POSITIVE POLARITY ITEMS: AN ALTERNATIVE–BASED ACCOUNT*

ANDREEA CRISTINA NICOLAE
Harvard University

1 Introduction

The focus of this paper is on the polarity–sensitive indefinite *someone*, whose distribution has been shown by Szabolcsi (2004) to be restricted in ways similar to that of other polarity–sensitive items (henceforth PSIs). Taking her observations as a starting point, I propose that the distributional restrictions of these indefinites, commonly referred to as positive polarity items (henceforth PPIs), can be explained once we couch them in an alternative–based semantics, i.e. Hamblin semantics (Hamblin, 1973). In doing so, we will accomplish three things: (i) offer an analysis of PPIs that can account for their varying distributional restrictions, (ii) capture the connection between PPIs on the one hand, and negative polarity items (henceforth NPIs) on the other, and (iii) provide independent support for the view that the polarity system should be analyzed in an alternative–semantics framework. The paper is organized as follows. Sections 2 and 3 present the distribution of PPIs and the parallels between these items and NPIs. Section 4 introduces an analysis of NPIs couched in an alternative–based framework. In Section 5, I propose an analysis of PPIs that allows for a sensible integration of these items within this framework and straightforwardly derives their distributional restrictions. The last section concludes and discusses some open issues.

2 The distribution of PPIs in English

The distribution of PPIs in English has been carefully plotted out by Szabolcsi (2004). This section reviews her presentation of the distributional constraints that *some*–type indefinites exhibit.

2.1 Clausemate negation

PPIs in the scope of clausemate negation can only receive a wide scope reading, as seen in 1. The surface scope reading is unavailable, unless explicitly used in a denial context with a metalinguistic negation, as illustrated in 2.

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(1) I didn't see something.
  a. ✓There is a thing such that I didn't see it. ✓some>not
  b. *There is nothing that I saw. *not>some

(2) A: I heard John talked to someone at the party yesterday.
  B: No, actually. John didn't$_F$ talk to someone.[1]

However, not all negative environments disallow PPIs from their immediate scope at LF, as shown in 3. Descriptively, the operators that *someone* resists scoping under are those that qualify as strongly negative: clausal negation, negative quantifiers and 'without.'

(3) a. John didn't call someone. *not>some
  b. No one called someone. *no one>some
  c. John came to the party without someone. *without>some
  d. I rarely get help from someone. ✓rarely>some
  e. At most five boys called someone. ✓at most>some
  f. Few boys talk to some girls. ✓few>some

In addition to the cases in 3(d-f), also note that PPIs are allowed to take narrow scope with respect to an extra–clausal negation. I illustrate this in 4.

(4) a. I don't think that John called someone. ✓not>[$_{CP}$ some
  b. Nobody thinks that he called someone. ✓nobody>[$_{CP}$ some

To summarize, these indefinites cannot survive in the scope of a strongly negative element such as clausal negation, negative quantifiers and 'without' unless the negative element is extra–clausal.

2.2 Intervention effects

Szabolcsi (2004) further observes that PPIs can scope below a local negation as long as the indefinite is not in the immediate scope of the negative operator. In 5 the universal quantifiers 'every' and 'always' intervene at logical form between the negative operator and the indefinite.

(5) a. Not every student said something. ✓not>every>some
  b. John didn't say something at every party. ✓not>every>some
  c. John doesn't always call someone. ✓not>always>some

2.3 Rescuing effects

Lastly, note that an otherwise infelicitous structure (*neg>some) can be rescued if it is embedded in a negative environment, regardless of the strength of the negative operator.

(6) a. I don't think that John didn't call someone. ✓not>not>some
  b. I doubt that John didn't call someone. ✓doubt>not>some
  c. I'm surprised that John didn't call someone. ✓surprise>not>some
  d. Only John didn't call someone. ✓only>not>some

[1] I use the subscript F to represent a focused element.

These distributional restrictions call for a comparison between PPIs and NPIs given the fact that the contexts that license NPIs overlap with those that disallow, or "anti–license," PPIs. The next section presents an overview of these parallels.

3 Parallels between PPIs and NPIs

This section offers a side-by-side comparison of PPIs and NPIs, looking specifically at how these indefinites converge and diverge with respect to their felicity in specific environments.

3.1 Convergence

It is a well–known property of NPIs that they are only acceptable in the scope of a downward entailing (DE) operator (Kadmon and Landman, 1993).[2] DE expressions guarantee the validity of inferences from general statements to more specific statements, i.e. from sets to subsets. They contrast with upward entailing (UE) expressions which only allow inferences from subsets to sets. In other words, DE–expressions reverse entailment patterns. When *any*, an NPI, appears in a DE environment, the only possible reading is that of an existential indefinite in the scope of negation. This reading is ruled out when PPIs, also existential indefinites, occur in the scope of negation.[3]

(7) a. I didn't see anything/*something.
    b. Nobody brought anything/*something.

These data show that both NPIs and PPIs are sensitive to the monotonicity of their environments, albeit in opposite ways: NPIs can only occur in the scope of a DE operator, while PPIs cannot.

These indefinites also converge with respect to the effect of intervening quantifiers. NPIs become ungrammatical in the scope of negation if there are any intervening quantifiers, as first discussed in Linebarger (1980). By contrast, the same elements that disrupt the DE environment required by the NPI can shield PPIs from negation, and thus allow for a narrow scope reading of the indefinite. In other words, both PPIs and NPIs are sensitive to the presence of intervening quantifiers, as shown in 8.

(8) a. John didn't always read *anything/$^{\checkmark}$something.
    b. Anna didn't tell everyone *anything/$^{\checkmark}$something.

3.2 Divergence

While prima facie it looks as though PPIs and NPIs are in complementary distribution, there are certain environments that do not discriminate between these two types of indefinites. One such environment is extra–clausal negation. Unlike for PPIs, the locality of negation is irrelevant for NPI–licensing. In other words, an NPI is licensed in the scope of a DE operator regardless of whether or not they belong to the same clause, contrary to PPIs which only resist narrow scope with respect to a local negation.

[2]What I focus on here are 'weak' NPIs like *any* and *ever*, as opposed to 'strong' ones like *in weeks*. These are the most liberal in their distribution in that they occur in all types of DE environments unlike *in weeks* which is restricted to the scope of anti–additive operators (van der Wouden, 1997).

[3]The '*' here refers to the unavailability of the narrow scope reading of the indefinite.

(9) a. I don't think that John called anyone/someone yesterday.
b. Nobody believes that Bill called anyone/someone.

Next, observe in 10 that NPIs are not sensitive to the presence of a second negation, which is in contrast with the facts presented in 6, where we saw that a second negation can rescue a PPI already in the scope of negation.

(10) a. I doubt that Mary didn't talk to anyone/someone at the party yesterday.
b. Nobody said that Mary didn't bring anything/something to the party.

Lastly, note that the strength of negation is also a point of divergence between polarity sensitive items. NPIs are licensed in the scope of DE operators like 'few' and 'at most five' that are not also anti–additive. On the other hand, PPIs can take narrow scope with respect to these DE operators, as shown in 11.

(11) a. Few people talked to anyone/someone yesterday.
b. At most five people said anything/something to me.

3.3 Interim conclusion

The previous two subsections showed that while PPIs and NPIs are in complementary distribution in some environments, seen in 12a, there are certain contexts where the two types of indefinites overlap, in terms of both their distribution and the overall meaning, as shown in 12b.

(12) a.

Environment	**PPIs**	**NPIs**
[$_{CP}$ ... PSI]	✓	*
[$_{CP}$ neg ... PSI]	*	✓
[$_{CP}$ neg ... Q ... PSI]	✓	*

b.

Environment	**PPIs**	**NPIs**
neg [$_{CP}$ ... PSI]	✓	✓
[$_{CP}$ few ... PSI]	✓	✓
neg ... neg ... PSI	✓	✓

Any analysis that hopes to unify these items would need to address the following issues. In some instances PPIs and NPIs appear to have complementary distributions, suggesting that they are sensitive to the same properties. At the same time, PPIs, but not NPIs, are sensitive to locality restrictions and require the presence of a second DE operator.

In the following section I introduce a new approach to PSIs, one which takes these items to be dependent indefinites that, unlike regular scalar indefinites, obligatorily activate alternatives that need to be integrated into meaning. More specifically, this analysis derives the restricted distribution of these dependent indefinites as a result of the interaction between a syntactic requirement – PSIs need to enter into an agreement relation with an exhaustifying operator – and a semantic requirement imposed by the exhaustifying operator.

4 A unified approach to the polarity system

For the remainder of this paper I adopt an analysis of polarity–sensitive items that takes their restricted distribution to be a product of the interaction between the semantics of these items and the contexts in which they occur, following in large part the work in Chierchia (2011). Before delving into the realm of polarity–sensitive items, however, let's first consider the case of scalar implicatures, a phenomenon closely related to the matter at hand.

4.1 Scalar implicatures & silent exhaustification

The main insight that I will adopt for this analysis is that scalar implicatures (henceforth SIs), should be viewed as a form of exhaustification of the assertion, an approach rigorously defended in Chierchia, Fox, and Spector (to appear). The authors argue that SIs come about as a result of active alternatives and the way the grammar chooses to use up these alternatives, via covert alternative–sensitive operators that must apply at some point in the derivation in order to "exhaust" the active alternatives. Two such operators are assumed to be at work when calculating implicatures: **O** (covert counterpart of *only*) and **E** (covert counterpart of *even*).[4]

(13) a. $\mathbf{O}(p) = p \wedge \forall q \in ALT(p)\ [p \not\subseteq q \rightarrow \neg q]$
(the assertion p is true and any alternative q not entailed by p is false)

b. $\mathbf{E}(p) = p \wedge \forall q \in ALT(p)\ [p \lhd_c q]$ ('$\lhd_c$'=less likely in context C)
(the assertion p is true and any alternative q is at least as likely as p)

Consider the examples below, where the relevant alternatives are brought about by association with focus (Rooth, 1992):

(14) John talked to [a few]$_F$ of the students.

a. Alternatives: {John talked to a few of the students, John talked to many of the students, John talked to most of the students, John talked to all of the students}

b. **O**(John talked to [a few]$_F$ of the students) = John talked to a few of the students and he didn't talk to many/most/all of the students.

(15) A: Was the party well–attended? B: Yes, people were dancing [in the hallway]$_F$!

a. Alternatives: {People were dancing in the hallway, People were dancing in the dining room, People were dancing in the living room}

b. **E**(People were dancing [in the hallway]$_F$) = (People were dancing in the hallway=1) $\wedge$ (People were dancing in the hallway=1 is less likely than People were dancing in the dining/living room=1)

In 14, exhaustification proceeds via **O** and thus it eliminates all non–entailed alternatives, i.e. it negates all statements which, upon replacing the focused element with its alternatives, entail the assertion. Exhaustifying with **E** is more emphatic than exhaustification with **O**, and we can see this in 15 where exhaustifying via **E** strengthens the speaker's assertion by adding the implicature that people dancing in the hallway is less likely than people dancing in any other place.

Focus is not a prerequisite for active alternatives, however. Scalar items, which are lexically endowed with alternatives, are also prone to this type of semantic enrichment. Relevant examples include the elements of a Horn–scale: *<one, two, ...>*, *<or, and>*, *<some, many, all>*, *<few, no>*, *<sometimes, often, always>*. If the context is such that the alternatives are relevant, then they will be activated and thus will have to be factored into the meaning via an exhaustification operator. Take for example 16 where we see that the scalar elements *one* and *or* have the potential to give rise to enriched meanings.

(16) a. I talked to two boys yesterday. $\rightsquigarrow$ I didn't talk to three or more boys.

[4] The only difference between the overt **O** and its covert version is that it asserts rather than presupposes that its prejacent is true. For the purposes of this exposition I will ignore this difference.

b. I talked to Mary or John yesterday. ⇝ I didn't talk to both of them.

Beyond scalar alternatives, scalar items are also optionally endowed with sub–domain alternatives. Fox (2007) convincingly argues for their presence based on the free choice effects observed with disjunction in the scope of possibility modals. That is, aside from the scalar alternative of the disjunction, the conjunction, we also have to take into account its sub–domain alternatives, i.e. the individual disjuncts. Deriving the implicature in 17 would not be possible without also having access to the sub–domain alternatives. I refer the reader to Fox (2007) for the details of how these alternatives are exhaustified so as to derive this implicature.

(17) You can eat ice cream or cake. ⇝ You can eat ice cream and you can eat cake.
   a. $\Diamond$[eat ice cream $\vee$ eat cake] ⇝ $\Diamond$eat ice cream $\wedge$ $\Diamond$eat cake
   b. Scalar–alt: $\Diamond$[eat ice cream $\wedge$ eat cake]
   c. Sub-Domain–alt: $\Diamond$ eat ice cream, $\Diamond$ eat cake

What we saw in this section is that we can derive SIs in a purely compositional way by looking at the interaction between alternatives and the method by which they get factored into meaning. We saw above two sources of alternative activation: focus on the one hand, and the lexical semantics of the scalar item on the other. In the above cases the alternatives, whatever their source, are only optionally available, as is supported by the fact that these SIs are cancelable. This optionality is precisely the dimension along which NPIs, and PSIs more generally, differ from their regular indefinite counterparts — NPIs must obligatorily activate alternatives. This analysis of NPIs, pursued in Krifka (1995) and further advanced by Chierchia (2006) and Chierchia (2011), takes their distribution to be a product of the alternatives they activate and the way the grammar takes these alternatives into account.

4.2 NPIs from an alternative–based perspective

For the purposes of this overview I will focus on NPIs, noting however that this framework is equally capable of accounting for the distribution of free choice items. Krifka (1995) and Chierchia (2011), among others, assume that NPIs are minimally different from regular indefinites in that they obligatorily activate alternatives, which, like all instances of active alternatives, need to be factored into the meaning of the utterance. NPIs are commonly split into two main classes, the *any* type and minimizers like *sleep a wink*. The differences among them can be classified based on the type of alternatives they activate and the method in which these alternatives get factored into meaning. The remainder of this section deals with each type of NPI in turn.

Consider the following dialogue, and in particular B's response which contains the NPI *any*.

(18) A: Did Mary read books during her summer vacation?
   B: No, Mary didn't read any books.

In using an NPI in her response, B conveys the meaning that Mary didn't read any of the books in the domain of discourse. In a sense, this response brings into discussion the existence of all types of books (books about cats, logic, cooking, etc.) and asserts that none of them are such that Mary read them. These "types" of books are precisely the sub–domain alternatives claimed to always be active when an NPI like *any* is used.[5] I take NPIs to be existential indefinites that obligatorily

[5] NPIs also have a scalar alternative, the conjunction of the disjuncts. However, in the scope of negation this alternative will always be weaker, and thus its role in the derivation negligible.

activate smaller domain alternatives. Schematically, the alternatives can be represented as in 19, with D containing three books, and its six sub–domains containing one or two books each.[6]

(19) a. any book = ∃x∈D. x is a book.

b. ALTs: {∃x∈D′. D′⊂D and x is a book}

c.

	a ∨ b ∨ c	
a ∨ b	b ∨ c	a ∨ c
a	b	c

	cat book ∨ logic book ∨ cook book	
cat book ∨ logic book	logic book ∨ cook book	cat book ∨ cook book
cat book	logic book	cook book

Recall the discussion on SIs where it was argued that activating alternatives means having to incorporate them into the meaning. NPIs like *any* do so via the covert operator **O**. Syntactically, one can think of NPIs as involving a form of agreement with this operator: NPIs bear the feature [+D] which must be checked by an operator carrying the same feature. Chierchia (2011) claims that this is precisely what the exhaustifying operator is. In doing so, he encodes the need to exhaustify alternatives in the syntax. Semantically, NPIs must occur in a DE environment in order to satisfy the requirements of the exhaustification operator. This operator targets the alternatives and eliminates them just as long as they are stronger than (entail) the assertion; otherwise exhaustification by **O** is vacuous and simply returns the original assertion. Observe that in the scope of sentential negation the alternatives are all entailed by the assertion, since not reading any book whatsoever entails not reading a specific kind of book. Thus 20 turns out to be interpreted as a plain negative existential statement. In fact, all environments that license inferences from sets to subsets will allow NPIs to appear in their scope since the alternatives (the subsets) are entailed by the assertion (superset), hence the general description of NPI licensors as DE operators.[7]

(20) Mary didn't read any book.

a. Assertion: ¬∃x∈D[book(x) ∧ read(Mary,x)]

b. Alternatives: {¬∃x∈D′[book(x) ∧ read(Mary,x)]: D′⊂D}

c. **O**(Mary didn't read any book) = Mary didn't read any book.

In UE contexts, the alternatives are stronger than the assertion; entailments hold from subsets to supersets since reading a book about cats entails reading any book whatsoever. Since the alternatives entail the assertion, exhaustification by **O** requires them to be negated. Negating these stronger alternatives amounts to saying that for any possible book, Mary didn't read it, which is in clear contradiction with the assertion which says that Mary read a book. So while the syntactic requirement of NPIs is met, i.e. the [+D] feature is checked by **O**, the semantic requirement is not.

Another class of NPIs, discussed largely by Lahiri (1998), consists of those of the "emphatic" variety, exemplified by Hindi *ek bhii* 'even one' and English minimizers *give a damn*, *sleep a wink*, etc. What distinguishes these NPIs from the *any*–type is the fact that they activate not sub–domain alternatives, but rather degree alternatives (e.g. degree of care, of sleep). They also differ in terms of what method of exhaustification they appeal to, namely **E**, which requires the assertion to be the least likely among its alternatives. As with **O**, exhaustification with **E** is contradictory in UE contexts. In these environments, the alternatives entail the assertion since for any $d' > d$, if

[6]I use *a, b, c* as shorthand for the alternatives 'Mary read book a.'

[7]There are certain NPIs that require a stronger form of negation — anti–additivity. This issue is orthogonal to the analysis pursued in this paper, but see Gajewski (2011) for a proposed account.

something is true of d', then it must be true of d, given the monotonic structure of degree semantics. Since the alternatives entail the assertion, the requirements of **E** are not met. In DE, on the other hand, the entailment relations are reversed and the result of exhaustification is semantically coherent since all the alternatives are weaker, and hence more likely than the assertion, as in 21.

(21) Mary didn't sleep a wink.
  a. Assertion: $\neg$sleep(Mary, d_{min})
  b. Alternatives: {$\neg$ sleep(Mary, d')]: $d' > d_{min}$}
  c. **E**(Mary didn't sleep a wink) = $\neg$ sleep(Mary, d_{min}) $\wedge$ $\forall d' > d_{min}$ [$\neg$ sleep(Mary, d_{min})] $\lhd_c$[$\neg$ sleep(Mary, d')]

One see then how these distributional restrictions can be explained straightforwardly as soon as a compositional semantics of NPIs is adopted. Essentially, what such an alternative–based account says is that NPIs are low elements on a scale and, unlike regular indefinites, obligatorily activate alternatives. Their need to be in negative contexts falls out automatically once one looks at the interaction between the types of alternatives being activated and the way they are factored into meaning. For the purposes of this overview I assumed that the different types of PSIs are specified for which exhaustifier is invoked, i.e. they carry either a [+D_E] or a [+D_O] feature, which dictates which exhaustifying operator they can enter a checking relation with.[8] While this choice can be thought of as a form of agreement, the hope is to have a more principled analysis in the end.[9]

5 Integrating PPIs within the polarity system

In this section I turn to PPIs and argue for an alternative–based account of their meaning, similar in nature to that presented for NPIs presented above. I begin by presenting the analysis of PPIs as dependent indefinites and follow by demonstrating how this analysis can straightforwardly explain the distributional restrictions I noted in Section 2.

5.1 PPIs as dependent indefinites: the ingredients

The goal of this paper is to argue that PPIs are just another type of PSI and thus should be offered an account that can be couched in a unified, alternative–based approach to polarity–sensitivity. As reviewed above, the variation among different dependent indefinites can be reduced to two ingredients: the types of alternatives activated and the way they are factored into meaning.

The main claim I want to advance in this paper is that PPIs, like NPIs, have active alternatives that require exhaustification. Unlike NPIs, however, they must activate a different set of alternatives from NPIs, since appealing to sub–domains will not give us the attested distributional patterns. Given the existence of sub–domain alternatives it is not inconceivable that some PSIs activate super–domain alternatives instead.[10] This is precisely the direction I will pursue here. Essentially, we want PPIs to behave like minimal scalar items in the scope of negation. As far as their

[8] Thanks to Hedde Zeijlstra (p.c.) for this suggestion.

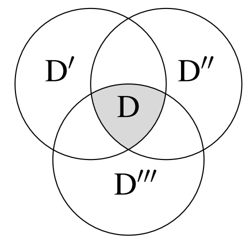
[9] Chierchia (2011) proposes an 'optimal fit' principle that would take **O** as the default exhaustifier unless the alternatives being acted upon are linearly ordered with respect to entailment, as is the case with minimizers.

[10] It remains to be determined if this can be argued for elsewhere in the polarity system, but one place we could begin with is the observation that free–choice items that are otherwise restricted to non–negative modal environments can, if stressed, be embedded in the scope of negation (Fălăuş (p.c.)).

alternatives are concerned, what this means is that they form a sequence of larger domains such that, when negated, each of them entails the assertion. One way to visualize this is as in the figure below in 22 where the smaller the domain, the fewer individuals it contains.

(22) a. DE: entailment ($\Rightarrow$) holds from sets to subsets
$\forall D'.\ D \subset D'\ (\neg\exists x{\in}D'[P(x)]) \Rightarrow (\neg\exists x{\in}D[P(x)])$
all alternatives entail the assertion

b. UE: entailment from subsets to supersets
$\forall D'.\ D \subset D'\ (\exists x{\in}D[P(x)]) \Rightarrow (\exists x{\in}D'[P(x)])$
all alternatives are entailed by the assertion



Turning to the second component of this analysis, I argue that PPIs appeal to the same method of alternative–exhaustification as minimizers do, i.e. via the **E** operator. As discussed in the previous section, there are two different types of exhaustification operators: *any*–NPIs are exhaustified by **O** while minimizers are exhaustified by **E**. Assuming that the choice of operator is encoded in the feature carried by the PSI, I submit that PPIs carry the feature [+D_E] which can only be checked by a c–commanding operator carrying the same feature, i.e. **E**.[11] With these ingredients in place we can now move on to the account of the distributional restrictions presented in section 2.

5.2 Positive environments

We saw before that PPIs are acceptable in any type of positive context, including plain episodic sentences. Consider the example in 23. Whenever a PSI is present in a structure we need to check that both the syntactic requirement – checking the feature on the indefinite – and the semantic requirements – those imposed by the exhaustifying operator – are satisfied.

(23) John saw someone$_{[+D_E]}$.
a. Assertion: $\exists x{\in}D[\text{saw(John,x)}]$
b. Alternatives: $\{\exists x{\in}D'[\text{saw(John,x)}]: D \subset D'\}$

Since PPIs are endowed with the [+D_E] feature, an operator carrying the corresponding feature must be inserted in order to check the PPI's feature, namely **E**. In order for 23 to be semantically coherent, we need to check that the requirements of the **E** operator are satisfied. Recall that exhaustification via the **E** operator results in the assertion that all propositions containing an alternative of the PPI are more likely than the original proposition, with likelihood being defined in terms of entailment (see 24).

(24) $p \lhd_c q$ if $p \Rightarrow q$ and $q \not\Rightarrow p$ (*p is less likely than q if p entails q and q does not entail p*)

Given that the alternatives of the PPI are super–domains and the entailments in 22 say that in UE contexts if something holds true of a domain it will hold true of any super–domain (e.g. *I saw a or b* entails *I saw a or b or c*), it follows that the assertion will entail all the alternatives and thus be less likely than any of them, satisfying the requirement of the **E** operator. I formalize this in 25:

(25) $\mathbf{E}_{[D_E]}$ John saw someone$_{[+D_E]}$ =
$= \exists x{\in}D[\text{saw(John,x)}] \wedge \forall D'.\ D \subset D'(\exists x{\in}D\ [\text{saw(John,x)}]) \lhd_c (\exists x{\in}D'\ [\text{saw(John,x)}])$

[11] I leave it to the reader to verify that exhaustification by **O** would give us the wrong results.

5.3 Clausemate negation

Let's turn next the problematic case of PPIs in the scope of a clausemate negation. Consider the deviant sentence in 26. As before, we need to verify that both the syntactic and semantic requirements are met. The **E** operator is adjoined in order to check the feature on the indefinite, satisfying the syntactic requirement. Semantically however, this configuration is inconsistent given the entailment patters discussed in 22. Consider below what happens when we try to exhaustify.

(26) *John didn't see someone$_{[+D_E]}$.
   a. Assertion: $\neg\exists x{\in}D[saw(John,x)]$
   b. Alternatives: $\{\neg\exists x{\in}D'[saw(John,x)]: D{\subset}D'\}$
   c. $\mathbf{E}_{[D_E]}$ John didn't see someone$_{[+D_E]}$ =
   $= \neg\exists x{\in}D[saw(J,x)] \wedge \forall D'.\ D{\subset}D'(\neg\exists x{\in}D\ [saw(J,x)]) \lhd_c (\neg\exists x{\in}D'\ [saw(J,x)])$

Unlike in the positive case, the alternatives acted upon by the **E** operator are now negated, and thus a contradiction will arise in virtue of the assertion being entailed by the alternatives (e.g. *I didn't see a or b or c* entails *I didn't see a or b*). To reiterate, this is contrary to the requirement of **E**, which calls for the alternatives to be entailed by the assertion, i.e. be more likely than the assertion.

Exhaustification operators are assumed to be propositional and therefore adjoin at the IP level, above the locus of negation. In the case of metalinguistic negation where the PPI can be interpreted with narrow scope as long as the negation is focused, the present analysis would predict that the negation has to undergo movement to a focus position, higher in the clause than the IP, thus allowing for the exhaustification of the PPI to occur below negation where it proceeds coherently.

5.4 Intervention effects

Observe the contrast in 27 where we see that a universal quantifier intervening between the PPI and the negation at LF can rescue the otherwise deviant configuration [neg. . . PPI].

(27) a. *John didn't give Mary something. *neg>PPI
   b. ✓John didn't give everyone something. ✓neg>∀>PPI

The only cases of intervention that have been dealt with in the framework of alternative–based semantics for PSIs are those involving an implicature–inducing element intervening between the DE operator and an NPI. Relevant examples are provided below in 28.[12]

(28) a. John didn't (*always) read any novels.
   b. Anna didn't tell (*everyone) to eat anything.

The proposal, as advanced by Chierchia (2006) and Gajewski (2011), says that in the sentences above universal quantifiers such as *always* and *everyone* disrupt the DE–ness required by the NPI to survive. Being scalar items with the potential of having active alternatives, these quantifiers find themselves in a structural position where they must obligatorily activate their scalar alternatives, i.e. the scope of an exhaustifying operator.[13] Once these alternatives are taken into account, the

[12] Intervention by presuppositional elements is also attested. For details on a possible approach to the integration of presuppositional elements within the domain of interveners, I refer the reader to Homer (2011b) and Chierchia (2011).

[13] I assume this obligatory activation of alternatives is due to a syntactic checking condition which states that whenever an alternative–bearing element finds itself in the scope of an exhaustifying operator its alternatives need to be taken into account in the calculation of implicatures.

previously DE environment created by the negation is no longer DE due to the implicatures brought about by the intervening quantifiers, as shown below.

(29) John didn't always read any novels. $\rightsquigarrow$ John sometimes read any novels.

In effect, what happens in this case is that the NPI ends up being exhaustified in an UE environment, which results in semantic deviance.

Returning to the cases involving PPIs and intervention, I will now show how this analysis carries over. Unlike with NPIs, an intervening universal rescues the otherwise illicit configuration, allowing the PPI to scope under the negation. As before, the idea is that the universal quantifier, being in a DE context, gives rise to an SI that reverses the entailment inferences, from DE to UE.

(30) John didn't always call someone. $\rightsquigarrow$ John sometimes called someone.

We see then that once the SIs of the quantifier are taken into account, the PPI finds itself in a UE context, a context that allows for the consistent exhaustification of the PPI.

5.5 Extra–clausal negation

A crucial characteristic that distinguishes PPIs from NPIs is the fact that PPIs, and not NPIs, exhibit what appears to be a locality restriction. I repeat the relevant data below where we see that the locality of negation with respect to the PPI is critical to the availability of a narrow scope reading.

(31) a. John didn't hear someone. *neg>some
b. I don't think that John heard someone. ✓neg>[$_{CP}$ some

This locality restriction can be shown to fall out immediately under this present approach which takes the distribution of PPIs to be the result of their semantic and syntactic requirements. The reason why the PPI can be interpreted as a narrow scope indefinite in 31b but not 31a rests on the fact that the exhaustification operator can adjoin below the negation in 31b but not in 31a, allowing the PPI to be interpreted as a regular indefinite in the former but not the latter. Given that **E** is an IP–level operator, in the case of an extra–clausal negation there exists an intermediate position above the PPI and below the negation where **E** can adjoin, a position not available with clausemate negation. In other words, we have the following LF scope relations for these cases:

(32) a. scope relations at LF for 31a: E > neg > PPI $\rightarrow$ semantic deviance
b. scope relations at LF for 31b: neg > E > PPI $\rightarrow$ narrow scope reading

Let's consider in more detail what happens in 31b. The PPI *someone* carries the [D_E] feature which needs to be checked by an operator carrying the same feature, namely **E**. Syntactically, this operator could enter the derivation at any IP–level position above the PPI. Semantically, however, it needs to be lower than negation, otherwise the requirements of the **E** operator would not be satisfied since the alternatives of the PPI, if negated, would all be stronger and thus less likely than the assertion. In the case of 31b, **E** can adjoin at the IP–level of the embedded clause, above the PPI and yet under the negation. Once exhaustified, the PPI's assertive component will be equivalent to that of an indefinite, and 31b will end up being interpreted as having an indefinite in the scope of negation. In 31a, on the other hand, the IP–level where **E** can adjoin ends up being above the negation, and as discussed in detail in the previous section, this 'E > neg > PPI' configuration leads to a semantic crash. The reason why the NPIs I have considered so far do not exhibit similar locality restrictions is because in their case, the semantic requirement is satisfied as long as the exhaustification operator can adjoin higher than the negation, a condition which will never be incompatible with the syntactic requirement.

5.6 Other DE environments

Given the analysis I presented up to this point, one would be in a position to draw the following descriptive generalization regarding the distribution of PPIs: any clausemate entailment–reversal operator, i.e. DE operator, precludes PPIs from taking narrow scope. However, looking at the data below one can see that this generalization falls apart since another environment where NPIs and PPIs overlap in their distribution is in the presence of DE operators such as ‘few’ and ‘at most five.’

(33) a. Few/at most five students talked to anyone yesterday. ✓few>anyone
b. Few/at most five students talked to someone yesterday. ✓few>someone

In subsection 5.3 I showed that in the presence of clausemate negation, a DE operator, PPIs cannot have a narrow scope reading. Since ‘few’ is a DE operator, we would expect PPIs to exhibit similar behavior in the scope of this operator as well, contrary to the data in 33. If we look back at the account I provided for extra–clausal negation, we can see why this generalization breaks down. The reason has to do with the fact that DE operators such as ‘few’ on one hand, and ‘not’ on the other, occupy different positions in the clause. More specifically, while sentential negation occurs somewhere between the IP and VP level, i.e. lower than the target of adjunction of **E**, operators such as ‘few’ and ‘at most five’ are generated in the subject position, meaning that the nominal constituent which contains them must undergo EPP–driven movement to a position higher in the clause, above the adjunction target of **E**. We see then that the difference between these two classes of operators is not due to a semantic divide (DE versus anti–additive operators), but rather to their syntactic position. ‘Few’ and the like are interpreted high enough in the clause that the exhaustifying operator can adjoin and check for semantic consistency below them, in an UE context where no deviance arises.[14]

5.7 Rescuing by negation

In this section I discuss the rescuing by negation facts. We see that if we further embed the sentence in 34 in a DE context as in 35, and then proceed with the exhaustification, the result will be consistent. Being embedded under two DE operators is equivalent to being in a positive environment since the entailment relations are restored. Given that the alternatives are super–domains, the requirements of **E** are satisfied as every alternative is weaker and thus more likely than the assertion. The derivation is illustrated below.

(34) John didn’t see someone$_{[+D_E]}$. *neg>some

(35) I doubt that John didn’t see someone$_{[+D_E]}$.[15] ✓neg>neg>some
a. Assertion: $\neg(\neg\exists x{\in}D[saw(John,x)])$
b. Alternatives: $\{\neg(\neg\exists x{\in}D'[saw(John,x)]): D\subset D'\}$

[14] We know independently from scope interactions that quantified subjects are interpreted in the highest position and do not reconstruct to their base position except to produce an inverse scope reading.

[15] ‘Doubt’ creates a DE environment, as supported by its ability to ‘license’ NPIs.

c. $\mathbf{E}_D$ [I doubt that John didn't see someone$_{[+D]}$] =
= $\neg(\neg\exists x{\in}D[saw(John,x)]) \wedge \forall D'.D{\subset}D'\ (\neg(\neg\exists x{\in}D\ [saw(John,x)])) \lhd_c$
$(\neg(\neg\exists x{\in}D'\ [saw(John,x)]))$
= $\exists x{\in}D[saw(John,x)] \wedge \forall D'.D{\subset}D'\ (\exists x{\in}D[saw(John,x)]) \lhd_c (\exists x{\in}D'\ [saw(John,x)])$

It's worth noting that the second layer of negation does not have to be a sentential negation as long as it can support entailment–reversal inferences. So while *few* and *at most five* are ruled out as PPI "anti–licensers" on syntactic grounds, i.e. not being low enough to disallow an operator from exhaustifying the PPI directly, they do qualify as good rescuers since they have the capacity of reversing the entailment inferences, and therefore feed a consistent exhaustification via **E** as long as the operator is adjoined higher than them. The idea is that any higher DE operator will be able to reverse the entailment inferences and revert back to a situation where the alternatives are all entailed by the assertion, as imposed by the exhaustifying operator.

Lastly, it appears that DE operators are not the only ones capable of salvaging an otherwise illicit configuration. Homer (2011a) presents the data in 36 as evidence against an analysis à la Szabolcsi's "double licensing" which takes PPIs to be rescued by two stacked NPI–licensers.

(36) a. I'm glad you didn't buy me something. glad>neg>some
b. I hope he didn't steal something. hope>neg>some
c. Make sure that he didn't steal something! make sure>neg>some

Prima facie it appears to be the case that *glad*, *hope* and *make sure* are not DE and thus cannot license NPIs. Crnič (2011), however, notes that overt instances of *even* are often attested in the scope of non–negative desire statements, as well as in imperatives. He even goes so far as showing that these types of operators can also license stressed *any*, which according to Krifka (1995) should be analyzed as being exhaustified via **E**. The relevant examples are provided in 37.

(37) a. I hope to someday make even ONE video of that quality.
b. Show me even ONE party that cares for the people.
c. I am glad that ANYONE likes me.

The details of Crnič's analysis are beyond the scope of this paper, but in a nutshell, his analysis shows that if we allow *even* to scope above the relevant operators (whether in its overt or covert instantiations), the interaction between its semantics and that of the desire and imperative operators will yield consistent inferences, i.e. have the prejacent be less likely than its alternatives. What this means for the present analysis is that inserting **E** above these operators will allow for consistent exhaustification of the PPI since, in effect, this analysis predicts that the 'neg > PPI' configuration will behave like an NPI in need of exhaustification by **E**.

Given that in the current analysis the acceptability of PPIs rests on their ability to be consistently exhaustified via **E**, the data in 36 are not only consistent with this alternative–based account, but in fact offer independent support for the choice of exhaustifier (**E** over **O**).

6 Conclusion

In this paper I have argued that PPIs can and should be integrated into the more general polarity system by adopting a framework that analyzes the dependency of these items as an interaction between their lexical semantics, activation of super–domain alternatives, and the method in which they compose with the other elements of the structure, by exhaustification via a covert operator **E**. Adopting this analysis allows us to account for the distributional differences noted in Sections 2 and 3, namely a PPI's behavior with respect to negation, the syntactic position of an entailment–reversing operator, intervention and rescuing facts. This proposal enables us to see what PPIs have in common with, and how they differ from other polarity sensitive items. Future research needs to probe further into the distribution of exhaustification operators and provide independent support for the claim that they should be analyzed as IP–level operators. This paper has also not touched upon cross–linguistic variation within the domain of PPIs, an area which will undoubtably shed more light on this topic.

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