

FOCUS AND THE LICENSING OF NEGATIVE POLARITY ITEMS

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1. What is a Negative Polarity Item?

This paper deals with the distribution and interpretation of negative polarity items (NPIs). An NPI is an expression that occurs naturally in negated contexts, but not in corresponding non-negated contexts.

- (1) a. John didn't *lift a finger* to help Lucy move.
b. Mary doesn't have *any idea* how to sew a costume.
c. Phil hasn't *ever* been to Yemen.
d. Bart didn't earn *one thin dime* selling Christmas cards.
- (2) a. *John *lifted a finger* to help Lucy move.
b. *Mary has *any idea* how to sew a costume.
c. *Phil has *ever* been to Yemen.
d. *Bart earned *one thin dime* selling Christmas cards.

The licensing contexts for NPIs are broader than strict syntactic negation.

- (3) a. John regrets that he *lifted a finger* to help Lucy move.
b. Few people have *any idea* how to sew a costume.
c. Has Phil *ever* been to Yemen?
d. Bart hardly earned *one thin dime* selling Christmas cards.

Krifka (1991) lists the following licensors for NPIs:

- certain quantified NPs (such as *few people*)
- certain determiners (such as *every*)
- certain modal operators (such as *hardly*)
- the protasis of conditional sentences
- adversative predicates (such as *regret*)
- the standard clause of comparative and excessive constructions
- grading particles (such as *only*)
- certain temporal conjunctions (such as *long after*)
- generic sentences (e.g. *Any tourist who visits Yemen enjoys the country.*)
- questions (e.g. *Do you know any professors from Pennsylvania?*)
- offers (e.g. *You can help yourself to any food in the refrigerator.*)
- commands (e.g. *Pick up any trash you see in the yard.*)

In section 2 of this paper, I will present an overview of the current account for the licensing and interpretation of NPIs. In section 3, I will indicate some problems for the current theory, and in section 4, I will propose a supplement to the current theory to solve the problems introduced in section 3.

2. NPI Theories: Downward-entailment and Scalar Implicature

The basic account of NPIs, following Fauconnier (1975) and Ladusaw (1979), relies on the notions of downward-entailment, scalar implicature, and informativity. In sections 2.1.–2.3. I will describe three basic assumptions which taken together can explain the occurrence and interpretation of NPIs in some contexts.

2.1. Scalar Implicature

The first assumption is that the common knowledge shared by native speakers of a language includes various scales which speakers can use to reason deductively. Some possible scales are given in Figure 1.



Figure 1

NPIs are represented as minimal elements of such scales. It is not necessary that speakers agree on the entire structure of such a scale, it is sufficient that they agree on the question of which NPIs belong to which scales. For example, it is not necessary that all speakers agree on the relative ranking of different elements of the scale of *Effort Expended*, as long as they agree that 'lift a finger' is the minimal element of that particular scale.

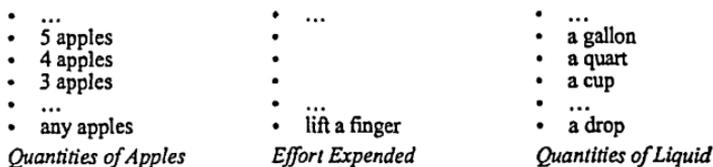


Figure 2

Furthermore, it is not necessary that the scales be linear, nor that they refer to quantities, although the ones I've represented here are. The following scale represents a taxonomy of types of apples.

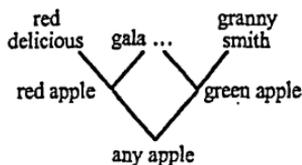


Figure 3

Now, several observations can be made about such scales. In a 'normal' context F , for all $y < x$ on some scale, if $F(x)$ is true, then $F(y)$ is true. So, for example, the truth of (4) guarantees

the truth of (5) below. In addition, an assertion $F(x)$ is stronger (more informative) than an assertion $F(y)$ for all $x > y$. So in a context where both (4) and (5) are true, a speaker makes a stronger assertion by uttering (4).

- (4) John ate *four apples*.
 (5) John ate *three apples*.

The same relationships hold between (6) and (7). When (6) is true, (7) must be true, and (6) is the more specific (stronger) assertion of the two.

- (6) John ate a *granny smith apple*.
 (7) John ate a *green apple*.

Now, if z is an NPI, and if NPIs are indeed minimal scalar elements, then $F(z)$ will be the *least informative* assertion based on F .

2.2. Downward-Entailingness

The following is a definition of downward-entailing contexts based on Krifka (1991).

A term is in a DE context in an assertion sentence if and only if it can be replaced by a semantically stronger (i.e. more restricted) expression without changing the truth of the sentence.

In (8) and (9) we see that the term *never* introduces a DE context.

- (8) John has never eaten *ice cream*.
 (9) John has never eaten *strawberry ice cream*.

This is so since, when we replace the term *ice cream* with the more restricted *strawberry ice cream* the truth of the sentence is unchanged, since the truth of (8) guarantees the truth of (9).

In a downward-entailing (DE) context, scales are in effect reversed. This can be formalized as follows:

In 'normal' contexts: $F(x) \ \& \ y < x \Rightarrow F(y)$
 In DE contexts: $F(x) \ \& \ y > x \Rightarrow F(y)$

- (10) John didn't eat *three apples*.
 (11) \Rightarrow John didn't eat *four apples (five apples, six apples, ...)*.

So if z is an NPI, and F is DE, $F(z)$ is the *most informative* assertion based on F .

2.3. Informativity

Given the above notions of DEness and Scalar Implicature, if we add a Gricean maxim requiring informative utterances, we can correctly predict the occurrence of NPIs in DE contexts making strong assertions, and the nonoccurrence of NPIs in non-DE contexts. So for example the NPI *anyone* in (12) is licensed since it occurs in a DE context (embedded under the negation in

didn't); furthermore (12) makes a very strong (i.e. informative) claim: the hearer can substitute any more specific value for *anyone* and correctly conclude that the proposition would remain true (e.g. I didn't see *anyone* \Rightarrow I didn't see *Mr. Smith*). In contrast, *anyone* is not licensed in (13), as the context is non-DE, and consequently the claim made is too weak to pass the Gricean standard of informativity.

- (12) I didn't see *anyone* downtown today.
 (13) *I saw *anyone* downtown today.

2.4. Conclusion

The occurrence of NPIs in some contexts can be explained based on the notions of DEness, scalar implicature, and informativity. In what follows I will refer to this account as the DE/SI account.

3. Problems for current Theories

In this section I will point out two shortcomings of the DE/SI account of NPI licensing. The first is a predictive failure, an environment where NPIs do in fact occur, but where DE/SI fails to predict that they could. The second is not a predictive failure, but rather a failure to capture a generalization about the behavior of a certain type of NPI, namely those formed with the quantifier *any*. These two shortcomings will indicate that the DE/SI account must at least be modified to account for natural language use of NPIs.

3.1 NPIs in non-truth-conditional utterances

The occurrence of NPIs in questions, as in (14), poses a problem for the DE/SI account of NPI licensing.

- (14) Has John eaten *any ice cream*?

DEness is defined in terms of *truth conditions*, which reflect the meaning of declarative utterances. But the meaning of interrogative utterances is modeled in terms of *answerhood conditions*. The substitution from (15) to (16) of *strawberry ice cream* for *ice cream* is parallel to that in (6) and (7) above. But we cannot apply the same test for DEness that we applied to (6) and (7). (i.e. "If (15) is true, can we say that (16) is necessarily true?")

- (15) Has John eaten *ice cream*?
 (16) Has John eaten *strawberry ice cream*?

An obvious solution to this problem would be to modify the notion of DEness to make it well-defined for interrogatives as well as declaratives. The following is an initial attempt:

A term is in a DE context in an assertion/interrogative sentence if and only if it can be replaced by a semantically stronger (i.e. more restricted) expression while preserving the truth/answerhood conditions of the whole expression.

Take U(X) to mean an utterance U with some subexpression X, and y(X) to mean X restricted by a modifier y. The test for DEness is now the following:

- a. If the meaning of U is modeled by truth conditions,
then X is in a DE environment in U
iff $\text{TRUE}[U(X)] \Rightarrow \text{TRUE}[U(y(X))]$.
- b. If the meaning of U is modeled by answerhood conditions,
then X is in a DE environment in U
iff any answer to U(X) is also an answer to U(y(X)).

Now let us apply this test to the environment in (15). In this case,

- U(X) = Has John eaten *ice cream* ?
y(X) = *strawberry ice cream*
U(y(X)) = Has John eaten *strawberry ice cream* ?

We find that the environment in (15) does not count as DE, as an answer to (15) does not necessarily resolve the question in (16) (It does so only in the negative case). So even with this extended notion of DEness, we find that the DE/SI account does not correctly predict the occurrence of NPIs in questions.

3.2 Polarity-Sensitive *any* and Free-Choice *any*

One way that NPIs are formed in English is through the use of the quantifier *any*. Expressions of the form *any CN*, where CN is a common noun, can occur in all of NPI environments listed in section 1 above. It has been observed that there seem to be two semantically different *any*'s: polarity-sensitive *any* (PS *any*) and free-choice *any* (FC *any*). PS *any* is usually associated with an existential reading, whereas FC *any* is usually assigned a universal reading. This can be seen in the sentences in (17), whose meanings are roughly represented in (18).

- (17) a. I didn't see *any* apples. (PS *any*)
b. I would dance with *any* woman. (FC *any*)

- (18) a. $\neg \exists x [\text{apple}(x) \ \& \ \text{I saw } x]$
b. $\forall x [\text{woman}(x) \rightarrow \text{I would dance with } x]$

The following are observations about FC *any* are made by Carlson (1981) and Kadmon and Landman (1993).

- FC *any* requires stress
- FC *any* is licensed in a wide variety of contexts
- FC *any* can be modified by *almost*, whereas PS *any* cannot.
- *any* in some contexts is ambiguous between PS and FC *any*
- *any* exhibits the same range of quantificational force as *a/an* (i.e. universal and existential readings)
- *any* functions to 'widen' the meaning of a common noun.

4. Solution: Focus as a supplementary licenser of NPIs

In this section I will offer two kinds of evidence to support a connection between NPI licensing and Focus. In 4.1. I will show that NPIs are not licensed in questions without also being

focused. In 4.2, I will show that, contrary to the claims of Kadmon and Landman (1993), *any* is neither necessary nor sufficient to induce widening. Finally, in 4.3, I will show that the unique characteristics of FC *any*, including widening, can be explained as consequences of being under focus.

4.1 Focus is necessary for the felicitous use of *any* in questions

Rochemont (1986) points out that normal question/answer pairs share the same focus.

- (19) a. [Who]_F came to the party?
 b. [John]_F came to the party.
 c. *John came to the [party]_F

Despite the fact that *wh*-words (such as *who* in (19.a)) are not normally stressed in English, they are usually considered to be focused. Theoretical support for this comes from the fact that questions introduce background/focus structures, with the background formed by the sentence with an open variable at the position of the *wh*-word. Empirical support comes from languages which have a focus position, such as Basque or Hungarian. In such languages *wh*-words are moved into the focus position. The fact that *wh*-words are not normally stressed in English may be due to their pronominal nature.

In (20) we see that natural responses may select alternatives to the focused element in a yes/no question.

- | | |
|--|---|
| (20) a. Did John help you move? | Yes/No. |
| b. Did John help you [MOVE] _F ? | No, he helped me [PACK] _F |
| c. Did John help [YOU] _F move? | No, he helped [MARY] _F move. |
| d. Did John [HELP] _F you move? | No, he [WATCHED] _F me move. |
| e. Did John [HELP YOU MOVE] _F ? | No, he [WENT TO THE MALL] _F |
| f. Did [JOHN] _F help you move? | No, [PHIL] _F did. |

In addition, notice that any of the responses in b-f are natural responses to the question in a, which does not have focus on any element. This is so because the hearer can naturally reinterpret a as one of the other questions in (20).

In (21), although *lift a finger* may be unstressed, it nevertheless must be in focus, as responses which select alternatives to *lift a finger* are natural, whereas those which select alternatives to other sentential elements are not.

- (21) a. Did John lift a finger to help you?
 b. Well no, he didn't
 c. Yes; as a matter of fact he [carried boxes for over 2 hours]_F
 d. *No, [PHIL]_F did.
 e. *No, he did it to help [MARY]_F

In this case the hearer cannot reinterpret the question with focus on some element other than *lift a finger*, and consequently the responses in (d) and (e) are unnatural.

In the following questions, *anyone* is focused, as answers referring to elements other than

anyone are unnatural.¹

- (22) a. Did John mail packages to anyone?
 b. Yes, to [BILL, TED, AND MARY]F.
 c. ?No, he [SHIPPED]F them.
 d. ?No, [PHIL]F did.
- (23) a. Did anyone help you?
 b. Yes, BILL (did).
 c. ?No, someone helped Mary.

Pragmatically, NPIs of the form *any CN* have a similar function in questions as to *wh*-words: they mark elements about which the questioner wants more information. The response in (24.c) would be deemed at best uncooperative.

- (24) a. Did you do anything this morning? [VP do anything]F
 b. I went to the store.
 c. ?Yes.

4.2. Focus, *any*, and widening

Kadmon and Landman claim that the semantic function of *any* is to widen the denotation of a common noun along some contextually specified parameter.

- (B) WIDENING In an NP of the form *any CN*, *any* widens the interpretation of the common noun phrase (CN) along a contextual dimension.

In the following example based on Kadmon and Landman, speaker A is conversing with speaker B, a cook for a group of 50 people.

- (25) A: Will there be French fries tonight?
 B: No, I don't have potatoes.
 A: Don't you have even a couple of potatoes that I could take and fry in my room?
 B: Sorry, I don't have ANY potatoes.

According to Kadmon and Landman, in B's first utterance, 'potatoes' refers only to large quantities of potatoes (large enough to make French fries for the whole group). In B's second utterance, B 'widens' the meaning of 'potatoes' to include even small quantities of potatoes.

4.2.1. *Any* is not sufficient to induce widening

Unstressed *any* can occur in an NP without inducing widening.

¹ The responses given are possible responses to the question, but they seem more like corrections than answers. They would be expected in a discourse such as the following:

- i. a: Did John mail packages to anyone?
 b: No, (you have it wrong), he SHIPPED them.
 a: Yes, well anyway, who did he ship them to?

- (26) A: Will there be French fries tonight?
 B: No, I don't have any potatoes.
 A: Don't you have even a couple of potatoes that I could take and fry in my room?
 B: Well sure, there's one or two back in the pantry; you can help yourself.

In appropriate conversational contexts B's initial response could mean either that B doesn't have enough potatoes (as in (26)) or that B has no potatoes (as in (27)).

- (27) A: Will there be French fries tonight?
 B: No, I don't have any potatoes.
 A: Don't you have even a couple of potatoes that I could take and fry in my room?
 B: Sorry, I don't have ANY potatoes.

The data in (27) suggest that it is not the term *any*, in and of itself, but rather stress on *any* which induces widening.

4.2.2. *Any* is not necessary to induce widening

Above I've demonstrated that occurrence of *any* is not a sufficient condition for widening. Now I will attempt to show that *any* is also not a necessary condition for widening. The following examples show that the widening induced by *any* can be indicated in other ways.

- (28) A: Will there be French fries tonight?
 B: No, I don't have potatoes.
 A: Don't you have even a couple of potatoes that I could take and fry in my room?
 B: NO, I DON'T HAVE POTATOES!
- (29) A: Will there be French fries tonight?
 B: No, I don't have any potatoes.
 A: Don't you have even a couple of potatoes that I could take and fry in my room?
 B: Sorry, I don't have any potatoes AT ALL.

The following example, based on Kadmon and Landman's (39), shows widening from a qualified term (*dry match*) to an unqualified term (*match*).

- (30) a. If you take a dry match and strike it, it lights.
 b. If I take ANY match and strike it, it lights!

I assume a form of specificity lattice similar to the polarity lattices of Krifka (1991). Terms at higher nodes are more specific, those at lower nodes are less specific. The term *ANY match* in (30.b) is used in contrastive focus to move down the lattice to make a more general statement.

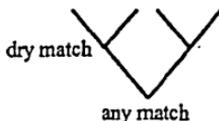


Figure 4
 Specificity Lattice for the Term *any match*

Example (31) shows the same type of widening without the occurrence of *any*.

- (31) a. If you take a dry match and strike it, it lights.
 b. If I take a WET match and strike it, it lights!

In this case the widening is introduced by the stress on the adjective *wet*. In the context of the discourse, (31.b) gets the same interpretation as (30.b). This widening seems to be triggered by (i) conversational principles and (ii) the structure of the polarity lattices introduced by terms such as *dry match* (generally, terms built with complement adjectives.) Normal conversational principles allow (or cause) unchallenged assertions to be added to the common ground. So (31.a) is added to the common ground, since it is not denied. Now, the term *dry match* introduces a (contextually specified) binary split in the bottom level of the specificity lattice for match.

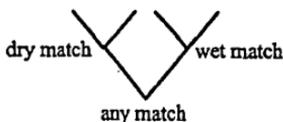


Figure 5
 Specificity Lattice for *any match*
 with a binary split for *wet/dry*.

Now there are two different ways to exhaust the lattice in Figure 7. The first is to make an assertion by referring to the minimal element, as in (32). The second is to make two separate assertions referring to the two nodes immediately above the minimal element, as in (33).

- (32) If I take any match ...
 (33) a. If I take a dry match ...
 b. If I take a wet match ...

In (31), the speaker of (a) makes a statement which goes unchallenged and so it is allowed to stand. Then the speaker of (b) makes an additional assertion. These two statements together exhaust the polarity lattice, with the same result as if (30.b) had been uttered.

These situations seem semantically similar to the 'unconditionals' discussed by Zaefferer (1991).

- (34) a. Whether you like it or not, I won't permit smoking here.
 b. Ready or not, here I come!

The protases of these conditionals could logically be rephrased as "in any case" or "in any event". They are similar in that by referring to two complementarily exhaustive elements, the speaker achieves the same result as by referring to the minimal element

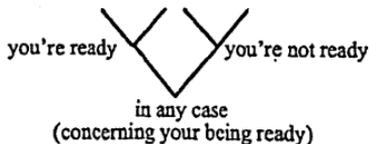


Figure 6
 Lattice Structure for Unconditional
 "Ready or not, ..."

4.2.3. The role of Focus

We saw in 4.2 that the behavior of unstressed *any* was different from that of stressed *any*. What is the role of stress in the assignment of widening readings? Kadmon and Landman claim that "*any* cannot be truly dissociated from its widening feature" and that "emphatic or major stress is neither sufficient nor necessary for the widening observed with *any*". In section 1 I showed that *any* can in fact be dissociated from widening. In this section I will discuss Kadmon and Landman's evidence against associating widening with stress and conclude that widening is the result of the interaction between focus and the polarity lattice introduced by a term *any CN*.

One of Kadmon and Landman's main points is that "...while stressed *any* seems to always indicate widening, stress on *every* is sometimes entirely unable to express anything like widening." As evidence they give the following two examples (their 41-42).

- (35) Every match I strike lights. —Not ANY match, of course, a wet one doesn't.
 (36) #Every match I strike lights —Not EVERY match, of course, a wet one doesn't.

My first observation here is that (35) can be quite natural discourse in English, provided the correct intonation pattern on *every*. Nevertheless, I think that both of these sentences exhibit something other than widening, in that in each the speaker changes his assertion. Consider the following two examples.

- (37) An owl hunts mice. Not ANY owl, of course—sick ones don't—but still, an owl hunts mice.
 (38) An owl hunts mice. Not EVERY owl, of course—sick ones don't—but still, an owl hunts mice.

In both of these, the speaker simply clarifies his meaning (forcing the intended interpretation on the hearer) and this is precisely what we have called widening. It is clear that the speaker does not change his meaning, as he repeats the initial assertion at the end. Both utterances of the assertion must be interpreted according to the clarification. In contrast, (35) and (36) do not exhibit widening, in that the speaker does not clarify, but rather corrects his statement, making a different assertion in the end. This is not to say that the two sentences must have the same meaning; (36) does seem to sound more like a correction than (35). But this difference cannot be attributed to widening. In an extended context both of them must be taken as corrections. In effect, the speaker retracts something of the force of his initial statement, leaving a different assertion. This is verified in the following extended discourses.

- (35') Every match I strike lights. —Not ANY match, of course, a wet one doesn't. *But still, every match I strike lights.
 (36') Every match I strike lights —Not EVERY match, of course, a wet one doesn't. *But still, every match I strike lights.

It seems that the unavailability of widening in (35) and (36) is due to the use of *every* to introduce the CN *match*. This prohibits any real widening, whereas in (37) and (38) widening is available, since the CN *owl* is introduced by the term *an owl*.

In this section I have shown that widening cannot be formulated apart from stress, as it is stress on *any* that induces widening.

4.3. Focus explains unique characteristics of Free-choice any

- FC *any* requires stress because it is nothing more than an instance of *any* licensed by focus. Consider the following example.

(39) I would pet ANY kitten.

By uttering this, the speaker contrasts this proposition with alternative propositions using other terms on the specificity lattice given in Figure 5.

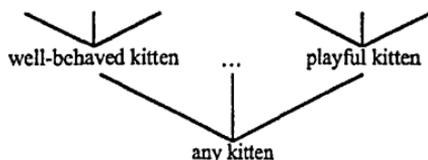


Figure 7
Lattice Structure for the term *any kitten*

So the speaker of (39) makes the most general assertion, contrasting it with all more specific assertions of the form *I would pet X*, where *X* is some alternative term on the lattice.

- FC *any* is licensed in a wide variety of contexts since it is restricted not by syntactic position, but by ability to be focused.
- Modifiers of FC *any*, such as *almost*, are licensed as focus-sensitive operators. Focus-sensitive operators, such as *even*, require that there be some focused element in their scope.

(40) a. I would dance with almost ANY woman.
 b. Almost ANY lawyer could tell you that.
 c. I don't have (*almost) any potatoes.
 d. I regret that I gave you (*almost) any money to begin with.

Relatively free word order suggests that *almost* and *even* are sentence level operators which associate with a focused element.

(41) a. Phil would dance with ANY woman, almost.
 b. Phil would almost dance with ANY woman.
 c. Phil almost would dance with ANY woman.
 d. Phil would even dance with a TALL woman.
 e. Phil would dance with even a TALL woman.
 f. Phil would dance with a TALL woman, even.
 g. *Phil would dance with a TALL woman, very.

- The FC/PS ambiguity arises since *any* within an affective context can also be focused.

Those instances where *any* is licensed by focus are also the instances where *almost* can occur. In cases where *any* can be dually-licensed (e.g. by an affective context and by focus), the use of *almost* improves with heavy stress (perhaps indicating focus as the 'primary' licenser).

(39) a. I didn't get almost ANY of the Cap'n Crunch, and now it's gone!
 b. I hate that supermarket—they didn't charge me right for almost ANY thing!

5. Conclusions

In this paper I have shown how DE/SI accounts for NPIs in some contexts, (e.g. negation, quantified NPs, etc.), and that focus plays a role in the licensing of NPIs (most notably NPIs of the form *any CN*) in non-DE contexts, such as questions. The use of *any CN* makes salient a lattice-like structure associated with *CN*, and the term *any CN* refers to the minimal element. Such an analysis provides an explanation for the occurrence of NPIs in questions. In addition, it explains the following observations about the distinction between FC *any* and PS *any*.

- PS *any* is licensed by DE/SI, whereas FC *any* is licensed by Focus.
- FC *any* requires stress because it is nothing more than an instance of *any* licensed by Focus.
- FC *any* is licensed in a wide variety of contexts since it is restricted not by syntactic position, but by ability to be focused.
- The FC/PS ambiguity arises since *any* within an affective context can also be focused.
- Modifiers of FC *any*, such as *almost*, are licensed as focus-sensitive operators.
- The widening function of *any* is related to contrastive focus; the speaker implicitly contrasts *any CN* with a more restricted term based on *CN*, forming maximally informative utterances in DE contexts.

These observations remain to be formally placed within a more comprehensive theory of questions, such as those of Groenendijk and Stokhof (1984, 1990), Berman (1991), Lahiri (1991) or Ginzburg (1992). The following are other remaining research questions:

- Why do NPIs not occur in other presumed focus environments in English?
- (42) a. *It's ANYONE that I want to see.
- Why do questions with idiomatic NPIs favor negatively-biased rhetorical readings, whereas NPIs of the form *any CN* are natural for information questions?
 - How does the interpretation of NPI-term questions differ from that of wh-term questions? How are they the same?
 - How are NPIs licensed in other non-truth-conditional utterance types, such as commands and offers?

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