

## **Licensing and Sensitivity in Polarity Items: from Downward Entailment to (Non)veridicality**

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### **1. Introduction**

Polarity phenomena in language are pervasive and quite diverse. A quite familiar polarity item (PI) is *any*. *Any* a PI because it exhibits limited distribution: it is ungrammatical in positive sentences, but becomes fine with negation, in questions, with modal verbs, and in the scope of downward entailing quantifiers like *few*:

- (1) a \* John saw any students.
- b John didn't see any students.
- c Did John see any students?
- d John may talk to any students.
- e Few professors invited any students.

For a given paradigm of PIs, hence also for *any*, two questions are central. First, the licensing question: what is the property that restricts distribution? Second, the sensitivity question: why is the distribution of the PI restricted by this property? In the traditional account, since Ladusaw 1980 and through the mid-90's, the research agenda focused almost exclusively on the first question. It was proposed that downward entailment (DE) is the property that licenses PIs:

- (2) *Ladusaw's (1980) licensing condition*  
      is a trigger for negative polarity items in its scope iff is downward  
      entailing. (where *trigger* is the expression that licenses )

This licensing condition talks about 'negative polarity items' (NPIs), relying on the contrast between negation and affirmation. But this is not exactly the central contrast we observe in (1), hence it is more accurate to talk about PIs, and employ the term 'NPIs' for those PIs that are indeed identifiable as being licensed only by negation and the like, as I proposed in Giannakidou 1998.

Licensing conditions like (2) proved quite fruitful and inspired a number of significant contributions in the area (Hoeksema 1983, Zwarts 1986, 1993, van der Wouden 1994, Dowty 1994, among many others). The shared enthusiasm has been that we are finally in position to characterize semantically the class of PI-licensors, a major advance compared to the previous alternative which was postulating merely the syntactic feature *affective* (Klima 1964). Yet the advance

on the licensing front brought with it a persistent limitation: conditions like (2) were stipulated as global, composition external filters on the structures that contained PIs. This can be seen clearly in Ladusaw's (1986) *semantic filtering*:

(3) Semantic Filtering

**grammatical** ( ) =<sub>def</sub> **Syn** ( )    **Sem** ( );

where **Syn** is syntactic well-formedness, **Sem** is semantic-well-formedness

Grammaticality is a conjunction of syntactic and semantic well-formedness. Syntactic rules determine which structures will be grammatical and which not, and so do semantic rules. In the case of polarity, a syntactically well-formed structure will be filtered out semantically: (1a) with the PI *any* is subject to the condition in (2), and (2) is not satisfied in (1a). Why PIs are subject to such semantic rules remains a mystery: there is no obvious link between DE and the lexical semantic content of PIs, and it seems hard to establish one-- which is why essentially no attempts were made in this tradition. Filtering conditions of this kind are posited at the polarity module, and are in no way derivable from the meaning of the PIs.

Recently, however, with the emergence of a massive amount of cross-linguistic work, the sensitivity question has surfaced as an equally important field of inquiry (see, for example, Israel 1996, Giannakidou 1998, 2001, Tovena 1998, and Lahiri 1998). We no longer want to treat PIs as items subject to mysterious constraints. Rather, we want to understand why PIs are subject to the kinds of constraints they are, and derive these from other more familiar operations that are motivated independently in the grammar. In this context, the goal is to derive the limited distribution of a given PI-paradigm from its lexical semantics, and dispense entirely with global filters and the polarity module.

The discussion in this paper must be seen in this light. Polarity indeed raises the issue of semantic well-formedness, but instead of viewing semantic-well-formedness in terms of filtering, I will view it in terms of interpretability, as I did in Giannakidou 1998, 2001. I explain below what exactly I mean by this.

### **1.1 Polarity: interpretability, licensing, and presupposition failure**

PIs are sensitive expressions. An intuitive way of capturing sensitivity is to say that PIs have a semantic 'deficit'. For a sentence containing a PI to be interpreted the deficit must be nullified somehow, and this is what drives the need to be licensed. Without a licenser the deficit surfaces, and the sentence containing the PI cannot be interpreted, i.e. it cannot be assigned a truth value in any model, and will therefore be ruled out as ungrammatical. The idea here is consistent with Heim and Kratzer's 1998 view of uninterpretability as ungrammaticality, and the need to keep a meaningful distinction between uninterpretability and pragmatic ill-

formedness, e.g. presupposition failure. The latter yields infelicity and can be fixed in contexts satisfying the presupposition; but polarity failures are cases of uninterpretability, and cannot be repaired by any context. Sentence (1a) with *any* is ungrammatical, no matter how we manipulate the context. This fact is worth emphasizing, especially when we consider attempts to ‘pragmaticize’ polarity (for more discussion see Giannakidou 2001).

At this initial stage it will be useful to single out some borderline cases which indicate a kind of sensitivity distinct from that involved in polarity proper. Consider, e.g. the so-called positive polarity items (PPIs) like *some student*:

- (4) a      John didn’t see some student.  
       b      x [**student** (x)    ¬ **saw** (John, x)]  
       c      # ¬ [ x **student** (x)    **saw** (John, x)]

The descriptive generalization about PPI *some* has always been that it must scope over negation, as in (4b), and never below it, as in (4c). Hence, the term ‘polarity’ is used here to indicate not limited distribution but limited scope; and in this sense *some* contrasts with a ‘regular’ indefinite like *a student* which has unrestricted scope, and can be interpreted in both ways in (4). To the extent that we treat limited scope as an instance of polarity, however, we must be careful to keep a clear distinction between limited scope and limited distribution: crucially, there is no PI-licensing in limited scope. Limited scope items are never ungrammatical; they are just fine, they must only be interpreted in a particular way. In a context blocking their required interpretation, e.g. in a context forcing the reading in (4c) above, the choice to use *some* would be infelicitous – but there is no licensing failure yielding ungrammaticality, as is the case with *any* in (1a).

In other words, *some* is not uninterpretable, but *partially interpretable*: it is interpretable in the models compatible with its required scope. This means that for *some*, the requirement that it be interpreted with a particular scope must have the status of a presupposition. So, we may argue that the presupposition for *some* is that it can be interpreted only with wide scope (this is an oversimplification, but for our purposes it suffices; see Farkas 2002 and Szabolsci 2001 for more details) – a hypothesis supported by its tendency to receive specific readings and inverse scope in construals with universal quantifiers, and by the fact that it cannot be bound by Q-operators (Langacker 1991), unlike regular indefinites. If the scoping of *some* is constrained by the presupposition that it takes wide scope, then we predict that if *some* occurs with negation, it will only scope above it. The ‘failed’ reading, then, just doesn’t surface in the ordinary case. In the case of *any*, however (and the other items we will discuss in this paper),

there is no reading available in the absence of a licenser: these items are not partially interpretable like *some* but plainly uninterpretable.

Consider in this connection items like *even*-quantificational superlatives and minimizers, as in the examples below:

- (5) a He didn't *say a word*. (minimizer: He didn't say any word)  
b He said a word.
- (6) a He didn't solve *even the easiest problem*.  
(= He didn't solve any problem)  
b He solved the even the easiest problem.

In these cases too, 'polarity' seems to be associated with the availability of a certain reading, not with rendering an expression grammatical. The minimizer reading arises with negation in (5a) and does not surface in the absence of it in (5b). *Say a word* is not ungrammatical without negation, it just lacks the polarity interpretation. The same holds for the quantificational superlative in (6a): the *any*-equivalent reading arises with negation; in the absence of it, the *any*-reading is lost, but the superlative is still fine. Hence, just like *some*, but unlike *any*, minimizers and *even* superlatives exhibit only limited interpretation. In all cases, the need for a particular interpretation is arguably encoded as a presupposition. If it is not satisfied, as with minimizers and *even* superlatives without negation, the items are good, but without their presupposition-dependent interpretation.

The discussion will have to remain brief for reasons of space, but the bottomline is obvious: although we may relax the term polarity to include both limited distribution and limited interpretation phenomena, it is a mistake to collapse the two. In particular, it is a mistake to try to explain limited distribution in PIs like *any* by using tools appropriate for limited interpretation. There is, as we noted, a crucial difference between limited distribution and limited interpretation: in the later case, 'licensing' is just a case of imposing certain interpretations, and excluding others; but with limited distribution PIs licensing enables the very occurrence of an expression. For such an expression, there is no interpretation available without a licenser; hence the problem is clearly lexical semantic, and cannot be merely reduced to a case of pragmatic failure.

## 1.2 Outline of the paper

With the above background in mind, the discussion proceeds as follows. I first show that in order to establish empirically adequate licensing conditions we need to employ a notion broader than DE—nonveridicality. The general definition of what constitutes a PI will be the following:

- (7) **DEFINITION 1**— *Polarity item* (Giannakidou 2001)  
 A linguistic expression is a polarity item iff:
- (i) The distribution of is limited by sensitivity to some semantic property of the context of appearance; *and*
  - (ii) is (non)veridicality, or a subproperty thereof: {veridicality, nonveridicality, antiveridicality, modality, intensionality, extensionality, episodicity, downward entailingness}.

This definition presents a general heuristic format from which various conditions can be derived, predicting of course distinct distributions, as is the case with PIs. Simplifying somewhat, the set of properties subsumed under (non)veridicality is presented as a closed set in (ii) in order to cover the PI-paradigms that have thus far been identified in the literature. Multiple sensitivities are also allowed in this system (e.g. with free choice items, as we shall see later on).

Veridicality and nonveridicality are defined in terms of truth as in (8); see also Zwarts 1995. (For first mention of veridicality see Montague 1969.).

- (8) **DEFINITION 2** (*Non*)veridicality for propositional operators
- i. A propositional operator  $F$  is veridical iff  $Fp$  entails  $p$ :  $Fp \rightarrow p$ ; otherwise  $F$  is nonveridical.
  - ii. A nonveridical operator  $F$  is antiveridical iff  $Fp$  entails *not*  $p$ :  $Fp \rightarrow \neg p$ .

A propositional operator is a proposition embedding function: a sentence modifier (type  $\langle t, t \rangle$ ; a sentence-level adverb, modal operators, tense, temporal/aspectual adverbs, connectives), or an expression taking a proposition as its first argument, e. g. a propositional attitude verb (type  $\langle t, \langle e, t \rangle \rangle$ ), or the question operator (type  $\langle t, \langle s, t \rangle \rangle$ ).  $F$  is veridical iff whenever  $Fp$  is true,  $p$  is also true; if this does not hold,  $F$  is nonveridical. A nonveridical  $F$  is antiveridical iff whenever  $Fp$  is true  $p$  is not true. Antiveridical operators are a proper subset of the nonveridical. Positive operators like past tense adverbials are veridical and exclude PIs. Modal verbs, intensional operators, and questions are nonveridical and license PIs, as we noted in (1). Antiveridical operators, finally, are negation and *without*; these are the prototypical licensers of negative PIs.

- |      |   |                              |    |                                  |
|------|---|------------------------------|----|----------------------------------|
| (9)  |   | Yesterday, Paul saw a snake. |    | Paul saw a snake.                |
| (10) | a | ? Did Paul see a snake       | -/ | Paul saw a snake.                |
|      | b | Paul may have seen a snake.  | -/ | Paul saw a snake.                |
| (11) | a | Paul didn't leave.           |    | It is not the case that P. left. |
|      | b | without Paul leaving.        |    | It is not the case that P. left. |

Truth is not absolute but relative to at least times and individuals, hence the core definition must be relativized accordingly to account for the veridicality properties of temporal and aspectual operators, as we see in the discussion in section 2.

I will concentrate on three PI-paradigms: *any*, affective PIs (APIs, Greek *kanenan-* paradigm), and free choice items (FCIs; Greek *-dhipote* series). Once we establish licensing conditions for all three based on nonveridicality, I show how we can actually get rid of these conditions by making them derivable from the lexical semantics of the items. The discussion will necessary be brief, given space limitations for extensive details, see Giannakidou 1998, 2001.

## 2 Why do we need nonveridicality?

The answer is: because the previous semantic alternative, DE, does not predict the correct distribution of PIs. I illustrate below eleven cases where DE wrongly predicts PIs to be bad. Two further problematic cases, *only* and negative factives, will be discussed in section 3. Recall also the conceptual problem with DE: it is hard to see what the connection is between DE and the lexical semantics of PIs; and it is precisely for this reason that polarity filters have been quite popular.

As a starting point, DE predicts that PIs will be fine in the scope of negation, DE quantifiers like *few N*, *at most n N*, *no N*, and the restriction of *every*:

- (12) a No students saw anything.  
b John didn't see anything.  
c Few children saw anything.  
d Every student who heard anything should report to the police.

But there are many non-DE environments where PIs are fine. Observations about the individual cases can be found scattered in the literature, but here I list them in full, to give a complete picture of the extent of the empirical problem:

### 2.1 Non-monotone quantifiers

Quantifiers like *exactly three students*, *neither student*, *nobody but John*, and *almost nobody* are non-monotone but they nevertheless admit *any*.

- (13) a % Exactly three students saw anything. (Linebarger 1980)  
b Neither student saw anything.  
c Nobody but John saw anything.  
d Almost nobody saw anything.

### 2.2 Hardly/barely

*Hardly* and *barely* allow for *any*, yet they do not exhibit the DE pattern as we see below (for more discussion of this point see Atlas 1996 and Horn 2001).

- (14) John {hardly/barely} talked to anybody.  
 (15) a John barely studied linguistics -/ John barely studied syntax  
 b John hardly talked to anybody -/ J. hardly talked to his mother

### 2.3 Questions

PIs are quite frequent in questions:

- (16) a Heb je **ook maar iets** gezien? (Dutch)  
*have.2sg you anything seen*  
 ‘Did you see anything?’  
 b Idhes {**tipota/\*otidhipote**}? (Greek)  
*saw.perf.2sg API/ FCI*  
 ‘Did you see anything?’  
 (17) a kanenas (kanas), tipota, etc. (Greek APIs)  
 b opjosdhipote, otidhipote, etc (Greek FCIs)

Two things are noteworthy here. First, questions are not monotone (especially if they denote the proposition corresponding to their true answer; see Groenendijk and Stokhof 1997). Ladusaw 1980 admits the problem of questions and appeals to the availability of a biased negative answer. Though this may be justifiable for minimizers like *give a damn*, it obviously cannot provide the basis for a general account of PIs in questions, since PIs like *any* and its Greek/Dutch counterparts above are perfectly neutral, and do not exhibit bias towards a negative answer.

Second, presumably “strong” PIs, like the Dutch *ook maar iets* and the Greek *tipota*, expected to be licensed by antiadditive or antimorphic triggers only (Zwarts 1993, 1998, van der Wouden 1994), are grammatical in questions (and other non-DE structures, as we shall see below). The point is illustrated in (18) for *ook maar iets*: it is good with *niemand* ‘nobody’, but bad with *weinig mensen* ‘few’; likewise in (19) we observe exactly the same pattern for the Greek *tipota*: it requires negation (there are no negative quantifiers in Greek; Giannakidou 2000); a merely DE-quantifier like *liji* ‘few’ and *to poli pende* ‘at most five’ will not suffice:

- (18) a \***Weinig mensen** hebben **ook maar iets** gezien. (Dutch)  
*few people have.3pl anything seen*  
 ‘Few people saw anything.’  
 b **Niemand** heeft **ook maar iets** gezien.  
 ‘Nobody saw anything.’

- (19) a \* **Liji anthropi idhan tipota.** (Greek)  
*few people saw.3pl anything*  
 ‘Few people saw anything.’  
 b \* **To poli 5 anthropi idhan tipota.**  
 At most five people saw anything.  
 c Ta pedhia **dhen idhan tipota.**  
 The children didn’t see anything.

*Ook maar iets* and *tipota* are thus strong PIs; yet they are good in questions, as we saw in (16). The observed pattern is common crosslinguistically, and provides one of the strongest obstacles in trying to make questions fit the DE-hierarchies.

Nonveridicality, on the other hand, predicts that PIs should be fine in questions because questions are nonveridical. I will briefly sketch here an account. In a semantics which treats questions as the set of their true answers (Karttunen 1977) the denotation of a polar question would contain two possible answers, represented here as a disjunction:

- (20) a. [[ Did you see John ]] (w) =  $p [p(w) \quad p = w' \text{ saw } (you, John, w')]$  =  
 b.  $Q = \{you \text{ saw John} \quad you \text{ didn't see John}\}$

Disjunction is nonveridical: from  $p \vee q$  it does not follow that  $p$  is true and that  $q$  is true-- unlike conjunction, which is veridical (for  $p \wedge q$  to be true, both  $p$  and  $q$  must be true; for more discussion see Zwarts 1995). Being nonveridical, disjunction allows for PIs, as illustrated in the example below, from Giannakidou 1997:

- (21) I bike mesa **kanenas** i afisame to fos anameno.  
 Either somebody came in, or we left the light on.

The licensing of PIs in questions can be seen on a par with disjunctions; the parallel can serve as the basis for explaining why PIs are good in questions.<sup>1</sup> Additional properties of PIs and questions are, of course, also relevant for determining what interpretations will further be possible or not, e.g. whether there is a bias for a negative answer or not, and where it comes from. But crucially, bias

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<sup>1</sup> In English, *any* is not licensed in disjunctions but it is in questions: \**Either anybody came in* is bad. This indicates that disjunctions and questions are not identical, which is of course consistent with what I am saying here. It supports furthermore the view that *any* is subject to a weaker dependency to nonveridicality, as I suggest in section 2.13. At any rate, the fact that questions and disjunctions pattern together in terms of PI-licensing in the general sense suffices to establish the parallelism and use disjunction as the basis for nonveridicality in questions.



alone cannot predict grammaticality of PIs in questions, as we noted, for not all PIs come with bias, certainly not *any*.

## 2.4 The future

PIs appear in future sentences. The future is a modal context, and depending on the analysis one adopts for modals, it will turn out to be either non-monotone or upward monotone (Giannakidou 1995, Giannakidou and Zwarts to appear). PIs, let alone alleged strong ones, are not expected to be good there, but they are. The data here from Greek, Dutch and English; see also Vikner 1999 for Danish.

- (22) a O Janis **tha** agorasi **kanena bukali kراس**.  
John will buy a/any bottle of wine.  
b De kinderen **zullen** vertrekken zodra zij **ook maar iets** ontdekken.  
The children will leave as soon as they discover anything.

We see here that PIs are fine in the scope of the future expression; but the definition of (non)veridicality we have thus far does not suffice to explain why this is so. What we want to do is relativize truth with respect to times:

- (23) **DEFINITION 3** *(Non)veridicality for temporal/aspectual operators*  
Let  $F$  be a temporal/aspectual operator;  $t$  an instant or an interval.  
i.  $F$  is *veridical* iff for  $Fp$  to be true at a time  $t$ ,  $p$  must be true at a (contextually relevant) time  $t' \leq t$ . Otherwise  $Op$  is *nonveridical*.  
ii. A nonveridical operator  $F$  is *antiveridical* iff for  $Fp$  to be true at a time  $t$ ,  $\neg p$  must be true at a (contextually relevant) time  $t' \leq t$ .  
iii. If  $F$  is true of an interval  $t$ , then  $F$  is veridical iff for all (contextually relevant)  $t' \subseteq t$ ,  $p$  is true at  $t'$ . Otherwise,  $F$  is nonveridical. If for all (contextually relevant)  $t' \subseteq t$ ,  $\neg p$  is true at  $t'$ , then  $F$  is antiveridical.

The future is nonveridical by this definition, but the past tense and adverbials are nonveridical, and PI-licensing follows.

- (24)  $[[\text{FUT } p]]_t = 1$  iff  $t', t < t'$ , and  $[[p]] = 1$  at  $t'$   
(25)  $[[\text{PAST } p]]_t = 1$  iff  $t', t' < t$ , and  $[[p]] = 1$  at  $t'$

Note that the present and past progressives also turn out to be veridical under this definition (see specially clause iii), and is correctly predicted that they will not allow for PIs, as observed in Giannakidou and Zwarts (to appear) where more discussion of these cases is offered.

## 2.5 The habitual

This is another non-monotone context (Krifka et al 1995). Giannakidou 1995, Giannakidou and Zwarts (to appear) observe that PIs are good in habituals:

- (26) **Sinithos** dhiavaze **opjodhipote** vivlio me megali prosoxi.  
*usually read.3sg FC book with great attention*  
'S/He usually read any book very carefully.'
- (27) a O Janis me **idhopiouse** molis **evlepe** **kamia agelia**.  
*John me warned.impf. as-soon-as saw.impf.3sg any ad*  
'John used to call me as soon as he saw **any ads**.  
**BAD:** \* At 8 pm, J. called me as soon as he saw **any job ads**.  
b De kinderen vertrokken zodra zij **ook maar iets** ontdekten.  
*the children left.3pl as soon as they anything discovered.3spl*  
'\*The children left as soon as they discovered anything.'  
OK, as: 'The children used to leave as soon as they saw anything.'

The habitual is nonveridical by definition 3.

- (28)  $[[\text{HAB } p]]_t = 1$  iff MOST  $t'$  [ $t' \subseteq t$ ,  $[[p]] = 1$  at  $t'$ ].

In other words, it is not the case that  $p$  is true at all the contextually relevant  $t' \subseteq t$ . The definition actually predicts PIs to be bad with a Q-adverb meaning *always*. In Giannakidou 1995 it is shown that this prediction is borne out.

- (29) \*Otan pijene o Pavlos ja ipno, ksefilize **panda kanena periodhiko**.  
*when went.3sg the P. for sleep, browsed.3sg always any magazine*  
'When Paul went to bed, he always browsed through a magazine.'

The occurrence of PIs in habitual domains is considerably more complex, of course, but even this basic picture suffices to make the point clear that DE cannot predict the core facts. Notice that PIs are licensed in the restriction (the *when*-clause) as well as in the scope of HAB (the main clause), which makes it impossible to invoke DE of a potentially universal restriction for licensing.

## 2.6 Generic sentences

Likewise, non-monotone generic sentences accept PIs.

- (30) Any cat hunts mice.

That the generic operator GEN is not monotone has come to be considered as standard, see Krifka et al. 1995 and references therein for discussion.

## 2.7 Modal verbs

Modal verbs create generally good environments for PIs, despite the fact that they are non-monotone, or worse, upward entailing.

- (31) a John may talk to anybody.  
 b Any minors must be accompanied by their parents.  
 c The search committee can give the job to any candidate.
- (32) a. John {may/can/ must} dance -/ John {may/can/ must} tango  
 b. John {may/can/ must} tango John {may/can/ must} dance

Notice that trying to void this argument by saying that in this case we have ‘free choice *any*’ is besides the point, since FCIs *are* PIs.

## 2.8 Imperatives

Here we have a parallel with modal verbs and intensional contexts in general:

- (33) Pare {**kanena/opjodhipote**} milo.  
*take.2sg AP- FC apple*  
 ‘Take any apple.’

PIs in imperatives are quite problematic for DE. Note again that appealing to FC *any* does not help. In Greek, as we see, FCIs *and* APIs occur in imperatives.

## 2.9 Protasis of conditionals

Heim 1984 shows that the protasis of conditionals is not strictly speaking DE; but it is one of the most common environments for PIs.

- (34) An kimithis me {**kanenan/opjondhipote**}, tha se skotoso.  
*if sleep.2sg with AP- FC-person fut you kill.1sg*  
 If you sleep with anybody, I’ll kill you.
- (35) a. If you go to Spain you will have a great time -/  
 b. If you go to Spain and get sick you will have a great time.

## 2.10 Directive intensional verbs

PIs are licensed with directive propositional attitudes but not with epistemic ones.

- (36) a John would like to invite any student.

- b John asked us to invite any student.
- d \* John believes that we invited any student.
- e \* John dreamt that we invited any student.

- (37) I Ariadne **epemine** na afiso {**opjondhipote/kanenan**} na perasi mesa.  
*the Ariadne insisted.3sg subj let.1sg FC-person subj come.3sg in*  
 ‘Ariadne insisted that I allow anyone in.’
- (38) \* O Pavlos **pistevi** oti akuse {**kanenan/opjondhipote**} thorivo.  
*the Paul believe.3sg tha. indicative heard.3sg API/FCI noise*  
 \* Paul believes that he heard any noise.

The facts were introduced and discussed in Giannakidou (1998, 1999), and seem to generalize in many other languages: Spanish, Catalan (Quer 1998, 2000), Russian (Pereltsvaig 2000; see Haspelmath 1997 for more). In Giannakidou 1998, 1999 I proposed an analysis of epistemic attitudes as veridical, and directive ones as nonveridical, from which PI-licensing (and mood choice) follows; I will not repeat the analysis— suffice it to note that DE cannot explain these facts. Worse, recent attempts to “monotonize” attitudes (von Stechow 1999) predict no PIs with directive attitudes because they are upward entailing, contrary to fact.

## 2.11 Problematic restrictions of universals

Finally, consider the contrast between the restriction of *every*, which allows for PIs, and that of *each* and *both*, which don’t (see Horn 1972, Seuren 1984 already).

- (39) {**Every student/ the students**} who saw anything should report to the police. (But I doubt that there will be any such students).
- (40) a. \***Each** student who saw anything should report to the police.  
 (But I doubt that there will be any such students).  
 b. \***Both** students who saw anything should report to the police.  
 (But I doubt that there will be any such students).

The contrast doesn’t seem to follow from DE—and again, it is predicted not to obtain in analyses like von Stechow’s 1999 (to be discussed in section 3), since *both* and *each* are Strawson-DE by his definition. Rather, the contrast follows if we assume that *each* and *both*, but not *every*, are presuppositional, as evidenced by the contradictory continuations in (40): their restriction must be non-empty.

- (41) **DEFINITION 4** — *Presuppositionality of determiners and quantifiers*  
 A determiner/quantifier is presuppositional iff for all A, B, D, if A = D, then  $\langle A, B \rangle \in \text{Dom}(\cdot)$ . (based on Heim and Kratzer 1998: 163)

Presuppositional determiners and quantifiers are veridical, as is clear from the definition below, from Giannakidou 1998:

- (75) **DEFINITION 5** — *(Non)veridicality of determiners and quantifiers*  
 A determiner/quantifier is veridical w.r.t. its NP argument iff it holds that:  $[[ \text{NP VP} ]] = 1$   $[[\text{NP}]]$  ; otherwise, is nonveridical.

In the domain of determiners, then, truth meets existence. For extension of (non)veridicality for determiners in this spirit see Bernardi 2002.

### 2.12 Hierarchy of DE triggers can't offer much help

To sum up, we have seen so far that most PI-environments are actually not accounted for by DE. Would appealing to DE-hierarchies (Zwarts 1993, van der Wouden 1994) offer any help? Obviously not: we noted already that presumably strong PIs (expected to be licensed roughly by negative triggers), are grammatical in non-DE sentences: e.g. questions, habituals, modals, etc.

On top of that, consider that there are PIs that don't fit the DE-hierarchy at all. FCIs are typical such cases: they are grammatical in the non-DE contexts mentioned previously, but are unacceptable in the scope of DE and negative operators, if episodic. Episodic structures are structures which involve a single event as we see; such structures are perfective in Greek.

- (42) a Dhen idha kanenan.  
*not saw.perf.1sg API-person*  
 'I didn't see anybody.'  
 b \*Dhen idha opjondhipote.  
*not saw.perf.1sg FC-person*  
 ('I didn't see anybody.')
- (43) !e (e) (episodicity)

The decisive factor is that perfective positive *and* negative sentences are episodic: they involve existential closure of an event variable. FCIs, but not *any* or APIs, as we see, are apparently sensitive to this property. Anti-episodicity systematically blocks FCIs from other expected contexts, e.g. questions, and is also observed in Spanish and Catalan FCIs (see data in Quer 1998, 2000, and Giannakidou 2001):

- (44) \* Su sistisan opjondhipote thavmasti?  
*you introduced.perf.3pl FC admirer*  
 'Did they introduce any admirer to you?'

So, for FCIs is not just nonveridicality that matters, but also episodicity. We revisit the issue in 4.2, where we derive anti-episodicity from the lexical semantics of FCIs, following the analysis I proposed in Giannakidou 2001. What we need to keep in mind here is that FC sensitivity is clearly not of DE nature.

## 2. 13 Licensing conditions and nonveridicality

The discussion thus far provided enough motivation for the need to move from DE to nonveridicality in order to account for both DE- and non-DE licensers. Since DE functions are a proper subset of the nonveridical (for a proof see Zwarts 1995), the theoretical move from DE to nonveridicality is not at all in conflict with the previous alternative, but rather a (conservative) extension of it.

Based on the distributions we have seen, we can formulate the following licensing conditions for APIs and FCIs:

(45) *Licensing condition for FCIs* (-**dhipote** items)

A FCI is grammatical in a sentence S iff:

- (i) is in the scope of a nonveridical operator in S; and
- (ii) S is not episodic.

(46) *Licensing condition for APIs* (**kanenas** items)

A FCI is grammatical in a sentence S iff:

- is in the scope of a nonveridical operator in S.

These conditions have the status of global filters, albeit empirically more adequate ones than the DE-based (2). But as I said at the beginning, we want to derive these conditions from the lexical semantic content of the PIs. In section 4, I show that there is a direct link between nonveridicality and the lexical semantics of these PIs.

For *any*, we have to postulate a weaker condition, because (a) there are nonveridical structures where *any* is not accepted, and (b) there are veridical structures where *any* occurs if a nonveridical inference is licensed pragmatically, e.g. as a negative implicature. The latter is illustrated by *only* and negative factives, and discussed in section 3 next. The former becomes evident when we consider *any* in propositional attitudes. Though *any* is fine with directive verbs, as we saw in 2.10, its occurrences are more limited than those of its Greek counterparts, which are freely licensed. The contrast is illustrated in the examples below with the verb *efxome* ‘wish’.

(47) Efxome na me voithuse kanenas.

\* I wish anybody helped me.

*Wish* is nonveridical and licenses *kanenas*; *any* however is bad. Likewise, *any* is bad with disjunctions, as we note in fn 1, and with adverbs like *perhaps*:

- (48) Isos na bike mesa kanenas.  
\* Perhaps anybody came in.

Obviously, then, the relation of *any* to veridicality is not the *must* relation imposed by licensing, but the weaker *must not* relation that indicates antilicensing (Giannakidou 1998). In Giannakidou 1999, I proposed the following condition:

- (49) *Anti-licensing condition regulating the distribution of any*  
i. *Any* will not be grammatical in a sentence S if *any* is interpreted in the scope of a veridical expression  $\beta$  in S.  
ii. In certain cases, (i) can be voided if S gives rise to a negative implicature.

Items subject to this condition are expected, of course, to be good in nonveridical structures, but this expectation does not have the status of a necessary *and* sufficient condition, as in the case of licensing (which is an attraction relation between PIs and context). Furthermore, unlike licensed-by-nonveridicality items, *any* can be good as long as veridicality is voided somehow (since anti-licensing is merely an avoidance relation). For APIs and FCIs, the requirement that they be in the scope of a nonveridical expression is a *must* condition and can never be violated: this is why Greek PIs are bad, but *any* is good, with *only* and negative factives.

### 3. Pragmatic licensing: *only* and emotive factives

*Any* is known to be good with *only* and negative factive verbs:

- (50) Only Larry talked to anybody.  
(51) a Bill {is surprised/regrets} that I have any friends.  
b \*Bill is glad that I have any friends.

These data are problematic if we want to maintain a purely semantic account for the distribution of *any*, since *only* and negative factives are veridical and not DE. Linebarger 1980 pointed out this problem for Ladusaw's theory, and proposed to handle *any* in these contexts in terms of a negative implicature: *only* and negative factives license negative implicatures and it is by virtue of this that they allow for *any*. (Linebarger actually proposed this as a general theory for *any*, but it obviously cannot be right, given the data we just discussed in section 2).

Note first that the problem is not general. PIs that are licensed by nonveridicality, e.g. Greek APIs, are not grammatical in these cases, as I illustrated in earlier work (Giannakidou 1999, 2001), because the sentences are veridical: if *only Mary ate*, then *somebody ate*. Factives, positive *and* negative, are veridical because they presuppose the truth of their complement.

(52) \* **Monon** i Theodora idhe {**opjondhipote/kanenan**} fititi.  
*only the Theodora saw.3sg FC/ API student*  
 ‘Only Theodora saw any students.’

(53) a \* **Ekplisome** pu exi {**opjondhipote/kanenan**} filo.  
*be-surprised.1sg that has FC / API friend*  
 ‘I’m surprised she has any friends.’  
 b \* **Xerome** pu exi {**opjondhipote/kanenan**} filo.  
 ‘\*I’m glad she has any friends.’

So, the Greek items do not violate their licensing condition which requires a nonveridical trigger. We see in (54) that other PIs licensed by nonveridicality behave exactly the same way, e.g. the Spanish *cualquier confianza* :

(54) \* **Solo** el profesor mostro **cualquier confianza**. (data from Josep Quer)  
 Only the teacher showed any confidence.

Hence the behavior of *any* seems to be exceptional (see Haspelmath 1997 for more data in support of this). Still, the fact that some PIs are admitted with *only* and factives poses a problem, if we want to maintain a purely semantic approach. To this end, there has been a recent attempt by von Stechow 1999 to render *only* and factives DE, despite the fact that they seem not to be:

(55) Only Larry ate a vegetable -/ Only Larry are kale.  
 Larry may have eaten spinach, for instance.  
 (56) Larry regrets that I bought a car. -/ Larry regrets that I bought a Honda.  
 Because, in fact, I bought a Ferrari, and Larry might not regret this at all.

Von Stechow argues that, although *only* and negative factives do not exhibit the classical DE-pattern, they can be shown to be DE in a special way. He defines a notion of Strawson-DE for expressions that come with presuppositions. The idea is that when we evaluate the monotonicity properties of such expressions we must check for DE only in contexts where the presuppositions are satisfied.



- (57) *Strawson DE* (von Fintel 1999: 14)  
 A function  $f$  of type  $\langle \alpha, \beta \rangle$  is Strawson-DE iff  
 for all  $x, y$  of type  $\alpha$  such that  $x \approx y$ , and  $f$  is defined:  $f(y) \approx f(x)$ .

Strawson DE is clearly not entailment in the classical sense that whenever  $f(y)$  is true,  $f(x)$  is true too. Strawson-DE comes with the following reasoning scheme:

- (58) a.  $P \approx Q$   
 b. [[ only John ]] ( $P$ ) is defined.  
 c. [[ only John ]] ( $Q$ ) is true.  
 d. Therefore, [[ only John ]] ( $P$ ) is true.

The crucial premise is (58b): the intended presupposition. In a context satisfying this premise, premises (58a) and (58c), the sentence whose monotonic inference we want to derive, allow the conclusion in (58d). Here is an example:

- (59) a. Kale is a vegetable.  
 b. Somebody ate kale for breakfast.  
 c. **Only John ate a vegetable for breakfast.**  
 d. Therefore, only John ate kale for breakfast.

Suppose that  $b$  is given in the context, i.e. that somebody ate kale for breakfast. Then if  $c$  is true, namely that John only ate a vegetable for breakfast, we can conclude  $d$ , that only John ate kale for breakfast. Hence *only* is Strawson DE and it therefore licenses *any*.

The argument for negative factives takes a much more complicated route, but it goes against many of the basic assumptions about the implications we get with propositional attitudes, and how the dynamics of context change work; I will not discuss it here for reasons of space. Von Fintel proposes an analysis of directive attitudes as upward entailing; but if this is correct, we can't explain why PIs, *any* included, are grammatical with verbs like *insist*, *be willing to*, and *ask*, as we noted in 2.10. It seems more appropriate to analyze these verbs as non-monotone, as in the more classical approaches (Heim 1992).

Likewise, the argument for *only* turns out to be quite problematic. To begin with, it is not uncontroversial that the relevant component of *only* is a presupposition. Atlas (1993, 1996) argues that it is an entailment, and likewise Horn 2001 is willing to relax the presupposition analysis: the presupposition part is *asserted* though it remains assertorically *inert*.

But even if we accept the presuppositional analysis, the argument still suffers from two serious problems. The first one has to do with what is taken to

count as a presupposition. What von Fintel characterizes as a presupposition of *only* in premise b **is not** the presupposition extracted from the sentence we actually evaluate, which is premise c, but an arbitrary proposition which we decide to include as part of the common ground. Such arbitrary propositions are allowed to influence reasoning in an unconstrained way, and this leads to the second problem—generating Strawson-DE and PIs in contexts where they do not occur.

To see the first problem, consider what the presupposition of the sentence (60c) **Only John ate a vegetable for breakfast** is. It is (60b): that somebody ate **a vegetable** for breakfast, and not kale as in von Fintel's (59b). (59b) is just some proposition that we agree to have in as background knowledge, *independent* of the presupposition of the *only*-sentence. If we replace (59b) with the actual presupposition, we see that Strawson-DE doesn't go through:

- (60) a. Kale is a vegetable.  
 b. **Somebody ate a vegetable for breakfast.**  
 c. **Only John ate a vegetable for breakfast.**  
 d. DOES NOT FOLLOW: Only John ate kale for breakfast.

So, for Strawson-DE to work, we allow not the presupposition of the evaluated sentence but just any arbitrary proposition to count as relevant. This has quite undesirable consequences, the obvious one being that it overgeneralizes. Wrong predictions are made in (at least) two cases: generalized focus, and *both/each*. Consider focus first. Von Fintel's scheme predicts that other focus exhaustive structures, e.g. preposed focus and clefts will also make *any* licit, since it is not just *only*, but exhaustive focus in general that validates his Strawson DE:

- (61) a. Kale is a vegetable.  
 b. Somebody ate kale for breakfast.  
 c. **It was John who ate a vegetable for breakfast.**  
 d. Therefore, it was John who ate kale for breakfast.  
 c': **JOHN ate a vegetable for breakfast.**  
 d'. Therefore, JOHN ate kale for breakfast.

With (61a,b) as the background, the cleft sentence in (61c) and the preposed focus in (61c') end up Strawson-DE; yet, unlike *only*, clefts and preposed exhaustive focus, **do not** license *any*.

- (62) a       \* It was John who talked to anybody.  
 b       \* JOHN talked to anybody.

Strawson-DE doesn't get things right here. Now, consider presuppositional *both* and *each*. In 2.11 we noted that these exclude *any* from their restriction.

- (63) a \*Each student who saw anything reported to the Dean.  
b \* Both students who saw anything reported to the Dean.

Yet, the restriction of *each* and *both* is Strawson-DE by von Fintel's criterion.

- (64) a. A linguistics student is a student.  
b. There is a set of exactly two linguistics students that we are talking about.  
c. **Both students got an A.**  
d. Therefore, both linguistics students got an A.

- (65) a. A linguistics student is a student.  
b. There is a set of linguistics students that we are talking about.  
c. **Each student got an A.**  
d. Therefore, each linguistics student got an A.

Again, Strawson-DE makes the wrong predictions. So, if we allow Strawson-DE we end up overgeneralizing (*both*, *each*, clefts, and preposed focus), or undergeneralizing (propositional attitudes). And, of course, we would still have to account for the considerable number of non-DE environments we mentioned in section 2. We must conclude, then, that Strawson-DE is not a very useful notion. This conclusion seems to threaten Horn's DE-assertion (versus *entailment*) too: the problem of overgeneralization that we noted for Strawson-DE seems to carry over to DE-assertion, at least in the exhaustive focus structures. (And it is hard to see how negative factives can be handled.)

For *only*, then, the correct analysis seems to be the non-monotone position of Atlas 1993, 1996, and our best bet for an explanation of why some PIs occur with it must still make use of a pragmatic condition invoking the availability of a negative implicature, as I suggested in (49).

#### **4 Deriving licensing for lexical semantics: dependent variables**

In this last section, I consider the issue of sensitivity. We have to show that there is a connection between nonveridicality and the meaning of PIs. I will concentrate here on APIs and FCIs. For reasons of space, I will not discuss *any* in great detail (but see Giannakidou 2001 for a more detailed discussion).

#### 4.1 Dependent indefinites

PIs have restricted distribution because they are lexically ‘deficient’ expressions. They can only be interpreted in structures that are consistent with their deficit; if a PI occurs in a structure that imposes an interpretation that the PI cannot have because of its lexical deficit, the structure cannot receive an interpretation, and will be ruled out as ungrammatical.

The basic observation is that some variables cannot be existentially closed in the ordinary way. Compare the sentences below, the ungrammatical one containing PIs, and the grammatical one containing a ‘regular’ singular indefinite:

(66) \* Idha {**opjondhipote/kanena**} fititi.

saw.1sg FC/ AP student

‘\*I saw any student.’

(67) Idha **enan** fititi.

saw.1sg a student

‘I saw a student.’

The non-PI indefinite *enan fititi* ‘a student’ contributes a restricted variable as in (68a) which undergoes text level existential closure, as in Heim 1982. The formula receives the usual truth conditions of existential statements.

(68) a [[ a student ]] = **student**(x)

b x [**student**(x) saw (I,x)] Existential closure (Heim 1982)

Text-level existential closure assigns the ‘specific’, wide scope reading of indefinites (as opposed to nuclear scope existential closure which gives the narrow scope). In Giannakidou 1998, 2001 I argued that we must identify certain PIs as indefinites introducing variables which cannot undergo these standard procedures. I proposed a new type of variable which is *dependent*; APIs and FCIs introduce dependent variables. In the former case the dependent variable is of the individual type *e*, in the latter of the world type *s*; it is the presence of such variables that restricts the distribution of APIs and FCIs.

(69) Ontology of variables

Type	Independent	Dependent
e	x	$x_d$
s	w	$w_d$
Examples:	<i>a student</i> (x)	<i>kanenas fititis</i> ( $x_d$ )
		<i>opjosdhipote fititis</i> (x, $w_d$ )

Before we proceed, let me just note that admitting different kinds of variables is not at all peculiar. It has been a commonplace observation in the literature that not all variables are alike. This underlies, for example, the very common idea that some variables must be used only if their presuppositions are satisfied, e.g. the variables of definites are distinct in this way; or extensions of this idea imposing constraints on how the variables of ‘specific’ indefinites must be interpreted (e.g. Farkas 2002; recall also our discussion in 1.1). Admitting that certain PIs are dependent variables must be understood in this context. Only instead of positing dependency as a presupposition, I propose to encode it in the type of the expression itself. This way, we explain why the failure of a dependent variable in the wrong context yields ungrammaticality, and is not merely a case of presupposition failure.

APIs are indefinites that cannot assert existence in the default world of evaluation,  $w_0$ — though they may do so in a hypothetical, non-actual context. In the case of APIs, then, the variable  $x_d$  is dependent because  $x_d$  cannot introduce a discourse referent in the actual world.

(70) **DEFINITION 6** — *Dependent Indefinites* (cf. Giannakidou 1998: 140)

An indefinite is dependent iff the variable  $x_d$  it contributes cannot introduce a discourse referent in the actual world  $w_0$ .

This means that  $x_d$  cannot be  $\lambda$ -closed by the default existential quantifier (either text-level or in the nuclear scope) in a veridical context. Notice that it is veridicality and not extensionality that matters:  $x_d$  can still be  $\lambda$ -closed in an extensional context if  $\lambda$ -closure happens under negation, since  $x_d$  would not be forced to introduce a discourse referent under negation.  $\lambda$ -closure will generally be fine in the scope of a nonveridical operator, because the nonveridical operator ensures that  $x_d$  will not be forced to introduce a discourse referent in the actual world. This explains why APIs, and PIs in general, are good in the scope of negation and in intensional, modal, and conditional contexts.<sup>2</sup>

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<sup>2</sup> The notion of an unidentifiable variable (Farkas 2002) may be relevant here. A variable  $x$  in  $\phi$  is unidentifiable iff for any  $\langle w, f \rangle$ , if  $f$  satisfies  $\phi$  relative to  $w$  there are several values assigned to  $x$  relative to  $f$ . The idea is that there is no context in which an unidentifiable variable receives a single value only (roughly, the property of having wide scope). This makes such variables always take narrow scope, which is an obvious property of APIs in the definition of dependency I pursue here. But from my view of dependency, it also follows that APIs will not be good in a veridical context, even if they will be able to receive narrow scope, e.g. if a higher universal quantifier is present: \**Kathe aghori diavase kanena vivlio* \*‘Every boy read any book’. It is not clear to me how unidentifiability could rule out this case. Unidentifiability may be a more useful notion for the PIs *egy-egy* in Hungarian, which, contrary to *any* and the Greek items, seem to have just the property of narrow scope, and are fine in the case just mentioned.

If we want to cast the idea in Kamp and Reyle’s DRT, we must say that dependent existentials cannot introduce a variable into a main DRS; but they can do so in embedded DRSs. In Giannakidou (1998: 138-141), it is further claimed that the dependent indefinite cannot introduce a referent in the set of worlds compatible with what an individual believes. This was needed to account for APIs in propositional attitudes— see that work for more details.

Crucially, the variable dependency of APIs derives their narrow scope and the need to be c-commanded by a nonveridical licenser from the semantics, and nothing special needs to be said about the syntax. Without a nonveridical licenser,  $x_d$  cannot be  $\lambda$ -closed and the structure is uninterpretable, thus ungrammatical. Dependency has another welcome result: it can help us explain the recalcitrant problem of s-structure c-command which seems to hold for APIs and *any* under negation; space prevents me from elaborating on this here, but see Giannakidou and Merchant (2002) for more details.

The Greek items *kanenas* are dependent; and so is *any*, as I argued in Giannakidou (2001); den Dikken and Giannakidou 2002 further characterize *wh-the-hell* phrases as PIs which belong to this class. The analysis can also extend to include Dutch *ooit* and English *ever*.

#### 4.2 Free choice items as intensional indefinites

FCIs contain a dependent world variable. Recall that nonveridicality alone was not enough to predict the correct distribution; our licensing condition had to include a clause further restricting FCIs to contexts which are not episodic.

In Giannakidou 2001, I explained anti-episodicity by arguing that FCIs are intensional indefinites. They contain a dependent variable  $w_d$  that must be bound by an operator that can bind such a variable— a Q, modal, or intensional operator. In an episodic context (veridical or not) there is no such operator, the variable remains unbound, and the FCI is uninterpretable.

(71) \*Idha opjondipote ston kipo.  
*not saw.1sg anybody in-the garden*

(72) \*Dhen idha opjondipote ston kipo.  
*not saw.1sg anybody in-the garden*

(73) # !e x [**person** (x,  $w_d$ ) **saw** (I, x, e) **in-the-garden** (e)]

(74) #  $\neg$  !e x [**person** (x,  $w_d$ ) **saw** (I, x, e) **in-the-garden** (e)]

Because the word variable  $w_d$  is dependent it cannot be assigned the default value of the actual world  $w_0$  which would have to be the case in an extensional context.

Since  $w_0$  is not a possible value for  $w_d$ , and since there is no world-binder in episodic sentences, FCIs are uninterpretable and the structures are ruled out.

The free choice determiner *-dhipote*, then, is as a type shifter of type  $\langle\langle e,t\rangle, \langle s, \langle e,t\rangle\rangle\rangle$ , which, when applied to a property, the common noun denotation, returns an intensionalized property as its output.

$$(75) \quad [[ -dhipote_{FC} \langle\langle e,t\rangle, \langle s, \langle e,t\rangle\rangle\rangle ]] = P_{\langle e,t\rangle} \cdot w_d \cdot x[P(x)(w_d)]$$

$$(76) \quad [[ opjosdhipote \textit{fititis} ]] = \mathbf{student}(x)(w_d)$$

If the property is intensionalized already, then the free choice determiner will act as a filter passing intensionality to the higher node, as in the case of *opjosdhipote ipotithemenos eglimatias* ‘any alleged criminal’.

This account explains the distribution of FCIs straightforwardly, rendering the licensing condition in (45) superfluous. Our goal is thus achieved. The residual issue of what yields quasi-universal readings with FCIs calls for an explanation--and for this we need to posit a presupposition of exhaustive variation in identity alternatives (see Giannakidou 2001 for details). Crucially, exhaustive variation (and possibly scalarity, or *widening* in the sense of Kadmon and Landman 1993, if one wants to include these in the semantics of FC), are not properties that restrict the *distribution* of FCIs; they only further describe their interpretation. For this reason, they cannot be used successfully to predict where PIs will be grammatical or not. This can only be done by the type combinatorics I postulated here.

## 5 Conclusions

The main conclusions of the discussion can be summarized as follows.

1. We need a conservative extension from DE to nonveridicality in order to capture correctly PI-distribution within and across languages. It is hard to find a PI-series that is licensed just by DE (such a PI would have to be admitted by DE quantifiers, but not in questions, for instance).

2. Strawson-DE does not help rescuing the DE-approach. It leaves the occurrence of PIs in modal, intensional, future, habitual, generic and other non-monotone contexts unexplained. And, it overgeneralizes with respect to focus and presuppositional determiners by predicting PIs where in fact they do not occur.

3. Within the nonveridicality hypothesis it is possible to derive limited distribution from lexical semantics: we just need to identify a new type of variable that is *dependent*. Free choice items come with a dependent world variable that must be bound by a Q-operator; if there is no such operator, as is the case in episodic contexts, the world variable remains unbound, rendering the structure ungrammatical. Affective PIs, on the other hand, come with a dependent individual

variable which cannot introduce a discourse referent in the actual world. Such a variable can obviously not be interpreted in veridical contexts.

In sum, by deriving the restricted distribution of some PIs from the lexical semantics, we showed that at least some polarity cases are not that special, i.e. they need not be encoded in a specific polarity module in the grammar. Ultimately we want to derive the distribution of a given PI from mechanisms that are needed in the grammar anyway, and dispense entirely with polarity-specific filters of the traditional kind, which have been so popular in the DE-tradition.

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### **References**

- Atlas, Jay David. 1993. The importance of being Only: Testing the Neo-gricean versus Neo-entailment paradigms. *Journal of Semantics* 10:301-318.
- Atlas, Jay David. 1996. Only Noun Phrases, Pseudo-negative quantifiers, negative polarity items, and monotonicity. *Journal of Semantics* 13: 265-328.
- Bernardi, Raffaella. 2002. *Reasoning with Polarity in Categorical Type Logic*. PhD Thesis, University of Utrecht.
- den Dikken, Marcel, and Anastasia Giannakidou. 2002. Aggressively non-D-linked phrases as polarity items. *Linguistic Inquiry* 33: 31-61.
- Dowty, David. 1994. The role of negative polarity and concord marking in natural language reasoning. *Semantics and Linguistic Theory (SALT) IV*. Cornell University, Ithaca, NY.
- Farkas, Donka. 2002. Varieties of indefinites. In the Proceedings of *Semantics and Linguistic Theory (SALT) 12*.
- Von Stechow, Kai. 1999. NPI-Licensing, Strawson-Entailment, and Context-Dependency. *Journal of Semantics* 16: 97-148.
- Giannakidou, Anastasia. 1995. Subjunctive, habituality and negative polarity. In *SALT V*: 132-150. Cornell University, Ithaca, NY.
- Giannakidou, Anastasia. 1998. *Polarity Sensitivity as (Non)veridical Dependency*. John Benjamins, Amsterdam and Philadelphia.
- Giannakidou, Anastasia. 1999. Affective dependencies. *Linguistics and Philosophy* 22: 367-421.
- Giannakidou, Anastasia. 2000. Negative ...Concord? *Natural Language and Linguistic Theory* 18: 457-523.
- Giannakidou, Anastasia. 2001. The meaning of free choice. *Linguistics and Philosophy* 24: 659-735.
- Giannakidou, Anastasia, and Jason Merchant. 2002. Modularity and the minimalist program. Manuscript. University of Chicago.
- Giannakidou, Anastasia and Frans Zwarts. To appear. Temporal, aspectual operators and (Non)Veridicality. To appear in *The Syntax and Semantics of Tense and Mood Selection*, edited by A. Giorgi, J. Higginbotham, and F. Pianesi, Oxford University Press.



- Groenendijk, Jeroen and Martin Stokhof. 1997 Questions. *Handbook of Logic and Language*, ed. by J. van Benthem & A. ter Meulen. Elsevier Science Publishers, Amsterdam: 1055-1124.
- Haspelmath, Martin. 1997. *Indefinite Pronouns*. Oxford: Clarendon.
- Heim, Irene. 1982. *The Semantics of Definite and Indefinite Noun Phrases*. PhD thesis, University of Massachusetts, Amherst.
- Heim, Irene. 1984. A note on negative polarity and downward entailingness. *NELS* 14: 98-107.
- Heim, Irene. 1992. Presupposition projection and the semantics of attitude verbs. *Journal of Semantics* 9: 183-221.
- Heim, Irene, and Angelika Kratzer. 1998. *Semantics in Generative Grammar*. Blackwell.
- Hoeksema, Jacob. 1983. Negative polarity and the comparative. *Natural Language and Linguistic Theory* 1: 403-434.
- Horn, L. R. 1996. Exclusive company: *only* and the dynamics of vertical inference. *Journal of Semantics* 13: 1-40.
- Horn, L. R. 2001. Assertoric inertia and scalar inference. Formal Pragmatics Workshop, Berlin.
- Israel, M. 1996. Polarity sensitivity as lexical semantics. *Linguistics and Philosophy* 19:619-666.
- Kadmon, Nirit and Fred Landman. 1993. Any. *Linguistics and Philosophy* 16: 353-422.
- Kamp, Hans, and Uwe Reyle. 1993. *From Discourse to Logic*. Kluwer, Dordrecht.
- Karttunen, L. 1977. Syntax and semantics of questions. *Linguistics and Philosophy* 1:3-44.
- Klima, E. 1964. Negation in English. In Katz and Fodor (eds), 246-323.
- Krifka, Manfred, F. J. Pelletier, G. Carlson, A. ter Meulen, G. Chierchia and G. Link (1995) Genericity: an introduction. In G. Carlson & F. J. Pelletier (eds.), *The Generic Book*, 1-124. Chicago: U. of Chicago Press.
- Ladusaw, William A. 1980. *Polarity Sensitivity as Inherent Scope Relations*. Garland, NY.
- Ladusaw, William. A. 1986. Principles of semantic filtering. In the Proceedings of WCCFL 5.
- Lahiri, Utpal. 1998. Focus and negative polarity in Hindi. *Natural Language Semantics* 6:57-23.
- Langacker, R. 1991. *Foundations of Cognitive Grammar*. Stanford Univ. Press.
- Linebarger, Marcia. 1980. *The Grammar of Negative Polarity*. PhD thesis. MIT.
- Montague, Richard. 1969. On the nature of certain philosophical entities. *The Monist* 53: 159-94. Reprinted in 1974 in *Formal Philosophy. Selected papers of Richard Montague*. ed. by R.H.Thomason. Yale University Press, New Haven, 148-87.
- Quer, Josep. 1998. *Mood at the Interface*. PhD thesis, University of Utrecht.
- Quer, Josep. 2000. Licensing free choice items in hostile environments: the role of aspect and mood. Ms. University of Amsterdam.
- Pereltsvaig, Asya. 2000. Monotonicity-based versus veridicality-based approaches to negative polarity: evidence from Russian. In *Formal Approaches to Slavic Linguistics*, 328-346.
- Szabolcsi, Anna. 2001. Positive polarity-negative polarity. Manuscript. New York University.
- Tovena, Lucia. 1998. *The Fine Structure of Polarity Items*. Garland, NY.
- Vikner, Carl. 1999. Episodic and habitual temporal connectives in Danish, Norwegian and Swedish. NORDSEM Report, University of Copenhagen.
- van der Wouden, Ton. 1994. *Negative Contexts*. PhD thesis, University of Groningen.
- Zwarts, Frans. 1986. *Categoriale Grammatica en Algebraische Semantiek. Een studie naar negatie en polariteit in het Nederlands*. PhD thesis. University of Groningen.
- Zwarts, Frans. 1993. Three types of polarity. Ms. Also appeared as Zwarts 1998 in *Plural Quantification*, ed. F. Hamn and E. Hinrichs, Kluwer, Dordrecht.
- Zwarts, Frans. 1995. Nonveridical contexts. *Linguistic Analysis* 25, 3-4: 286-312.