Licensing of negative polarity items under inverse scope* 

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Abstract

Negative polarity items are licensed 'in the scope' of their trigger. In this article, I take a closer look at the relevant notion of scope, which is shown to involve syntactic, semantic and pragmatic considerations. In general, a position in the c-command domain of its trigger at S-structure is sufficient for an NPI to be licensed. If the NPI precedes its trigger, the sentence is felicitous only if the NPI can be interpreted in the semantic scope of its trigger. The possibility of an inverse scope reading of negation is subject to a pragmatic constraint, which requires the sentence to convey positive information. The incapability of bare NPIs involving any in English or ook maar in Dutch to satisfy this constraint explains why they cannot precede their trigger. Embedded NPIs and the NPI hoeven 'need to' in Dutch can satisfy the pragmatic constraint on inverse scope, and are therefore licensed outside of the c-command domain of the trigger.

Keywords: Negation; Polarity; Scope; Reconstruction; Pragmatics

1. Licensing of negative polarity items

Many languages have a class of expressions which can only be felicitously used in contexts with a certain 'negative' flavor. For that reason, expressions such as any, ever, lift a finger in English and een rooie cent 'a red cent', ook maar 'any' and hoeven 'need to' in Dutch have been called negative polarity items (NPIs). The licensing conditions on negative polarity items have been the subject of many studies. One of the basic assumptions is that NPIs have to be 'in the scope' of an appropriate licenser. This assumption immediately raises two important questions: what counts as an appropriate licenser and what is the appropriate view of scope? Section 1.1 describes the semantic properties of the licenser. In section 1.2 we will determine

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that the appropriate notion of scope is semantic in nature. Sections 1.3 and 1.4
address the issues this position raises for the relation between syntactic and semantic
scope. In particular, we will observe in section 1.4 that NPIs are not always c-com-
manded by their trigger, but are sometimes licensed under inverse scope of negation.
The rest of the article is devoted to the constraints on the reconstruction of NPIs.
Section 2 demonstrates that some easy solutions fail. Section 3 develops a pragmatic
analysis of inverse scope. Section 4 shows how the licensing of NPIs under inverse
scope of negation falls out from the pragmatic analysis developed in section 3.

1.1. Semantic properties of the licenser

It has been argued that semantic, rather than syntactic properties determine
whether an expression can license an NPI. A good licenser for NPIs is (sentence)
entailment as illustrated in (1a) and (2a). Ladusaw (1979), Zwarts (1986) and others
have pointed out that not only sentence entailment, but more generally, downward
entailing operators such as no one, few children, hardly any students can license neg-
ative polarity items, as exemplified in (1b) and (2b). An even more general perspec-
tive is adopted by Zwarts (1995) and Giannikidou (1997), who argue that NPIs can
be licensed in non-veridical contexts. The set of non-veridical contexts includes the
downward entailment operators, but also certain modal (subjunctive) environments
and rhetorical questions (1c, 2c):

(1) a. Phil did not lift a finger to help us
   b. No one has ever read this paper
   c. Did anyone ever read this paper?

(2) a. De tandarts zei dat Flip niet terug hoefde te komen
   The dentist said that Flip did not need to come back
   b. Weinig kinderen hoeven hun huiswerk over te doen
   Few children need to do their homework again
   c. Heeft Flip ooit ook maar iets bijgedragen aan het project?
   Did Flip ever contribute anything to the project?

I will take the results from the literature for granted, and assume that negative
polarity items are licensed in downward entailment or non-veridical contexts. The
main emphasis of the paper is on the second question raised above. I want to inves-
tigate in more detail what it means for the NPI to be in the scope of its trigger. Given
the interest in connections between syntactic and semantic scope, I will leave cases
of indirect licensing through negative implicatures out of the discussion, and focus
instead on cases where we can clearly identify the trigger as some element of the
sentence. Thus I will not try to account for cases like (1c) and (2c), but restrict the
discussion to examples like (1a,b) and (2a,b).

1.2. Semantic scope

If we assume that an NPI is licensed in the scope of its trigger, we need to address
the question what defines the scope of a non-veridical operator. Ladusaw (1979),
Zwarts (1986), Giannikidou (1997) and others argue that the appropriate notion of scope is semantic in nature. For propositional operators like negation or quantifiers, the semantic scope is defined as the proposition the operator is prefixed to. Support for the claim that a negative polarity item must be in the semantic scope of negation comes from pairs of sentences such as (3):

(3) a. Sue did not read a book by Chomsky
   b. Sue did not read any book by Chomsky

(3a) is ambiguous depending on the scope of the negation operator with respect to the existential quantifier introduced by the indefinite NP. A representation of the two readings of the sentence in first-order logic makes this explicit:

(4) a. \( \neg \exists x \ (\text{Book-by-Chomsky}(x) \land \text{Read}(s,x)) \)
   b. \( \exists x \ (\text{Book-by-Chomsky}(x) \land \neg \text{Read}(s,x)) \)

(3b) on the other hand is not ambiguous: it can only mean that there is no book by Chomsky that Sue read. We can treat any as the negative polarity counterpart of a and give it a translation in terms of existential quantification. The interpretation of the sentence is then the one spelled out in (4a). The reason that (4b) is not available as a reading of (3b) is that this interpretation violates the condition that the negative polarity item must be interpreted in the semantic scope of its licenser.

1.3. Direct scope

The claim that semantic scope is the crucial notion involved in the licensing of NPIs does not imply that syntactic scope is irrelevant. In many languages, semantic scope is constrained by syntactic structure. In languages like Dutch and English, the semantic scope of an operator involves at least its c-command domain. We expect then that a sufficient condition for an NPI to be licensed is for it to occur in the c-command domain of its trigger. One way of putting this is to say that an NPI is licensed in the ‘direct scope’ of its trigger:

Direct scope
An expression \( a \) has direct scope over an expression \( b \) if and only if \( b \) is in the semantic scope of \( a \) and \( a \) c-commands \( b \) at S-structure.

In (1a,b) and (2a,b) the NPIs occur in the c-command domain of their trigger. The felicity of these examples can thus be viewed as a result of the NPIs being in the direct scope of their trigger. The question arises whether it is not just a suffi-

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1 In this paper I ignore the use of any in so-called ‘free choice’ interpretations illustrated in (i):
(i) Pick any apple

2 Note that some NPIs may be subject to more specific locality conditions. As shown below, hoeven requires the trigger and the NPI to be clausemates and Beghelli (1995) claims that certain NPIs create an
cient, but also a necessary condition for the NPI to be in the c-command domain of its trigger at S-structure. At first sight, the answer to this question seems to be affirmative.

Ladusaw (1979), Hoekstra et al. (1988) and Hoeksema (1997) argue that NPIs involving any in English or ook maar in Dutch require the licenser to c-command the NPI at S-structure. The linear restrictions explain the contrast between the grammatical (a)-sentences and the ungrammatical (b)-sentences in (5)–(7):³

(5) a. Phil did not say anything to me
   b. *Anyone did not talk to me
(6) a. No one said anything to me
   b. *Anyone said nothing to me
(7) a. Niemand heeft ook maar een woord tegen mij gezegd [Dutch]
   No one said even a word to me
   b. *Ook maar iemand zei niets tegen mij
   Anyone said nothing to me

In English and Dutch, the subject c-commands negation, but negation c-commands the direct object. This explains why the a-sentences of (5)–(7) are fine, but the corresponding b-sentences are infelicitous. A context which supports the claim that linear order is more important than subject/object asymmetries involves examples in which the object has been preposed. Compare the minimal pairs in (8) and (9):

(8) a. Phil would not give me anything
   b. *Anything Phil would not give me

³ The data in (5)-(6) describe the situation in modern English. In old English, NPs involving any occurred felicitously in subject position followed by sentence negation:

(i) And we laerað paet aenig maespreost ana ne maessige
   And we teach that any mass-priest alone not should hold mass
   'And we teach that no priest should hold mass alone'
(ii) An riht is Paet aenig cristen mon blod ne pycge
   And it is right that any Christian man blood not should-drink
   'And it is right (law, good conduct) that no Christian man should drink blood'

The examples are from Wulfstan's Canons of Edgar and are quoted in Labrum (1982: 30-40, 150-154) as support for her claim that the indefinite is within the scope of negation. Interestingly, the examples occur in lawlike environments and illustrate a generic use of any which is missing from modern English. A restricted corpus search shows that most examples of any in subject position are found in subordinate clauses, but some occur in main clauses. All the examples I found involve generic, lawlike statements. Although the generic hypothesis developed in section 2.1 below fails to provide an adequate explanation of the syntax and semantics of indefinites in modern English, the data in (i) and (ii) suggest that the hypothesis could possibly be made to work for old English. I am grateful to Elizabeth Traugott for pointing out the relevance of the old English data to me and for her help with the search of the old English corpus.
The examples in (8) and (9) show that NPI licensing cannot be explained in terms of subject/object asymmetries. Under the assumption that movement of the object NP leaves a trace in the underlying object position as in (10a,b), the examples in (8) and (9) further illustrate that c-command at D-structure is not sufficient for the NPI to be licensed:

(10) a. *Anything Phil would not give me to,  
    b. *Ook maar een woord heeft niemand tegen mij gezegd

I take it that these examples demonstrate that the requirement on c-command of the NPI at S-structure is robust for the English and Dutch examples discussed. This suggests that the occurrence of the NPI in the direct scope of the trigger is not only a sufficient, but also a necessary condition for the NPI to be licensed. However, in the literature on negative polarity, we find examples of NPIs which are not in the c-command domain of their trigger at S-structure. The question arises how the felicity of these cases correlates with the observation that c-command is a strong constraint otherwise, as argued in relation to (5)–(7) and (8)–(9) above.

1.4. Inverse scope of negation

It turns out that not all NPIs observe the constraint on direct scope. The following examples from Linebarger (1980) illustrate the fact that non-quantifier NPIs can precede and c-command their licenser:

(11) a. He gives a damn about no one but himself  
    b. She can help doing none of those things

Similarly, Hockstra et al. (1988) show that the Dutch NPI hoeven ‘need’ does not need to be in the c-command domain of its trigger at S-structure:

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4 Even if the c-command constraint seems to be correct for languages like English and Dutch, it cannot be part of universal grammar in its basic form given here. Kawashima and Kitahara (1992) give examples like (i) to support the claim that in Japanese, c-command at S-structure is not required for a negative polarity item to be licensed:

(i) Daremo kuruma-o kawa-na-katta  
    Anyone car-Act buy-Neg-Past  
    ‘Anyone didn’t buy a car’

Kawashima and Kitahara argue that the different behavior exhibited by Japanese and English can be reduced to independently motivated conditions on feature checking at LF. I will not discuss their proposals here, but just note that languages like Japanese are outside the scope of the analysis which will be developed here.
(12) a. Hij hoeft je niet te zien
   He need you not to see
   ‘He does not need to see you’

b. Hij hoeft niemand te zien
   He need no one to see
   ‘He does not need to see anyone’

c. *Hij hoeft te weten dat je niet komt
   ‘He needs to know that you not come’

The examples in (11) and (12) show that it is sufficient for a non-quantifier NPI to be in the same clause as its trigger for it to be licensed. Linebarger (1980: 147) claims that non-quantifier NPIs are not assigned scope, so they are automatically within the scope of negation at LF. I don’t think this can be the whole story, for expressions like can in (11b) and hoeven in (12) are modal operators. Modal operators are scope bearing expressions that are subject to scope ambiguities when they occur in combination with negation and quantifiers. Thus the contrast between nominal NPIs involving any and ook maar and non-nominal NPIs involving verbs like hoeven remains unaccounted for under Linebarger’s approach.

The second class of exceptions to the direct scope constraint involves embedded NPIs. As we noticed in section 1.3 above, bare NPIs involving any in English or ook maar in Dutch are restricted to the c-command domain of their trigger. However, if we embed the NPI in a more complex construction, the constraints on linearity vanish. Consider the following English and Dutch examples, where a NPI is contained within a preverbal indefinite subject or a preposed complement clause:

(13) a. That he had stolen anything was never proved
   b. Finding any green vegetables is impossible there
   c. A doctor who knew anything about acupuncture was not available
   d. An article with any convincing examples of NPIs in subject relative clauses has never appeared in any journal of linguistics so far
   e. Examples with any relevance to that issue didn’t come up in the discussion

(14) a. Dat ook maar iemand ontslagen zou worden had niemand verwacht
   ‘That anyone would be fired, no one had expected’

5 Other non-quantifier NPIs which can precede their trigger in Dutch are in-adverbials and certain degree expressions, such as pluis (‘all right’):

   (i) In jaren had zij hem niet gezien en nu stond hij opeens op de stoep
       In years had she not seen him, and now he suddenly turned up on the doorstep
   (ii) Helenaal pluis was het er niet
       ‘Quite all right was it there not’

Thanks to Jack Hoeksema (p.c.) for drawing my attention to these examples. There are some obvious connections between these examples and cases I discuss. Unfortunately, I do not have room in this paper to extend the analysis to the non-quantifier NPIs in (i) and (ii).
b. Een kind dat ook maar iets aan zijn huiswerk gedaan heeft kent niemand
A child that anything to his homework done has knows no one
‘A child that has done anything about his homework, no one knew’
c. Een arts met ook maar enige kennis van deze ziekte was niet te vinden
A doctor with any knowledge of this disease was not to be found

(13a,b) are from Ross (1967) and quoted in Linebarger (1980). (13c) is Linebarger’s (1980) example. (13d) and (13e) are attributed to Barbara Partee and reported in Uribe-Etxebarría (1996). (14a) and (14b) are examples given by Hoekstra et al. (1988) and Hoekstra (1991), respectively; Hoeksema (1997) discusses similar data. The problem these examples raise is obvious: the NPI is not c-commanded by negation at S-structure, but the sentences are felicitous. This cannot be due to variation within the class of negative polarity items, because the examples involve NPIs like any and ook maar, which have been argued to be subject to a strict c-command constraint at S-structure. Linebarger (1980) makes the syntactic generalization that in some sentences the NPI may precede its licenser if it does not c-command it. This observation seems correct, but it does not explain why the NPI is licensed in such constructions. Moreover, the examples involving hoeven in (12) illustrate that some NPIs can precede and c-command their trigger. I take this to suggest that a purely configurational solution in terms of precedence versus c-command is unable to generalize over the two relevant cases.

Intuitively, the well-formedness of the examples in (13) and (14) is due to the fact that they are interpreted with negation taking wide scope over the indefinite NP or the preposed complement clause. The semantic wide scope of negation seems to license the NPI in the relative clause of the indefinite subject or the preposed complement clause in this particular configuration. Following the terminology used by May (1977), Szabolcsi (1997), Beghelli and Stowell (1997) and others, we can say that the NPI is licensed under ‘inverse scope’ of negation. I will use the term inverse scope of negation as a descriptive term to refer to cases in which (sentence) negation or a negative quantifier does not c-command the relevant expression (quantified NP or NPI) at S-structure, but is interpreted as taking semantic scope over this expression. The general notion of inverse scope can be formulated as follows:

Inverse scope
An expression \(a\) has inverse scope over an expression \(b\) if and only if \(b\) is in the semantic scope of \(a\) but \(a\) does not c-command \(b\) at S-structure.

The question I will address in the rest of this paper is how we can account for licensing of negative polarity items under inverse scope of negation. The challenge is to develop an account which on the one hand explains the examples given in this section, and on the other hand preserves the insight that NPIs are usually restricted to the direct scope of their trigger as argued in section 1.3.
2. Three tentative solutions

I am not aware of any attempts in the literature to explain the lack of linearity constraints on NPIs like hoeven or topicalized complement clauses. Therefore I will limit myself in this section to proposals that have been advanced in order to account for the licensing of NPIs in the relative clause of indefinite subjects. I will discuss three easy ways out of the dilemma sketched at the end of section 1.4. One involves explaining away the observations on inverse scope by assuming that the indefinite subject is generic in nature, and is therefore better translated as a (default) universal quantifier taking wide scope over negation than as an existential quantifier taking narrow scope with respect to negation. The second solution involves formulating the constraints on c-command at LF, rather than at S-structure. I will argue that neither approach works. The third solution discussed in this section proposes to look at subclasses of NPs to see which properties are relevant to license inverse scope. Although the syntactic version of this approach will be shown to fail, the idea that not all NPs behave in the same way in inverse scope configurations is the starting point for the pragmatic analysis developed in section 3 below.

2.1. Explaining away inverse scope

In this section, I explore the possibility of preserving our claim that all we need is c-command at S-structure by arguing that the data in (13) and (14) do not really involve inverse scope of negation. This option is attractive, because it would reduce the problem to a pseudo-problem. The argumentation proceeds along the following lines. It is one of the basic insights of first-order predicate logic that the negation of an existential quantifier is equivalent to a universal quantifier taking wide scope over negation, that is:

(15) For all formulas \( \phi \): \( \neg \exists x \phi \leftrightarrow \forall x \neg \phi \)

It is equally well known that indefinite NPs in natural language do not always have existential force, but sometimes get a generic interpretation. The generic interpretation of indefinites is often described in terms of default quantification, or universal quantification with tolerance for exceptions. Using a predicate \( AB \) for abnormal cases, we can represent the meaning of a generic sentence like (16a) as in (16b) (cf. Reiter, 1980):

(16) a. A bird flies
   b. \( \forall x ((\text{Bird}(x) \land \neg AB(x)) \rightarrow \text{Fly}(x)) \)

The quasi-universal force of (16a) is captured by the formula in (16b). This representation allows for penguins as exceptional birds that do not fly.

Furthermore, we know from generalized quantifier theory that universal quantifiers are left monotone decreasing, for they license inferences to subsets of the set of individuals denoted by the common noun:
(17) Every child cried → Every small child cried

Given that negative polarity items are licensed in downward entailing environments, we can use the characterization of universally quantified NPs as left monotone decreasing quantifiers to explain the observation that NPs of the form every N license NPIs in their first argument:

(18) a. Every student who expresses any interest in semantics is encouraged to apply to graduate school
   b. Everyone who has ever been to Paris loves the city

The combination of these three observations leads to the following hypothesis. Suppose that the examples in which an NPI occurs in the relative clause of an indefinite subject involve a generic interpretation of the indefinite. The generic interpretation guarantees that the indefinite NP behaves like a (quasi-)universal quantifier. This (quasi-)universal quantifier is left-monotone decreasing and therefore licenses NPIs in its first argument. Under this analysis we do not need sentential negation to license the NPI, so this hypothesis provides a straightforward account of examples like (19a,b):

(19) a. A student who expresses any interest in semantics is often/usually/typically encouraged to apply to graduate school
   b. A linguist who has ever worked on scope, often/usually/typically knows it is a difficult topic

The observation that generic indefinites license NPIs in their first argument can now be used to provide an alternative interpretation of the problematic data introduced in section 1.4. Consider again (13c–e), repeated here as (20a–c):

(20) a. A doctor who knew anything about acupuncture was not available
   b. An article with any convincing examples of NPIs in subject relative clauses has never appeared in any journal of linguistics so far
   c. Examples with any relevance to that issue didn’t come up in the discussion

So far, we have assumed that the NPI in the relative clause of the indefinite subject has to be licensed by sentential negation in an inverse scope configuration. However, we could argue that the real structure is one in which the NPI is in fact licensed by the generic indefinite NP, which is interpreted as a left-monotone decreasing, quasi-universal quantifier which takes wide scope over negation. Because of the equivalence in (15) above, this would lead to the same truth-conditions as a wide scope interpretation of negation. Thus our licensing problem would be explained away without affecting the interpretation of the sentence. Although the approach outlined here is attractive at first sight, I do not think it provides a viable solution to the problem. Note that the hypothesis is crucially dependent on the indefinite NP getting a generic interpretation. In the absence of a generic interpretation, there is no quasi-universal quantifier available to license the NPI. This turns out to be a problematic assumption.
It is well known that there are linguistic constraints on the availability of generic interpretations for indefinites. Carlson (1978) establishes a distinction between stage-level and individual-level predicates. Stage-level predicates like be available, be drunk, play the piano describe temporary situations that come about, hold for a while and then end. Individual-level predicates such as have green eyes, be intelligent, like French describe more or less permanent properties of the individual to which they are ascribed. Carlson observes that indefinite subjects of stage-level predicates can (21a) but need not (21b) get a generic interpretation:

(21) a. A pianist plays the piano
   b. A guest played the piano for us last night

(22) A pianist likes French

(22) illustrates that a generic interpretation of indefinite subjects is obligatory for individual-level predicates. In combination with our hypothesis about the indefinite subject in sentences like (20) having a generic interpretation, we would expect to find reconstruction possibly with stage-level predicates, but certainly with individual-level predicates. In fact, we find that the opposite is true. The sentences in (20) contain stage-level predicates, and both Linebarger and Uribe-Etxebarria point out that reconstruction is impossible with individual-level predicates. Consider the minimal pair in (23):

(23) a. Tickets to any of the afternoon concerts were not available
   b. *Tickets to any of the afternoon concerts were not green

The ungrammaticalilty of (23b) is hard to explain under the hypothesis that the indefinite subject should get a generic interpretation.

Linebarger (1980: 100) and Uribe-Etxebarria (1996) further observe that the best examples of inverse scope involve only a subset of the stage-level predicates, namely those verbs that express availability, existence, appearance or coming into existence of an object. Uribe-Etxebarria calls them ‘light’ verbs, because their semantic contribution involves little more than predication of existence. The generalization Linebarger and Uribe-Etxebarria make is confirmed by the examples in (20), which all involve a light verb. Note that it is much more natural to read these examples as ‘there does not exist/appear/occur an N which ...’ than as ‘for all N’s which, they do not occur/appear/ ...’. This observation is unrelated to the logical equivalence in (15) above, but has to do with the fact that universal quantifiers typically carry a presupposition of existence, as argued by de Jong and Verkuyl (1985). If generic indefinites are interpreted as (quasi-)universal quantifiers in contexts like (20) and (23a), the sentences would express the odd statement that all existing N’s do not exist. I conclude that the typical environments in which inverse scope shows up do not satisfy the constraints on generic interpretation of indefinite NPs.

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6 Linebarger and Uribe-Etxebarria suggest that light verbs are the only predicates that license NPIs under inverse scope. In the next section, I will provide examples which show that the phenomenon of inverse scope is more general. The preference for using light verbs in examples that demonstrate inverse
This conclusion is confirmed by the following observation. As argued by De Hoop (1992) and others, existential interpretations of indefinites are weak in the sense of Milsark (1977) and Barwise and Cooper (1981), but generic readings are strong. Weak (readings of) NPs are felicitous in existential sentences like (24a,b), whereas strong (readings of) NPs are not (24c,d):

(24) a. There was a student/some student in the library
    b. There were two students/ many students/ few students/ at most two students/
       no students in the library
    c. *There was the student/ every student/ neither student in the library
    d. *There were most students/ all students in the library

Generic NPs are strong, and thus infelicitous in existential sentences. In Dutch, this is illustrated by the fact that it is possible to insert er ‘there’ into the sentence when the indefinite gets an existential interpretation, but not when the indefinite is generic:

(25) a. Vorige week werd (er) een kraker gearresteerd
    Last week (there) was a squatter arrested
    b. Vroeger had (*er) een student meer tijd voor zijn studie dan nu
    In the past (*there) had a student more time to complete his studies than nowadays

If we claim that the indefinite subject in sentences like (21) licenses the NPI in its relative clause because the NP is generic, we do not expect the Dutch counterpart of these sentences to allow er-insertion. However, the following examples illustrate that they do:

(26) a. Een verhaal met ook maar enige inhoud werd (er) niet gepresenteerd op dit
    congress
    A paper with any content was (there) not presented at this conference
    b. Artsen met ook maar enige kennis van zaken waren (er) op dat moment niet
    vinden
    Doctors with any knowledge of the situation were (there) at that moment not
    to be found

The use of er in sentences like (26) is optional, but its felicity provides a strong argument in favor of the claim that the indefinite NP is interpreted as an existential quantifier which takes narrow scope with respect to negation. I take it that the arguments I have advanced to argue against a generic interpretation of the indefinite subject are sufficient to discard the option of simply explaining away the problem.

Scope could be attributed to the fact that a narrow scope interpretation for these predicates does not make a lot of sense. Not surprisingly, it is easier to bring out the wide scope interpretation of negation if the predicate disfavors the narrow scope reading.
2.2. C-command at LF

Ross (1967) and Linebarger (1980) take inverse scope seriously. In examples like (13), they take negation to have semantically wide scope over the indefinite subject. Linebarger allows reordering of logical elements at LF in order to give negation wide scope over the non-specific indefinite in the logical representation of the sentence. Uribe-Etxebarria (1996) accepts Linebarger’s insights concerning the semantic scope of negation. She argues against reordering, but obtains the desired LF by means of a reconstruction mechanism which puts the indefinite NP back into its base-generated position within VP. The LF-structure of sentences like (13) and (14b,c) can then be argued to have the skeleton form in (27):

(27) \[\text{NEG ... } [\text{NP indefinite NP } [\text{RC ... NPI ...}]]\]

After reordering or reconstruction, sentential negation c-commands the indefinite NP at LF. This would then be sufficient to license the occurrence of the NPI embedded in the relative clause of the indefinite subject. However, it is clear that this reconstruction process is subject to constraints. If we freely allow reconstruction, and c-command at LF is sufficient to license the NPI in (13) and (14), we can no longer explain the unacceptability of the b-sentences of (5)–(9) above. We used these examples to argue that English and Dutch require negation to c-command the NPI at S-structure. The question remains why certain NPs can be reconstructed with respect to negation whereas others cannot. I conclude that a purely syntactic approach in terms of unconstrained LF-movement does not explain the restrictions on admissible scope configurations.

2.3. Lexical constraints on reconstruction

In recent years, several linguists have argued more generally that unconstrained quantifier raising at LF is not a good approach to account for scope ambiguities. Liu (1996), Szabolcsi (1997), Beghelli and Stowell (1997) and others have argued that the specific syntactic and semantic properties of wide scope and narrow scope taking NPs are crucial to determine the scope configurations a sentence allows. Most of these approaches are concerned with subject/object combinations, but Beghelli and Stowell (1997) specifically discuss the interaction of NPs with negation. They introduce new functional projections for the five types of quantificational expressions they distinguish, and argue that each NP has its own specific landing site at LF, where it moves to in order to check semantic and morphological features. Some NPs can land in more than one landing site, which allows the sentence to be scopally ambiguous. But in the absence of free LF movement, the number of scope ambiguities is limited.

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7 Linebarger (1980: 148) acknowledges that she does not know why indefinites can reconstruct, but NPs introduced by any cannot. Uribe-Etxebarria adopts de Hoop’s (1992) framework, and argues that weak, non-specific indefinites are interpreted as part of the predicate, but any N is not. However, it remains somewhat unclear why any is different.
ties generated by the system is severely constrained. Unfortunately, the system they develop seems to be too strict. Given that Beghelli and Stowell assume a NegP which is lower than most functional projections that NPs can land in, they predict that negation takes narrow scope with respect to almost all quantifiers in all positions. Counting NPs like *more than five, at most six, few, etc.* are interpreted in situ. They are the only NPs which can optionally scope lower than negation, but they do so only when they are in object position. As a result, Beghelli and Stowell’s system does not derive the inverse scope reading of sentences like (28):

(28) a. All that glitters is not gold  
    b. All doors will not open  
    c. A doctor was not available  
    d. Many people aren’t likely to arrive on time

(28a) is from Horn (1989), (28d) is from Linebarger (1980). It is well known that the inverse scope reading requires a particular intonation and contextual support (cf. Büring, 1997), but in general universal quantifiers and singular indefinite NPs of the form *a N, bare plurals and bare mass nouns, and some other indefinite NPs like many N* allow inverse scope. Beghelli and Stowell acknowledge that (28a–c) are a problem for their theory. Their explanation of the inverse scope reading of (28c) is based on ideas developed by Kamp (1981), Heim (1982) and others, who argue that singular indefinites like *a N* and bare plurals/mass nouns differ from other NPs in not having any quantificational force of their own. Beghelli and Stowell suggest that simple indefinites do not need to move to a particular scopal position to check their features if they are not quantifiers. As a result, they are not subject to the standard scope constraints on NPs. Along similar lines, Beghelli and Stowell argue that universally quantified NPs display variable behavior, which would explain why the scope constraint does not apply in (28a,b) either. If I understand Beghelli and Stowell’s analysis correctly, this approach does not extend to the cases in (28d), which involve group denoting NPs that are not expected to reconstruct under negation.

Although Beghelli and Stowell work out their scope theory for English, they suggest that there is cross-linguistic evidence which supports their approach. In this perspective it is interesting to observe that counting NPs like *more than two* in subject position are not expected to reconstruct under negation, because they are interpreted in situ. Although inverse scope readings are indeed prohibited for English counting NPs, the example in (29) illustrates that reconstruction is possible in Dutch:

(29) Meer dan twee artikelen die ook maar iets zinnigs beweren over bereik heb ik niet kunnen vinden  
     More than two articles that say anything sensible about scope I have not been able to find

The presence of an NPI in the relative clause of the subject NP triggers an obligatory inverse scope reading of negation. In view of the cross-linguistic validity of Beghelli and Stowell’s approach, the Dutch data in (29) are problematic for the checking the-
ory of scope. I conclude that there is no convincing formulation of the constraints on inverse scope in purely syntactic (i.e. configurational) terms. As an alternative, I propose to look at the meaning of the sentence to determine whether inverse scope is felicitous. In the next section, I will argue that the constraints on inverse scope of negation are pragmatic in nature. In section 4, I will discuss the implications of the analysis developed here for the licensing of negative polarity items.

3. Pragmatics of inverse scope

I will not attempt to formulate a general scope theory, but concentrate on the interaction of NPs and negation. Even though I will not follow the checking theory of scope, I will borrow from Szabolcsi (1997), Beghelli and Stowell (1997) and others the insight that the admissible scope configurations of a sentence are constrained by the semantics of the NP involved. For instance, we know that certain quantified NPs never allow inverse scope of negation. Examples are NPs like someone, some students, that are traditionally called positive polarity items:

(30) a. Some students were not invited $\exists \neg$

b. I did not invite some students $\exists \neg$

The positive polarity items are not very interesting for the purpose of this paper, because they never allow wide scope interpretations of negation (with the exception of meta-linguistic negation of course, see Horn, 1989). However, they illustrate the fact that inverse scope is not generally available, but depends on the semantic properties of the quantifier negation scopes over. For NPs which do not rule out the possibility of inverse scope by their semantic nature, the question remains what determines whether inverse scope of negation is available in a particular context. In this section, I will argue that the constraints on inverse scope of negation are related to the more general question of informativeness.

3.1. Informativeness

Wason (1965), Horn (1989) and others have pointed out that negative sentences are typically less specific and less informative than positive ones, because the set of true negative facts about the world is much greater than the set of true positive facts. The set of contexts in which a negative statement is relevant is thus much smaller than the set of contexts in which its affirmative counterpart is relevant. The expression of a negative fact corresponds with negation taking semantic scope over the proposition as a whole. In English and Dutch, the syntactic scope of negation is generally smaller than the entire sentence. Whatever the exact syntactic structure we assign to negative main clauses, negation typically occurs somewhere lower than the subject, and higher than the VP. Thus the c-command domain of negation includes the verb and its inner arguments (direct and indirect objects) and excludes the subject. The inverse, sentential scope of negation implies that its semantic scope is
wider than its syntactic scope. I claim that the discrepancy between syntax and semantics needs to be pragmatically motivated by the contribution the utterance makes to the discourse. Normally, inverse scope of negation is dispreferred, because the expression of a negative fact is less informative than a narrow scope interpretation. A narrow scope interpretation conveys positive information by the part of the sentence which is outside the pragmatic scope of negation. However, inverse scope is felicitous if the wide scope interpretation carries some additional informative value. This arises when the wide scope interpretation of negation semantically entails a positive statement, or pragmatically carries a positive implicature. This claim is similar to ideas developed by Büring (1997). Büring argues that certain scope readings are not available if no implicatures determine a residual topic that marks the turn the conversation will take next. Although I do not follow Büring’s analysis in terms of topic-focus configuration, his use of implicatures in the explanation of scope problems supports the pragmatic analysis developed here.

Following Horn (1989: 194ff.), I distinguish two kinds of implicatures. The implicatures which arise through the maxim of Quantity weaken the assertion. Typical examples are scalar implicatures. The implicatures which arise through Relation strengthen the assertion. Examples involve the constrastive interpretation of indefinites, which introduces alternatives. The two strategies are discussed in sections 3.2 and 3.3 respectively.

3.2. Scalar implicatures

Grice (1975) formulates a principle of cooperative conversation, which involves a number of maxims which regulate the behavior of speakers and hearers in conversational exchanges. Two important maxims are Quality and Quantity. The maxim of Quality tells the speaker to make her contribution one that is true. This implies that she should refrain from saying things that she believes to be false or for which she has no evidence. The maxim of Quantity tells the speaker to make her contribution at least as informative as, and not more informative than is required for the current purpose of the conversation. As argued by Horn (1972), the combination of Quantity and Quality leads to systematic implicatures when items are ordered on a scale. For instance, there is a scale \(< a, all \rangle\), where \( a \) (or \( some \)) makes the weaker statement and \( all \) conveys the stronger claim. The assertion of the weaker element on the scale triggers the implicature that the statement involving the stronger element is false. An example is given in (31):

(31) Some students passed the exam →
    Not all students passed the exam

If the speaker observes the principle of cooperative conversation, she respects both Quality and Quantity. The maxim of Quantity encourages the speaker to say as much as she can and thus to make the strongest possible claim. From an assertion which involves the weaker element of the scale, the hearer infers that the speaker does not have evidence for the stronger claim, or believes the stronger claim to be
false. If the hearer thinks that the speaker has all the relevant information, she can take the fact that the speaker did not make the stronger claim to mean that the stronger claim is false. Thus the assertion of the weaker claim that some students passed the exam triggers the implicature that the assertion of the stronger claim that all students passed the exam is false. Obviously, this invited inference is not a logical entailment, which is why Horn characterizes it as an implicature in the Gricean sense of the term.

If we consider universal statements under negation, we observe that they are equivalent to an affirmative sentence with narrow scope of negation, as in (32):

(32) Not all students passed the exam ⇔
Some students did not pass the exam

Thus negative universal sentences carry a positive informational value. Furthermore, we know that scales are reversed under negation (compare Fauconnier, 1975, 1978). If we embed the scale \( \langle a, \text{all} \rangle \) under negation, we obtain the reversed scale \( \langle \text{not all}, \text{not a} \rangle \). Following the same argumentation as above, the weaker assertion implicates the negation of the stronger one. Thus, a statement involving not all invites the inference to some via double negation:

(33) Not all students passed the exam →
It is not the case that not a student passed the exam ⇔
Some students passed the exam

If negation takes wide scope over the universal quantifier, the semantic scope of negation extends over the entire sentence. We would expect this interpretation to be dispreferred, because the report of a negative fact is typically not very informative. However, the semantic and pragmatic contribution of this negative sentence is positive because of the combination of the equivalence in (32) and the scalar implicature in (33). As a result, the sentence conveys that some students did, and some students did not pass the exam. If we assume that a positive informative value is crucial to license inverse scope, we can argue that the semantic equivalence and the scalar implicature is what makes the inverse scope interpretation of sentences like (28a,b) felicitous. The NPs in (34) trigger scalar implicatures along similar lines:

(34) a. Many people aren't likely to arrive on time
b. Meer dan twee sigaretten heeft hij niet gerookt [Dutch]
   More than two cigarettes has he not smoked
   [Dutch]
c. Veel bier is er niet gedronken op het feest
   Much beer has there not been drunk at the party

The determiners which participate in this construction typically involve intermediate values on some numerical scale going from small numbers or small quantities to large ones. The general outline of the scale for increasing determiners like more than two is \( \langle \text{more than zero, more than one, ...} \rangle \). For
much and many, we adopt the scale \{ few, many \}. Negation reverses the scale, so we obtain the scales \{ not more than n, not more than n-1, ... not more than one, not more than zero \} and \{ not many, not few \}. This corresponds with our intuitions about the strength of the assertion: denying that there are a large number of N’s that have the property denoted by the VP is a weaker claim than denying that a small number of N’s have that property. Suppose now that we deny that more than \( k \) individuals have the relevant property, where \( k \) is somewhere in between zero and \( n \). In such a context, we immediately generate the implicature that it is not the case that not more than \( k-1 \), \( k-2 \), etc. individuals have that property. In other words, the statement implicates that some number of individuals smaller than \( k \) has the property in question. For (34a), this argumentation leads to the implicature that some people are expected to arrive on time, but we know they are not many. (34b) implicates that he did smoke cigarettes, but no more than two. (34c) carries the implicature that a certain amount of beer was drunk, but not a whole lot. Given that we preserve the implicature that a lower number or quantity has the property expressed by the VP, we can argue that the sentence conveys a positive statement.

If this approach is correct, we expect certain NPs not to reconstruct under negation, because they do not generate scalar implicatures that convey positive information. An example is few, which is the weaker element on the scale \{ few, many \}. Under negation, this scale becomes \{ not many, not few \}, as we argued above. Given that it is weak statements, not strong statements which trigger scalar implicatures, we do not expect NPs involving few to allow inverse scope readings in contexts like (35):

(35) a. Few people are unlikely to arrive on time
    b. Few students did not pass the exam

It is generally acknowledged that sentences like these do not have an inverse scope reading. The pragmatic approach developed here provides a straightforward explanation of this observation.

3.3. Contrastive interpretations

The appeal to the maxims of Quantity and Quality cannot explain the wide scope of negation over indefinites such as a N, many N, bare plurals or mass nouns. These expressions denote the weakest item on the relevant scale, so under the reversed scale induced by negation they lead to the strongest possible statement. As argued in section 3.2, scalar implicatures are triggered by weak statements, not strong ones. Thus, the argumentation developed so far does not account for the inverse scope interpretation of sentences like (28c,d). Intuitively, it is clear that the positive information these sentences convey does not arise through a scalar implicature. However, as Horn (1989) points out, the combination of the maxims of Quantity and Relation creates a second strategy of generating implicatures. In contradistinction to the implicatures based on Quality and Quantity, the implicatures based on Quantity and Relation are essentially positive in nature: they are used to strengthen, rather than
weaken the assertion. Grice's maxim of Relation requires the speaker to be relevant. In combination with the maxim of Quantity this tells the speaker to say no more than she must. As a result, the hearer is invited to read as much into the utterance as possible. Examples include the strengthening of if to if and only if, observed by Geis and Zwicky (1971) in contexts like (36), and the kind of inferences in (37) and (38), discussed by Harnish (1976):

(36) You will get an ice-cream if you do the dishes →
    You will get an ice-cream if and only if you do the dishes

(37) Paul and Jerry moved the piano →
    Paul and Jerry moved the piano together

(38) The flag is red →
    The flag is red all over

Along similar lines, the focus-sensitive interpretation of negation can be regarded as an instance of an inference to the strongest interpretation. Typically, sentences like (39) (from Jackendoff, 1972) and (40) (from de Swart, 1998) trigger an interpretation in which part of what is in the semantic scope of negation is outside the pragmatic scope of negation:

(39) He didn't kill the judge with a hammer →
    He killed the judge, but not with a hammer

(40) He didn't arrive at six o'clock → He arrived, but not at six o'clock

A sentence like (39) is typically not used to deny that any killing took place, but to deny that it happened with a hammer. If part of the sentence is interpreted outside the pragmatic scope of negation, the negative sentence conveys some positive information. In contexts like (39) and (40) the effect is purely pragmatic, and not truth-conditional in nature. However, if the negative sentence involves an indefinite NP in focus, the implicated statement is stronger than the assertion:

(41) a. Sue doesn't read novels →
    Sue reads things, but not novels

  b. ¬∃x (Novel(x) ∧ Read(s,x)) → ∃x (Read(s,x) ∧ ¬Novel(x))

(42) a. Phil didn't wear a red tie →
    Phil wore a tie, but it was not red

  b. ¬∃x (Tie(x) ∧ Wear(p,x) ∧ Red(x)) →
    ∃x (Tie(x) ∧ Wear(p,x)) ∧ ¬(Red(x))

The assertion and the implicature in (41a) and (42a) are spelled out in first-order logic in (41b) and (42b) respectively. The strategy of reading as much into the utterance as possible leads to a contrastive interpretation in which only part of the sentence is in the scope of negation. Indefinite NPs of the form a N, bare plurals and bare mass nouns easily trigger contrastive interpretations, in which we introduce a set of alternatives that do have the property in question. A contrastive interpretation
is compatible with inverse scope of negation, because the existential force of the implicature allows the utterance to convey positive information. Examples of contrastive interpretations of indefinites outside the syntactic scope of the negation operator are provided in (43):

(43) a. A doctor was not available
    b. Reviews are not published by this journal
    c. Beer and wine are not served here
    d. A doctor who spoke Russian was not available
    e. Articles on scope are not published by this journal

(43a) is felicitous in a context in which someone was available (a nurse for instance), but the situation really required a doctor. (43b) can be used to contrast reviews with research articles. (43c) suggests that some drinks (presumably non-alcoholic beverages) are served in this restaurant. These examples illustrate that the contrast can bear on the common noun. (43d,e) show that the introduction of modifiers or a relative clause allows us to contrast subsets of the set of individuals that satisfy the common noun. (43d) contrasts doctors who speak Russian with doctors who don’t speak this language. In (43e) we compare articles on scope with articles on other subjects. In all the cases in (43), negation focusses on the NP or part of the NP, and it triggers the presupposition that something satisfies the predicate, although it is not the value of the (full) NP itself. In other words, focus on (part of) the indefinite always means that the verbal predicate is outside of the pragmatic scope of negation, even if the semantic scope of negation is the entire sentence.

Singular indefinites, bare plurals and mass nouns are not the only NPs which allow this qualitative kind of contrastive focus, at least not in Dutch. Examples involving many and numerals are given in (44):

(44) a. Meer dan drie studentleden kwamen er niet opdagen voor de vergadering
    More than three student members did not show up for the meeting
    b. Veel bier is er niet gedronken op het feest
    Much beer has there not been drunk at the party

In the appropriate context, (44a) contrasts student members with members from other groups (e.g. staff members or faculty). Similarly, (44b) can express the fact that not much beer was drunk, but much of some other beverage (e.g. wine or soda) was consumed. Note that the determiners do not get a scalar interpretation in this construction, even though they express existential quantification and specify a cardinality. The contrast focusses on alternative values for the common noun, not on alternative values for the determiner.

Although such qualitative contrasts are possible with determiners like more than two and many, a quantitative contrast is more easily available, because the NP carries a heavier emphasis on the information provided by the determiner. The quantitative contrast triggers a scalar implicature along the lines of the argumentation spelled out in section 3.2. Both the qualitative and the quantitative contrast are com-
compatible with inverse scope, because in both cases, pragmatic implicatures allow the negative sentence to convey positive information.

4. Back to NPIs

The idea that polarity is related to a scalar interpretation goes back to observations made by Fauconnier (1975, 1978). Recently, Krifka (1995) and Israel (1996) have argued that scalarity and emphasis are closely tied up with informativeness. In view of the literature and the results from section 3, it is natural to establish a relation between the licensing of NPIs and the general conditions on inverse scope of negation. I will argue that the differences between NPIs like any N in English, and ook maar in Dutch on the one hand, and hoeven on the other hand can be explained in terms of the positive implicatures they generate or lack thereof.

4.1. Bare NPIs that refer to the bottom of a scale

Interestingly, we do not expect negation to take inverse scope over NPIs like any N in English, and ook maar in Dutch under any of the options outlined in section 3. This means that the analysis developed so far provides an immediate explanation for the ungrammaticality of the (b)-sentences of (5)–(7), repeated here as (45):

(45) a. *Anyone did not talk to me
b. *Anyone said nothing to me
c. *Ook maar iemand zei niets tegen mij

Anyone said nothing to me

On the one hand, the NPIs in (45) do not trigger scalar implicatures. This follows from the argumentation in section 3.2 above in combination with general insights about the semantics of NPIs involving any or ook maar. Fauconnier (1975, 1978), Landman and Kadmon (1993), Krifka (1995), Israel (1996) and others argue that such NPIs denote the lowest element, the ‘bottom’ of some scale. Rullmann and Hoeksema (1997) make similar claims about ook maar in Dutch. Quite generally then, these NPIs generate the ordering {any, ...} or {ook maar, ...}. Accordingly, an affirmative statement which involves the NPI provides the weakest possible assertion. However, NPIs typically do not occur in affirmative sentences. NPIs are restricted to negative sentences, or other contexts that reverse the orientation of the scale. Thus the relevant scale we are using in the interpretation of sentences involving NPIs is {not ..., not NPI}. According to this reversed scale, the negation of an NPI makes the strongest possible statement. We know from the argumentation based on the Gricean maxims of Quantity and Quality sketched in section 3.2 that scalar inferences are invited by weak, not strong assertions. The strong nature of negative

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8 However, compare Rullmann (1996) for a slightly different view.
statements involving NPIs prohibits the sentence from generating scalar implications.

On the other hand, NPIs involving *any* or *ook maar* do not participate in the qualitative contrast that singular indefinites and other weak NPs exhibit. NPs involving *any* have existential force just like other indefinite NPs. This made it hard for Linebarger (1980) and Uribe-Itxebarría (1996) to explain why bare *any* NPs are not licensed under inverse scope. Note, however, that although singular indefinites, bare plurals and other weak NPs can get a scalar interpretation, this is not obligatory. The qualitative contrast which triggers an implicature to the strongest interpretation does not rely on a scalar interpretation of the determiner, and is in fact incompatible with it. The contrastive interpretation relies on the introduction of alternative values for (part of the) common noun denotation, not alternative values on the scale. The semantics of *any* and *ook maar* we adopt here makes these NPIs inherently scalar expressions, for we take them to combine their existential force with a denotation as the bottom element of a scale. The obligatory scalar interpretation implies a quantitative meaning aspect which rules out the possibility of a qualitative contrast, so a negative sentence with a bare *any* or *ook maar* NP in subject position does not license an implicature along the lines of the argumentation developed in section 3.3.

Summing up, we observe that both strategies to generate positive implicatures for a negative sentence fail when a bare NPI in subject position refers to the bottom of a scale. The lack of implicatures that weaken or strengthen the assertion makes it impossible for such NPIs to satisfy the pragmatic constraint on inverse scope of negation. However, we know that NPIs must be interpreted under the semantic scope of negation. The ungrammaticality of sentences like (45) is thus a direct result of the fact that we put an NPI which does not license inverse scope of negation in a position where it is not in the direct scope of negation. This explains the observation made by Ladusaw (1979) and Hoekstra, de Hoop and Zwarts (1988) that bare NPIs that refer to the bottom of a scale cannot precede their trigger, but must be in the direct scope of negation.

### 4.2. Embedded NPIs

Linebarger (1980) and Hoekstra et al. (1988) were unable to explain the contrast between bare and embedded NPIs in configurational terms. In the pragmatic approach developed here, their observations get a straightforward explanation. The pragmatic constraint on inverse scope does not exclude the possibility for embedded NPIs to precede their trigger. The general requirement on the NPI is that it needs to be in the semantic scope of negation in order to be properly licensed. This is a strictly semantic condition on NPIs which must always be observed. If the NPI does not occur in the c-command domain of its trigger, the only way for the NPI to be in the semantic scope of negation is to participate in a construction that allows inverse scope because the pragmatic constraint on informativeness is satisfied. The examples in (45) are ill-formed because the bare NPIs themselves do not allow inverse scope. However, the English and Dutch examples (13) and (14), repeated here as (46) and (47) are well-formed, because the indefinite NP which contains the NPI allows...
inverse scope by creating a contrastive interpretation along the lines of the pragmatic argumentation sketched in section 3.3 above:

(46) a. That he had stolen anything was never proved
    b. A doctor who knew anything about acupuncture was not available
    c. An article with any convincing examples of NPIs in subject relative clauses has never appeared in any journal of linguistics so far
    d. Examples with any relevance to that issue didn’t come up in the discussion

(47) a. Dat ook maar iemand ontslagen zou worden had niemand verwacht
   ‘That anyone would be fired, no one expected’
   b. Een kind dat ook maar iets aan zijn huiswerk gedaan heeft kent niemand
   ‘A child that anything to his homework done had knows no one’
   c. Een arts met ook maar enig kennis van deze ziekte was niet te vinden

Focus on (part of) the indefinite subject or the preposed complement triggers an implicature in which at least the verbal predicate is outside the pragmatic scope of negation. The inference to the strongest interpretation generates an implicature with existential force, because negation only affects part of the sentence. For instance, in (46a), we contrast doctors with even the slightest knowledge of acupuncture with other doctors. In a situation where a minimal amount of knowledge of acupuncture is required, this conveys the information that some doctors may be available, but there is no one who has the right kind of expertise. (46c) can be used to express the disappointment of a speaker who was expecting to get relevant examples from the discussion, but got examples that she was not interested in. The other sentences are interpreted along similar lines. Much as we expected, the NPI denotes the bottom element of the relevant scale. As a result, the denial of a sentence involving the NPI makes the strongest possible claim. Embedding the NPI in the relative clause of an indefinite subject contrasts the set of N’s that satisfy the relative clause with the set of N’s that do not. The comparison set triggers the existential implicature that some N’s satisfy the property expressed by the VP, but they are typically not the ones that were desired, requested, expected, etc. in the context of utterance.

In English, a contrastive interpretation of the indefinite subject or preposed, topicalized clause seems to be the only way to license an NPI like any outside of the c-command domain of negation. As we observed above, Dutch is more liberal in allowing inverse scope with cardinal NPs. We can embed an NPI in the relative clause of a cardinal NP as illustrated in (29), repeated here as (48):

(48) Meer dan twee artikelen die ook maar iets zinnigs beweren over bereik heb ik niet kunnen vinden
    More than two articles that say anything sensible about scope I have not been able to find
(48) conveys the positive information that there exist articles that say something sensible about scope, but the speaker did not find more than two of them. The inverse scope reading is licensed by the scalar implicature triggered by the cardinal NP in subject position. The interpretation of the NPI in the semantic scope of negation created by this inverse scope reading guarantees the felicity of the sentence. Thus both strategies for the calculation of positive implicatures that we discussed in section 3 play a role in the licensing of NPIs under inverse scope of negation.

4.3. The NPI hoeven

So far, we have provided an explanation of the contrast between bare and embedded NPIs that describe the bottom of some scale. The second issue to be investigated involves the lack of linear precedence constraints on certain non-quantifier NPIs like the modal verb *hoeven*, which we observed in section 1.4 above. The relevant examples given in (12) above are repeated as (49):

(49) a. Hij hoeft je niet te zien
   'He does not need to see you'
   b. Hij hoeft niemand te zien
   'He does not need to see anyone'

I take *hoeven* 'need to' to be the negative polarity counterpart of Dutch *moeten* 'must'. Accordingly, I assume that it expresses the modal force of necessity. More specifically, *hoeven* is used to express deontic necessity or obligation. As far as the scalar implicatures are concerned, the quantificational force of the modal is more important than the kind of modality involved, so I will formulate the analysis in the more general terms of possibility (☐) and necessity (□). The modal operators have existential and universal force, respectively, so they are related in the following way:

(50) For all formulas $\phi$: $\neg □ \phi \Leftrightarrow □ \neg \phi$

Negative sentences involving *hoeven* express the denial of the necessity that $\phi$, which according to (50) is equivalent to the assertion of the possibility of not $\phi$. For instance, (49a) denies that it is obligatory for him to see you, and thereby conveys that it is in fact permissible for him to not see you. Similarly, (49b) asserts that there is no one in particular he is required to see. This opens up the permissible option that there are certain people he simply won’t see.

Furthermore, as pointed out by Horn (1972), modal verbs introduce a scalar order $\langle □, ☐ \rangle$. Modals expressing possibility (☐) are the weaker elements, and modals expressing necessity (□) the stronger ones. Given that we are interested in a negative polarity version of the modal verb, the relevant scale is the reversed scale which arises under negation, namely $\langle \neg □, \neg ☐ \rangle$. It is a weaker statement to deny an obligation or necessity than to deny a permission or possibility. If the speaker
observes the maxims of Quality and Quantity and makes an assertion which involves the weaker element, the hearer infers that the stronger one is false, as usual. Thus the negation of a necessity operator (¬□) triggers the implicature that the negation of a possibility operator is false (¬¬◊). Of course ¬¬◊ is equivalent to ◊. In other words, if we negate a necessity, we infer a possibility by implicature. Given that we gave hoeven the semantics of a deontic necessity operator, the occurrence of this modal verb in negative sentences triggers the implicature that it is possible or permissible to do something, even though it is not required. The combination of semantic and pragmatic positive values means that (49a), for instance, conveys the information that it is permissible, but not required for him to see you. As a result of this interpretation, the sentence conveys a positive statement, which satisfies the pragmatic constraint on inverse scope. Given that hoeven satisfies the pragmatic constraints on inverse scope by the nature of its semantic interpretation, we expect it to be able to precede its trigger. With NPIs like hoeven there is thus no contrast between bare and embedded NPIs. The theory developed in section 3 provides a straightforward and unified explanation of the two cases of licensing of negative polarity under inverse scope.

5. Conclusion

The results of section 4 bring us full circle in the argumentation. We started out with a set of examples which seemed to show that syntactic scope at S-structure plays a role in the licensing conditions on NPIs. However, a restriction to direct scope at S-structure made it impossible to explain why embedded NPIs and modal verbs like hoeven can precede their trigger. The analysis I developed in sections 3 and 4, gets us out of the dilemma created by the seemingly conflicting data presented in section 1.4 by formulating precise pragmatic constraints on inverse scope. If we wish, we can build these constraints into the movement rules which allow negation to raise at LF or the NP to reconstruct under the scope of negation. However, it is clear that a purely syntactic (i.e. configurational) approach to the licensing conditions of NPIs is not sufficient to give a proper account of the data. Given the interesting differences between direct and inverse scope, we need to appeal to semantic and pragmatic properties of the expressions in question. Once we have this insight, we see that the data are fully consistent and allow for a simple and coherent analysis.

References


