

# Semantic maps and negative polarity

Eric Hoekstra

Fryske Akademy, Royal Netherlands Academy of Arts and Sciences

*Abstract: This article provides a discussion of some counterexamples to the analysis of negative polarity items (NPIs) proposed by Zwarts (1981, 1986a) and others within the framework of Generalised Quantifier Theory. It is argued that the theory of the semantic map (Haspelmath 1997) may throw some light on the proper treatment of some of the counterexamples, by providing a semantic feature theory of implicational relations between usages (and constructions).*

Een persoonlijke noot voor Frans Zwarts als *Voorwoord*: het paradepaardje van de taalkunde als exacte wetenschap is voor mij de verklaring van de relatie tussen negatieve polariteit en patronen van gevolgtrekking met behulp van wiskunde, meer specifiek, verzamelingenleer. Ik kwam daarmee in aanraking door het befaamde artikel van Frans, (1981). Als Nederlandse taalkundigen hebben we met behulp van die theorie heel veel data kunnen beschrijven, al vind ik het jammer dat we er niet meer ‘school’ mee gemaakt hebben. Dat laatste komt (waarschuwing: subjectieve mening!) doordat veel artikelen in het Nederlands verschenen en doordat we in het Engels, een later aangeleerde tweede taal, de blijde verzamelingstheoretische boodschap niet zo effectief konden uitdragen. Ach, het mooie Nederlands waarin Frans zijn artikelen schreef is in vrijwel alle Nederlandse wetenschappelijke tijdschriften vervangen door Engels. “Dy’t himsels weismyt wurdt fan in oar net opkrigen” (zoals Frans goed zal begrijpen nu hij de University Campus Fryslân voor de provincie heeft ingericht). Maar wij Nederlanders mogen niet klagen want hoe moeilijk is het Engels niet voor sprekers van Aziatische, Afrikaanse en andere talen. Kortom, niet tobben dus, “tiden hawwe tiden”, “let’s all speak English”. Tenslotte, laten we er trots op zijn dat zulke exacte vormen van taalkunde, als door Frans bedreven, mogelijk zijn en wie weet biedt de verzamelingenleer of wiskunde nog vele verborgen mogelijkheden om de semantische structuur van de zin verder te ontrafelen, in het bijzonder als het gaat om de onbegrijpelijke tweeplaatsigheid van determinatoren, de uitwisselbaarheid van sommige determinatoren met adverbiale zinsdeterminatoren (floating quantifiers), enzovoorts, enzovoorts.

## **1. Introduction: Elementary explanation of negative polarity and the link with patterns of inference<sup>1</sup>**

This paragraph contains a brief introduction to the phenomenon of negative polarity, which has been widely studied in the past decades (Ladusaw 1979, Zwarts 1981, Van der

---

<sup>1</sup> I thank Jack Hoeksema for valuable comments on this article.

Wouden 1994, Zwarts 1995, Giannakidou 1997, 2002, among others). It involves a local relation between a negative polarity item (henceforth: NPI) and a trigger.<sup>2</sup> An example is given below:

- (1) *Niemand heeft ook maar iets gezien.*  
 nobody has anything seen  
 'Nobody saw anything.'

In this example, the negative DP *niemand* 'nobody' is the trigger that licenses the semantic context in which the NPI *ook maar iets* 'anything' is allowed to occur (on the distribution of this NPI, see e.g. Zwarts 1981, Hoekstra, de Hoop & Zwarts 1988, Hoekstra 1989). Not all DPs provide the right semantic context for this NPI. For example, simple proper names do not, as is illustrated by the ungrammaticality of the following example:

- (2) \* *Kees heeft ook maar iets gezien.*  
 Kees has anything seen  
 'Kees saw anything.'

Thus there is a causal connection between the occurrence of the NPI *ook maar iets* 'anything' and the semantic context in which it is found. The semantic context is at least partly determined by the type of DP that is found in it.

Several questions arise at this point, one of which is put into words below, since it is the central topic of this article: How can the class of triggers for a given NPI be characterized? It was found that the triggers for the NPI *ook maar iets* 'anything' share a mathematical property: they are all monotone decreasing. This means that they all preserve truth under subsets. Monotone decrease can be tested by examining the patterns of logical inference with which triggers are associated. Consider for example the

---

<sup>2</sup> Actually, this is a convenient simplification. In fact, every word makes a contribution to the semantic structure of the sentence. The contribution of compositionally intervening words must be such that they do not weaken the mathematical property which licenses the NPI (Zwarts 1986b). The process of semantic composition is not well understood, but it seems to be an asymmetrical process: here the terms functor and argument are sometimes used. There is evidence that verbs are functors with respect to sentences, whereas they are arguments with respect to (most) types of NPs. On this difference between NPs and sentences see e.g. Linebarger (1981), Zwarts (1986b), Hoekstra (1989). Concerning the semantic relation between NPI and trigger, it seems to be the case that the NPI must be contained in the argument and the trigger must be the functor to that argument.

monotone decreasing DP *geen jongen* 'no boy'. This DP preserves logical inference under subsets:

- (3) *Geen jongen lacht.*             $\implies$     *Geen jongen lacht hard.*  
 no boy laughs                      no boy laughs hard  
 'No boys laughs'                      'No boy laughs hard'

Being a monotone decreasing trigger, the DP in question can license NPIs like *ook maar iets* 'anything' and *hoeven* 'need', as shown below:

- (4) *Geen jongen heeft ook maar iets gezien.*  
 no boy has anything seen  
 'No boy saw anything'
- (5) *Geen jongen hoeft te werken.*  
 no boy needs to work  
 'No boy needs to work'

A DP like *de jongens* 'the boys' cannot be a trigger for these NPIs, as shown below:

- (6) \* *De jongens hebben ook maar iets gezien.*  
 the boys have anything seen  
 'The boys saw anything.'
- (7) \* *De jongens hoeven te werken.*  
 the boys need to work  
 'The boys need to work'

Correspondingly, this DP does not license downward entailments:

- (8) *De jongens lachen*  $\not\Rightarrow$  *De jongens lachen hard*  
 the boys laugh                      the boys laugh hard  
 'The boys laugh'                      'The boys laugh hard'

Hence there seems to be a one-to-one relation between a DP's ability to license downward entailments and its ability to license NPIs.<sup>3</sup>

---

<sup>3</sup> GQ theory makes available other mathematical properties which make it possible, for example, to generalise over apparently unrelated categories such as negative and universal determiners. Such a generalisation is empirically supported in that both negative and universal determiners may be modified by the adverb *vrijwel* 'almost' (Zwarts 1985).

Stepping away from the data, we may view Generalised Quantifier theory as a theory of the mathematical (or logical) building blocks of meaning. However, it doesn't say anything about the content of the building blocks of meaning. In addition, it has nothing to say about the complex relation between syntax and semantics, beyond seeing syntax as a string of words which may combine depending on their semantic properties.

## 2. Problems with the link between NPIs and monotone downward contexts

Theories that are explicit and clear can be easily falsified, unlike theories that are implicit and unclear. As GQ theory provided a clear and explicit, even elegant, analysis of the class of triggers of NPIs, it soon faced empirical complications. One such complication was the fact that the NPI *hoeven* 'need' was excluded in some specific monotone decreasing contexts, whereas the NPI *ook maar iets* 'anything' was not. An example of such a context is the conditional construction. The test of inference shows that the clause introduced by the conditional complementiser is monotone decreasing:

- (9) *Als het regent of sneeuwt.*  $\implies$  *Als het regent en sneeuwt.*  
 if it rains or snows if it rains and snows  
 'If it rains or snows.' 'If it rains and snows.'
- (10) *Als ik droom, slaap ik.*  $\implies$  *Als ik mooi droom, slaap ik.*  
 if I dream, sleep I if I beautifully dream sleep I  
 'If I dream, I am sleep.' 'If I dream beautifully, I am asleep.'

The conditional complementiser can license the NPI *ook maar iets* 'anything', but fails to license the NPI *hoeven* 'need', contrary to expectation (cf. Zwarts 1981: 39):

- (11) *Als ik ook maar iets voelde van kritiek*  
 if I anything felt of criticism  
*dan kreeg de (in mijn ogen) tegenpartij hem onder uit de zak.*  
 then got the (in my eyes) opposing.party him deep from the sack  
 'If I felt any hint of criticism, then the (in my eyes) other side was in for it.'
- (12) \* *Als hij hoefde te werken, voelde hij zich ziek.*  
 if he needed to work felt he himself ill  
 'If he had to work, he felt ill.'

Investigation of other languages than Dutch similarly yielded cases in which NPIs were not grammatical where they should have been. Conversely, there were also cases in which NPIs should have been excluded, yet they were not. A case in point is the English item *anything*. It can occur in sentences like the following:

(13) *You can do anything (you want).*

However, such sentences do not seem to be downward entailing:

(14) *He can roll over or play dead.*       $\neq \Rightarrow$       *He can play dead.*

(15) *He can paint.*       $\neq \Rightarrow$       *He can paint miniatures.*

Items such as *anything* have been referred to as Free Choice Items (FCIs for short). Various extensions of the theory have been proposed (see e.g. Giannakidou 2001, and for an overview, Hoeksema 2012), but an overall conceptual picture is still lacking. The upshot is that we have counterexamples both ways against a simple view of negative polarity, which was set up as a straw man here. There are examples in which a NPI should be able to be found, yet it isn't (the case of 12), and there are examples in which a NPI should not occur, yet it is (the case of 13).

On the other hand, it should also be recognized that there are a great many examples for which the theory makes the right predictions. It provides valuable insight into the relation between logical interpretation and patterns of inference on the one hand, and the occurrence of NPIs on the other hand. My aim is not solve these problems, but I hope to throw some light on them by applying the theory of the semantic map to NPIs.

### 3. Semantic maps and GQ theory

The theory of semantic maps (see Haspelmath 1997, Van der Auwera, Gast and Vanderbiesen 2012 among others) is essentially, in my view, a classification of *syntactic* constructions on *semantic* grounds. This is an attractive conceptual feature, since we know that syntax and semantics are inextricably intertwined, but we don't know how. Generalised Quantifier Theory abstracts away from this problem by implicitly assuming that it is only the semantic properties of words which are relevant for understanding the distributional properties of NPIs. Of course, this might have been empirically correct, but apparently it is not, since there are many empirical issues with GQ theory. Hence new avenues of research must be explored not just in order to account for difficult examples but also to provide a proper conceptual setting for dealing with the relation between

syntax and semantics, or, more specifically, for dealing with the relation between syntactic constructions and the basic building blocks of meaning.

Another criticism of the GQ account of the phenomenon of negative polarity involves the implicit assumption that there is a perfect fit between the set of contexts allowing for a NPI and the actual set of contexts in which NPIs are found. Empirically, this involves cases which are exemplified by (12), that is, cases in which a NPI should be found, yet it isn't. Here, comparison can be made with the definition of possible word in phonology. Phonological theory defines the set of possible words of a language as a set of restrictions on the combinatorial properties of phonemes. But not every possible word is an actual word. There can simply be accidental gaps. Extending this analogy to the set of possible contexts for NPIs, we can reasonably suppose that it is a lexical matter whether potential contexts for a given NPI are actual contexts for that specific NPI.

We could extend the analogy between the definition of possible words and the definition of NPI contexts. We could propose that just as there are accidental gaps in the set of actual words, likewise there are accidental gaps in the set of NPI contexts. This line of investigation would involve a serious weakening of the original hypothesis of GQ theory which provides for a 100% fit between possible and actual contexts. Just as it is not possible to predict which potential word is actually a word, so it would be impossible to predict which potential NPI context would be a context in which NPIs are actually found. Fortunately, the analogy does not extend so far, since the theory of the semantic map does provide a limitation on the set of possible and actual contexts in which NPIs are found. It does so by providing a map of the contexts in which NPIs could potentially be found, and by requiring that the set of actual contexts form an uninterrupted chain on the map. The set of actual contexts thus forms a non-interrupted part of the set of potential contexts. These contexts by and large correspond to constructions which differ from each other in terms of semantic features. Thus two constructions which are adjacent on the map differ from each other with respect to one semantic feature at most. In this way, the semantic map provides a classification of *syntactic* constructions on *semantic* grounds, and it provides testable predictions about their relative degree of relatedness.

The theory of the semantic map requires that the distribution of a given NPI targets a non-interrupted subset of the set of constructions on the map. As a result, it restricts language change, more specifically, it provides a limitation on the changes in the set of contexts in which a NPI may occur. If a NPI starts being used in a new context, it must be a context that is adjacent on the map to the other uses of that NPI. Conversely, if a NPI loses a context, it must be a context that is on the periphery of the set of contexts of that NPI.

Having introduced the theory of semantic maps in the abstract, we are now in a

position to examine Haspelmath's original proposal in more detail and see how it can be modified in order to be combined with GQ theory.

#### 4. Critical appraisal of Haspelmath's theory of semantic maps

Haspelmath's theory has been designed to account for the various functions which the indefinite pronoun (in English: *anybody* / *somebody*) may have in various languages, including negatively polar usages of such pronouns. These functions are correlated with syntactic constructions and with uses. I will employ the terms 'constructions' and 'uses' indiscriminately, since the differences are not relevant for my purpose in this article. Haspelmath distinguishes the following uses of the indefinite pronoun, which are exemplified by the following sentences:

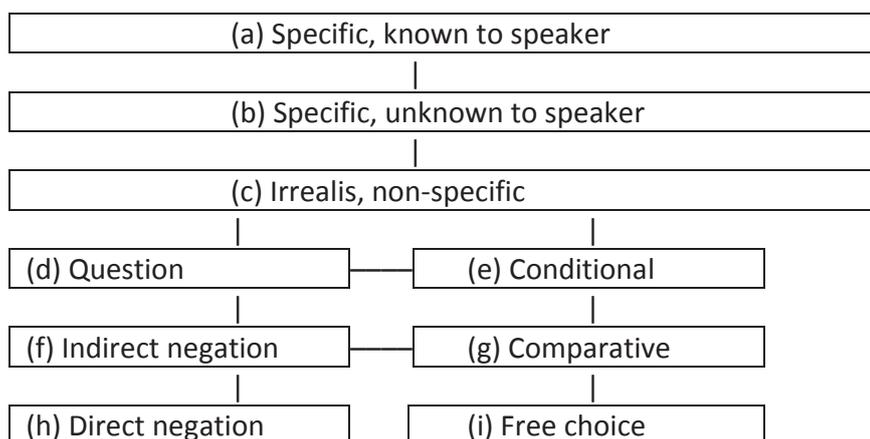
(16) List of uses exemplified by examples (Haspelmath 1997:2-3)

- (a) Specific, known to speaker:  
**Somebody** called while you were away: Guess who!
- (b) Specific, unknown to speaker:  
 I heard **something**, but I couldn't tell what sound it was.
- (c) Irrealis non-specific:  
 Please try **somewhere** else.
- (d) Question:  
 Did **anybody** tell you anything about it?
- (e) Conditional:  
 If you see **anything**, tell me immediately.
- (f) Indirect negation:  
 I don't think that **anybody** knows the answer.
- (g) Comparative:  
 In Freiburg the weather is nicer than **anywhere** in Germany.
- (h) Direct negation:  
**Nobody** knows the answer.
- (i) Free choice:  
**Anybody** can solve this simple question.

As can be gleaned from the list, these functions include the simple referential use in affirmative sentences, use as a NPI in negative sentences and use as a Free Choice Item in modal clauses. Note again that uses correspond to constructions in many cases, clearly so in (d-h). These uses are put on a map which expresses which uses are adjacent to each

other, that is, these uses minimally differ from each other. The semantic map reflecting adjacency relations looks as follows, where the adjacency relation is represented by horizontal or vertical dashes:

(17) Haspelmath's map of uses of indefinite pronouns



Uses which are connected by a line differ minimally from each other. Adjacency relations between constructions are not just motivated by empirical considerations. They involve uses which differ with respect to one feature specification only (Haspelmath 1997:119ff). Furthermore, the theory views negative polarity not as an isolated phenomenon, but relates it to the plain referential use of indefinite pronouns and to free choice interpretation of pronouns. However, the theory of the semantic map lacks the overarching analysis of logical hardware that is provided by GQ theory. Thus, Haspelmath's map does not have much to say about patterns of logical inference.

Haspelmath's theoretical claim is that the uses for a given pronoun (or NPI) are always adjacent to each other. Thus, if a given pronoun is used, say, in conditional clauses and as a free choice item, then it must also be used in the comparative, since otherwise the actual uses of this pronoun are not adjacent to each other. It is clear from the map that a given use can have multiple neighboring uses, which differ minimally from it, that is, they differ with respect to one semantic feature. The map thus provides a classification of uses that is theoretically grounded in semantic features and empirically supported by distributional patterns of indefinite pronouns from a vast array of languages. Even if this specific map is incorrect or incomplete (which it is, see below), it is attractive to have a map of constructions that is theoretically grounded in semantic features and that is empirically supported by a large array of distributional patterns. Furthermore, the map

relates diverse uses of the indefinite pronoun to each other, such as the free choice interpretation, the negatively polar use and the plain specific interpretation.

This is not to say that the semantic map is perfect. Many constructions are missing from the map, such as the construction in which a NP is complement to a quantifier or the exclamative construction. The Frisian NPI *syn leven* ‘his life’ occurs in such contexts (Hoekstra & Slofstra to appear), but, admittedly, this NPI is not an indefinite pronoun. However, regardless of whether Haspelmath would want to extend his theory to other nominal NPIs, we would clearly prefer a theory of *some* NPIs to generalize to *all* NPIs if possible, and in this vein we will continue the discussion.

Of course, we could view the exclamative use, which represents a high-degree reading, as a special case of the comparative use, but it is not clear whether such an extension of the notion ‘comparative’ is warranted, nor is it clear whether exclamatives always pattern with comparatives. As for the use of *syn leven* ‘his life’ following a universal quantifier, it is not clear how this should be represented in Haspelmath’s semantic map. Thus, it seems that the use of *syn leven* ‘his life’ only partly and impressionistically conforms to Haspelmath’s semantic map generalization, and that a further evaluation of Haspelmath’s proposal depends on how he would treat exclamatives and universal quantification.

Haspelmath’s map is in essence a bottom-up taxonomy of the uses of indefinite pronouns, including their use as a NPI and a FCI. This taxonomy turns out to be explainable in terms of generally accepted semantic features, but these features lack the internal logical coherence provided by GQ theory. Ideally, one would want to have a theory which provides the underlying hardware for semantic features. In the next section, I will examine Haspelmath’s map by investigating the distribution of the indefinite pronoun *ook maar X*.

### 5. How does the NPI *ook maar X* ‘any X’ fit the semantic map?

Haspelmath’s theory has been designed to cover the usages of indefinite pronouns, including negatively polar usages. I will test which constructions distinguished by Haspelmath allow insertion of the Dutch indefinite pronoun / NPI *ook maar X* ‘any X’:<sup>4</sup>

- (18a) \* Ook maar iemand belde toen je weg was: raadeens wie.  
 Somebody called while you away were guess MP who!  
 ‘Somebody called while you were away: Guess who!’  
 (Specific, known to speaker)

<sup>4</sup> In the glosses to the sentences below, MP stands for ‘modal particle’, and R stands for ‘R-pronoun’, i.e. the class of locative adverbs which also function also prepositional objects in Dutch.

- (18b) \* *Ik hoorde ook maar iets, maar ik kon niet zeggen welk geluid het was.*  
 I heard something, but I couldn't tell what sound it was.  
 'I heard something, but I couldn't tell what sound it was.'  
 (Specific, unknown to speaker)
- (18c) \* *Probeer het alsjeblieft ook maar ergens anders.*<sup>5</sup>  
 try it please somewhere else  
 'Please try somewhere else.'  
 (Irrealis non-specific)
- (18d) *Heeft ook maar iemand je er ook maar iets oververteld?*  
 did anybody you R anything about told  
 'Did anybody tell you anything about it?'  
 (Question)
- (18e) *Als je ook maar iets ziet, vertel het me direct.*  
 if you anything see tell it me immediately  
 'If you see anything, tell me immediately.'  
 (Conditional)
- (18f) *Ik denk niet dat ook maar iemand het antwoord kent.*  
 I think not that anybody the answer knows  
 'I don't think that anybody knows the answer.'  
 (Indirect negation)
- (18g) \* *In Freiburg is het weer beter dan ook maar ergens in Duitsland.*  
 'In Freiburg is the weather nicer than anywhere in Germany.'  
 'In Freiburg the weather is nicer than anywhere in Germany.'  
 (Comparative)
- (18h) \* *Ook maar iemand weet het antwoord niet.*  
 anybody knows the answer not  
 'Nobody knows the answer.'  
 (Direct negation)<sup>6</sup>

---

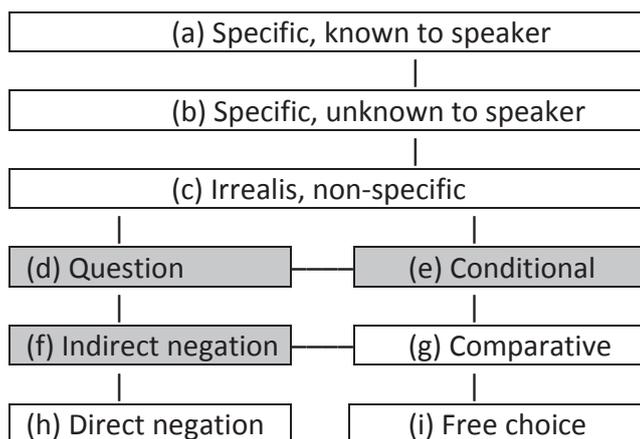
<sup>5</sup> Hoeksema & Rullmann (2001: 148) provide some (rare) cases of *ook maar* in subordinate clauses with a nonveridical matrix predicate, such as:

(i) *Ik wou dat er op mij ook maar iemand zo verliefd was.*  
 I wish that thereon me anybody so in.love was  
 'I wish that anybody was so much in love with me.'

<sup>6</sup> Jack Hoeksema points out to me that ungrammaticality here is due to two independent factors. First, this NPI must be c-commanded by negation in case negation occurs in the same clause as the NPI, cf. Hoekstra, de Hoop & Zwarts (1989). Second, if negation and this NPI are adjacent, then the

- (18i)\* *Ook maar iemand kan dat eenvoudige probleem oplossen.*  
 anybody can that simple question solve  
 'Anybody can solve this simple question.'  
 (Free choice)

(19) Uses of *ook maar x* 'any x' marked in grey



The grammatical uses of this NPI form a coherent set on Haspelmath's map, as shown above. Matters become more complicated if we take the dichotomy between the S and the NP comparative into account (on comparatives and negative polarity, see Hoeksema 1983a). The map conflates the NP comparative and the sentential comparative under the general category of comparatives, but the NP comparative cannot be equated with the S comparative, as is clear from the fact that there are NPIs which are found in one type of comparative but not in the other. A case in point is the Dutch NPI *ook maar X* 'any X'. To illustrate, consider the following sentences:

- (20a)\* *Atsje is sneller dan ook maar iemand.*  
 Atsje is faster than anybody  
 'Atsje is faster than anybody.'

---

discontinuous sequence *niet ook maar iemand* ('not anybody') must be replaced by the negative quantifier *niemand* 'nobody'. In contexts that comply with both conditions, *ook maar* is compatible with clausemate negation:

- (i) *Hij is niet met je vriendin of ook maar iemands vrouw vreemdgegaan.*  
 he is not with your girl.friend or anybody's wife cheated  
 'He didn't cheat with your girlfriend or anybody's wife.'

- (20b) *Atsje is sneller dan ook maar iemand had gedacht.*  
 Atsje is faster than anybody had thought  
 ‘Atsje is faster than anybody had thought.’

This makes it clear that some of the constructions present incorrectly conflate two or more smaller constructions.

Furthermore, the NPI occurs in constructions which are not mentioned on Haspelmath’s map. For example, it occurs in the complement of predicates expressing surprise (22), doubt (23), negation inherent to the verb (24) (see Hoeksema & Klein 1995) or negation inherent to the complementiser (25):

- (22) *Dat deze camping door ook maar iemand bezocht wordt verbaast mij.*  
 that this camping by anybody visited is surprises me  
 ‘That this camping is visited by anybody, surprises me’

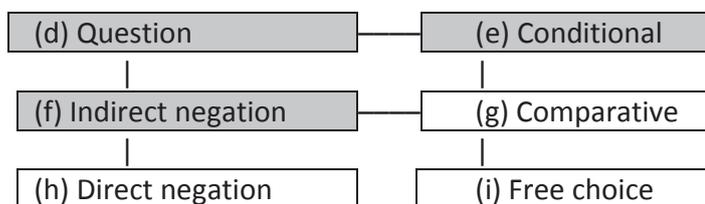
- (23) *Hij betwijfelt of ook maar iemand dat werkelijk gelooft.*  
 he doubts whether anybody that really believes  
 ‘He doubts whether anybody really believes that.’

- (24) *Hij weigert ook maar iemand in vertrouwente nemen.*  
 he refuses anybody in trust to take  
 ‘He refuses to put his trust in anybody.’

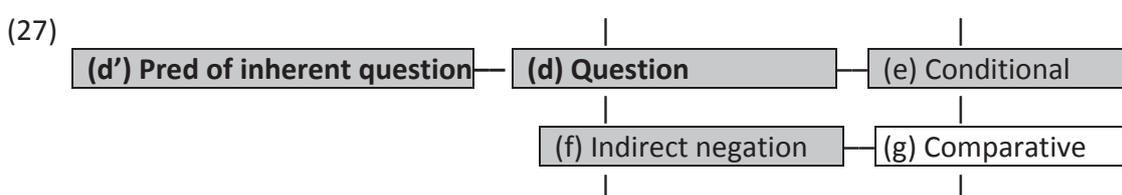
- (25) *Zonder ook maar iemand tegen te komen.*  
 without anybody against to come  
 ‘Without meeting anybody.’

Let us group the predicates of doubt, surprise and so on (examples 22, 23) together as predicates of inherent question, and examples of the type (24, 25) as predicates of negation. Consider next the relevant part of Haspelmath’s map:

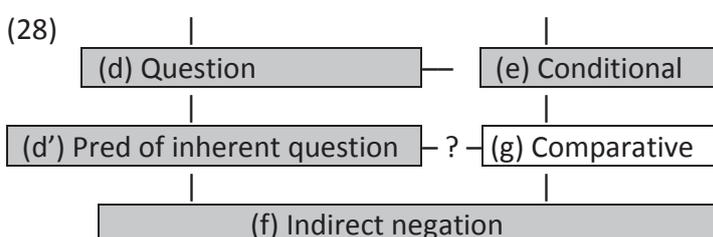
(26)



The data in (22-25) indicate that boxes must be added for predicates of inherent questions and predicates of negation. It is clear that they must be linked up to (be adjacent to) one of the three constructions in which this NPI can also be found. The semantic characterization we have chosen suggest that predicates of negation must be connected to the category 'indirect negation', and predicates of inherent question to the category 'question'. However, this is just a suggestion; the actual state of affairs might well be different. Furthermore, we cannot make sure *how* this constructional category must be connected: must the category 'Predicate of inherent question' be connected to the category 'Question' as an outlier?



Or does it occur in between the categories 'Question' and 'Indirect negation', and if it does, must it be connected with the Comparative?



Or does it occur in between the categories 'Question' and 'Conditional'? Or even between the categories 'Conditional' and 'Comparative'. In order to answer these questions, the taxonomy proposed by Haspelmath must be vastly extended as far as the number of constructions investigated is concerned and tested on a large number of NPIs. It remains to be seen if this extension yields a coherent distribuion, mapwise, for all NPIs.

## 6. How does the NPI *hoeven* 'need' fit the semantic map?

At first blush, putting this negatively polar verb on the map may seem an exercise that is unfair to Haspelmath's theory, since it has been designed for indefinite pronouns. However, Haspelmath's theory intends to cover negatively polar usages of indefinite

pronouns. GQ theory has shown that negative polarity is a transcategorial phenomenon. NPIs may be nouns, but there are also NPIs that are verbs or adjectives. Incidentally, there do not seem to be NPIs that are prepositions. Furthermore, the triggers of NPIs may be nouns, verbs, complementisers and adjectives, especially comparatives (Hoeksema 1983a) and superlatives (Hoeksema 1983b, 1986; De Hoop 1988 and others).<sup>7</sup> GQ theory is also able to transcategorially define classes of triggers as being monotone decreasing (or anti-additive, a subset property of monotone decrease). It is therefore clear that any theory of the distribution of indefinite pronouns must take this transcategorial property of negative polarity into account. Haspelmath may for the moment restrict his theory to indefinite pronouns (and NPs in the case of ‘any N’, as for example in ‘any house’), but ultimately any theory of this phenomenon must come up with an account of how the category-specific and the category-general are intertwined.

The first three uses on Haspelmath’s map are clearly restricted to nouns, and these are consequently irrelevant for the distribution of the NPI *hoeven* ‘need’, which is a verb. When putting the uses of *hoeven* ‘need’ on the map, we can conveniently ignore these uses and restrict ourselves to subpart (26) of the semantic map. I will now test which constructions distinguished by Haspelmath allow insertion of the NPI *hoeven* ‘need’:

(29) Occurrence of *hoeven* ‘need’ in Haspelmath’s set of constructions

(29d) \* *Hoeft er iemand een verhaal te vertellen?*  
 needs there somebody a story to tell  
 ‘Does somebody have to tell a story?’ (Question)

(29e) \* *Als je een verhaal hoeft te vertellen, doe het dan direct.*  
 if you a story have to tell do it then immediately  
 ‘If you need to tell a story, then do so immediately.’ (Conditional)

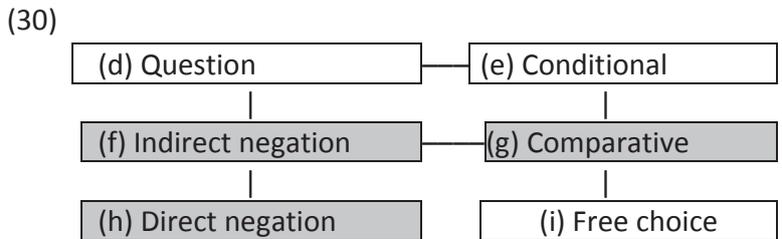
(29f) *Het betekent niet dat je hoeft te baden in aftershaves.*  
 it means not that you have to bathe in aftershaves  
 ‘It does not mean that you have to bathe in afterhave.’ (Indirect negation)

---

<sup>7</sup> De Hoop (1988: 123) seems to suggest that a superlative embedded in a NP can have licensing effects on NPIs and PPIs in a VP outside that NP. However, the licensing properties of a NP with respect to an external VP depend on the determiner of that NP. Put differently (see note 1), the determiner is a functor taking its nominal complement as its argument, hence nothing contained in the nominal complement can license anything outside NP, given that the licenser or trigger for NPI and PPI must be the functor and the NPI or PPI must be contained in its argument. If correct, this entails that functor-argument structures cannot be interchanged at random.

- (29g) *Dat was meer dan hij had hoeven doen.*  
 that was more than he had needed do  
 ‘It was more than he had been required to do.’ (Comparative)
- (29h) *Dat hoeft niet.*  
 that needs not  
 ‘That isn’t necessary.’ (Direct negation)
- (29i)\* *Iedereen kan eens hoeven overwerken.*  
 anybody can MP need overwork  
 ‘Anybody can have to work overtime.’  
 (Free choice)

These uses form a connected whole on Haspelmath’s semantic map:



However, it was noted in the preceding section that the map does not accommodate the two constructions which we had referred to as predicates of inherent question and predicates of inherent negation. Both of these accommodated the NPI *ook maar x* ‘any x’. The sentences below show how the NPI *hoeven* ‘need’ fares in these two constructions:

- (31) Predicates of inherent negation
- (a) *Geweldige sushi, zonder te hoeven wachten.*  
 great sushi without to have wait  
 ‘Great sushi, without having to wait.’
- (b) *De bedrijfsfilosofie is geld verdienen zonder te hoeven werken.*  
 the company.philosophy is money earn without to have work  
 ‘The company’s philosophy is earning money without having to work.’

## (32) Predicates of inherent question

- (a) \* *Hij was verbaasd dat hij hoefde te werken.*  
 he was surprised that he had to work  
 'He was surprised that he had to work.'
- (b) % *Ik betwijfel of hij hoeft te werken.*  
 I doubt whether he has to work  
 'I doubt whether he has to work.'

The percentage (%) sign indicates that speaker judgments vary. It seems that this NPI is plainly acceptable with predicates of inherent negation, whereas judgments may vary with predicates of inherent question. Furthermore, verbs of inherent negation do not seem to license this NPI:

## (33) Verbs of inherent negation

- (a) \* *Hij ontkende te hoeven werken.*  
 he denied to have.to work  
 'He denied having to work.'
- (b) \* *Hij ontkende naar de psychiater te hoeven.*  
 he denied to the psychiatrist to have.to  
 'He denied having to go to the psychiatrist.'

However, there are grammatical examples involving verbs of inherent negation, for example the following from the newspaper *Trouw* (10 April 2009):<sup>8</sup>

- (34) *Eurlings zelf ontkent dat hij excuses heeft hoeven maken.*  
 Eurlings himself denies that he apologies has have.to make  
 'Eurlings himself denies that he had to make apologies.'

There are more distinctions which Haspelmath's theory fails to make, although it would be empirically warranted. Hoeksema (2012) investigates a wide range of NPIs and notes (among others) that the NPIs *yet* and *either* are fine in yes/no questions, but disallowed in wh-questions. This distinction is not made in Haspelmath's theory. Similarly, Hoeksema (2012) shows that comparatives of inequality must be distinguished from other

---

<sup>8</sup> This example was brought to my attention by Jack Hoeksema, who also informs me that this NPI is rarely triggered by a negative predicate (only 3 times out of 3300 in his data set). Restrictive adverbs with a negative flavor are a much more frequent trigger (roughly 550 times out of 3300). Examples of such adverbs include *alleen* 'only', *slechts* 'merely', and so on.

comparatives. It is clear that the data need to be further investigated, but it is also clear that the semantic map needs to be much more fine-grained.

## 7. Concluding remarks

A strong point of the map approach is that it attempts to find a classification of constructions, such that certain constructions or uses resemble each other more than other constructions, and that the distribution of a NPI across constructions is coherent in the sense that the constructions in which a NPI shows up differ minimally from each other. The semantic hardware underlying constructions may well combine the mathematical concepts of GQ theory with a designated set of salient semantic features involving notions referred to by Haspelmath such as specificity, the realis / irrealis distinction and so on. Ideally, such features are not primitive, but can be mathematically defined, as is the case with the feature veridicality (cf. Zwarts 1995, Giannakidou 2002 and others). Of course, this hypothesis is not necessarily correct, but Haspelmath's research and the facts noted indicate that this might be a promising way of attacking the problem of the distribution of NPIs and the relation between negative polarity, logical inference and the semantic structure of sentences. This approach is in fact instantiated in Hoeksema (2012) who distinguishes 12 classes of polarity items depending on their occurrence in 8 constructions (not counting direct negation).<sup>9</sup> Hoeksema notes that a priori there could have been  $2^8 = 256$  classes of items, so that 12 is not too bad. There is clearly a system in this, and its contours may become better visible given insightful auxiliary hypotheses about what is blurring the picture. Ideally, implicational relations between usages (constructions) are derived from a semantic feature system underlying these usages, for example, such as the one constructed by Haspelmath.

## 8. References

- Auwera, J. van der, V. Gast and J. Vanderbiesen (2012). Human impersonal pronoun uses in English, Dutch and German. *Leuvense Bijdragen* 98, 27-64.
- Giannakidou, A. (1997). *The landscape of polarity items*. Dissertation, University of Groningen.

---

<sup>9</sup> In fact, more distinctions are necessary, seeing that Hoeksema (2012:15) did not intend his classification to be complete, and seeing that he explicitly excluded indirect negation as a context.

- Giannakidou, A. (2001). The Meaning of Free Choice. *Linguistics and Philosophy* 24, 659–735.
- Giannakidou, A. (2002). Licensing and Sensitivity in Polarity Items: from Downward Entailment to (Non)veridicality. In: M. Andronis, E. Debenport, A. Pycha and K. Yoshimura, eds, *Chicago Linguistic Society* 38, 29-53.
- Haspelmath, M. (1997). Indefinite pronouns. Oxford: Clarendon Press.
- Hoeksema, J. (1983a). Negative polarity and the comparative. *Natural Language and Linguistic Theory* 1, 403-434.
- Hoeksema, J. (1983b). Superlatieven. *Taalkundich Bulletin* 13, 101-106.
- Hoeksema, J. (1986). Monotonie en superlatieven. In: C. Hoppenbrouwers, J. Houtman, I. Schuurman and F. Zwarts, eds, *Proeven van Taalwetenschap*, Ter gelegenheid van het emiritaat van Albert Sassen. Groningen: Nederlands Instituut, Rijksuniversiteit Groningen, 38-49.
- Hoeksema, J. (2012). On The Natural History Of Negative Polarity Items. *Linguistic Analysis* 38, 3-34.
- Hoeksema, J. and H. Klein (1995). Negative Predicates and their Arguments. *Linguistic Analysis* 25, 146-180.
- Hoeksema, J. & H. Rullmann (2001). 'Scalarity and Polarity. A study of scalar adverbs as polarity items.' In J. Hoeksema, H. Rullmann, V. Sánchez-Valencia and T. van der Wouden (eds) *Perspectives on Negation and Polarity Items*. Amsterdam: John Benjamins, 129-171.
- Hoekstra, E., H. de Hoop & F. Zwarts (1989). Lineaire restricties op negatief polaire uitdrukkingen? *Taalkundich Bulletin* 18, 226-236.
- Hoekstra, E. (1989). Polaire Asymmetrieën tussen NP en S. *Taalkundig Bulletin* 19, 86-97.
- Hoekstra, E. & B. Slofstra (to appear). A diachronic study of the negative polarity item SYN LEVEN 'his life > ever' in West Frisian between 1550 and 1800. *Historical Syntax*, Peer-reviewed open access online section of *Language*.
- Hoop, H. de (1988). Polariteit en Superlatieven. *Taalkundig Bulletin* 18, 114-128
- Ladusaw, W. (1979). *Polarity sensitivity as inherent scope relations*. Ph.D. Dissertation, University of Texas, Austin. (Indiana University Linguistic Club, 1980)
- Linebarger, M. (1981). *The grammar of negative polarity*. Massachusetts Institute of Technology: doctoral dissertation (Bloomington: Indiana University Linguistics Club).
- Wouden, T. van der (1994). Negative contexts. University of Groningen: doctoral dissertation.
- Zwarts, F. (1981). Negatief polaire uitdrukkingen 1. *Glott* 4, 35-132. Also: [http://www.dbnl.org/tekst/zwar007nega01\\_01/zwar007nega01\\_01\\_0001.php?q=](http://www.dbnl.org/tekst/zwar007nega01_01/zwar007nega01_01_0001.php?q=)
- Zwarts, F. (1985). De zaak vrijwel. *Taalkundig Bulletin* 15, 145-149.

- Zwarts, F. (1986a). *Categoriale Grammatica en Algebraïsche Semantiek: een onderzoek naar negatie en polariteit in het Nederlands*. University of Groningen: Doctoral dissertation.
- Zwarts, F. (1986b). Polariteit: De reikwijdte van een lexicale eigenschap. In: C. Hoppenbrouwers, I. Schuurman, R. van Zonneveld and F. Zwarts, eds, *Syntaxis en lexicon*, Dordrecht: Foris, 157-192.
- Zwarts, Frans (1995). Nonveridical Contexts. *Linguistic Analysis* 25, 286-312