Polarity and 'Illogical Negation'

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1 Introduction

As the title shows, this paper discusses two topics. In the first part I offer new arguments in favor of a semantic (as opposed to a syntactic) approach to polarity items. The approach is essentially that of Ladusaw (1979), but with some mathematical refinements. Moreover, it is shown that Ladusaw's generalizations concerning affirmative polarity items (APIs) are not altogether correct, and that these items fit the general pattern better than Ladusaw himself thought.

The second part of the paper discusses the topic of paratactic negation, a kind of 'illogical' negation occurring in the scope of various kinds of lexical elements and constructions. The semantic approach to polarity phenomena turns out to cover these data as well, which makes it again superior to syntactic alternatives.

2 On the Distribution of Polarity Items

2.1 The Fine-Structure of Negative Polarity

2.1.1 Observations concerning Negative Polarity Items

The Dutch sentences in (1) contain negative polarity items (NPIs) in the scope[1] of sentence negation *niet*. The complex verbal expression

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[1]We will not dwell here on the question how 'scope' should be defined with respect to negation and polarity items.

kunnen uitstaan 'can stand', the complex indefinite *ook maar iets* 'anything', and the idiomatic adjectival expression *mals* all yield perfectly grammatical results.

(1) a. De kinderen *kunnen* de schoolmeester *niet uitstaan*
The children can the schoolmaster not stand
'The children can't stand the teacher'

b. Ik denk *niet*, dat de kinderen *ook maar iets* zullen bereiken
I think not, that the children anything will reach
'I don't think that the children will reach anything'

c. Zijn oordeel was *niet mals*
His judgement was not tender
'He was very harsh in his judgement'

The situation changes as soon as negation is incorporated in the subject noun phrase, as is demonstrated in (2): *kunnen uitstaan* and *ook maar iets* are still fine in these sentences, but the sentence containing *mals* is ungrammatical.[2]

(2) a. *Geen kind kan* de schoolmeester *uitstaan*
No child can the schoolmaster stand
'No child can stand the teacher'

b. *Geen kind* zal *ook maar iets* bereiken
No child will anything reach
'No child will reach anything'

c. **Geen oordeel* was *mals*
No judgement was tender

The picture is different again if the negative quantifier *geen* 'no' is replaced by *weinig* 'few', as in (3): sentence (3a) containing *kunnen uitstaan* is the only grammatical one left.

(3) a. *Weinig kinderen kunnen* de schoolmeester *uitstaan*
Few children can the schoolmaster stand
'Few children can stand the teacher'

b. **Weinig kinderen* zullen *ook maar iets* bereiken
Few children will anything reach

c. **Weinig oordelen* waren *mals*
Few judgements were tender

[2] As always, informants try to make as much sense of sentences like (2c) as possible, but the only interpretation they can get involves the literal reading of *mals*, which leads to nonsense.

The findings with respect to Dutch NPIs are summarized in Table 1.

Table 1

	kunnen uitstaan	ook maar iets	mals
weinig	√	*	*
geen	√	√	*
niet	√	√	√

The reader is warned not to view the state of affairs summarized in this table as just one more of the many idiosyncracies of Dutch, for the following sentences show that a parallel situation exists in English:

(4) a. Chomsky wasn't *a bit* happy about these facts
b. Chomsky didn't talk about these facts *yet*
c. Chomsky didn't talk about *any* of these facts

(5) a. *No one was *a bit* happy about these facts
b. No one has talked about these facts *yet*
c. No one talked about *any* of these facts

(6) a. * At most three linguists were *a bit* happy about these facts
b. * At most three linguists have talked about these facts *yet*
c. At most three linguists have talked about *any* of these facts

For convenience of the reader, we list the findings with respect to the distribution of English NPIs in Table 2.[3]

Table 2

	any	yet	a bit
at most three	√	*	*
no one	√	√	*
not	√	√	√

[3]This table goes back to a suggestion of Edward Klima's, via Spellmire (n.d.), Zwarts (1992), and Ladusaw (1980): 'Klima [1964] showed that some items of limited distribution, such as the particle *either*, were licensed only by negations [...]' (Ladusaw 1980, footnote 1). Spellmire claims that *either* is compatible with sentence negation (and other elements of that semantic class) only. Most of the *either*–cases (ca. 90 %) in real life texts corroborate Spellmire's claim; in the following corpus examples, however, a weaker negation licenses *either*.
No one goes out of their way to make it easier, either.
'It is hardly likely, either,' continued Bathsheba.
She was never into drugs, either–her only addictions being nicotine and chocolate.

2.1.2 Syntactic Approaches to the Distribution of NPIs

How can we explain the distributional patterns shown in the tables in the last section? Abstracting away from details of implementation, the various syntactic approaches to the distribution of negative polarity items (as exemplified by Klima (1964), Linebarger (1980), Seuren (1985), Progovac (1988), Zanuttini (1991), Seuren (1991)) claim that, in the normal case, NPIs occur in the scope of a negative operator only. Sentences that fail to show an overt negative operator but that allow NPIs nonetheless, such as comparative constructions, relative clauses and sentences containing the adverb *hardly* (7), are allegedly derived from deep structures containing a negative operator.

(7) a. Susan is lovelier than *anyone* expected her to be[4]

b. Anyone who *budged an inch* was shot[5]

c. There was hardly *any* money, and hardly *any* hope[6]

This reasoning, however, is circular: a cluster of phenomena is explained by postulating an underlying negative element. No independent motivation for the existence of this underlying element is given, apart from parallelism with cases where the same phenomenon occurs in the scope of a visible negative element, and the occurrence of the phenomenon to be explained.

Moreover, the claim meets empirical problems. Reconsider the sentences in (6). In order to account for the well–formedness of sentence (6c), containing the NPI *any*, an underlying negation must be postulated. If such an underlying negation is present in (6c), it will be, according to this line of reasoning, present in (6a) and (6b) as well. These sentences, containing the NPIs *either* and *yet*, respectively, are nonetheless ungrammatical. Comparable problems arise in the sentences of (5): *no one* pretty much looks like a negative operator, but whereas the negative polarity items *any* and *yet* are fine in its scope, the NPI *either* is not.

2.1.3 A Typology of Monotone Decreasing Contexts

In the seminal work of Ladusaw (1979), elaborating on work by Gilles Fauconnier, a semantic factor instead of negation was claimed to be the crucial factor that triggers polarity, viz. 'downward entailment', also known as 'polarity reversal' or the property of being 'monotone

[4]Hoeksema (1983, (42)).
[5]Linebarger (1987, (171)).
[6]Seuren (1991, (4)).

decreasing'. Along these lines, Frans Zwarts has designed a typology of monotone decreasing operators within the theory of Generalized Quantifiers (Barwise and Cooper 1981) that is a refinement of this work (Zwarts 1986). The relevant categories and their definitions are given below.[7]

Monotone Decreasing (MD) operators are closed under subsets; Downward Entailment is not restricted to one syntactic category, nor is it the case that if one element of a category has this property, all do.

(8) A functor f is monotone decreasing (downward entailing) iff
$\forall$ sets P and Q, Q $\leq$ P $\rightarrow$ f(P) $\leq$ f(Q)

This is equivalent to[8]

(9) A functor f is monotone decreasing (downward entailing) iff
f(X or Y) $\rightarrow$ f(X) and f(Y)

The following examples demonstrate that *few children* and *at most three children* are monotone decreasing noun phrases, but *many children* is not; *to doubt* is a MD verb, *without* is a MD preposition, and *hardly* is a MD adverb:

(10) a. *Few children* like vegetables $\rightarrow$ *few children* like spinach

b. *At most three children* sing a song $\rightarrow$ *at most three children* sing a song by Bob Dylan

c. *Few children* sing or dance $\rightarrow$ *few children* sing and *few children* dance

(11) a. *Many children* like vegetables $\not\rightarrow$ *many children* like spinach

[7] Zwarts's original typology handled monotone decreasing nominal expressions only. In the light of the generalization of the notion entailment in Keenan and Faltz (1985), the relevant semantic inference patterns hold for the semantic types associated with other syntactic categories as well, as long as their semantics is in the universe of Boolean algebras. Therefore, we may be sloppy about semantic types.

[8] Zwarts (1986) uses both definitions, as well as the tests that follow from them; Ladusaw (1980) shows that the *or*–test does not work completely in the case of affective verbs such as *to regret*: although it licenses NPI *anyone* [i], the disjunction in [iia] does not entail the conjunction in [iib].

i John regrets that anyone was injured

iia John regrets that Mary or Susan was injured

iib John regrets that Mary was injured and John regrets that Susan was injured

In the relevant cases in the remainder of this paper, we will mostly use the test parallel to 10a.

b. *Many children* sing a song $\not\rightarrow$ *many children* sing a song by Bob Dylan

c. *Many children* sing or dance $\not\rightarrow$ *many children* sing and *many children* dance

(12) a. John *doubts* that Mary sings or dances $\rightarrow$ John *doubts* that Mary sings and John *doubts* that Mary dances

b. The king arrived *without* any knight or baronet $\rightarrow$ the king arrived *without* any knight and the king arrived *without* any baronet

c. There was *hardly* money or hope $\rightarrow$ There was *hardly* money and there was *hardly* hope

Anti-additive operators form a proper subset of the monotone decreasing operators. They preserve the Boolean operation of union, that is, anti-additive operators are operators that map unions into their opposites, intersections (Hoeksema 1983).

(13) A functor f is anti-additive iff f(X or Y) $\leftrightarrow$ f(X) and f(Y)

Again, anti-additivity is not an exclusive property of one syntactic category (15), nor is it the case that all elements of a certain category possess this property: *no children* is anti-additive, but *few children* is not (14a vs. 14b), although both noun phrases are monotone decreasing. Note that sentences (15d) and (15e) demonstrate that some comparative constructions[9] and some relative clauses (Zwarts 1986) are anti-additive contexts as well.

(14) a. *No children* sing or dance $\leftrightarrow$ *no children* sing and *no children* dance

b. *Few children* sing or dance $\not\leftarrow$ *few children* sing and *few children* dance

(15) a. John *doubts* that Mary sings or Bill dances $\leftrightarrow$ John *doubts* that Mary sings and John *doubts* that Bill dances

b. There was *hardly* money or hope $\leftrightarrow$ There was *hardly* money and there was *hardly* hope

c. The king arrived *without* any knight or baronet $\leftrightarrow$ The king arrived *without* any knight and the king arrived *without* any baronet

[9]Hoeksema (1983) claims that all and only sentential comparatives are anti-additive; cf. Hendriks (in progress) for a somewhat different view.

d. He is faster than I would expect from a librarian or a philosopher ↔ He is faster than I would expect from a librarian and he is faster than I would expect from a philosopher

e. Anyone who budges an inch or lifts a finger will be shot ↔ Anyone who budges an inch will be shot and anyone who lifts a finger will be shot

Antimorphic operators are a subset of the anti-additive operators; they obey the complete set of De Morgan Laws.

(16) A functor f is antimorphic iff
f(X) and f(Y) ↔ f(X or Y) and f(X) or f(Y) ↔ f(X and Y)

The examples demonstrate that the negation *not* belongs to the class of antimorphic operators, whereas the negative quantifier *no children* doesn't.

(17) a. *Not* sing and *not* dance ↔ *not* (sing or dance)

b. *Not* sing or *not* dance ↔ *not* (sing and dance)

(18) *No children* sing and dance ↛ *no children* sing or *no children* dance

Note that it is not the case that (sentence) negation is the only antimorphic operator: in Dutch, adverbs such as *allerminst* 'not at all' (an API itself) and *allesbehalve* 'anything but' show exactly the same behavior:

(19) a. De schoolmeester is allesbehalve gelukkig of tevreden ↔ De schoolmeester is allesbehalve gelukkig en de schoolmeester is allesbehalve tevreden
'The teacher is anything but happy or satisfied'

b. De schoolmeester is allesbehalve gelukkig en tevreden ↔ De schoolmeester is allesbehalve gelukkig of de schoolmeester is allesbehalve tevreden

Apart from anti-morphic adverbs, such as *not*, one finds anti-morphic noun phrases such as *not Frege* and *not the philosopher*:

(20) Not Frege sings and dances ↔ not Frege sings or not Frege dances

Expressions of the form *Not the X* and *Not Propername*, i.e., the complements of unique descriptions, are the *only* anti-morphic noun phrases, apart from the trivial quantifiers ∅ and P_W(E).[10]

[10] Zwarts (1986, 416), who attributes this result to Johan van Benthem. The editors suggest that all anti-morphic functions can be expressed as negation composed with homomorphic functions.

2.1.4 Application of the Typology: Some Generalizations

On the basis of the data discussed so far, the following generalizations may be stated.[11]

- Weak Negative Polarity Items, such as *kunnen uitstaan* in Dutch and *any* in English, may (apart from other restrictions) occur in all Monotone Decreasing contexts.
- Negative Polarity Items of medium strength, such as *ook maar iets* in Dutch and *yet* in English, may (apart from other restrictions) occur in all Anti-additive contexts.
- Strong Negative Polarity Items, such as *mals* in Dutch, may (apart from other restrictions) occur in all Anti-morphic contexts.

Note that it is the semantics of the MD operator that licenses the NPIs: operators from other *syntactic* categories that are comparable to the ones given earlier with respect to Polarity Reversal yield the same result:

(21) a. De klas kan rustig zijn *zonder* dat de kinderen de meester *kunnen uitstaan*
'The class can be quiet without that the children can stand the teacher'

b. *Without* being completely healthy *yet*, the patient is no longer in critical condition

c. The teacher *doubts* that the children have learned *anything*

d. Zijn commentaar was *allerminst mals*
'He was pretty harsh in his judgement'

e. The prime minister is *not at all* safe *either*

To sum up the results of this section, we can collapse and formalize the tables we gave before:

[11] Generalizations such as these are called 'laws of negative polarity' in Zwarts (1986). Zwarts only distinguishes a strong and a weak form of negative polarity there, which is, as the examples show, empirically inadequate. Cf., however, his (1993). Incidentally, it should be noted (and it has been noted, e.g. by Linebarger (1987)) that some occurrences of polarity items do not fit too nicely in these laws. On the one hand, some polarity items do not occur in all contexts that meet their semantic needs. E.g. Dutch *hoeven* 'need' only needs a MD context, but it doesn't occur in relative clauses (de Mey 1990). On the other hand, some polarity items occur in contexts lacking the exact properties needed. E.g. Dutch *ooit* 'ever' and its English counterpart occur in superlative constructions (Hoeksema 1986).

Table 3

	any kunnen uitstaan	yet ook maar iets	a bit mals
monotone decreasing	√	*	*
anti-additive	√	√	*
anti-morphic	√	√	√

These results offer, among other things, an alternative explanation for the fact that NPIs show up in (certain) comparative constructions, (certain) relative clauses, and sentences involving *hardly* (sentences (7)). We no longer need to postulate an underlying negative element in these cases: the semantic properties of these constructions, which are testable independently by way of the various inference patterns, constitute the crucial factor that licenses the occurrence of negative polarity items.

2.2 The Fine-structure of Affirmative Polarity

2.2.1 Observations Concerning APIs

Affirmative Polarity Items (APIs) are usually defined as lexical items that are *not* combinable with negation (given normal intonation).[12] APIs have received much less attention in the literature than NPIs, because it was thought that they are simple to deal with. E.g. von Bergen and von Bergen (1993, 11-12), following Ladusaw (1979, 135), think that the distribution of APIs may be described in a relatively easy way: they allegedly do not occur in the scope of an explicit negation. The following Dutch examples (after van der Wouden (1988)), however, show that these elements exhibit a fine-structure that is similar to the one just demonstrated for NPIs (van der Wouden 1989).

(22) a. *De schoolmeester is *niet allerminst* gelukkig
The teacher is not not-at-all happy

b. *De schoolmeester is *niet een beetje* gelukkig
The teacher is not a bit happy

c. *De schoolmeester is *niet al* gelukkig
The teacher is not already happy

(23) a. **Geen van de schoolmeesters* is *allerminst* gelukkig
None of the teachers is not-at-all happy

b. **Geen van de schoolmeesters* is *een beetje* gelukkig
None of the teachers is a bit happy

[12] In the following, we abstract away from echo-readings, denial, metalinguistic negation, litotes and the like.

c. *Geen van de schoolmeesters* is *al* gelukkig
None of the teachers is already happy

(24) a. **Weinig schoolmeesters* zijn *allerminst* gelukkig
Few teachers are not-at-all happy

b. *Weinig schoolmeesters* zijn *een beetje* gelukkig
Few teachers are a bit happy

c. *Weinig schoolmeesters* zijn *al* gelukkig
Few teachers are already happy

Lexical items such as *allerminst* 'not at all', *een beetje* 'a bit' and *al* 'already' are APIs, as they all yield ungrammaticality in the scope of sentence negation *niet* (22). However, not all affirmative polarity items are equal, as things start to change as soon as sentence negation is replaced by a negative quantifier in subject position. Consider (23): the sentences with *allerminst* and *een beetje* are still unacceptable, but the one with *al* is flawless. If, finally, the negated subject *geen van de schoolmeesters* is replaced by *weinig schoolmeesters*, both the sentence with *een beetje* and *al* are well–formed: the combination with *allerminst*, however, is out.

We summarize our findings with respect to the distribution of Dutch APIs in a table:

Table 4

	al	een beetje	allerminst
weinig	√	√	*
geen	√	*	*
niet	*	*	*

Ladusaw (1979, Ch. 6) claims that all APIs in English are excluded from monotone decreasing contexts containing an overt negation. This may be interpreted as equivalent to the statement that English APIs uniformly abhor *anti-additive* contexts. However, the following examples, taken from Ladusaw (1979, 134), suggest something else, viz., that there exist various types of APIs in English as well:[13]

[13] The asterisks in these examples are not intended to mean 'ungrammatical under any meaning', but rather 'ungrammatical under the intended meaning', the intended meaning being the one where the affirmative polarity item is construed within the scope of sentence negation, *no one*, *few people* and *hardly*, respectively. E.g., the reading of (25a) where the scope-bearing elements *someone*, *n't* and *some* are in that order is not available. The judgements are Ladusaw's, who admits they are delicate; sentences (25) have no star, but a question mark in Ladusaw (1979), but according to the text these sentences can only be denials, readings which we exclude from our discussion.

(25) a. *Someone hasn't eaten *some* of his soup
b. *John hasn't *already* finished the exam
c. *John wouldn't *rather* be in Cleveland

(26) a. *No one ate some of the soup
b. *No one has already finished the exam
c. *No one would rather be in Cleveland

(27) a. ?Few people ate some of the soup
b. Few people have already finished the exam
c. Few people would rather be in Cleveland

(28) a. ??Hardly anyone ate some of the soup
b. ?Hardly anyone has already finished the exam
c. Hardly anyone would rather be in Cleveland

Although our findings with respect to English APIs are not as clear-cut as those with respect to Dutch, it is good to summarize them in a table.

table 5

	some	already	rather
few people	?	√	√
hardly anyone	??	?	√
no one	*	*	*
n't	*	*	*

2.2.2 A Typology of APIs: Some Generalizations

In the last section, we showed that no APIs in Dutch and English may be combined with sentence negation, and that some APIs may appear in the scope of noun phrases such as *weinig schoolmeesters* and *few people*, whereas others may not. It will probably not come as a surprise that other operators, such as the verb *betwijfelen* 'to doubt', pattern with these noun phrases:

(29) a. *De leraar *betwijfelt* dat de leerlingen *allerminst* thuis zijn
the teacher doubts that the pupils not-at-all at-home are
b. *Hij is *allesbehalve allerminst* gelukkig
he is anything-but not-at-all happy
c. *De leraar *betwijfelt* dat de leerlingen *een beetje* ziek zijn
the teacher doubts that the pupils a bit ill are
d. De leraar *betwijfelt* dat de leerlingen *al* thuis zijn

e. The teacher *doubts* that the pupils are at home *already* (=29d)

From examples such as the ones just given, we cannot but conclude that it is the *semantics* of the operators involved that is responsible for the fact that only some APIs are allowed in their scope.

On the basis of the data discussed in this section and elsewhere, we propose the following generalizations.[14]

- Strong Affirmative Polarity Items, such as Dutch *allerminst*, are excluded from all monotone decreasing contexts.
- Affirmative Polarity Items of medium strength, such as Dutch *een beetje* and most English APIs, are excluded from all anti-additive contexts.
- Weak Affirmative Polarity Items, such as Dutch *al*, are excluded from anti-morphic contexts.

We restate Table 4 in terms of the theory we have been developing throughout this paper:

Table 6

	al	een beetje	allerminst
Monotone Decreasing	√	√	*
Anti-additive	√	*	*
Anti-morphic	*	*	*

2.3 Conclusion: Negation and Polarity Phenomena

Zwarts's typology gives us the apparatus to describe the complex distribution of the various types of polarity items in Dutch. Negative and affirmative polarity items are not in complementary distribution, but they show a nice mirror image structure, as is illustrated in the following table.

Table 7

	NPIs			APIs		
	strong	medium	weak	weak	medium	strong
MD	*	*	√	√	√	*
Anti-additive	*	√	√	√	*	*
Anti-morphic	√	√	√	*	*	*

[14] Generalizations such as these are called 'laws of affirmative polarity' in Zwarts (1986). Zwarts only distinguishes a strong and a weak form of affirmative polarity, which is, as the examples show, empirically inadequate.

The fine-structure demonstrated yields a host of counterexamples and problems for all theories that claim *negation* to be the crucial factor in triggering polarity effects. There is no way in which a binary system may account for the rich variety of polarity items we find in natural language; a more fine-grained semantics is called for.

2.4 An Aside: Bi-polar Elements

According to the theory given above, it is not impossible that there exist lexical elements that show a combination of NPI and API behavior. Nothing in the theory so far forbids such a conspiracy of various restrictions on the distribution of words. This being said, consider the following examples:

(30) a. *Een van de kinderen gaat *ooit* bij oma op bezoek
One of the children goes ever with granny on visit
'One of the children ever visits granny'

b. Weinig kinderen gaan *ooit* bij oma op bezoek
Few children go ever with granny on visit
'Few children ever visit granny'

c. Geen van de kinderen gaat *ooit* bij oma op bezoek
None of the children goes ever with granny on visit
'None of the children ever visits granny'

d. *Een van de kinderen gaat niet *ooit* bij oma op bezoek[15]
One of the children goes not ever with granny on visit

In the theory developed here, there is an obvious way to explain these data. Assume that *ooit* 'ever' combines properties of negative and affirmative polarity items (we might call it a 'bi-polar item'). In this view, it is a negative polarity item (of the weakest type) as it is uncomfortable in a context that is not monotone decreasing, such as (30a), and fine in monotone decreasing (30b) and anti-additive (30c) contexts. On the other hand, it is a (weak) affirmative polarity item in causing ungrammaticality in antimorphic contexts (30d).

In a theory that attributes polarity effects to (underlying or surface) negation, examples such as (30a–30d) are both unexpected and unex-

[15]Note that this sentence is ungrammatical for the reason given and not because the sequence *niet ooit* 'not ever' is blocked by the existence of the lexical element *nooit* 'never': *ooit* is also excluded from the scope of the antimorphic operator *allerminst* 'not at all'.

i *Een van de kinderen gaat *allerminst ooit* bij oma op bezoek
One of the children goes not at all ever with granny on visit

plainable. However, they fit perfectly well in a semantically oriented theory such as the one developed here.[16]

3 Paratactic Negation

3.1 Introduction

Various languages and dialects show the effect of paratactic negation (PN) (Jespersen 1917), also known as 'redundant negation', 'expletive negation' or 'sympathetic negation'. The terms refer to the phenomenon that verbs and other lexical elements with 'negative import' either trigger the occurrence of one or more negative morphemes in their complement clause, or select a special type of complementizer that may or may not be homophonous to a negation operator. The following sentences are instances of PN:

(31) a. Nature defendeth and forbedeth that *no man* make hymself riche (Chaucer)

b. First he denied you had in him *no* right (Shakespeare)

c. Je crains qu'il *ne* vienne (French)
I fear that-he not comeSUBJ
'I fear that he may come'

d. Evitez qu'il *ne* vous parle (French)
prevent that-he not to-you speak
'prevent that he talks to you'

(32) a. Timeo *ne* veniat (Latin)
'I fear that he may come'

b. Then fearing *lest* we should have fallen upon rocks, they cast four anchors out of the stern, and wished for the day (Acts 27:29, King James version)[17]

[16] As Jack Hoeksema pointed out to me, matters with respect to *ooit* are slightly complicated by the fact that *ooit* is losing its NPI character. Nowadays one finds sentences such as [i] that were considered ungrammatical a century ago.

i Ooit kende Groningen meer dan duizend molens
Ever knew Groningen more than thousand mills
'Groningen used to have more than a thousand mills'

The judgements concerning (30a–30d) are however pretty robust; cf. footnote 11.

[17] To show that *lest* in itself has a negative meaning, we quote Acts 27:42: *And the soldiers' counsel was to kill the prisoners,* lest *any of them should swim out, and escape.* 'And the soldiers' counsel was to kill the prisoners, in order that none of them would swim away and escape'.

c. Fobamai *mipos* kano lathos (modern Greek)[18]
fear-1SG that-not make-1SG error
'I am afraid to make an error'

3.2 Explaining Paratactic Negation

The phenomenon of PN occurs in languages such as Latin, Greek (both classical and modern), French, Polish, etc. Traditional explanations of the phenomenon take one of the following forms.

1. According to a line of thinking that leads back at least as far as Paul (1886) and others, *I fear that he may not come* (meaning 'I fear that he comes') is a CONTAMINATION of *I fear that he will come* and *I hope that he will not come.*

2. van Ginneken (1907) and others stress the EMOTIONAL character of repeated negation: 'the negative prefix is, very unmathematical, placed both before and inside the brackets, in order to spread the negative feeling across the whole proposition'.[19]

3. More modern sources (Seuren 1991, Progovac 1992) postulate an underlying NEGATION in the words that license paratactic negation — just as an underlying or abstract negation has been postulated since Klima (1964) to explain the occurrence of negative polarity items in the scope of such elements.

Each of these explanations is problematic, one way or another. To begin with, explanation 1 does not explain *why* verbs and other lexical elements tend to contaminate, and why some words with a negative flavor do show the effect, whereas others don't. Therefore, we will not elaborate on this approach. Explanation 2 may be intuitively plausible, but it is too impressionistic and too vague to make any predictions; therefore, it can be dispensed with. Finally, explanation 3 suffers from circularity: an abstract element is postulated to explain a fact or a group of facts, but these facts are the only argument in favor of the postulated element: there is hardly any independent evidence for its presence.[20] Moreover, such a postulated difference is counterintuitive: all verbs under discussion do have some negative-like meaning, as may be demonstrated in the following sketchy analyses: hinder'(X) = cause X not to become the case; refuse'(X) = not allow that X becomes the case; doubt'(X) = not believe that X is true; fear'(X) = believe that

[18] Example from Ruge (1986). Thanks to Stella Markantonatou for discussing the Greek facts with me.
[19] van Ginneken (1907, 198).
[20] Cf. section 2.1.2.

X will be the case and hope that X will not be the case. If these are anywhere near right, they are not of any help: all verbs contain an underlying negation.

Two more types of explanation of the effect of paratactic negation may be thought of, a syntactic one and a semantic one.

4. Some verbs (etc.) are SUBCATEGORIZED (in the sense of Jackendoff (1977)) for a (paratactically) negative complement or a special, negative complementizer.

5. Paratactic negation is sensitive to SEMANTIC properties of the subordinate clause, perhaps in a way comparable to the way polarity items are sensitive to semantic properties.

Explanation 4 is not without problems either. If paratactic negation would be a case of subcategorization, it should be rather easy to learn and use. In the normal case of subcategorization, the language learner hears that a word is used with a certain complement (or may be used with some argument, in the case of optionality), (s)he remembers this, and that's it. One very seldom meets a native speaker who fails to use verbs like *devour* or *wonder* with the right complements, i.e., with a (optional) noun phrase and a clause starting with *if* or a question word, respectively. However, things are different in the case of paratactic negation. In modern standard Dutch, paratactic negation is supposed to be extinct; normative grammarians nonetheless still need to forbid examples such as (33).[21] The same holds for modern French where the grammar books allow paratactic negation in some constructions and forbid it in others, but where errors against these rules may be found even in the best writers (34).[22] If, then, paratactic negation is a case of subcategorization, it is of a special, error-prone kind indeed, unlike the ordinary cases of subcategorization.

(33) a. *Hij verbood mij dat ik het raam *niet* zou opendoen (Dutch)
He forbade me that I the window not would open
'He forbade me to open the window'

b. *De beklaagde bleef ontkennen dat hij de misdaad *niet* begaan had (Dutch)

[21] The examples are from Tacx (1961). The asterisks mean 'forbidden by normative grammar' here. Alexis Manaster-Ramer and Jack Hoeksema warned me to be careful in using prescriptive grammars as proof that certain sentences are judged grammatical by a considerable number of native speakers. The examples under discussion usually involve complicated sentences, so they may as well constitute implicit warnings to be careful as regards performance errors.

[22] Kukenheim (1968, 181). The examples are from Kukenheim (1968) and Cristea (1971). The asterisks mean 'forbidden by normative grammar' here.

The accused stayed deny that he the crime not committed had
'The accused continued to deny the crime'

(34) a. J'ai peur que ce *ne* soit trop fatigant (French)
I have fear that it not be too tiresome
'I fear that it may be too tiresome'

b. Il faut éviter que les relations *ne* se dégradent (French)
It should avoid that the relations not themselves deteriorate
'The relations shouldn't get worse'

c. *Il m'apprenait ... qu'un ouvrier est tout aussi bien un Monsieur que *ne* l'est un homme du monde (French: Proust)
he me-taught that-a workman is just as good a Monsieur than not it-is a man of-the world
'He taught me that a working man is a Monsieur just like a man of the world'

Let us therefore forget about explanation 4, and consider explanation 5: that paratactic negation is triggered by semantic properties. Let us furthermore assume that essentially the same kind of properties license both polarity effects and paratactic negation, i.e., that the explanation of the occurrence of paratactic negation in the complement of a certain word or construction may be cast in terms of the monotonicity properties of that word or construction.

3.3 Arguments in favor of a Semantic Approach

3.3.1 Contexts for Paratactic Negation and Polarity

A first argument in favor of the possible correctness of a semantic explanation may be found in the fact that, although there exists considerable cross-linguistic, diachronic, dialectical and even individual variation, the set of words and constructions that license paratactic negation and the set of words and constructions that license polarity effects tend to overlap to a large extent. For instance, in the scope of the elements just demonstrated to license paratactic negation, negative polarity items may occur as well:[23]

(35) a. Hij verbood mij *ook maar* een raam open te zetten
He forbade me whatever window open to put
'He forbade me to open any window whatsoever'

[23]Thanks to Rita Landeweerd, Hillig van't Landt, and Henriëtte de Swart for discussing the French data with me.

b. De beklaagde bleef ontkennen dat hij *een vinger* naar de juwelen *had uitgestoken*
The accused stayed deny that he a finger to the jewels had lifted
'The accused continued to deny that he had lifted a finger towards the jewels'

(36) a. J'ai peur que *personne* ne vienne
I have fear that nobody not come
'I fear nobody will come'

b. Il faut éviter qu'il achète *quoi que ce soit*
It should avoid that he buy whatever
'He shouldn't buy anything'

c. Défense de déposer *quoi que ce soit* ici
Forbidden of anything here
'It is forbidden to deposit anything over here'

3.3.2 On the Semantics of Paratactic Negation Contexts

Secondly, the monotone decreasing character of the operators under discussion can be demonstrated, using the subset test:

(37) a. Hij verbood mij een *raam* te openen → Hij verbood mij een *keukenraam* te openen
'He forbade me to open a window → he forbade me to open a kitchen window'

b. J'ai peur que *personne* ne vienne → J'ai peur que *personne de mes amis* ne vienne
'I fear nobody will come → I fear that nobody of my friends will come'

The monotone decreasing character of the verbs *ontkennen* 'deny', *éviter* 'avoid' and *defense* 'forbidden' may be demonstrated analogously.

3.3.3 The Uniformity across Languages

The third argument for a semantic explanation underlying paratactic negation may be found in its relatively uniform behavior across languages. For instance, if we compare the occurrence of the phenomenon in modern French (according to Grévisse (1980) with that in seventeenth century Dutch as used by Vondel[24] (according to van Helten (1883)), the following generalizations may be formulated:

[24]The influential writer Joost van den Vondel (1587–1679) wrote ca. 32 plays, in addition to a lot of poetry and prose. This part of the research would have been

- Paratactic negation is never obligatory
- It often coincides with subjunctive, conjunctive and other moods that are typically used to express counterfactuals, irrealis etc.
- The phenomenon occurs after words expressing FEAR

(38) a. J'ai *peur* qu'il *ne* vienne
I-fear that-he not come SUBJ
'I fear he will come'

b. J'ai *peur* que l'événement *ne* vous trompe
I-have fear that the-event not you mislead SUBJ
'I am afraid the event will mislead you'

(39) a. Uyt *vreeze* dat de Staet *niet* strande
From fear that the state not go-under SUBJ
'Out of fear, that the state would collaps'

b. Van *vreeze* datze *niet* wierd nae haer dood mishandelt
Of fear that-she not would after her death ill-tretade
'Fearing that she would be treated badly after death'

- Paratactic negation may be triggered by words expressing HINDER, PRECAUTION, and PROHIBITION:[25]

(40) a. J'*empêche* qu'il *ne* vienne
I-prevent that-he not come SUBJ
'I prevent that he come'

b. Donnez-vous *garde* qu'on *ne* vous attaque
Give-you guard that-one not you attack SUBJ
'Take care of being attacked'

(41) a. Men *hindre* dat hier *niet* de weiflaers 't zamenrotten
One prevent SUBJ that here not the hesitants to gethercome
'One should prevent that the hesitants come together here'

b. *Keer*, [...] Dat de schoone Abizag *niet* [...] stof bestelle, tot verdriet van getrouwe burgeryen [...]

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impossible without the help of Ben J. Salemans, who made available Salemans and Schaars (1990) in machine readable form.

[25] van Helten (1883) states that after verbs such as *hinderen* 'to hinder' Vondel *always* uses paratactic negation. With the help of the computer it was easy enough to find a counterexample to this claim:

i Pluck weelde, en *hinder* dat de quicxse lent des levens Voorby vloey.
'Seize the day, and prevent that the joyful springtime of life flow away'

Prevent that the beautful Abizag not stuff bring about to grief of faithful citizenships
'Prevent that the beautiful Abizag cause the sorrow of faithful citizens'

- Paratactic negation is absent after words of DUBITATION:[26]

(42) a. Je doute fort que cela soit
I doubt strongly that that be SUBJ
'I seriously doubt that that should be'

b. Il nie que ce soit trouvé dans cette maison
He denies that it be SUBJ found in that house
'He denies that it was found in that house'

(43) In twyffel, of hy met den hals syn' schuld sou boeten
In doubt, if he with the neck his debt would pay
'Doubting whether he was going to pay with his life'

- One may find it in various types of COMPARATIVE constructions:[27]

(44) a. Il est autre que je ne croyais
He is other than I not believed SUBJ
'He is different than I thought'

b. Paris était alors plus aimable qu'il n'est aujourd'hui
Paris was then more nice than-it not-is today
'Paris was more amiable then than it is today'

- It also sometimes occurs in subordinate constructions governed by 'CONJUNCTIVE' elements such as (French) *avant que* ('before'),[28] *sans que* ('without'),[29] *à moins que* ('unless'), etc.[30]

[26] In Latin, words of dubitation sometimes license paratactic negation:

i Dubito ne veniat
I doubt that-not he come
'I doubt that he will come'

In all the other cases discussed here, Latin has paratactic negation as well. We assume that the phenomenon of PN is parametrized in such a way that in some languages, all and only the MD contexts license PN, in other languages, a subset of these contexts (perhaps Vondel's Dutch is a case in point), in a third class of languages, a superset thereof. We will not dwell on this topic.

[27] For polarity-effects in comparative constructions, compare Hoeksema (1983).

[28] On *before*, cf. Sánchez Valencia, van der Wouden and Zwarts (1993).

[29] Sources disagree on whether paratactic negation occurs after *sans que*: according to Kukenheim (1968), this element is not followed by *ne*, according to Grévisse (1980), it is.

[30] Browsing the Vondel corpus didn't yield any clear cases of paratactic negation after *eer* 'before' or *zonder* 'without'. van Helten (1883) doesn't discuss these cases.

(45) a. Avant qu'il ne fasse froid
Before that-it not gets cold
'Before it gets cold'

b. Le lieutenant répondit militairement au salut sans qu'un muscle de sa figure ne bougeât
'The lieutenant answered the salute in a military way without moving a muscle in his face'

Seventeenth century Dutch and contemporary French show comparable patterns with respect to the distribution of paratactic negation: French and Dutch verbs of dubitation do not trigger the effect, whereas verbs of hinder and fear do. This suggests that some semantic factor is at play here. If the phenomenon would be a matter of idiosyncratic properties of lexical items, be they subcategorizational or collocational in nature, this patterning would be unexpected.

Alternatively, one might explain the phenomena by invoking an underlying negation, but that is circular. Of course, it is possible to postulate a negation in the deep structure (or componential analysis) of verbs of fear and hinder, and not in the deep structure of verbs of dubitation, but as independent evidence for such an entity is lacking, nothing much is gained.

So, by exclusion, we are left with the hypothesis that it is (aspects of) the semantics of lexical elements that licenses paratactic negation.

3.3.4 'Double Negations'

The fourth argument for the assumption that the same mechanism is at work both in paratactic negation and polarity effects may be found in the fact that comparable 'double negation effects' effects occur. Baker (1970) noticed that, contrary to what one would expect, affirmative polarity items (such as *rather* in the examples below) may occur in the scope of downward entailing items, if only these themselve are in the scope of downward entailing items. In cases such as these, two negations seem to behave logically, i.e., they cancel out:

(46) a. Everybody in this camp would *rather* be in Montpellier

b. *Everybody in this camp would*n't rather* be in Montpellier

c. **Nobody* in this camp would *rather* be in Montpellier

d. *Nobody* in this camp would*n't rather* be in Montpellier

In this type of contexts, negative polarity items are less than perfect. Native speakers sometimes judge these sentences grammatical, but they seldom know what their meaning might be:

(47) ?*Nobody* in this camp does*n't* like *any* green vegetables

Words that are able to license paratactic negation likewise loose that property under negation.[31] On the other hand, verbs such as *to doubt* that do not trigger paratactic negation, may 'inherit' this property from negation. Note, however, that not all verbs taking a sentential complement may inherit the possibility of licensing paratactic negation and negative polarity from a polarity reverser governing them. In van der Wouden (1985) it is shown that (in Dutch) only the so-called negative raising verbs allow monotone decreasing noun phrases in the matrix sentence to license negative polarity items in the subordinate clause. On the basis of this result, one would likewise expect that only negative raising verbs may in this way acquire the possibility of triggering paratactic negation.

(48) a. Je *ne* crains *pas* qu'il (**ne*) fasse cette faute
'I am not afraid he will make that mistake'

b. Je *n*'empêche *pas* qu'il (**ne*) fasse ce qu'il voudra
'I don't prevent that he does what he wants to do'

c. Je *ne* doute *point* que la vraie dévotion (*ne*) soit la source du repos
'I do not doubt that devotion is the true source of rest'

d. Votre mère *n*'est peut-être *pas* aussi mallade que vous (**ne*) croyez
'Your mother may be not as ill as you think'

e. Je *ne* puis *pas* parler sans qu'il *(*ne*) m'interrompe
I cannot talk without him interrupting me'

f. *Fobamai *mipos* kano lathos (Modern Greek)
fear-1SG that-not make-1SG error
'I am not afraid to make an error' (cf. (32c))

[31] We predict that the same would hold for other downward entailing expressions that have scope over these lexical items. This prediction seems to be borne out:

i Il y a quelques enfants qui craignent qu'il ne vienne
There are some children that fear that-he NE come SUBJ
'Some children fear that he may come'

ii Il y a peu d'enfants qui craignent qu'il (*ne) vienne
There are few of children that fear that-he come SUBJ
'Few children fear that he may come'

iii Il n'y a pas d'enfants qui craignent qu'il (*ne) vienne
There not are of children that fear that-he come SUBJ
'No children fear that he may come'

g. *Den* fobamai oti kano lathos (Modern Greek)
fear-1SG that make-1SG error
'I am not afraid to make an error'

Double negation effects such as described above offer a final blow for any explanation of paratactic negation in terms of subcategorization: this would be — as far as we know — the only case where the subcategorization frame of a word depends on the presence or absence of an external operator, in this case of the monotone decreasing type.

3.4 Towards a Theory of Paratactic Negation

On the basis of the foregoing, we state the following hypothesis concerning paratactic negation:

(49) *Hypothesis:*
Paratactic negation is a negative polarity item of the weak sort, i.e., it may occur in all monotone decreasing contexts.[32]

This hypothesis offers an explanation for (and may be a step in the direction of our understanding of) a number of facts.

Across languages, certain patterns in the distribution of paratactic negation occur over and over again. This suggests that some fundamental mechanism is at work. On the other hand, paratactic negation shows considerable variation, not only across languages but even between speakers within one language community. As we have seen in the first part of this paper, the same holds for the distribution of negative and positive polarity items. In our discussion of Dutch *ooit*, we showed that the polarity character of lexical items can change within a century. The same kind of rapid changes may be found in the case of paratactic negation: most cases of it in Vondel are totally out now, in modern German the phenomenon is almost extinct, although it was perfectly normal in the era of Schiller and Goethe, and contemporary native speakers of French judge some of the examples given earlier as 'highly archaic'. That is to say: we don't know why we fond this variation, but it doesn't come as a surprise.

Our hypothesis also offers an explanation for the 'double negation' facts discussed earlier. There exist several theories explaining how an operator with the power to license an NPI may lose this power when it is in the scope of another such operator. No matter which one of the theories we choose, its scope may be extended in a natural way to cover the facts discussed in section 3.3.4.

[32]The phenomenon may be parametrized in the sense that in some languages PN may only show up in contexts with stronger properties, e.g., anti–additivity.

If paratactic negation is indeed a polarity phenomenon, one would predict it not to be restricted to downward entailing verbs alone. We already discussed that comparable effects show up in comparative constructions and in the scope of the MD preposition *without* and its counterparts in other languages. Another class of cases in point might be so-called 'negative concord', a phenomenon that, at least in certain dialects of English, may be triggered not only by sentence negation, but by monotone decreasing adverbs such as *hardly* as well.

(50) a. It ai*n't no* cat ca*n't* get in *no* coop[33]

b. There was *hardly no* money, *nor* hardly *no* hope[34]

Exploration of the idea that negative concord is indeed an instance of paratactic negation is outside the scope of this article.[35]

An extra argument in favor of the hypothesis that the same mechanism underlies the distribution of both negative (and affirmative) polarity items and paratactic negation involves the elegance of the theory. In general, comparable phenomena should be explained in comparable ways. In the discussion above, I have shown that polarity phenomena and paratactic negation are comparable to a large extent. Efforts to explain the distribution of polarity items in one way (viz., in terms of downward entailment) and the distribution of paratactic negation in another way (viz., in terms of negation) are apt to miss generalizations, and are bound to result in theories that are less than optimal from a parsimonious point of view. In other words, a theory that explains both polarity effects and paratactic negation in the same terms (viz., downward entailment) is superior to a theory that explains one phenomenon in terms of downward entailment and the other one in terms of negation.

3.5 On the Semantics of Paratactic Negation

It is clear that the semantics of paratactic negation is not the same as that of ordinary negation. To be more precise, its meaning should not be identified with complementation. The contribution of *no* to the overall meaning of *First he denied you had in him no right* (31b) or that of *ne* to that of *timeo ne veniat* (32a) seems to be nothing at all. In other words, the semantics of paratactic negation may be characterized as the identity function.

One might argue that such a step will lead to systematic polysemy in the lexicon: a word such as *not* should be attributed both the complement meaning (for its normal, Boolean use) and the identity meaning

[33] Black English Vernacular. Example from Labov (1972).

[34] Cockney folksong. Example from Seuren (1991).

[35] On negative concord, cf. van der Wouden and Zwarts (1993).

(for its paratactic and negative concord use). The same would hold for all other elements showing up in cases of negative concord in the various dialects of English (*never, neither, nobody, nothing, nor* ...).

However, a solution, or at least an implementation, for this kind of problem may be found in the literature. In order to capture the various meanings of *red* in collocations such as *red grapefruit, red carpet, red army*, Partee (1984) has proposed a disjunctive meaning function that maps various meanings on one lexical element, the choice of the various values depending on the noun being modified. Likewise, we may think of a meaning function for the class of lexical elements that is sensitive to the semantic properties of the linguistic context.[36]

Apart from the fact that the contribution of the paratactic element is (intuitively) zero or identity, there are two more arguments for a different semantics for paratactic negation.

The first argument involves cases where negative polarity items coincide with paratactic negation and negative concord.[37] If paratactic negation would have had the same meaning of 'ordinary' *not*, it would change the monotone decreasing character of the context into monotone increasing, thus disallowing the negative polarity item.[38] However, the following examples are fine:[39]

(51) a. Nobody never *lifted a finger* to help Mary (NS English)

b. Niemand vertelt mij nooit geen *ene moer* hier (NS Dutch)
Nobody tells me never no one bolt here
'Nobody here ever tells me anything'

c. Ick [...] keerme aen moeder noch aen zusters *'t minste* niet. (Vondel)
I turn-me to mother nor to sisters the least not
'I do not listen to my mother and sisters at all'

The second argument in favor of a different semantics for *not* and elements of that kind runs as follows. Assume a speaker tries (in a paratactic negation language) to express that (s)he *does not* fear (etc.) something. If *not* etc. would be systematically ambiguous without any restrictions, one would expect that (s)he could convey that message by just putting a *not* in the complement of the verb. However, one would

[36] van der Wouden and Zwarts (1993) use the same approach to account for the systematic ambiguity of negative quantifiers in negative concord languages.

[37] Jack Hoeksema (p.c.) pointed out the relevance of these cases to me.

[38] Cf. the double negations in section 3.3.4

[39] One likewise expects that affirmative polarity items (of the appropriate strength) will not co-occur with paratactic negation, for the very same reason that negative polarity items do show up there: the context where paratactic negation shows up is monotone decreasing, and the PN element doesn't change that. Therefore, affirmative polarity items are not allowed there.

then predict all cases of paratactic negation and negative concord to become systematically ambiguous between 'fearing that' and 'fearing that not'. This prediction is wrong, as this way of expressing the intended meaning is not available. In other words, in paratactic negation contexts within paratactic negation languages, the element used for paratactic negation just cannot mean the same as ordinary negation, i.e., logical complementation. French uses the full negation *ne ... pas* (where the paratactic negation form is just *ne*), in Greek the 'negative' complementizer *mipos* 'that-not' is not homophonous with negation, so there normal negation *den* is used.

(52) a. Je crains qu'il *ne* vienne *pas* (cf. (31c))
'I fear that he will not come'

b. Fobamai *mipos* den erthei (modern Greek)(cf. (32c))
fear-1SG that-not not come-3SG
'I am afraid that he will not come'

4 Conclusion

We have shown that the semantic, monotonicity based, approach to polarity phenomena is superior to theories that center around negation as the crucial factor. Affirmative and negative polarity items where shown to exhibit parallel fine–structures that theories in which negation is the only (anti–)trigger are unable to tackle. We moreover gave a number of arguments that the same theory may be applicable to 'paratactic negation' in various languages as well. It is the property of being Monotone Decreasing (and *not* negation per se) that triggers polarity effects, and it is the property of being Monotone Decreasing (and *not* negation) that triggers paratactic negation.

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