certain kind of elements intervene (when this happens, *some* is 'shielded'): these happen to be the very elements which create so-called intervention effects on NPIs, i.e. (certain) quantifiers, numerals, *because*-clauses, and conjunction. I claim that this is not an accident.

(101) a. When Fred speaks French, Jean-Paul doesn't always understand something. ✓n.s. of SOME
b. When Fred speaks French, not everyone understands something.[31] ✓n.s. of SOME
c. John didn't understand something because it was easy but because he is smart. ✓n.s. of SOME
d. John didn't drink wine and some soda. ✓n.s. of SOME

Insofar as the disruption effects created by strong scalar terms on NPIs bear witness to the role of environments (cf. 4.1.1), the PPI facts (which are in this respect the perfect mirror image of the NPI facts, compare (94) repeated as (102) below and (101)) suggest that the anti-licensing of PPIs is environment-based and that the monotonicity of the environment is what matters to licensing.

(102) a. *When Fred speaks French, John doesn't always understand anything.
b. *When Fred speaks French, not everyone understands anything.
c. *John didn't understand anything because it was easy but because he is smart.
d. *John didn't drink wine and any soda.

To interpret these data, we need to proceed stepwise, though. Even if we grant that the monotonicity of the environment of *some* in (101) is affected in a way that makes it

[30] I assume that *not every* doesn't form a constituent: it is the spell-out of sentential negation and of *every* in its scope (which means that the quantifier is contained in PolP). The fact that *not every* cannot appear in object position lends some support to this assumption. Besides, split-scope, which is used as evidence in favor of a similar analysis for *no one,* is also possible with *not every* (although *must* and *supposed to* do not allow split-scope, for a reason that I do not understand).

(i) (*Context:* Words of wisdom found on a management consultant's blog.)
Although each member is entitled to be on the board, not everybody can be on the board.
NEG > CAN > EVERY

[31] If we replace *everyone* with the existential (and NPI) *a single person,* narrow scope of *some* is impossible. This is because *not* is sitting in Spec,PolP, just as it is presumably in (101b), and an existential cannot modify the monotonicity of the context in this configuration.

(i) When Fred speaks French, not a single person understands something. *n.s. of SOME

acceptable, there are still two options to consider, at least as far as (101a) and (101b) are concerned. The presence of a universal quantifier (be it over individuals or over instants) under a negation creates a DE environment, as can be checked intuitively:

(103) a. $[\![$ red car $]\!] \Rightarrow [\![$ car $]\!]$
b. Not everyone has a car $\Rightarrow$ Not everyone has a red car. *(DE)*

In the examples we have considered so far, the expressions that anti-license *some*, i.e. negation and negative quantifiers, denote Downward-entailing functions which also have the property of being Anti-additive (Zwarts 1998):

(104) **Anti-additivity:** A function f is Anti-additive (AA) iff $f(A \vee B) \iff f(A) \wedge f(B)$

The equivalence is intuitively verified by negation and by negative quantifiers e.g. *no one:*

(105) a. John doesn't smoke or drink $\iff$ John doesn't smoke and John doesn't drink
b. No one smokes or drinks $\iff$ No one smokes and no one drinks

All AA functions are also DE functions; but the reverse is not true. The presence of a universal quantifier under negation creates a DE, non Anti-additive environment:

(106) a. Not everyone has a car $\Rightarrow$ not everyone has a red car. *(DE)*
b. Not everyone smokes and not everyone drinks $\not\Rightarrow$ not everyone smokes or drinks. *(not AA)*

So it is conceivable that *some* is only illicit in AA environments. But it is equally conceivable that *some* is illicit in all DE environments (AA environments are DE): the Chierchia 'interveners' ruin the monotonicity of the environment of *some*, and its acceptability conditions are therefore met in the presence of an intervener (provided the strengthened meaning is taken into account).

(107) a. [[Not everyone] α_1 understands t_1]
b. $[\![(107a)]\!]^s = \neg\forall x$ [person'(x) $\rightarrow$ understand'(x,α')] $\wedge \exists y$ [person'(y) $\wedge$ understand'(y,α')]

(107a), when evaluated with the function $[\![\cdot]\!]^s$, is non-monotonic w.r.t. the position of α (cf. (99)).

At this point in the discussion, adjudicating between the two options (intolerance to AA environments vs. intolerance to merely DE environments) is impossible. But in the next section 4.1.3, I provide evidence in favor of the hypothesis that *some* is illicit in DE environments, therefore in favor of the hypothesis that in (101) indirect scalar implicatures are factored in that ruin the monotonicity of the environment.

4.1.3 Downward-entailingness or Anti-additivity?

With the new polarity clash test 3.3 in hand, we can turn to the question of the logical property that anti-licenses *some.* I have been assuming that DEness anti-licenses *some.* But this view is usually rejected, since strictly DE expressions such as *at most five people* do not seem to be disruptive, whereas AA expressions such as *no one* clearly are:

(108) a. When Fred speaks French, at most five people understand something.
b. *When Fred speaks French, no one understands something.

One difference that this kind of descriptions omit is that the syntactic position of subject DE quantifiers is not the same as the position of negation (and consequently of negative quantifiers): if we assume that the former are interpreted in Spec,TP, we are led to the conclusion that negative quantifiers are interpreted lower than T. In fact, negative quantifiers are the spell-out of negation and of an existential quantifier: therefore a subject negative quantifier inevitably creates a DE environment in the local PolP of an object PPI, while a subject DE quantifier doesn't. The pair shown in (108) is thus inconclusive: it is impossible to tell whether (108a) is grammatical because strict DEness is innocuous, or because the subject quantifier, although it is a potential offender, is far enough to leave the PPI unaffected in its smallest domain. In order to ascertain whether strict DE expressions anti-license *some,* I propose that we set up a configuration with two PIs, a PPI (*some)* and an NPI (*any*), such that we enforce the following alternative: either checking occurs on a constituent where the NPI is not in a DE environment (and therefore yields an error), or the NPI and the PPI are both in a strictly DE environment. The latter is the only viable option: only it makes room for the licensing of the NPI. All that matters now is the fate of the PPI *some.* The prediction is the following: if *some* is impervious to DEness, the sentence is grammatical, whereas if *some* is vulnerable to DEness, the sentence is out. (109a) realizes the envisaged configuration, and the data lend support to the hypothesis that *some* is anti-licensed by DEness, contrary to the consensus: in (109a), the strictly DE expression *at most five people* outscopes both *someone* and *anything*, neither can be independently licensed (assuming that the NPI cannot raise out of PolP), and the result is clearly deviant.

(109) a. *At most five people sold someone anything.
b. (109a): *[TP ↘1 ↘2 **at most 5 people** T [PolP ↗1 ↗2 someone$_2$ anything$_1$ sell t_2 t_1]]

The important lesson that we can draw from this is that the PPI *some* is vulnerable to DEness, rather than Anti-additivity. Is *some* also vulnerable to non-monotonicity? We can now answer this question: although negation creates AA environments, the presence of a quantifier in its scope alters the logical properties of the environment below: from AA it becomes strictly DE (cf. (106) on p. 35).
Some is licit in those environments created by quantificational interveners (110), but we've just established that it is vulnerable to DE environments.

(110) Not everyone understands something. ✓n.s. of SOME

We are faced with a paradox. The solution lies in the obligatory indirect scalar implicature that a strong scalar term yields in a DE environment (following Chierchia (2004)). Once the SI is factored into the meaning of the constituent, the environment of the PPI is non-monotonic. Consequently, *some* is not vulnerable to non-monotonicity. This conclusion is directly corroborated by (111), where *some* is in the scope of a non-monotonic quantifier in its smallest possible domain: PolP is non-monotonic w.r.t. its position because the composition of a DE function and of a non-monotonic function is non-monotonic;[32] the theories which make use of the notion of immediate scope (such as Szabolcsi 2004)[33] will also conclude from (111) that non-monotonic functions are not PPI anti-licensers since *some* can be interpreted in the immediate scope of a non-monotonic function.

(111) No salesclerk sold exactly 2153 people *anything/something.[34]
✓n.s. of SOME

Some is not vulnerable to non-monotonicity and it is not vulnerable to upward-entailingness either, therefore only downward-entailingness anti-licenses it. *Any* has symmetric properties: it is vulnerable to upward-entailingness and to non-monotonicity (I exploit this fact further in section 6).

[32]To see this in an intuitive way, consider the following sentences. In a situation in which exactly ten people brought a cake and exactly three people brought a chocolate cake, the entailment from (ia) to (ib) doesn't hold; in a situation in which exactly three people brought a cake and no one brought a chocolate cake, the reversed entailment doesn't hold:

(i) a. It's not the case that exactly three people brought a cake.
b. It's not the case that exactly three people brought a chocolate cake.
c. (ia) $\not\Rightarrow$ (ib)
d. (ib) $\not\Rightarrow$ (ia)

[33]Caveat: the notion of immediate scope is inherited from Linebarger 1980: it has survived in various guises to this day. It is no longer claimed that any scope-bearing element interferes with licensing when sandwiched between a licenser and an NPI. A number of such elements don't create an interference, i.e. *any*, bare plurals, non-numerical indefinites, embedding predicates, e.g. modal verbs. For example (I check that the narrow scope reading of *any*, which entails the wide scope reading, does exist by using a falsity test):

(i) —A: John doesn't have to read anything.
—B: False, it is required that he reads.

Immediate scope is therefore no longer an empirically adequate notion but some authors continue to use it nonetheless, whether or not they have an explanation to offer for the disruption facts that it was designed to account for.

[34]For some speakers, non-monotonic quantifiers can license weak NPIs in their nuclear scope (Rothschild 2006). But high numbers in the restrictor do not allow this licensing. The potential confounding factor is controlled for in (111):

(i) a. Exactly three students read anything.
b. *Exactly 2153 students read anything.

Summary

Scalar implicatures can ruin the monotonicity of a constituent: they lead to the anti-licensing of NPIs; symmetrically, they salvage PPIs in the scope of a clausemate anti-licenser. There is no need to treat the NPI and the PPI phenomena differently: shielding and intervention are one and the same thing, seen from two different angles. Dependency allows us to demonstrate that *some* is vulnerable to the very environments that *any* is in need of. When they occur in the same surface position, they do so trough different derivational histories. In some circumstances, a PI bears on its sleeves the derivational history that led to its occurrence: this is the case with deontic *must*, whose semantic scope w.r.t. negation is a reliable indicator of its syntactic position.

4.2 Scope of Deontic *must*

The deontic modal *must* is a PPI: this fact is carefully established in Homer 2010a,b (as claimed first in Israel 1996, and recently in Iatridou and Zeijlstra 2009). The property of *must* that bears directly on the present discussion is its ability to QR past an offending negation (I propose to call this movement 'escaping', cf. Homer 2010a). It is base-generated under negation, as the head of a VP, but like all PPIs, it cannot remain in the scope of a clausemate negation in an eligible constituent unless it is rescued or shielded (it can also be interpreted under a superordinate negation). Therefore the LF of (112a), which is precisely a case where *must* is neither rescued nor shielded, is as in (112b).

(112) a. John mustn't leave. MUST>NEG;*NEG>MUST
b. [John$_1$ must$_2$ not t$_2$ [t$_1$ leave]]

Remarkably, when *must* is shielded, it cannot raise.[35]

(113) Not everyone must leave. *MUST>NEG; NEG>MUST

We can thus lay down the following principle:

(114) **Principle of Laziness:** For any constituent A, don't move a PPI π^+ for acceptability purposes if A is not DE w.r.t. the position of π^+.

Note that the mere presence of an intermediate quantifier (for example the existential *a single person*) doesn't block the movement of the PPI:

(115) Not a single person must leave. MUST>NEG; *NEG>MUST

The hypothesis defended here explains the fact: the smallest possible domain of *must* in (113) doesn't have the same logical properties as the one in (112a). In the former, *must* is in an AA environment, whereas in the latter it is either in a DE environment (if the indirect scalar implicature triggered by the universal quantifier *'someone must leave'* is not factored in) or in a non-monotonic environment (if the indirect SI is factored in). We have no direct way to decide whether or not the implicature is factored in in the case

[35] When it is not shielded, it can raise: there is no indication that it has to raise. Failure to raise leads to ungrammaticality in a number of cases, but there is no evidence that some principle forces the modal to raise whenever this is possible, cf. the discussion in 5.

at hand: it is conceivable that *must* is only anti-licensed in AA environments, therefore the incorporation of the SI into the meaning that is relevant to the computation of the acceptability conditions is unnecessary and doesn't take place; it is equally conceivable that the SI is obligatorily incorporated. The latter hypothesis has more to recommend itself than the former: weak NPIs are anti-licensed by Chierchia 'interveners', i.e. by obligatory indirect SIs. If speakers could abstain from incorporating the SI at their leisure along some kind of charity principle, weak NPIs could be saved, contrary to fact. Whether the SI is incorporated or not, we lack evidence to decide whether *must* is vulnerable to mere DEness or to Anti-additivity (because the polarity clash test doesn't apply, see section 9.2).

To sum up, the semantic scope of deontic *must* w.r.t. negation unambiguously indicates its syntactic position w.r.t. negation, because (i.) it has the ability to move past an offending clausemate negation, and (ii.) it only moves when it has to; its scope is therefore an indication of the polarity of its local context (the scope of *some* on the other hand is known to be particularly flexible, since it can always outscope negation, perhaps because its semantic scope is the reflexion of a choice function construal rather than of QR, see Reinhart 1997).

The interesting fact is observed when *must* is in the scope of two DE expressions, the lower one being a clausemate negation: two readings obtain. The reason is that two options arise: *must* takes narrowest scope under the two DE expressions (there is flip-flop, i.e. it is 'rescued' in the Szabolcsi sense of the word, as in (116a)) or it takes intermediate scope between the two as in (116b).

(116) a. (Speaking about a five-year-old boy, whose parents are very demanding.)
–This poor kid does so many chores: he must$_{deon}$ empty the dishwasher, feed the dog, clean his bedroom, make his bed...
–Yes, you're right, and I'm not sure that he must$_{deon}$n't rake the leaves too. NEG > NEG > MUST$_{deon}$

b. I know that John's condition imposes drastic precautions, but even then I'm not sure that he mustn't rake the leaves.[36]
NEG > MUST$_{deon}$ >NEG

[36]The contracted form *mustn't* is on its way out in certain dialects of English, for example American English. But it is important to use it in our test, because the contraction indicates that the negation is a clausemate of *must* (Homer 2010d). The evidence that contraction is not possible with subordinate negation comes from modals which can only take semantic scope over negation in non-contracted forms (just like deontic *must* and other root modals, abilitative *could* is generated under negation; unlike deontic *must*, it need not raise past it (hence it cannot) because it is not a PPI):

(i) a. John could$_{abil}$ not swim. COULD>NEG; NEG>COULD
b. John could$_{abil}$n't swim. *COULD>NEG; NEG>COULD

Root modals are main verbs, which embed an infinitive. Non contracted forms of negation with *must* are either clausemate or subordinate negations (with no semantic difference between the two options):

(ii) John must not swim.

The existence of these two readings is intriguing in the light of the Principle of Laziness (114) (the prohibition on raising when *must* is shielded). If this principle is indeed at play in grammar, then the intermediate scope of *must* should be impossible: being rescued, *must* need not raise past the clausemate negation, and therefore should not be allowed to do so. But it can in fact optionally raise, as shown by (116b). The facts become intelligible once seen from the cyclic perspective that we are advocating here. Consider the following simplified LF (the label YP AA x indicates that YP is AA w.r.t. the position where the bearer of index x is interpreted):

(117) [PolP2 ↗1 **not** sure [$_{CP}$ [XP AA 1 [PolP1 AA 1 **not** must$_1$ [he rake . . .]]]]]

To derive the above facts, we need only consider three cases.

1. When licensing is checked on PolP1, *must* is anti-licensed, and there is no room for it to move anywhere above the offending negation: the sentence doesn't converge if the checking procedure stops at this stage.

2. There is however at least one constituent in the embedded clause which (i.) is an eligible constituent for licensing purposes, (ii.) is larger than PolP1 and (iii.) offers a landing site for the modal to raise to (it is labeled XP in the above LF): in XP, *must* is still anti-licensed prior to movement (i.e. in the LF shown in (117)), but it is licensed after movement (i.e. in the LF shown in (118)). This is how the intermediate reading illustrated in (116b) obtains. The reason this reading is tied to the existence of an eligible constituent in the embedded clause is that QR is, by a large consensus, clause-bounded.

(118) [PolP2 ↘1 **not** sure [$_{CP}$ [XP ↗1 must$_1$ [$_{PolP1}$ **not** t$_1$ [he rake . . .]]]]]

3. Lastly, when anti-licensing is checked on PolP2 and movement hasn't taken place (117), the modal finds itself in a UE environment (it is rescued), therefore it doesn't have to QR and cannot do so, per (114): reading (116a) obtains.

To sum up, there are two converging situations, and they give rise to the two observed readings: the sentence converges either when licensing is checked on PolP2 of LF (117) (reading (116a)), or when licensing is checked on some embedded XP of LF (118) that contains PolP1 (the reading is illustrated in (116b)).[37]

[37] French deontic *devoir* and *falloir* are PPIs too. They differ from *must* in that they can but need not be interpreted above a clausemate negation:

(i) *Jean ne doit$_{deon}$ pas faire de jogging.*
Jean NEG must NEG do of jogging
'*John must not jog/John is not required to jog.*'

The wide scope of *devoir* is blocked when it is shielded by a strong scalar term e.g. *souvent* 'often'. To control for the position of the adverb (i.e. make sure that it is in the matrix) I replace the complement of the modal with a pronoun (right-dislocation):

(ii) *Jean ne le doit$_{deon}$ pas souvent, faire du jogging.*
Jean NEG it must NEG often do of-the jogging

Importantly, we observe that QR is partially determined by PI acceptability. We witness a movement which is only possible when a PI is not acceptable on a given constituent: escaping seems to be blocked when made unnecessary (=when the PPI is rescued), although it would have a semantic effect if it took place, and would hence be allowed according to standard assumptions about movement, in particular Fox's Scope Economy Principle (Fox 2000). I don't know of any other instance of such a condition on QR.

5 Cyclicity

We have now gathered enough evidence about the licensing of PIs to draw some conclusions. First of all, the licensing procedure proceeds cyclically. I repeat some of the crucial pieces of evidence below:

(119) a. Mary didn't tell anyone that John didn't do anything to help the Mafia.
b. It's impossible that someone isn't hiding somewhere.
*w.s. of SOMEONE
c. It's impossible that someone isn't trying to hide somewhere.
✓w.s. of SOMEONE
d. *It's impossible that someone stole anything.
e. It's impossible that anyone stole something.
f. It's impossible that someone isn't eating anything. *n.s. of SOMEONE

This begs a fundamental question: what is licensing? Our licensing condition (73) says that a PI is licensed provided that it is acceptable on some domain (and the other PIs in that domain are concomitantly licensed within that domain). But why is one appropriate domain sufficient? The reader is probably accustomed to this kind of condition about NPIs and might fail to see how puzzling it really is. When applied to PPIs, the condition is perhaps more evidently intriguing. Why should a PPI be licensed provided that it is acceptable on some domain? The requirement relative to a PPI is negative: it must not be placed in a DE environment. But it is hard to see how the existence of one constituent which is not DE w.r.t. it can satisfy the requirement, given that there might be an arbitrarily large number of constituents which are DE w.r.t. its position in the same sentence. Global acceptability seems a priori more intuitive, but we know that it is not enforced.

The mystery lies in the existential quantification in the licensing condition. Operator-based approaches solve the puzzle by invoking feature checking (or a variant thereof). But environment-based approaches don't have a natural way of accounting for it. Or so it seems: I propose that the best way to understand the existential condition is to reverse the perspective. We usually call licensing of a PI what is in fact the *validation of a constituent.* It is the cyclic nature of licensing which tells us that. If a constituent

'*Jean is not often required to jog.*' (only reading)

I propose that *devoir*$_{deon}$ can take narrow scope under a clausemate negation although it is a PPI because its smallest possible domain is smaller than PolP. It is only when its licensing is checked on superconstituents of PolP that it has to raise (unless the Principle of Laziness makes this movement impossible, due to shielding).

contains no unacceptable PIs, it gets validated, and subsequent verifications of larger constituents cannot change that. This suggests that there is a course of operations that make up what is usually referred to as LF (assuming the standard Y model): polarity checking is one such operation; the operations occur in a rigid order; operation *n* can only take place if operation *n-1* has been completed first; if one link of the chain is missing, the whole derivation crashes.[38] Validating a constituent sends it off to the next operation: all the constituents have to be sent off to the next operation. Ungrammaticality occurs when not all the constituents of a sentence are sent off to the next level and this happens e.g. when all the eligible domains of NPI π_k^- which are DE w.r.t. π_k^- contain PPI π_l^+ and all the eligible domains of PPI π_l^+ which are UE w.r.t. π_l^+ contain NPI π_k^- (119d). Once a constituent is sent off (validated) it is no longer accessible: in the case at hand, this means that the PIs it contains cannot get anti-licensed or manipulated in any way.

The next question is: when does the validation of a constituent occur? It is obviously not the case that for each node that the checking procedure runs into, the constituent dominated by that node has to be validated, for two reasons. First, there exist smallest possible domains (e.g. PolP for *some*). Second, although every constituent must be sent off, the number of shipments is not important. Consider a sentence *S* with four levels of embedding; *S* contains the NPI π_k^- in the most deeply embedded clause; only *S* is DE w.r.t. π_k^-: no constituent can be validated until the top node is reached. In this case, only one shipment takes place. But what the inspection of *must* reveals is that validation can be delayed even when a constituent is found which is acceptable w.r.t. all the PIs it contains: recall that *must* can take either narrow or intermediate scope when it is generated below two negations, one of which is a clausemate. The following pair illustrates this fact (cf. also (116) on p. 39):

(120) a. The coroner is the most competent person I know but this is a free country: he does nothing that must$_{deon}$n't be done over again.
NEG > MUST > NEG

b. The coroner does nothing that must$_{deon}$n't be done over again, he is so unbelievably incompetent! NEG > NEG > MUST

(121) a. (120a): [$_{TP}$ T [PolP AA 1 **not** thing [$_{CP}$ that [TP ↗1 must$_1$ [$_{PolP}$ **not** t$_1$ . . .]]]]

b. (120b): [$_{TP}$ T [PolP ↗1 **not** thing [$_{CP}$ that [$_{TP}$ [PolP AA 1 **not** must$_1$ . . .]]]]

(120a) and (120b) exhibit two distinct derivational histories. The licensing of *must* occurs on a larger constituent in the latter than in the former: the smallest constituent containing *must* that gets sent off (validated) in (120b) is the matrix PolP (it is a subconstituent of the embedded clause in (120a)): on the matrix PolP, QR of *must* is either blocked (if *must* is in its base position when the matrix PolP is scanned) or undone (if QR has taken place to escape from negation when the embedded clause was scanned), because it moves *must* into a AA environment; as a result, the modal is interpreted with

[38] In Homer 2010c, I provide evidence for a multilayered LF from the interaction between NPIs and presuppositions.

narrowest scope. This shows that is has not been licensed on the embedded clause: otherwise it would be inaccessible (constituents where the licensing of a PI takes place are by hypothesis sent off (validated)). In other words, validation can be delayed and is not mandatory when possible. The 'first' occasion for validation occurs in the embedded clause, when the modal QRs past the offending negation: the embedded CP is UE w.r.t. its landing position, hence favorable. Validation can occur at this stage, as evidenced by (120a), or be delayed, presumably even if the modal has not raised to a secure position, as evidenced by (120b). To sum up, decisions relative to the point of validation are made during the checking procedure; movements can take place at LF that are motivated by the acceptability of PIs.

The latter fact might conjure up a different picture than the one I have just delineated: one can imagine that there is no LF component separate from core syntax, and that the interpretation processes are contemporaneous with the syntactic derivation by phase. Perhaps PolP and the other domains of PIs are nothing but the phases that syntactic theory postulates. The movements that are motivated by licensing purposes do not, under this view, occur after the sentence has been spelled out but during the derivation itself. Attractive though this alternative hypothesis may be, it raises an issue. When phases are spelled out at their edge, they cannot be frozen, i.e. the PIs they contain cannot become inaccessible for licensing. Otherwise, an NPI separated from a potential licenser by a phase boundary could not be licensed, contrary to fact. Not all theories of phases assume that they are impenetrable (Fox and Pesetsky 2005), therefore this idea is in principle viable. What is more troubling is that we seem to have lost the explanation for the existential quantification in the licensing condition: in the previous analysis, validation was a necessary condition for the continuation of a multilayered interpretation process; in this analysis, we are back to the mystery that I described earlier, i.e. it is not clear why the licensing procedure is cyclic rather than global.

6 A Hypothesis about *any* as a PPI in Disguise

One moral of the present investigation of polarity is that *some* and *any* are in complementary distribution, in the specific sense that cannot be licensed in the same environment: the former is only acceptable in non-DE environments, and the latter is only acceptable in DE environments. This is evident in minimally small structures, i.e. when the polarity items occur in PolP and there is only one DE expression in that constituent:

(122) a. John didn't understand something. *NEG>SOME
b. John didn't understand anything.

One is easily misled into thinking they are not in complementary distribution because of the way the licensing condition can be met. Suppose constituent A is scanned for licensing, and A contains a position that is to be filled by either *some* or *any*: only one of the two is licit in A, but the other can be spelled out if it is licensed on a subconstituent of A. This gives rise to the deceptive impression of optionality that emerges e.g. from the two pairs below: on my account, in each of the sentences, the licensing of the PPI doesn't occur in the same constituent as the licensing of the NPI.

(123) a. It is impossible that John understood something.
b. It is impossible that John understood anything.

(124) a. It is impossible that John didn't understand something.
b. It is impossible that John didn't understand anything.

Having established complementary distribution, we are led to revive the very first idea (Klima 1964) that *some* and *any* are only superficially different and are either identical or very intimately related at some deeper level.

I want to pursue the idea that *any* is derived from a PPI (perhaps *some* itself), and I think French offers some interesting evidence in favor of this derivational link between PPIs and NPIs. In French, singular *quelque* is a PPI: just like *some* in English, it is illicit in the scope of a clausemate negation but can be rescued or shielded.

(125) a. **Jean n' a pas compris quelque chose.*[39]
Jean NEG has NEG understood some thing
'*Jean didn't understand something.*'
b. *Il est impossible que Jean ait compris quelque chose.*
it is impossible that Jean have.SUBJ understood some thing
c. *Il est impossible que Jean n' ait pas compris quelque chose.*
it is impossible that Jean NEG have.SUBJ NEG understood some thing
d. *Jean ne comprend pas toujours quelque chose.*
Jean NEG understands NEG always some thing

Quelque is grammatical under a clausemate negation when its restrictor is modified by a certain relative clause in the subjunctive:

(126) *Jean n' a pas compris quelque chose que ce soit.*
Jean NEG has NEG understood some thing that this be.SUBJ
'*Jean didn't understand anything.*'

The phrase that results from the addition of the modifier is only licit in a DE environment: it is a (weak) NPI.

(127) a. **Jean a compris quelque chose que ce soit.*
Jean has understood some thing that this be.SUBJ
Intended: '*Jean understood anything.*'
b. **Quelque chose que ce soit a eu lieu.*
some thing that this be.SUBJ has taken place
Intended: '*Anything took place.*'
c. ??*Exactement trois personnes ont compris quelque chose que ce soit.*
exactly three people have understood some thing that this be.SUBJ

[39]The asterisk indicates that the narrow scope of *quelque* is impossible.

Intended: *'Exactly tree people understood anything.'*

d. ??*Tout le monde n' a pas compris quelque chose que ce*
all the people NEG have NEG understood some thing that this
soit.
be.SUBJ
Intended: *'Not everybody understood anything.'*

e. *Moins de trois personnes ont compris quelque chose que ce*
less of three people have understood some thing that this
soit.
be.SUBJ
'Fewer than three people understood anything.'

Furthermore, there is a strong intuition that the effect of the subjunctive relative is a widening of the domain that *quelque* quantifies over. Summing up, French has a productive way of forming NPIs, which exhibit the widening property described as characteristic of weak NPIs in Kadmon and Landman's (1993) classic study and in much subsequent work.

But all we see really is a PPI being salvaged by the addition of an appropriate modifier. The addition is only licit when the acceptability of the PPI is checked on a constituent which is DE w.r.t. the PPI: when there is no DE-environment that the modified PPI is placed in, it is excluded. Recall that when we discussed *must* (section 4.2) we observed that it cannot raise across negation when it is shielded, i.e. when it is in a non-monotonic environment. I then laid down a *Principle of laziness* (114) to the effect that the movement of a PPI is disallowed when it is unnecessary. We can profitably generalize it as follows:

(128) **Principle of Laziness Generalized:** For any constituent A, don't modify PPI α (either by movement or by adjunction), if α is not anti-licensed in A.

The principle is too strong as it stands: PPIs are salvaged by postnominal modification ((150b), (151b), and (152b) and their French equivalents) but they can appear with some of the modifiers (but not the subjunctive relative *que ce soit*) outside of DE environments. It is therefore necessary to add some restriction to the principle: certain modifications are disallowed outside of DE environments. I leave to future research a characterization of the modifications that salvage PPIs. But what we can already glean from our data is that a subset of the salvaging modifications (the domain widening ones) share some property with QR: this property makes them improper out of DE environments. Suppose the two operations, QR and domain-widening modification, form a class: let's call them ρ operations. What could the property that unifies them be? An answer suggests itself (it is in keeping with previous research on NPIs (Kadmon and Landman 1993)): in DE environments (and only there) the ρ operations have the effect of yielding an outcome which is logically stronger than their input. Their execution might be ruled by the following principle (a generalization of Kadmon and Landman's 1993 principle[40]), which applies locally:

[40]Here is how they define strengthening:

(129) **Strengthening Principle:** Apply a ρ operation only if it leads to strengthening.

First consider the PPI *must*, analyzed as a universal quantifier over possible worlds: the meaning of XP after QR of the modal past negation is logically stronger than its meaning prior to movement.

(130) a. $[_{XP}$ **not** must $[_{YP}$]]
b. $[_{XP}$ must$_1$ **not** t_1 $[_{YP}$]]
c. $[\![$ (130b) $]\!]^s \Rightarrow [\![$ (130a) $]\!]^s$

Cases where QR of *must* is blocked are cases where the output is not stronger than the input:[41]

(131) a. $[_{XP}$ **not** every must $[_{YP}$]]
b. $[_{XP}$ must$_1$ **not** every t_1 $[_{YP}$]]
c. $[\![$ (131b) $]\!]^s \not\Rightarrow [\![$ (131a) $]\!]^s$
d. $[\![$ (131a) $]\!]^s \not\Rightarrow [\![$ (131b) $]\!]^s$

(132) a. $[_{XP}$ [**not** sure [**not** must $[_{YP}$]]]
b. $[_{XP}$ [**not** sure [must$_1$ **not** t_1 $[_{YP}$]]]
c. $[\![$ (132a) $]\!]^s \Rightarrow [\![$ (132b) $]\!]^s$

We can hypothesize that the movement of *must* is blocked when it doesn't yield a logically stronger meaning. Similarly, the addition of *que ce soit*, if it is indeed a domain widener, leads to strengthening only in DE environments, i.e. in those environments where it is licit.

(133) a. *Jean n'a pas compris quelque chose.
b. $\neg\exists x{\in}D$ (understand'(j,x))
c. Jean n'a pas compris quelque chose que ce soit.
d. $\neg\exists x{\in}D'$ (understand'(j,x)) with $D \subseteq D'$
e. (133d) $\Rightarrow$ (133b)

(134) a. Jean a compris quelque chose.
b. $\exists x{\in}D$ (understand'(j,x))
c. *Jean a compris quelque chose que ce soit.
d. $\exists x{\in}D'$ (understand'(j,x)) with $D \subseteq D'$
e. (134b) $\Rightarrow$ (134d)

(i) **STRENGTHENING:** *Any* is licensed only if the widening that it induces creates a stronger statement, i.e. only if the statement on the wide interpretation $\Rightarrow$ the statement on the narrow interpretation. Kadmon and Landman 1993, p. 369]

[41] Caveat: in (132), QR moves *must* into a position with respect to which XP is DE (the composition of negation and *sure*, which is a UE quantifier over possible worlds, yields a DE function). We know for sure that *must* is vulnerable to Anti-additivity, but we cannot rule out the possibility that it is in fact sensitive to downward-entailingness (the reason is that the polarity clash test is negative with *must*, cf. 9.2 on p. 60). If it is indeed anti-licensed by DEness, the ban on QR in (132) cannot be blamed unequivocally on laziness.

To sum up, French has an overt modifier *que ce soit* whose effect is to turn a PPI into an NPI and this transformation comes with domain widening, which is a hallmark of English *any.* I thus venture the hypothesis that *any* in English is nothing but a PPI (either *a* or *some*) salvaged by an analogue of *que ce soit*.[42] *Some* and *any* are thus in complementary distribution because the latter is nothing but a PPI with a modification that is only licit wherever *some* is not.[43] Needless to say, much more work is needed to verify this hypothesis: as a starting point, we need to establish that *a* is anti-licensed in DE environments); furthermore, a challenge awaits us: the smallest possible domain of *some* (PolP) is not the same as the smallest possible domain of *any* for some speakers (it is smaller than PolP), therefore it is unlikely that they are derivationally related.[44]

The benefit of this hypothesis is that it does away with a long-standing puzzle, namely the licensing of *any. Any* is the form that a PPI takes when salvaged in DE environments under a certain modification. We are thus left with one question: why are PPIs of the *some*-type anti-licensed in DE environments? The answer to the question of the licensing of *any* will ensue from the answer to this more fundamental problem.

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[42] *A* is a priori a more natural candidate than *some*, as *any* can be analyzed into a-n-y, where the morpheme *-y* is a ρ modifier (and the intervocalic [n] is euphonic).

[43] The PPI phenomenon is extremely robust across languages: to my knowledge, the unacceptability of indefinites—otherwise acceptable in simple positive sentences—under a clausemate negation is universal. But not all languages have weak NPIs such as English *any* (for example, Italian has n-words, which do not pattern exactly like NPIs).

[44] I want to point out that within English too, a derivational link between PPIs and NPIs is visible (although the resulting NPI is strong):

(i) John didn't understand a THING.

The indefinite is ungrammatical in (i) unless *thing* bears a pitch accent. Interestingly, this accent is ungrammatical outside of AA environments.

(ii) a. ??John understood a THING.
b. ??Fewer than three people understood a THING.
c. ??Exactly three people understood a THING.

A similar phenomenon takes place with the adjective *single:*

(iii) John didn't understand a single thing.

The prominent reading of (iii) is that John didn't understand anything. This meaning is not the expected one: one expects to get the negation of *'John understood a single thing'*, which is true e.g. in a situation in which John understood two things. (iii) can be viewed as an exemplification of a ρ modification of the PPI *a thing:* outside of AA environments, *a single thing* only has its literal—exhaustified—meaning, not the non-literal one. Since Lahiri 1998, there is a tradition that views strong NPIs (the ones that require AA environments) as being accompanied with a hidden *even:* the accent on *thing* in (i) might be a phonological marker of the presence of the silent focus particle. We could hypothesize that the presence of *even* is a way to salvage a plain indefinite PPI, and that this salvaging mechanism cannot be used outside of certain environments. One glitch is that the derivational link that I proposed between *any* and *some* made sense insofar as they are in complementary distribution: but *a thing* and *a single thing* are only vulnerable to AA environments, therefore if they derive from a PPI, this PPI has to be anti-licensed in AA environments only. And we haven't established yet that *a* (the natural candidate, also natural for the derivation of *any*) is anti-licensed in AA environments.

7 *Some* is not an Intervener

There is a possibility that we haven't excluded yet: so far, all the ungrammatical cases that we've considered involve the PPI *some* in one of the three configurations (assume that the sentences that correspond to these templates contain no other occurrences of PPI, NPI and negation, than the ones explicitly mentioned):

(135) A: *[$_S$ **not** ... [$_{S'}$ some ... any]]
B: *[$_S$ **not** ... [$_{S'}$ ... **not** ... some ... any]]
C: *[$_S$ **not** ... [$_{S'}$ some$_1$ ... **not** ... some$_2$]]

A simple-minded generalization comes to mind, that targets *some* (in A and B) and *some*$_1$ (in C) as the culprit: the quantifier *some* cannot intervene either between an NPI and the closest licenser, or between a negation that anti-licenses a PPI and the closest rescuer of that PPI. Put more simply: *some* cannot intervene between a PI in need of licensing and its potential licenser. I see two ways to make sense of this generalization.

The first one is easily dismissed: one might be tempted to extend Chierchia's (2004) proposal, originally designed to account for so-called intervention effects of *every, and*, numerals, *because*-clauses etc., to *some.* But notice that it is impossible that the disruption effects be due to a scalar implicature: although *some* is a scalar term, it is a weak one (therefore it only triggers a SI in a non-DE environment), and in the cases that we are concerned with, the only constituents where *any* (in A and B) and *some*$_2$ (in C) have a chance of being licensed are DE w.r.t. the position of *some*/*some*$_1$.

The second way goes as follows: *some* creates an intervention, and this intervention has nothing to do with its PPIhood (therefore what I described as polarity clashes are but spurious effects). If we are unable to respond to this challenge, the new data that we produced bring little support to the environment-related hypothesis: in effect, operator-based hypotheses have been developed that deal with the disruption effects created by *every* and *and* (Beck 2006) and treating *some* as a member of the class of interveners wouldn't be too big a stretch for those theories. Suppose for example that we hypothesize that (i.) an NPI needs to be in the scope of at least one DE operator in order to be licensed (there must be a syntactic dependency between the NPI and the DE operator, i.e. c-command); (ii.) *some* creates an intervention whose result is to break the syntactic dependency that the licensing condition requires. Such a theory cannot explain all the facts that I put forward in favor of the environment-based theory (e.g. the flip-flop data), but it can explain why the presence of *some* between a DE operator and an NPI leads to the anti-licensing of the NPI (in the configurations A and B). Turning to PPIs, suppose that we hypothesize that a negation and a clausemate PPI in its scope turn into an NPI, which requires being in the scope of at least one DE expression to be licensed (see Szabolcsi 2004 for such a theory). If *some* disrupts the licensing of NPIs, configuration C in (135) boils down to a case of anti-licensing of an NPI.

I see at least four reasons to maintain that polarity clashes exist and that they lend support to the environment-based approach: (1.) clashes occur even when *some* is c-commanded by *any*, (2.) other PPIs besides *some* create a clash, (3.) the clash is sometimes mitigated (in circumstances in which the intervention effect is not) and (4.) the clash can be avoided by applying a strategy which also salvages PPIs outside of the

multiple-PI configurations.

1. First of all, we can construct configurations where ungrammaticality ensues from the co-occurrence of an NPI and a PPI in that order (these are cases where the PPI cannot act as an intervener because it is lower than the NPI). If we are right in assuming that *some* has PolP as its smallest possible domain, we need to place an NPI in this domain; no DE expression can appear in this domain, because we want to exclude direct anti-licensing of the PPI as a cause of ungrammaticality. One way to achieve the result is to use a double object construction where the expression denoting the Goal is an NPI and the expression denoting the Theme is a PPI (this is a very simple modification of (109a)). Assuming that the relative scope of the quantifiers at LF remains what it is on the surface (because of scope freezing, cf. Bruening 2001) and that the NPI doesn't raise out of PolP, we expect the result to be bad because all eligible constituents have the same polarity w.r.t. both PIs as the LF shows. This prediction is borne out:

(136) a. *At most five people sold anyone something.
b. (136a): *[TP ↗1 ↗2 **at most 5 people** T [PolP ↗1 ↗2 anyone$_2$ something$_1$ sell t_2 t_1]]

With the verb *tell*, we replicate the effect with two PIs of opposite polarity in the same PolP (with both surface orders exemplified in (137a) and (137b)).

(137) a. *At most five people told anyone something.
b. *At most five people told someone anything.

Since *tell* can be constructed with a propositional complement, it offers an interesting testing ground for our hypothesis. The PPI in the embedded clause can be licensed before the NPI in the matrix can be licensed (and (138a) is correctly predicted to be grammatical); however an NPI in the embedded clause cannot be licensed without anti-licensing the PPI in the matrix and *vice versa* (and (138b) is correctly predicted to be ungrammatical):

(138) a. At most five people told anyone that someone had come.
b. *At most five people told someone that anyone had come.

2. Second, other PPIs besides *some*, e.g. *would rather*, create polarity clashes with *any*, witness (139d).[45]

[45] I was not able to find speakers of the dialect in which *would rather* is a PPI. The data are taken from Baker 1970, p. 178: Baker shares the intuition that underlies the present article and proposes a rule of polarity reversal which takes into account all clausemate PIs: 'one polarity-sensitive item in a subordinate clause can have its polarity reversed only if all such elements do.'

Van der Wouden (1997) comments on (139d) (p. 170): he shares the intuition developed in this article, since he suggests that 'an NPI and a PPI must be checked at the same time or under the same construction.' He proposes to view the rescuing facts as a cancellation of negation and explains that the DE operator, being unavailable, cannot license an NPI in its scope (and conversely, without cancellation, the PPI is not available). However he immediately discards what he calls a 'simple story in terms of negation cancellation' in view of the cases where a combination of two DE operators doesn't anti-license an NPI (i.e. lack of flip-flop). The facts that sentences such as (139d) exemplify are left unexplained.

(139) a. He would rather be in Montpelier.
b. *He wouldn't rather be in Montpelier.
c. There isn't anyone here who wouldn't rather do something downtown.
d. *There isn't anyone here who wouldn't rather do anything downtown.
[Baker 1970, ex. 46a]

The NPI *anything* cannot be licensed in the embedded PolP due to the presence of the anti-licensed *would rather;* the next constituents where *would rather* can be licensed (matrix PolP and its superconstituents) are constituents in which *anything* is anti-licensed. Changing the complement of *do* from the NPI *anything* into the PPI *something* (139c) rescues the sentence (all three PIs are licensed on matrix PolP).

(140) a. (139c): [$_{TP}$ T [PolP ↗1 ↗2 ↘3 **not** anyone$_3$ [$_{CP}$ [$_{TP}$ T [PolP ↘1 ↘2 **not** [would rather]$_2$ something$_1$ do t$_1$]]]]]
b. (139d): *[$_{TP}$ T [PolP ↗1 ↗2 ↘3 **not** anyone$_3$ [$_{CP}$ [$_{TP}$ T [PolP ↘1 ↘2 **not** [would rather]$_2$ anything$_1$ do t$_1$]]]]]

3. Third, if we adopt the perspective of theories that hold that *every, always, and,*... act as interveners (i.e. as elements that disrupt the syntactic dependency between an NPI and its licenser) and want to include *some* in the class of interveners, we expect *some* to pattern with the foregoing elements. But it doesn't, and the circumstances in which it fails to cause a disruption have a better chance of falling out from the environment-based approach than from the intervention approach. Let us see why. We've seen that the co-occurrence of *some* and *any* is ungrammatical in the scope of a superordinate negation or negative quantifier, and also in the scope of strictly DE quantifiers. But speakers judge that there is a very significant contrast between those cases (reproduced below as (141)) and (142c), where the PIs co-occur in the restrictor of *if* ((142a) and (142b) are controls). Importantly, (142c) is also significantly better than (143), where *every* replaces *some.* By itself, the latter contrast indicates that the effects induced by *some* and *every* are of a different brand.

(141) a. *I'm not sure that someone stole anything.
b. *No one claims that someone stole anything.
c. *At most five people sold someone anything.

(142) a. If someone stole a camera, we're in trouble.
b. If John stole anything, we're in trouble.
c. ?If someone stole anything, we're in trouble.

(143) *If everyone stole anything, we're in trouble.

The case of *if* is particularly interesting, because it is standardly analyzed as being non-monotonic on its restrictor (Lewis 1973, Heim 1984). It is a well-known fact that natural language conditionals do not exhibit the monotonicity properties of material implication. For example, the 'Strengthening of the Antecedent' property doesn't hold of natural language conditionals:[46]

[46]Alternative theories, e.g. von Fintel 1999, have been developed which maintain that conditionals are structures of universal quantification wherein the *if*-clause provides the restrictor: on this view, *if*-clauses are

(144) Strengthening of the Antecedent: If *if* ϕ, ψ then *if* $\phi \wedge \phi$', ψ.

(145) If this match were struck, it would light, but if this match had been soaked in water overnight and it were struck, it wouldn't light.
[modified from Stalnaker 1968].

The claim that antecedents of conditionals are non-monotonic faces an empirical challenge: weak NPIs are licensed in them, cf. (142b). If DEness is a necessary condition for NPI licensing, this fact is left unexplained on the non-monotonic line. Heim (1984) noted however that not all antecedents of conditionals license *any*, and she observed that licensing only obtains in the presence of some background assumptions.

(146) a. If you read any newspaper at all, you are well informed.
b. #If you read any newspaper at all, you remain quite ignorant.

It is a commonly shared assumption that reading newspapers is a way of being informed and that the more newspapers one reads, the better one is informed: given the additional assumption, the following entailment holds:

(147) For any n' $>$ n, if you read n newspapers, you are well informed $\Rightarrow$ if you read n' newspapers, you are well informed.

The background assumption provides what one might call pseudo-DEness, since we observe in (147) a reversal of the direction of entailment in (148):

(148) For any n' $>$ n, $[\![$ n' newspapers $]\!] \Rightarrow [\![$ n newspapers $]\!]$

There is no plausible background assumption to the effect that the more newspapers one reads, the more ignorant one remains, i.e. no assumption that could make up for the inherent non-monotonicity of *if*-clauses: this explains why (146b) is unacceptable.

Armed with this knowledge, we can now go back to (142c): on the *if*-clause, the environment is strictly speaking non-monotonic for both PIs.

(149) (142c): $[_{TP}$ $[_{\boxed{\text{CP} \mid \asymp 1 \mid \asymp 2}}$ **if** someone$_2$ anything$_1$ t$_2$ steal t$_1$] T . . .]

The PPI *somone* is therefore not anti-licensed; *anything* is not licensed by this environment, but it is licensed in some derivative way, i.e. by the adjunction of the plausible assumption that if we're in trouble if John stole a thing *x*, we're all the more in trouble if John stole *x* and something else; this move secures what I called pseudo-DEness. The question of course is the following: shouldn't pseudo-DEness affect the PPI as well? My answer to this question is at best a tentative one. The fact that (142c) is slightly deviant suggests that simultaneously licensing the two PIs subjects the system to some tension. We can suppose that pseudo-DEness anti-licenses PPIs; the restrictor of *if* is both non-monotonic and (given the right background assumptions) pseudo-DE. When the system checks for the licensing of *some* and *any* in such a constituent, it needs to integrate pseudo-DEness for the latter and ignore it for the former, and avoids a violation of the general licensing condition (73) at the cost of an inconsistency (and

monotonic, more specifically downward-entailing, and appearances to the contrary, cf. (145), ought to be blamed on changing domain restrictions.

this inconsistency is presumably less harmful than a plain violation of the licensing condition).

4. Fourth, there is a way to alleviate the ungrammaticality that arises from the presence of *some* in the scope of a clausemate negation, that we haven't discussed yet (it is not described in the literature, as far as I know). Adding an overt restriction to the restrictor of the quantifier in the form of a relative clause or a reduced relative clause (of which a postnominal adjective is an instantiation) significantly improves the acceptability of *some* (prenominal modification doesn't have the same effect):

(150) a. *John didn't hire someone. *NEG>SOME
b. John didn't hire someone that he didn't like. NEG>SOME

(151) a. *I didn't buy something. *NEG>SOME
b. I didn't buy something from Eastern Europe. NEG>SOME
c. *I didn't buy some Eastern European thing. *NEG>SOME

(152) a. *John never invited someone. *NEG>SOME
b. John never invited someone honest. NEG>SOME
c. *John never invited some honest person. *NEG>SOME

This phenomenon bears resemblance to subtrigging (LeGrand 1975), whereby *any* is acceptable—in a context which is neither negative nor modal or generic—thanks to the presence of a postnominal modification of the restrictor of the quantifier (see Dayal 2004):

(153) a. *Any student signed the petition.
b. Any student who went to the meeting signed the petition.
c. Any student at the meeting signed the petition.
d. Any student there signed the petition. [Dayal 2004, ex. 3]

I won't attempt to offer an explanation of the subtrigging phenomenon (i.e. licensing by modification), but will content myself with proposing that the cases of improvement of *some* that we are considering should be subsumed under it. We expect that subtrigging improves the sentences where the co-occurrence of a PPI and an NPI in all eligible constituents normally leads to unacceptability (provided that it leaves intact the monotonicity of the context and doesn't harm the NPI). This prediction is borne out: there is a correlation between the acceptation of (152b) and the acceptation of (154b) among speakers.[47]

(154) a. *It is impossible that someone stole anything.

[47] There is an obvious counterproposal. In all of the above pairs, the second sentence is associated with an inference. For example:

(i) John never invited someone honest.
$\rightsquigarrow$ John sometimes invited someone.

It is possible that this inference is a scalar implicature that derives, through the standard Gricean procedure, from the Maxim of Quantity. Consider (150), (151) and (152); in each of them, the grammatical counterpart of the a. sentence is logically stronger than the b. sentence. For concreteness:

(ii) $\neg\exists$x [person'(x) $\wedge$ invite'(j,x)] $\Rightarrow$ $\neg\exists$x [person-honest'(x) $\wedge$ invite'(j,x)]

b. ?It is impossible that someone honest stole anything.

Adding a postnominal modifier to the restrictor of *every* doesn't have the same mitigating effect:

(155) *It is impossible that everyone who is honest stole anything.

Summing up, the environment-based approach (specifically the cyclic hypothesis) can be upheld against the potential counter-analysis that I outlined. Operator-based approaches are hard-pressed to explain the new facts introduced in this section, which strongly suggest that polarity clashes are real. After discussing hypothetical analyses, I turn in the next section to the examination of an actual theory, namely Szabolcsi 2004, which departs radically from mine in two important ways: it is operator-based and it reduces PPIhood to NPIhood (while I attempt a symmetric reduction).

8 Szabolcsi 2004

Szabolcsi proposes that the commonalities that one observes between PPIs and certain NPIs are not an accident: in her analysis, *some* behaves like a weak NPI when it falls in the immediate scope of an anti-additive operator, i.e. it needs to be licensed. Rescuing—whereby an occurrence of *some* in the so-called immediate scope of a clausemate negation ends up being acceptable only if *some* and the clausemate negation are outscoped by a DE expression—is thus a simple instance of licensing of a weak NPI. Anti-additivity is the logical property that *some*-type PPIs are vulnerable to, i.e. the property that induces the NPI-like behavior; strict DEness leaves *some*-type PPIs unaffected. This rule is supported, in Szabolcsi's view, by the following contrast:

(156)	a.	No one called someone.	*n.s. of SOME
	b.	At most five people called someone	✓ n.s. of SOME

If the (grammatical counterpart of the) a. sentence is an alternative to the b. sentence, it gives rise to an implicature. Factoring in this scalar implicature (i.e. calculating the strengthened meaning, as in Chierchia 2004) yields a non-monotonic context, and this has the effect of shielding the PPI e.g. in (152b) because all eligible constituents are non-monotonic w.r.t. its position.

(iii) $[\![\text{(152b)}]\!]^s = \neg\exists x\,[\text{person-honest'}(x) \wedge \text{invite'}(j,x)] \wedge \exists x\,[\text{person'}(x) \wedge \text{invite'}(j,x)]$

The situation is more complex than it looks however: the fact that prenominal modification doesn't salvage PPIs—although it feeds the SI mechanism—suggests that SIs are not in fact at work in the grammatical sentences. Yet, some data seem to support the implicature line. It is possible to salvage *some* without directly modifying its restrictor, as shown in (iv) (Tim Stowell, p.c.), where context and the adverbial *for a change* contribute to making the PPI acceptable. It is plausible that *for a change* triggers the implicature that Mary said something on other occasions.

(iv) (Mary can't help raising her hand to express her views in class. Guess what...)
For a change, she didn't say something.
$\rightsquigarrow$ Mary sometimes said something.

Notice in closing that if a SI salvages the PPI when it is modified postnominally, we expect the NPI to be anti-licensed in (154b). The judgments of the speakers I've polled so far show otherwise.

The explanandum is thus the effect of clausemate anti-additive operators on *some.* Szabolcsi proposes that *some* has two NEG or 'NPI features', and that these NEG features act just like negations: *some* is one possible spell-out of an item which has the semantics of a doubly negated existential $\lambda P \lambda Q \neg\neg\exists[P(x) \wedge Q(x)]$. The higher negative feature can interact with an operator to form a binary resumptive quantifier: but only clausemate anti-additive operators qualify (it is a 'strong-NPI' feature); the lower negative feature can also form a resumptive quantifier with an operator, which only needs to be DE (it is a 'weak-NPI' feature). The operator can be DP-internal, it need not be external, which means that the lower NEG feature can combine with the higher one. The PPI phenomenon is thus reduced to the NPI phenomenon (analyzed as the formation of a resumptive quantifier with an external DE operator). This is one original and appealing feature of the proposal; another one is that there is strictly speaking no licensing or anti-licensing. In this system, *some* and *any* are the mere morphological reflexes of semantic processes whereby negative features combine with operators to form resumptive quantifiers. A third form, namely *no,* is a possible spell-out for the form $\neg\neg\exists$: Postal (2000), whose system is partially inherited by Szabolcsi, underlines that *any* and *no* have one property in common, i.e. they can host exceptives, and for that reason proposes that they are underlyingly identical (he argues that they are both ambiguous between an existential and a negative reading).[48] We have thus a *some-any-no* paradigm, and the choice is controlled by pronunciation rules, which decide which form gets to be pronounced, depending upon the number of negative features that enter the semantic process and the position of the operator with which the quantifier is formed (Szabolcsi uses the wording 'is licensed by' or 'is deleted by' as shortcuts for 'forms a resumptive quantifier with'):

(157) **Szabolcsi's 2004 pronunciation rules:**

- a. one NEG is left in place: pronounce *no;*
- b. two NEG's are left in place: pronounce *some;*
- c. no NEG is left in place:
  - (i) two NEG's are licensed DP-externally: pronounce *some;*
  - (ii) elsewhere: pronounce *any.*

Let us look at some examples:

(158)
- a. John saw something.
- b. John didn't see anything.

[48] The important facts are illustrated in the following paradigm:

(i)
- a. John said nothing but hello.
- b. John didn't say anything but hello.
- c. At most five people said anything but hello.
- d. *John said something but hello.

Postal claims that *no* and *any* are ambiguous between a $\neg\exists$ and a $\neg\neg\exists$ construal: the former allows exceptives, while the latter doesn't. Pronunciation rules determine which of the two forms gets to be pronounced. In the $\neg\exists$ construal, the negative feature is strong (it needs an anti-additive licenser); in the $\neg\neg\exists$ construal, both negations are weak.

c. John saw nothing.
d. It's impossible that John didn't see something.

In each of the above four cases, the item that is inserted has the semantics of a doubly negated existential. The derivation of (158a) is as follows: the two NEG features are left in place, and they cancel each other out semantically; *some* is pronounced per (157b). In (158b), the higher NEG feature 'licenses' the lower one and sentential negation 'licenses' the higher one: *any* gets pronounced per (157cii). In (158c), the higher NEG feature 'licenses' the lower one, and remains in place: *no* is pronounced per (157a). Lastly, in (158d), the higher NEG feature is 'licensed' by clausemate negation and the lower one is 'licensed' by the superordinate DE expression: *some* is pronounced per (157ci). Importantly, this is a failure proof system: the ungrammatical forms are not ruled out after being generated, they are simply not generated. It bears saying that, under those assumptions, there can in fact be no underlying identity between *some* and *any*, by Szabolcsi's own admission (her fn. 32). In effect, the order of the strong and weak NPI features in the underlying representations cannot be the same: in the underlying representation of *some*, it is $\text{NEG}_{strong} > \text{NEG}_{weak}$, because if the weak feature intervened, it would shield the strong one from the external anti-additive licenser (recall that immediate scope is of the essence in this theory). Inversely, in the case of *any*, the higher negation deletes the lower one and remains in place; since it can be licensed by a DE expression, it has to be weak: the order in the underlying representation has to be $\text{NEG}_{weak} > \text{NEG}_{strong}$. This stipulated difference weakens the proposal, as it deprives it of its main appeal, namely the underlying identity between *some* and *any.* It reintroduces gaps in the paradigm: there is no pronunciation rule for the outcome of neg-deletion within the underlying form $\neg_s\neg_w\exists$: the remaining NEG feature is strong, which means that we have a strong NPI in need of an anti-additive licenser; Szabolcsi doesn't say what quantifier this is.

In order to make the system empirically adequate, certain stipulations are in order. First of all, Szabolcsi needs to rule out (159) (for the dialects that do not allow negative concord).

(159) *John didn't see nothing. (unless denial)

Her rule (157a) allows it however: the higher NEG is licensed (deleted) by sentential negation (an anti-additive operator) and the lower NEG is left in place, therefore *no* should be pronounced. She proposes the following condition:

(160) **The evenness condition on neg-deletion:** Only an analysis with an even number of chained neg-deletions is well-formed.[49]

Second and more importantly, Szabolcsi has to stipulate that the two NPI features of the inserted item—with the semantics $\neg\neg\exists$—cannot be left in place in the immediate

[49]This rule doesn't apply to DP-internal deletions, only to 'chained' ones (if I understand this notion of 'chained neg-deletion' correctly): in (i), the higher NEG feature licenses the lower one, and this is the only neg-deletion operation that takes place.

(i) John saw nothing.

scope of an anti-additive operator, i.e. that *some* is not an option. This is certainly unfortunate, as the unavailability of *some* under a clausemate negation is one of the core facts that any theory of PPIs should account for in a principled way. Szabolcsi notices that negation itself is unacceptable under a negative quantifier (unless the sentence is used to express denial):

(161) *No one didn't laugh.

She claims that this observation lends independent support to the following principle (which requires the other stipulation that sentential negation is a strong-NPI feature):

(162) **Activation requirement:** When a strong-NPI feature occurs in the immediate scope of a local anti-additive, it cannot remain unlicensed (unless the anti-additive expresses denial). Resumption is obligatory in this configuration.

(161) is ungrammatical because the only possible output is, per (162), one in which the sentential negation is licensed. Yet another rule, specifically tailored to deal with sentential negation, seems necessary here—Szabolcsi omits to provide it: this rule should stipulate that the pronunciation of sentential negation is empty under an anti-additive operator (since the correct form is *'No one laughed'*). The application of (157cii) should also be blocked.

The invulnerability to non-local anti-additive operators is not derived on principled grounds: Szabolcsi proposes that it follows from the fact that the higher NEG feature in the underlying form of *some* is a strong-NPI feature, and certain strong NPIs require a local licenser (it is a correlation rather than an explanation which is offered). This is indeed true of the strong NPI *in years*, but not of the strong NPIs *yet* or *until* (they all require anti-additive licensers):

(163) a. *It's impossible that John has exercised in years.
b. It's impossible that John can understand this yet.
c. It's impossible that John left until the day after.

An explanation is missing, and the offered correlation is not even perfect, therefore the theory cannot account for this very salient property of PPIs.

In addition to being stipulative on some of its crucial tenets, the theory has also some shortcomings on the empirical front. It cannot account for the data presented and discussed in this article. Specifically, it cannot predict the ill-formedness of the configurations below as it is in essence an operator-based proposal. It is therefore inconsistent with the existence of domains of PIs.

(164) a. *[. . . **not** . . . [$_{TP}$ some . . . any]]
b. *[. . . **not** . . . [$_{TP}$ some . . . [$_{PolP}$ **not** . . . some]]]
c. *[$_{TP}$ [at most five] . . . [$_{PolP}$ . . . some any]]
d. *[$_{TP}$ [at most five] . . . [$_{PolP}$ . . . any some]]

Claiming that (164a)-(164c) are bad because *some* is an intervener is a nonstarter (in Szabolcsi's system, quantifiers that intervene between an operator and an item which

contains negative features block the formation of resumptive quantifiers); we have shown that there are good reasons to reject this hypothesis on empirical grounds (one argument actually relies on (164d) shown above), but from the point of view of Szabolcsi's theory itself, it is not a desirable move: while *some* and *any* do not differ in any substantial way according to it (they are both existential quantifiers underlyingly), replacing *some* in each of (164a)-(164c) with *any* leads to a grammatical result. This difference is out of the reach of the theory.

Anti-additivity is not, *pace* Szabolcsi, the property that PPIs are vulnerable to; only a theory which fully takes locality into account can show that this property is in fact downward-entailingness. Since the explanation of the PPI facts crucially relies in Szabolcsi's theory on anti-additivity (as being the licenser of a strong negative feature), the facts discussed here are at variance with it.

9 Open Problems

9.1 Computations Involving Non-monotonic Quantifiers

We have seen that a PPI anti-licensed by a clausemate negation gets rescued by a DE expression. The explanation that I offered is that the context of the PPI on constituents which include both DE expressions (the anti-licensing one and the rescuing one) is upward-entailing. The environment-based approach was discarded by previous researchers (Bhatt and Schwarz (2003), Szabolcsi (2004)) in favor of an operator-based approach on the grounds that *some* is not rescued by UE expressions: according to them, *some* is anti-licensed by AA expressions; and the combination of a UE and a AA expressions yields a strictly DE context.

(165) a. ⟦ Eastern-European Languages ⟧ ⇒ ⟦ European Languages ⟧
b. More than two people don't understand European languages ⇒ More than two people don't understand Eastern-European languages. *(DE)*
c. More than two people don't smoke and more than two people don't drink ⇏ More than two people don't smoke or drink. *(not AA)*

If the acceptability of *some* was checked on its syntactic environment, the objection goes, a UE function should rescue it by creating a DE environment when composed with negation.[50] For example in (166a), PolP is AA, while TP is strictly DE, w.r.t. the position of *something.*

(166) a. *When Fred speaks French, more than two people don't understand something.
b. (166a): *[TP ↘1 [more than two people] T [PolP AA 1 **not** something$_1$ t_2 understand t_1]]

This objection has no force since we have established that *some* is in fact vulnerable to DEness instead of Anti-additivity (4.1.3).

[50] According to Szabolcsi (2004), rescuers can only be DE expressions, i.e. NPI licensers, because a PPI in the 'immediate' scope of a clausemate negation forms a non-lexical NPI with this negation, see 8 above.

Opponents to environment-based licensing have also pointed out the lack of rescuing by non-monotonic expressions, and unlike the previous objection, this is indeed a vexing issue. We have established that *some* is not vulnerable to non-monotonicity, and the theory defended here does predict that *someone* should not be anti-licensed in (167a), since there is an eligible constituent which is non-monotonic w.r.t. its position, namely TP.

(167) a. *When Fred speaks French, exactly forty-two people don't understand something.

b. (167a): [TP ≿1 [exactly forty-two people]$_2$ T [PolP ◣1 **not** something$_1$ t_2 understand t_1]]

There are reasons however to take the counterargument with a grain of salt. It relies on the universally accepted assumption that speakers make no mistakes in the computation of monotonicity. This assumption might not be fully warranted, though. One can construct a complex expression comprising a negative quantifier such that the context created in its scope is not DE. *Not exactly no one* is an example of such a complex non-DE expression; it is a constituent, therefore it counts as an operator and an operator-based approach must take it into account.[51] Although it creates a non-DE context (in another parlance, it is a non-DE operator), *not exactly no one* anti-licenses PPIs and licenses NPIs:

(168) a. ⟦ red car ⟧ ⇒ ⟦ car ⟧

b. Not exactly no one has a car.

c. Not exactly no one has a red car.

d. (168b) ⇏ (168c)

(169) Can you name a time when no one in the family behaved responsibly?

a. *Not exactly no one did something when Mary was in trouble, but she received very little support from her relatives.

b. Not exactly no one did anything when Mary was in trouble, but she received very little support from her relatives.

The truth-conditional meaning of *not exactly no one* is clearly not DE; if it were the following sentence could be uttered truthfully in a context in which students who answer all questions correctly pass the exam (contrary to fact).

[51] I assume that *Not exactly no one* is a constituent with the structure [[[not exactly] no] one]. The two alternative constituencies that come to mind are unsatisfactory. First, suppose that *not exactly* is a modifier at the clausal level: [[not exactly] [$_{TP}$ no one. . .]]. This makes the wrong prediction that the following sentence is felicitous in the envisaged context:

(i) (*Context:* A new legislation is about to be adopted which bans the consumption of alcohol. But there are a few legislative steps remaining. So one can say that at this stage. . .)
#Not exactly no one can drink alcohol.

Second, the constituency [not [[exactly no one] [$_{VP}$]]] runs into the problem that [[exactly no one] [$_{VP}$]] is not well-formed.

(ii) #Exactly no one can drink alcohol.

(170) If you want to pass the exam, you have to make not exactly no mistakes.
[modified from Nouwen 2006]

There is a solid intuition that it is also non-UE, i.e. that (168c) doesn't entail (168b): the reason is that *not exactly no one has a car* seems to mean that a proportion close (but non equal) to 0% owns a car (I propose that we refer to this component of the meaning of *not exactly* as the proximal component, using a term that is traditionally used in the discussion of the meaning of *almost*, cf. Penka 2005, Nouwen 2006), and one can construct a situation in which a very small proportion of people in the domain own a red car, and a large proportion own a car.

Despite the strength of the intuition, I think one should exert caution here: it is reasonable to think that the proximal component is not truth-conditional, but rather is a scalar implicature (which I will not try to derive). Now, if *not exactly* denotes a non-monotonic function (i.e. it is neither DE nor UE, truth-conditionally), we are entitled to think that speakers mistakenly treat the composition $f \circ g$ of a non-monotonic function f and a DE function g (the expression that denotes f precedes the expression that denotes g) as being DE. And we thus expect, by parity of reasoning, that they will also treat as DE the context created by *exactly three people* and negation in (167a). Alternatively, if *not exactly* denotes a DE function, we have found an instance in which speakers are unable to compute the composition of two DE expressions (the result is in fact UE): under this hypothesis, we have evidence that speakers can err in their monotonicity computations, and (167a) might have the properties that lead to sub-optimal computing.[52]

Chemla et al. (2010) have established experimentally that the notion relevant for NPI licensing is *perceived* rather than *actual* downward-entailingness: in other words, the licensing condition is rightly phrased in terms of DEness (this notion is indeed operative), but speakers base their judgments on their perception of monotonicity, which is not necessarily accurate. Further experiments are needed to determine whether speakers perceive the context created under *exactly three* and negation as DE, and similarly for the context created by *not exactly no one.* Pending the results of these investigations, it is imprudent to conclude from (167a) that environment-based approaches are on the wrong track. Operator-related accounts (in particular Szabolcsi 2004) don't fare any better than my theory with regard to (169): if *not exactly no one* is indeed a constituent, it counts as an operator and the licensing pattern is not expected given the non-DEness (therefore the non-Anti-additivity) of that operator.

There is another case where the theory defended here incorrectly predicts that a PPI should be rescued: I have in mind sentences where a weak scalar term should rescue a PPI in its scope by triggering a direct SI (this is not a case that opponents to environments have envisaged).

(171) a. When Fred speaks French, someone doesn't understand something.
*n.s. of SOME

b. $[\![\text{(171a)}]\!]^s = \exists x\, [\text{person'}(x) \wedge \neg\exists y\, [\text{understand'}(x,y)]] \wedge$

[52] Linear order seems to be of the essence, as we have seen that speakers can compute that the combination of negation and a non-monotonic quantifier creates a non-monotonic context, when negation precedes the non-monotonic-function-denoting expression, cf. (111).

$\neg\forall$x [person'(x) $\rightarrow$ $\neg\exists$y [understand'(x,y)]]

If the direct scalar implicature is incorporated into the meaning that is relevant to licensing (just like indirect scalar implicatures are, cf. section 4), sentence (171a) is non-monotonic w.r.t. the PPI, and given our previous conclusions, the PPI should be acceptable on TP. This fact is reminiscent of the lack of anti-licensing by direct scalar implicatures:

(172) a. At most five people people understand anything.
b. *Direct scalar implicature:* Some people understand something.

Chierchia's (2004) solution to this puzzle is, in essence, that direct scalar implicatures are calculated after licensing is checked (in subsequent work, Chierchia derives the facts using two different operators, one for the calculation of scalar implicatures, one for the checking of licensing, cf. Chierchia 2006). Maybe (171a) shows that direct implicatures simply don't enter the computation of licensing of PIs.[53] It might also be that anti-licensing of *some* in (171a) is yet another effect of the failure to perceive as non-monotonic an environment which really is (when the source of non-monotonicity precedes a DE function).

9.2 Deontic *must*

In this paper, I have used the scopal properties of deontic *must* to make an argument in favor of the computation of PI licensing on syntactic domains. The syntactic scope of *must* w.r.t. negation derives from its being a PPI. We expect to witness a polarity clash with NPIs, of the kind that we observed between *any* on the one hand and *some, still,* and *would rather* on the other. The case in point is (173c) with narrow scope *any*, where all domains on which *any* is licensed are domains that contain a PPI in an anti-additive environment.[54]

(173) a. I don't think that John must$_{deon}$ read.
b. I don't think that John must$_{deon}$ read something.
c. %I don't think that John must$_{deon}$ read anything.
d. I don't think that John has$_{deon}$ to read anything.

The evidence is mixed. Some speakers reject (173c) (for them, the only possible reading of that sentence is one in which the modal is interpreted epistemically; it takes wide scope over negation because epistemic *must* is in their dialect—British English—a neg-raiser as it can take semantic scope over a superordinate negation as in *'I don't think John must be very clever'* interpreted as *'I think that John must not be very clever'*). But a majority accept it. At this stage, I can only offer speculations. First, focus seems

[53] This line of reasoning is potentially weakened by some facts which suggest that an implicature might play a role in the rescuing of *some,* discussed in fn. 47 on p. 52.

[54] A clarification is in order here: the verb *think* is a neg-raiser, i.e. it is optionally and preferentially interpreted as having semantic scope over negation. Under this interpretation, strong NPIs are licensed under *think* as they find themselves in an anti-additive environment (they are not licensed under the non-neg-raised interpretation: in that case the complement of the modal is a DE context, which results from the combination of an anti-additive operator and an upward-entailing universal quantifier over possible worlds.)

to play a role. It is possible to give deontic *must* narrow scope under negation with a special accent, for example in:

(174) No one MUST vote.[55]

It is possible that speakers save (173c) from ungrammaticality by placing an accent on *must* that I was not able to properly detect or control for. The alternative explanation I would like to offer is that there might be a categorial ingredient to polarity clashes (the NPIs and PPIs we have considered were all phrasal). The lack of clash between *any* and *must* can actually be likened to a symmetric lack of clash between *some* and the NPI modal *need* even when *some* takes wide scope over *need*.

(175) In such a case, all someone need do is go to the police.

10 Conclusion

Polarity items are sensitive to the monotonicity of the constituents they appear in, as evidenced by flip-flop, by dependency-related phenomena (polarity clashes), by the effects of scalar implicatures, and by the scope of *must*.

Let us recapitulate the main configurations that illustrate the first two kinds of phenomena (E_{DE} stands for 'DE expression'):

1. Flip-flop:

   1.1 With NPIs (in French and in English$_B$):

   $$*[_{\text{CP}} \dots [_{\text{PolP}} \; E_{DE} \; E_{DE} \; [_{\text{CP}} \dots \pi^- \dots]]] \tag{21}$$

   1.2 With PPIs:

   a. $[_{\text{CP}} \dots E_{DE} \dots [_{\text{PolP}} \; E_{DE} \; \pi^+ \dots]]$ (50)
   b. $*[_{\text{CP}} \dots [_{\text{PolP}} \; E_{DE} \; E_{DE} \; [_{\text{CP}} \dots [_{\text{PolP}} \; E_{DE} \; \pi^+ \dots]]]]$ (52b)

2. Dependency:

   a. $*[_{\text{CP}} \; E_{DE} \dots [_{\text{CP}} \; \pi_k^+ \dots [_{\text{PolP}} \; E_{DE} \dots \pi_l^+ \dots]]]$ (64b)
   b. $*[_{\text{CP}} \; E_{DE} \dots [_{\text{CP}} \dots \pi^+ \dots \pi^- \dots]]$ (77b)
   c. $*[_{\text{CP}} \; E_{DE} \dots [_{\text{CP}} \dots [_{\text{PolP}} \; E_{DE} \dots \pi^+ \dots \pi^- \dots]]]$ (86aii)
   d. $[_{\text{CP}} \; E_{DE} \dots [_{\text{CP}} \; \pi_k^+ \dots E_{DE} \dots \pi_l^- \dots]]$ (86aiv)
   e. $[_{\text{CP}} \; E_{DE} \dots [_{\text{CP}} \dots \pi^- \dots [_{\text{PolP}} \dots \pi^+ \dots]]]$ (89b)
   f. $*[_{\text{CP}} \dots E_{DE} \dots [_{\text{PolP}} \; \pi^+ \; \pi^- \;]]$ (109a)
   g. $*[_{\text{CP}} \dots E_{DE} \dots [_{\text{PolP}} \; \pi^- \; \pi^+ \;]]$ (136a)

[55] This accent cannot give *must* narrow scope under a simple negation:

(i) You MUST not vote. *n.s. of MUST

Armed with this knowledge, we have established that *some* is vulnerable to downward-entailingness, and is therefore never licensed in the same domains as *any.* This paves the way for a unification of the NPI and the PPI phenomena: in light of some direct evidence from French, I propose that *any* is the spell-out of a modified PPI and that the fundamental puzzle is: why is *some* unacceptable in DE environments?

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