Proceedings

of the Workshop on

# Negation and Polarity

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Jan-Philipp Soehn (Editors)

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# Introduction – Studying Negation and Polarity

This volume contains the papers presented at the Workshop on Negation and Polarity, held in Tübingen, March 8 – 10, 2007. They focus on the syntax, semantics, and pragmatics of negation and polarity items. Both topics have been central to linguistic study in the last few decades. The reason for this is that these phenomena are to some extent universal: Every language has some mode to express negation and some set of lexical elements or (idiomatic) expressions that can only be felicitously uttered in negative contexts. However, languages exhibit strong differences with respect to the way this is executed.

Hence, the study of negation and polarity phenomena requires on the one hand in-depth studies of the syntax, semantics, and pragmatics in particular languages, whereas on the other hand typological research of cross-linguistic differences is to be carried out. Especially the latter involves the application of linguistic database systems to collect and categorize data, observed in either the literature or during fieldwork.

Combining in-depth syntactic, semantic, and pragmatic studies of particular language phenomena with typological research and the creation of linguistic databases is exactly the kind of work which has been carried out at the Collaborative Research Center (Sonderforschungsbereich, SFB) 441, named "Linguistic Datastructures", in Tübingen.

Within this research center, two projects are occupied with the study of negation and polarity. **Project A5**, "Distributional Idiosyncrasies in Logical Form", studies to what extent lexical elements are restricted in their contexts in terms of their syntactic, semantic and selectional characteristics. Negative polarity items (NPIs), the subject of the current phase of this project, feature such distributional idiosyncrasies: NPIs must be licensed by certain elements within the logical form of the expression in which they occur. According to possible scope relations, these elements can be identified and classified. One of the main aims is to enlarge the database of polarity elements in German.

**Project B10,** "Typology and Logical Form of Sentential Negation", focuses on the different ways in which sentential negation can be expressed. The aim is the development of a cross-linguistic theory of sentential negation that is both semantically and syntactically adequate. Special attention has been given to the phenomenon of Negative Concord (i.e. the multiple morpho-syntactic manifestation of a single semantic negation), the interpretation of negative indefinites and the relation between negation and speech act theory. All this has been investigated for different languages.

Every scholar working on negation knows that (s)he cannot ignore polarity effects, and, conversely, understanding polarity requires a profound knowledge of the syntax and semantics of negation. Hence, the two projects have been cooperating to a large extend. This cooperation has also resulted in the organization of the Workshop on Negation and Polarity. For this workshop, papers have been solicited that concentrate on the syntax of negative markers, negative concord, the semantics of negative indefinites, the interaction between negation and other functional categories (such as tense and modality), the

interaction between negation and information structure, the licensing of negative and positive polarity items, and the distribution and classification of polarity items.

We received forty submissions, 15 of which were selected for presentation at the workshop and one as an alternate. Theresa Biberauer, Cleo Condoravdi and Jack Hoeksema accepted our invitation as guest speakers. The present proceedings volume features the extended abstracts resulting from the successful submissions.

These proceedings not only contain a rich collection of different investigations on the above-mentioned phenomena, but also represent what is currently going on in the process of obtaining a better understanding of negation and polarity and therefore provide a proper overview of the state of the art in this branch of linguistics and philosophy.

## Outline of Contents

This volume contains 18 papers, of which the first two are the contributions by our invited speakers, Theresa Biberauer and Jack Hoeksema.[1] The other 16 papers have been selected through a peer reviewing process. They are arranged alphabetically according to the first author.

**Biberauer's** paper focuses on the much-noted, but for the most part not systematically discussed "double-*nie*"-containing negation structure in Afrikaans and considers how it may be understood from a comparative perspective. The paper investigates the nature and distribution of the isomorphic negation elements in sentential negation structures ($nie_1...nie_2$) and shows that $nie_1$ is a "true" negation element, while $nie_2$ serves as a polarity marker, i.e. Afrikaans is a Negative Concord (NC) language.

In combinations with singular count nouns, the Dutch determiner *enig* shows a diachronic distributional shift from nonveridical environments to a subset of negative contexts. Similarities with Greek indefinites of the *kanenas*-series are explored by **Hoeksema**, and an argument is given that *enig* splits into two uses, one of which is on its way out.

A study of Japanese adverbial Negative Polarity Items (NPIs) suggests that there are two types of NPIs: (i) NPIs that can precede an ellipsis site, and (ii) NPIs that cannot precede an ellipsis site. **Buchanan** claims that elements of the first type, but not the second type, are semantically negative and license ellipsis.

Some sentences as *All the students have not read the book*, are ambiguous between a [$\forall \neg$] and a [$\neg \forall$] reading. Since the negation marker is syntactically lower than the universal quantifier in this sentence, the availability of the [$\neg \forall$] reading is difficult to explain. It will be shown by **Cirillo** that this reading is possible because the negation marker, which originates as a specifier in the negated quantifier phrase *not all the students*, can be stranded in the same way a quantifier can be stranded.

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[1] Unfortunately, Cleo Condoravdi's paper couldn't be included in the proceedings.

**Erschler** studies measure adverbials in Russian whose case marking is affected by the presence of negation. While in affirmative clauses they are obligatorily marked with the accusative, in the presence of negation the case marking can change to genitive. He describes semantic conditions that license such change and shows that these conditions are related to event structure and the scope of negation.

**Gajewski and Sharvit** defend, and propose an amendment to, Chierchia's analysis of local implicatures in the scope of attitude verbs. The main observation is that while strict DE operators cancel local implicatures, Strawson DE operators do not, and that non-monotonic operators support local implicatures.

A recent study by Hulsey et al. (2004) argued that scope resolution of negation in child language is largely determined by contextual factors. A different view was defended by Musolino and Lidz (2004), which reaffirmed the primary role of syntactic factors. **Gualmini** highlights several theoretical and empirical shortcomings of the critique offered by Musolino and Lidz (2004) and shows how the available data are accounted for by Hulsey et al.'s model.

**Gualmini and Schwarz** study a semantic learnability problem, first identified by Crain et al. (1994), concerning the acquisition of ambiguous sentences where one reading truth-conditionally entails the other. They demonstrate that sentences containing downward entailing operators provide children with truth-conditional evidence that would allow them to solve the learnability problem discussed by Crain et al. (1994).

In order to examine the controversially discussed meaning of negated polar questions, **Hartung** has conducted some experiments. The results indicate that one kind of negation in polar questions contributes a presupposition that the speaker believes in the truth of the positive proposition. Furthermore, a second kind of negation has the effect that the question is about a negated proposition. What is common to both kinds of negation is that they need a proper context in order to be felicitous.

**Herburger and Mauck** argue that the internal semantics of NPIs does not fully explain Ladusaw's puzzle, the question of why NPIs are licensed in downward entailing contexts. Instead, they propose that though it is no accident that NPIs have the semantics they have, ultimately, it is the presence of a syntactic feature that determines whether a semantically predisposed expression is an NPI or not. They spell out the implications of this analysis for the licensing of NPIs and their historical development.

The interest of **Hsiao**'s paper is in questions of knowledge and negation. She discusses the different representations of epistemic implicatures/biases in polar (or *yes-no*) and bipolar (i.e., A-not-A) constructions. Her examples show that NPIs have negative-biased force, and PPIs possess positive-biased force.

The typological distinction of different polarity types of indefinites leads to new insights in the history of negation beyond Jespersen's Cycle. It allows one to capture a whole range of changes in the marking of negation and polarity that have gone virtually unnoticed in classical philology. This is illustrated by **Jäger** in a cross-linguistic perspective with special emphasis on German. Furthermore,

it is shown that, while it is common for indefinites to become 'more negative', the opposite change is also attested.

**Kim and Sells** show that Korean NPIs are universal-like in nature, scoping over negation. Specifically, a Korean NPI takes negation in its immediate scope, respecting a generalized form of the Immediate Scope Constraint of Linebarger.

**Levinson** discusses a particular class of Negative Polarity Items in English: Negative Polarity Particles (NPPs). He observes that these items are only licensed by a subset of downward entailing (DE) environments. To distinguish the DE environments that can license NPPs he proposes an additional condition of *assertivity* and shows that only environments that are both DE and assertive can license NPPs. The combination 'DE and assertive' is then shown to be helpful in explaining other semantic and pragmatic phenomena.

**Østbø** presents data from two Norwegian dialects which each have two different negative markers with different distribution. In these dialects of Setesdal, as in the dialect of Älvdalen, the verb can move across a short form of negation but not the full form in non-asserted embedded clauses. In the dialects of Trøndelag the short negation may among others induce a peculiarity in imperatives. She discusses the possible explanation that these facts are related to the different syntactic status of the short negations, one being both a head and a specifier, the other being a specifier marked as a clitic.

**Sailer** argues that the class of interveners for NPI-Licensing matches exactly with the class of operators that are treated as establishing a dynamic relation between two Discourse Representation Structures within Discourse Representation Theory.

Data from the FRED and the BNC-SpS corpora show that most varieties of non-standard British English allow n-words to co-exist with polarity items (PIs) in NC constructions. Two separate licensing mechanisms operate in such cases. **Tubau** argues that *never* bears [iNeg] features in some occasions, and [uNeg] features in some others. By means of real data, the assumption that, unlike Standard English, Non-Standard English has n-words instead of negative quantifiers is strengthened.

Finally, **Yamashita** claims that the *Shika*-NPI construction in Tokyo Japanese, like Wh-questions, exhibits not only the prosodic, but also the interpretive property which is closely related to the former. This result provides further support for the necessity of an interdisciplinary approach to the theory of grammar, which seriously takes prosody into consideration of syntactic analysis.

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# Contents

Afrikaans Negation and Polarity: a comparative
investigation of the two *nie*s

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Cambridge

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**Abstract**

This paper focuses on the much-noted, but for the most part not systematically discussed "double-*nie*"-containing negation structure in Afrikaans and considers how it may be understood from a comparative perspective. The paper investigates the nature and distribution of the isomorphic negation elements in sentential negation structures ($nie_1 ...nie_2$) and shows that $nie_1$ is a "true" negation element, while $nie_2$ serves as a polarity marker, i.e. Afrikaans is a Negative Concord (NC) language. $Nie_2$, however, has the peculiar feature that it is obligatorily absent in certain negation contexts, raising questions as to whether Afrikaans is/isn't a strict NC language. It is shown that it is, and also that an analysis of $nie_2$ as a polarity item can account for a range of phenomena including the occurrence of $nie_2$ in non-negative contexts, and formal parallels between Afrikaans negation structures and negation and polarity-marking structures found in a range of related and unrelated languages.

# 1 Introduction

An often noted fact about Afrikaans is that it is a Negative Concord (NC) language which employs two superficially identical negators wherever negation does not involve specially designated n-words – cf. (1):

(1)  *Ek verstaan    **nie₁** sy redenasie **nie₂***
     I    understand not  his reasoning not
     "I don't understand his reasoning"

Two further notable, but not often noted facts about Afrikaans are, firstly, that there are range of circumstances in which *nie*-doubling produces an ungrammatical structure – cf. (2) – and, secondly, that it is possible for a single *nie* to surface in non-negative contexts in spoken Afrikaans – cf. (3):

(2)  *Ek verstaan (\***nie**) hom  **nie***
     I    understand not  him  NEG
     "I don't understand him"

(3)  *Ek kan my nouliks/skaars inhou   **nie***
     I    can me barely           in-hold not
     "I can barely contain myself", i.e. "I'm very excited"

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The present paper investigates these and related empirical facts in order to determine how the structure of Afrikaans negation is to be understood. Section 2 considers the nature of the two *nie*s and establishes Afrikaans as a strict NC language in the sense of Giannakidou (2005), despite the existence of structures like (2-3). Section 3 considers the merits of the proposed analysis viewed from both a language-internal and a comparative perspective, and concludes.

## 2 Negation and Negative Polarity in Afrikaans

Investigation of the behaviour of the two *nie*s in structures like (1) clearly shows that $nie_1$ is the "true" negator, while $nie_2$ represents an element that lacks the interface properties typically associated with lexical items, i.e. $nie_2$ is some form of functional head (cf. Roberts & Roussou's 2003 *Interface Defectivity Hypothesis*). The difference between the two *nie*s is summarised in Table 1:

Table 1: Comparison of the properties of $nie_1$ and $nie_2$ in Afrikaans

| Property | $nie_1$ | $nie_2$ |
|---|---|---|
| 1. Omission → meaning change (polarity reversal) | YES | NO |
| 2. Modifiability | YES | NO |
| 3. Co-ordinateability | YES | NO |
| 4. Substitution by emphatic negator | YES | NO |
| 5. Stressability | YES | NO |

The properties listed above evidently correspond to what one would expect of an NC language, which raises the question whether Afrikaans is a strict NC language or not. Structures like (2) would initially suggest not, but it can be shown that the non-occurrence of $nie_2$ in structures of this kind is systematically regulated by an OCP-style deletion operation that takes place at PF. Section 2.1 presents the clausal structure of Afrikaans negative sentences and section 2.2, the haplological mechanism that regulates the occurrence of $nie_2$.

### 2.1 The clause-structure of Afrikaans negative sentences

Distributional facts clearly show that $nie_1$ is merged at the lower edge of *v*P (i.e. immediately adjacent to *v*) and that there is no need to postulate a higher NegP to which negative elements obligatorily move. The examples in (4-5) illustrate:

(4)a.　　*… dat ek **nie₁** altyd/ maklik/gou　verstaan　**nie₂***
　　　　　　that I　not　always/easily/quickly understand NEG
　　　　　"… that I don't (always/easily) understand (quickly)"

　　b.　　*... dat ek altyd /　maklik/gou　**nie₁** verstaan **nie₂***
　　　　　　that I always/easily/quickly not understand NEG
　　　　　"... that I (always/easily/quickly) don't understand"

(5)a.　　*Jy　weet　dat hy (met　Jan) tevrede (?met Jan) is (met　Jan)*
　　　　　you know that he  with John satisfied with John is  with John
　　　　　"You know that he is  satisfied with John"

b.  *Jy weet dat hy (met niemand) tevrede (?met niemand) is (met niemand)
    nie₂*
    you know that he with no-one satisfied with no-one is with no-one NEG
    "You know that he is satisfied with no-one"

The examples in (4) show that *nie₁* and VP-adverbs can be interchangeably merged, with concomitant scope-effects, as one would expect if *nie₁* belongs to this class of adverbs. The examples in (5), in turn, indicate that the same distributional possibilities are available to both positive and negative objects, something we would not expect if negative objects are required to raise to a position designated exclusively for negative elements (cf. i.a. Haegeman, 1995 and Zanuttini, 1998). The Afrikaans data therefore point to the correctness of the view that Germanic negators are *v*P-adverbs (cf. i.a. Zeijlstra, 2004).

*Nie₂* in its turn is rather clearly a C-related polarity element of the kind discussed in i.a. Laka (1994): its origins appear to lie in a discourse-functional "resumptive negator" (cf. Roberge, 2004) which was grammaticalised as a polarity- rather than a scope-marker. Evidence that *nie₂* should be viewed as such comes from the fact that it is possible in non-veridical contexts like (3) which lack a "scope-initiating" negator and also from data clearly showing that "scope-marking" is not exclusively the province of *nie₂* (as one might expect, given that this is, with only the rarest of spoken-language exceptions, a necessarily clause-final element).

Given these facts and adapting the analysis in Oosthuizen (1998), I propose the following clause structure for Afrikaans negative clauses:

(6)
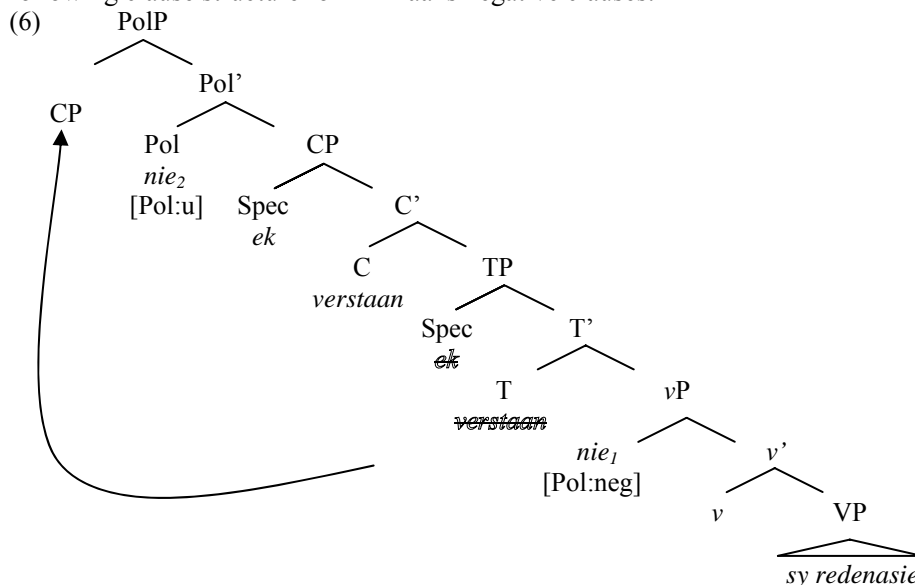


As illustrated above, the assumption is that *nie₂* is merged higher than *nie₁* and that its clause-final occurrence is the consequence of CP-movement ("clausal piedpiping") to Spec-PolP. This movement is assumed to be the consequence of an EPP-feature (move diacritic) associated with the unvalued polarity feature ([Pol:u]) on Pol which probes the corresponding valued feature on *nie₁*/an n-

word/a non-veridical element in its c-command domain. This analysis therefore crucially assumes that the "real" negators in Afrikaans bear valued/interpretable features (*contra* Zeijlstra), a claim that correctly predicts that these elements can surface independently of *nie₂* (as often happens in the spoken language) without their negative meaning being compromised (cf. property 1 of Table 1). Consider (7) which illustrates the relevant optionally available omission of *nie₂*:

(7)     A:     *Wie's daar?*     B:     *Niemand (nie₂)*
              who's there              no-one (neg)

If this is the case, however, is there any reason for maintaining the assumption that Afrikaans is a strict NC language?

## 2.2 Haplology in Afrikaans negative structures

Consider (6) again: this structure represents a sentence in which two *nie*s are realised. Investigation of structures which systematically (as opposed to just sporadically as in spoken-language structures like (7)) bar *nie₂* reveals that these are all structures in which the contents of VP have been evacuated: V2 structures lacking objects or VP-adverbs, V2 structures featuring scrambled objects and pronominal objects (which undergo obligatory scrambling; cf. (2)), V2 structures in which VP-adverbs outscope *nie₁* (as in (4b)), and V1 structures lacking VP-contained material are therefore all incompatible with *nie₂*, while structures in which VP is filled – all embedded clauses, for example – obligatorily require two *nie*s. The examples in (8) illustrate:

(8)a.     *Hy kom     nie₁ (\*nie₂)*
          he comes not   NEG
          "He isn't coming"

   b.     *Hy kom waarskynlik/moontlik nie₁ (\*nie₂)*
          he comes probably/possibly    not     NEG
          "He is probably/possibly not coming"

   c.     *Hy verstaan     daardie redenasie/dit nie₁ (\*nie₂)*
          he understand that       reasoning/it  not   NEG
          "He doesn't understand that reasoning/it"

   d.     *Kom     hy nie₁ (nie₂)?*
          comes he not   NEG
          "Isn't he coming?"

   e.     *Wat verstaan     jy  nie₁ (nie₂)?*
          What understand you not   NEG
          "What don't you understand?"

I take the distributional fact outlined above to signal the operation of an OCP-like mechanism which operates as given in (9):

(9)     **Afrikaans Syntactic Haplology mechanism**
        *Nie₂* is subject to PF deletion whenever it is sent to Spellout in a position where it will (a) end up (following copy deletion) being the element which is spelled out immediately adjacent to *nie₁* and (b) in the same prosodic phrase ($\varphi$) as *nie₁*.
        i.e. $[_\varphi \ldots nie_1 \ nie_2] \rightarrow nie_1 \ \text{nie}_2$

Employed in conjunction with a syntax-PF mapping algorithm of the kind proposed in Selkirk (1995) and Truckenbrodt (1995), (9) correctly predicts the (non-) occurrence of $nie_2$, also in more complex structures involving multiple negation. Furthermore, it also has the virtue of being a "natural" PF-mechanism whose operation is appropriately constrained so as not to rule out well-formed structures in which identical elements do surface adjacent to one another (e.g. *I'm keen to stay **on on** the West Coast* in English). This is particularly important since adjacent *nie*s are not categorically ruled out in Afrikaans – cf. (10):

(10)     *Hy verstaan     NIE₁ nie₁ die redenasie nie₂*
         he understands not   not  the reasoning NEG
         "He doesn't NOT understand the reasoning" (i.e. he does understand it)

Given (9), it therefore seems reasonable to conclude that Afrikaans is indeed a strict NC language in which $nie_1$ bears LF-interpretable negation features and $nie_2$ functions as a polarity head. The following section will consider the extent to which an analysis of this kind seems natural when viewed in comparative perspective.


## 3 Afrikaans negation in crosslinguistic perspective

To conclude, I will focus on three aspects of the proposed analysis: (a) "clausal piedpiping", (b) the occurrence of a polarity head in the C-domain of a Germanic language and (c) the feasibility of postulating OCP-style deletion in negation contexts generally. Clausal piedpiping appears to be quite widely attested in the world's languages, particularly in contexts involving operators (cf. *wh*-piedpiping as discussed i.a. in Simpson, 2000 and neg-piedpiping as discussed in i.a. Hagstrom, 2000). If van Craenenbroeck (2004) is correct in identifying elements like *ja(wel)* as C-related affirmation (polarity) markers which feature in clausal piedpiping structures, Afrikaans need not even be unique in the Germanic context in exhibiting either clausal piedpiping or a C-related polarity marker; and polarity-biasing interrogatives containing elements like *huh* and *right* (*You're going home, huh/right?*) in English and *oder* in German (*Du kommst mit, oder?*) may represent further instances of C-related polarity heads attested in Germanic. Finally, (c) seems to be attested in a range of West African languages (cf. Bell 2004, Dryer 2006), all of which are NC languages and all of which feature identical negators whose presence/absence appears to be regulated in exactly the same way as in Afrikaans.

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NPI Licensing in Temporal Clauses

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## Abstract

This paper offers a systematic approach to NPI licensing in temporal clauses based on a uniform analysis of temporal connectives as relations between times and relying on appropriate type shifting for compositional build-up. The quantificational force commonly associated with temporal connectives is attributed to the operators *earliest* and *max* operating on the temporal clause and effecting the necessary type-lowering for a connective to compose with a clause. An implication about the truth of a temporal clause with any kind of temporal connective is a semantic presupposition due to a definedness condition associated with *earliest* and *max*. Based on Beaver & Condoravdi (2003, in progress), I show that veridical and non-veridical *before* induces a reversal in specificity ordering when combined with a temporal clause, and so does *after* when construed with *max*. I then show that the exceptional NPI licensing in *until* and *since* clauses is due to a reversal in specificity ordering induced after the composition of these clauses with main clauses of a particular kind. Crucial throughout is the more restricted, presupposition-dependent notion of entailment, Strawson-entailment, proposed by von Fintel (1999).

# 1 Introduction

*Before* licenses negative polarity items, while *after* generally does not. Therefore, according to Ladusaw (1979), the strengthening inference in (1) ought to be valid. However, (1) appears no more valid intuitively than the strengthening inference in (2).

(1) He left before we were in the room.
? ∴ He left before we were in the room standing by the window.

(2) He left after we were in the room.
∴ He left after we were in the room standing by the window.

The invalidity of the inference in (1) is in a sense only apparent. It comes about because *before* and *after* sentences give rise to two kinds of implications: an implication that the temporal clause is true (**TC**) and an implication about the relative ordering between the events or states of affairs described by the main and by the temporal clause (**O**). The conclusions of (1) and (2) share the same **TC**— they both imply that we stood by the window at some point while in the room. The corresponding premises do not guarantee the truth of that implication. However, if we take **TC** to hold, (1) and (2) differ with respect to the other implication of the conclusion: **O** necessarily follows from the premise in the case of (1) but not in the case of (2).

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A popular view of the semantics of *before* and *after* treats **TC** as a truth-conditional entailment of *after* sentences but not of *before* sentences. As shown in (3), this view takes *before* to universally quantify over the times in the denotation of the temporal clause and *after* to existentially quantify over them (Heinämäki, 1972; Landman, 1991; Ogihara, 1995).

(3)  A Before B    iff    $(\exists t \in A)(\forall t' \in B)\ t < t'$
    A After B    iff    $(\exists t \in A)(\exists t' \in B)\ t > t'$

The semantics in (3) was primarily motivated by the asymmetries in *before* and *after*'s inferential properties pointed out by Anscombe (1964)[1] but has also been used to account for their asymmetry in licensing NPIs.

With respect to the temporal clause, (3) makes *before* non-veridical and downward entailing (DE) and *after* veridical and non-DE. (3) thus makes (1) valid and (2) invalid. Landman (1991:143) defends this view about the validity of inferences like (1) explicitly: "The fact that the inference is weird doesn't mean that it is invalid. This issue clearly has to do with the question whether *p before q* entails that *q* took place or *presupposes* or *implicates* that *q* took place. Entailments cannot be canceled, implicatures can." Endorsing the universal semantics, Zwarts (1995) argues that it is nonveridicality that "plays a role in the temporal system of many languages, particularly in connection with connectives like *before*" (p. 286) and that the universal semantics "makes *before* a nonveridical connective whose characteristic feature is that *pBq* doesn't necessarily imply *q*." (p. 299)

This is a simple and elegant account of NPI licensing in *before*-clauses. But it is not an adequate analysis of *before* and *after*, unless supplied with pragmatic principles to explain, first, why the **TC** implication of a *before* sentence, when present, is no more cancelable than the same implication of an *after* sentence, and, secondly, the modal implications that accompany non-veridical readings of *before*. The need for the latter is seen in (4) and (5). In (4) the implication that the temporal clause is false is accompanied by a counterfactual implication. In (5) the implication of speaker uncertainty as to the truth of the temporal clause is accompanied by a likelihood implication.

(4)  The mice died before they showed an/any immune response.
*No immune response.*
*The mice might have shown an immune response had they lived longer.*

(5)  We left the demonstration before there was (any) trouble.
*Trouble looked likely before we left and may have come about.*

In order to address precisely these implications, Heinämäki (1972) and Ogihara (1995) associate a presupposition with *before*.[2] Some additional assumptions are

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[1](3) is a reconstruction of Anscombe (1964), who considers and rejects the quantificational analysis. For a more faithful reconstruction of Anscombe's own proposal see del Prete (2005).

[2]Their proposals differ in several significant respects, including the presupposition they assign to *before*. Heinämäki makes **TC** a semantic presupposition of veridical *before*, while Ogihara makes the likelihood of **TC** a uniform pragmatic presupposition of *before*.

then needed to resolve the question of the role of presuppositions in strengthening inferences. Under what conditions, for instance, can (4) be said to be semantically stronger than (6a), or (5) stronger than (6b)?

(6)     a.  The mice died before they showed a strong immune response.

        b.  We left the demonstration before there was (any) serious trouble.

Ogihara (1995:282) offers the necessary qualification: for premise and conclusion "to be comparable, the same presupposition must be shared by them."[3] This means, for instance, that the relative semantic strength of (4) and (6a) can only be assessed in contexts where the two temporal clauses are equivalent, i.e. where a likely immune response would also be a strong immune response.

More recently, von Fintel (1999) has motivated the kind of qualification Ogihara employed on more general grounds and formulated it in somewhat different terms. He proposed a more restricted notion of entailment, Strawson-entailment, as coming into play when checking strengthening inferences. The main idea is that the strengthening inferences relevant for NPI licensing do not require that the truth of the proposition $p^G$ based on the more general expression guarantee the definedness of the proposition $p^S$ based on the more specific expression. The requirement is rather that $p^G$ restricted to those worlds in which $p^S$ is defined entail $p^S$.

This relativized notion of entailment comes into play in all cases of NPI licensing in temporal clauses, observed not just with *before* but under certain circumstances also with *after* (Linebarger, 1987, 1991), *since* (Zwarts, 1995; von Fintel, 1999), and *until*. This means that the **TC** implication of *after*, *since* and *until* clauses is not simply truth-conditional.

The rest of the paper outlines how Strawson-entailment coupled with a semantics of temporal connectives as relations between times and composing with temporal clauses via the mediation of certain operators gives a uniform analysis of NPI licensing in temporal clauses. With this perspective, seemingly exceptional or pragmatically-based NPI licensing can be brought under the fold of semantically based accounts of NPI licensing. The proposed analysis integrates NPI licensing with the veridical and modal implications of temporal clauses and accounts for the so far unobserved synonymy of positive *after* clauses with an NPI and the corresponding negative *after* clauses.

## 2   NPI licensing by *before*

Beaver & Condoravdi (2003, in progress) argue that *before* and *after* differ neither in quantificational force nor in presuppositionality. Lexically *before* and *after* are

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[3]Since on Ogihara's analysis the truth-conditional content of *before* sentences, determined by (3), does not depend on their presuppositional content, one could follow Ladusaw (1979) and assume that the entailment in strengthening inferences is solely based on truth-conditional content and that, therefore, we should abstract away from presupposition satisfaction when judging the validity of strengthening inferences. This is not an option afforded to the analysis presented below since there the truth-conditional content crucially depends on operators like *earliest* being defined.

relations between times and cannot directly compose with a clause. In order for the connectives to apply to a set of times, an operator has to apply first, selecting a particular time from that set. B&C (2003) show that *earliest* gets the desired asymmetry in inferential properties between *before* and *after*. For left-bounded instantiated sets of times $T$, *earliest.T* is that $t \in T$ such that $t = glb(T)$. In order for *earliest* to be defined, the temporal clause has to be instantiated.

## 2.1 Veridical *before*

Let us take sentence radicals to denote temporal properties (mappings from worlds to sets of times) and assume that there is only one semantic tense taking scope over both main and temporal clause. *Before* denotes the relation of temporal precedence $<$, and *after* its converse $>$. They combine with a sentence radical via the prior application of *earliest*, as seen in (7b,c). Temporal and main clauses combine conjunctively as in (7d,e) and the subsequent application of tense yields a proposition by instantiating the resulting temporal property.

(7)  a. $earliest_w.B = earliest.\lambda t\ at(w, t, B)$  defined if $\exists t\ at(w, t, B)$

  b. $[\![\text{before B}]\!]_w = \lambda t\ t < earliest_w.B$  if defined

  c. $[\![\text{after B}]\!]_w = \lambda t\ t > earliest_w.B$  if defined

  d. $[\![\text{A before B}]\!]_w = \lambda t\ at(w, t, A)\ \wedge\ t < earliest_w.B$  if defined

  e. $[\![\text{A after B}]\!]_w = \lambda t\ at(w, t, A)\ \wedge\ t > earliest_w.B$  if defined

Supposing $Y$ is a temporal property at least as specific as $X$, then for any world $w$ for which $earliest_w$ is defined for both $Y$ and $X$:

(8)  a. $earliest_w.X \leq earliest_w.Y$

  b. $[\![\text{before X}]\!]_w \subseteq [\![\text{before Y}]\!]_w$
   $\lambda t\ t < earliest_w X \subseteq \lambda t\ t < earliest_w Y$

  c. $[\![\text{after Y}]\!]_w \subseteq [\![\text{after X}]\!]_w$
   $\lambda t\ t > earliest_w Y \subseteq \lambda t\ t > earliest_w X$

(8b) shows the reversal induced by *before* based on the temporal ordering, shown in (8a), between the earliest time at which $X$ is instantiated and the earliest time at which $Y$ is instantiated. The proposition $\lambda w \exists t\ at(w, t, A) \wedge t < earliest_w.X$ is then at least as strong as the proposition $\lambda w \exists t\ at(w, t, A) \wedge t < earliest_w.Y$. *Before* sentences, therefore, satisfy strengthening inferences provided *earliest* is defined. On this view, an exclusively veridical *before* would still be an NPI licenser. By contrast, *after* preserves the original specificity ordering, as shown in (8c), and, therefore, *after* sentences cannot satisfy strengthening inferences.

## 2.2 Non-Veridical *before*

Beaver & Condoravdi (2003) attribute the modal dimension of *before* to the fact that when *earliest* is undefined in the world of evaluation it is relativized to a set of alternatives to the world of evaluation in which the temporal property the operator applies to is instantiated. If that set is empty, *earliest* will remain undefined and the *before* sentence will lack a truth value. The alternatives are specified as the reasonably probable amongst a world's historical alternatives at a given time and thus depend on a contextual parameter.[4]

With *earliest* relativized to a set of worlds $W$ defined as in (9a), we can specify the meaning of *before* clauses as in (9b), with $alt_c(w, t, X)$ defined as in (10).

(9)    a. $earliest_W.X = earliest.\lambda t(\exists w \in W) \, at(w, t, X)$  defined if
          $\exists w \in W \; \exists t \; at(w, t, X)$

       b. $[\![\text{before X}]\!]^c_w = \lambda t \; t < earliest_{alt_c(w,t,X)}.X$   if defined

(10)  $alt_c(w, t, X) \;=\; \begin{cases} \{w\} & \text{if } \exists t' \, at(w, t', X) \\ \{w' \in rph_c(w,t) \mid \exists t' \, at(w', t', X)\} & \text{otherwise} \end{cases}$

Supposing $Y$ is a temporal property at least as specific as $X$, then for any context $c$, any world $w$ and time $t$ for which $earliest_{alt_c(w,t,X)}$ is defined and $alt_c(w, t, X) \neq \{w\}$:

(11)   a. $alt_c(w, t, Y) \subseteq alt_c(w, t, X)$
       b. $earliest_{alt_c(w,t,X)}.X \leq earliest_{alt_c(w,t,Y)}.Y$  if $earliest_{alt_c(w,t,Y)}$ defined
       c. $[\![\text{before X}]\!]^c_w \subseteq [\![\text{before Y}]\!]^c_w$ if $[\![\text{before Y}]\!]^c_w$ is defined

$Y$ may be instantiated only in a subset of the worlds in which $X$ is instantiated, but still the earliest time at which $Y$ is instantiated in some world will be no earlier than the earliest time at which $X$ is instantiated in any world. If $earliest_{alt_c(w,t,X)}$ is defined, then $earliest_{alt_c(w,t,Y)}$ will be defined just as long as $Y$'s instantiation is consistent with $alt_c(w, t, X)$. Therefore, the relative semantic strength of (4) and (6a) can be assessed in any context in which a strong immune response is consistent with the possibility of an immune response, that is in any context implying that if the mice had shown an immune response that response might have been a strong one. This weaker requirement of consistency allows for a stronger notion of entailment than Ogihara's requirement of equivalence.

## 2.3 Alternatives and Strawson entailment

We can combine Krifka's (1995) analysis of NPIs as introducing alternatives with von Fintel's Strawson-entailment by considering only those alternatives that yield

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[4]Since the worlds in the expanded domain are selected from a particular forward branching structure of possible worlds, *after* is only trivially modal but *before* can be essentially modal.

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a semantic value. In these terms, the reversal induced by *before* would be with respect to the temporal property derived on the basis of the ordinary content of an NPI in a temporal clause and alternative temporal properties derived on the basis of the alternatives associated with the NPI, as shown schematically in (12) (more concrete examples are found in the following sections).

(12)  $[\![$ before Z $]\!] \subseteq [\![$ before $Z^A$ $]\!]$ if defined

In general, it can be shown that the familiar strength-based inferences are valid—for instance, (12) is guaranteed to be satisfied—for exhaustive NPIs.[5] Krifka (1995) characterizes weak NPIs as exhaustive NPIs. Extra considerations need to be brought to bear for non-exhaustive NPIs, which Krifka takes to characterize strong NPIs, and I will not discuss them here.

## 3   NPI licensing by *after*

Linebarger (1987, 1991) showed that *after* may license NPIs when combined with an appropriate measure phrase (*long after*, *(for) years after*, but not *seconds after*).

(13)    a. She persisted for years after she had any hope at all of succeeding. [ML]
            *She first had hope of succeeding and then she ran out of hope.*
            *She persisted for years after she had run out of hope.*

         b. Over months however the reality of the situation emerged, tho long after anyone still cared.[Google]
            *People first cared and then stopped caring.*
            *The reality of the situation emerged after people had stopped caring.*

         c. # Dogs were domesticated after there were any humans on the planet.
            *Humans stopped existing.*

Linebarger used examples like (13a) to argue against semantic accounts of NPI licensing. She claimed that NPIs can be licensed in the presence of a Negative Implicature (NI) and that with the right measure phrase *after* tends to "close down" the situation described in the temporal clause, resulting in the relevant NI. (13a)'s NI, for instance, is that she persisted when there was no hope anymore.

According to Linebarger (1991:176), "on the NI account, the acceptability of NPIs in sentences of the form *P (long) after Q* depends upon whether or not they are paraphraseable as *P when not Q*" The presence of a NI, however, is not sufficient for NPI licensing. *Until* sentences systematically give rise to a negative implication, e.g. in (14) that he was in the room while she was not, but NPIs are generally not licensed in *until* clauses.

(14)   He was at the office until she/*anyone else got in.

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[5]An NPI is exhaustive iff the union of the semantic values of the alternatives is identical to the ordinary semantic value of the NPI.

Linebarger (1991) imposes certain conditions on the negative implication associated with NPI licensing but it does not seem that *until*'s NI satisfies them any less than *after*'s NI.

The generalization to draw from examples like (13) is that an NPI in an *after*-clause is associated with the implication that the situation described by that clause ended at some point and that the situation described by the main clause is asserted to hold after that point. Now, with this ordering, strengthening inferences are valid, suggesting that the semantic account of NPI licensing, based on Strawson downward entailment, is applicable here as well. It is interesting to observe that the kind of reading forced by an NPI in an *after* clause arises independently of the presence of an NPI. (15a) has two incompatible readings and (15b) is synonymous with (15c). Moreover, NPI licensing is not dependent on there being a measure phrase, as seen in (15d).

(15)  a. It also included cleaning the viewing room after you had a cat or bunny in there. [Google]
*Cleaning during vs. after cat's or bunny's presence*

   b. Once the white blood cells are there, they continue to fight long after there is an enemy to conquer. [Google]

   c. Once the white blood cells are there, they continue to fight long after there is no enemy to conquer anymore.

   d. Some say the cuts were made after there was any real use for them. [Google]

In Beaver & Condoravdi (in progress) we propose that in addition to *earliest*, the operator *max* can be applied to a sentence radical to yield a unique time. Like *earliest*, *max* is defined only if the sentence radical to which it applies is instantiated. *earliest* and *max* give different interpretations for *after* but identical ones for *before*. The semantics does not constrain which operator is applied but in the case of *after* the choice of operator will determine the implications of the sentence (coming about/into existence vs. ceasing to hold/be) as well as the validity of strengthening inferences. For bounded, instantiated sets of times $T$, $max.T$ is defined only if $T$ is cumulative (closed under summation); when defined $max.T = \bigoplus T \cup \{glb(T), lub(T)\}$. For instantiated, bounded, homogeneous (divisive and cumulative) clauses, such as the stative clauses comprising the great majority of *after* clauses with NPIs, *max* cannot fail to be defined.[6]

On this view, the endpoint readings observed in (13) and (15) are semantic, not due to pragmatic strengthening, and it is precisely in the construal with *max* that *after* is predicted to license NPIs. *After* in construal with *earliest*, as we have seen, does not induce the necessary specificity ordering reversal for strengthening

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[6]The unacceptability of Linebarger's **He kept writing novels long after he retired to any Caribbean island* can be attributed to the non-cumulativity of the achievement predicate *retire to any Caribbean island*.

inferences to be valid. If there is an NPI in an *after* clause, *max* will have to apply to the temporal clause. Linebarger's NI is the result of *max*'s requirement for a right-bounded set and *after*'s truth-conditional content. The synonymy of positive and negative *after*-clauses, seen with (15b,c) above and (16) below, is due to the option for both *earliest* and *max*.

(16)  a. Small mammals were abundant (long) after there were <u>no dinosaurs</u> anywhere on the planet.

      b. Small mammals were abundant (long) after there were <u>any dinosaurs</u> anywhere on the planet.

Let us see more concretely how the analysis works for (16), ignoring the NPI *anywhere* in (16a), as it is licensed by overt negation in the temporal clause. The sentence radicals corresponding to the main and temporal clauses are as in (17). The NPIs are indefinites and are associated with alternatives with more specific descriptive content. As seen in (18), the operator *earliest* is associated with the temporal clause in (16a) and the operator *max* with the temporal clause in (16b).

(17)  a. X = "Small mammals be abundant"

      b. Y = "There be no dinosaurs anywhere on the planet"

      c. Z = "There be any dinosaurs anywhere on the planet"

      d. $[\![X]\!]_w = \lambda t\ at(w, t, abundant(smam))$

      e. $[\![Y]\!]_w = \lambda t\ at(w, t, \neg \exists x \exists y dino(x) \land pop(y) \land loc(x, y))$

      f. $[\![Z]\!]_w = \lambda t\ at(w, t, \exists x \exists y dino(x) \land pop(y) \land loc(x, y))$

      g. $[\![Z^A]\!]_w = \lambda t\ at(w, t, \exists x \exists y dino^A(x) \land pop^A(y) \land loc(x, y))$

(18)  a. $[\![\text{after Y}]\!]_w = \lambda t\ t > earliest_w.\lambda t'\ at(w, t', \neg \exists x \exists y dino(x) \land pop(y) \land loc(x, y))$

      b. $[\![\text{after Z}]\!]_w = \lambda t\ t > max.\lambda t'\ at(w, t', \exists x \exists y dino(x) \land pop(y) \land loc(x, y))$

      c. $[\![\text{after Z}^A]\!]_w = \lambda t\ t > max.\lambda t'\ at(w, t', \exists x \exists y dino^A(x) \land pop^A(y) \land loc(x, y))$

Y will denote a left-bounded set of times, as required by the definedness conditions of *earliest*, and Z or $Z^A$ a right-bounded set of times, as required by the definedness conditions of *max*, only relative to worlds in which dinosaurs (or in the case of $Z^A$ more specific kinds of dinosaurs) become extinct. For any such world $w$, (19a,b) hold. (19b) is an instance of the specificity reversal induced by *after*.

(19)  a. $[\![\text{after Y}]\!]_w = [\![\text{after Z}]\!]_w$

      b. $[\![\text{after Z}]\!]_w \subseteq [\![\text{after Z}^A]\!]_w$

Finally, the effect of measure modifiers on NPI licensing is a direct consequence of their semantics. *Long after, years after* preserve the specificity ordering in (19b), whereas *shortly after, seconds after* in general do not.

## 4   NPI licensing by *since* and *until*

NPIs are generally unacceptable in *since* clauses or *until* clauses:

(20)   a. *I've been sitting over here since anyone paid any attention to me.

b. *I stayed in the room until anyone noticed me.

Zwarts (1995), citing Bolinger (1977), notes that *it's two weeks since, it's a long time since, it's been a while since* license *any*. von Fintel (1999) makes a similar observation, citing examples like (21), and uses this case as another (suggestive) instance of licensing of NPIs based on Strawson-entailment.

(21)   It's been five years since I saw any bird of prey in this area. [vF]

Observing that while the inference in (22) is invalid, the adjusted inference in (23) is valid von Fintel concludes the following regarding (21): "This construction is not downward entailing as the problematic inference in (22) shows. Nevertheless, (21) shows that NPIs are licensed by this construction. We observe that *it's been five years since p* asserts that *p* hasn't been true since five years ago and presupposes that *p* was indeed true five years ago. The Strawson-DE experiment in (23) works fine." (p. 107)

(22)   It's been five years since I saw a bird of prey in this area.
$\not\Rightarrow$ It's been five years since I saw an eagle in this area. [vF]

(23)   It's been five years since I saw a bird of prey in this area.
Five years ago I saw an eagle in this area.
∴ It's been five years since I saw an eagle in this area. [vF]

The fact that the last time I saw a bird of prey in this area was (at least) five years ago seems part of the informative content of (21) rather than presupposed. It would, moreover, be desirable to derive the implications of (21) without appeal to any construction-specific presuppositions. In addition to being theoretically preferable, it would be empirically more adequate since *for two hours/for a long time until* similarly license NPIs:

(24)   The package was in the office for a week until anyone noticed it.
(heard on NPR, March 2006)
*Noone noticed the package for a week.*
*Someone (eventually) noticed the package.*

(25)   a. However, it was a long time until anyone knew who'd really fathered Amy. [Google]
*For a long time noone really knew.*
*Someone (eventually) got to know.*

     b. She sat at the Fandangle for a long time until anyone acknowledged her presence. [Google]
*For a long time noone noticed her.*
*Someone (eventually) noticed her.*

What are (24) or (25) supposed to pressupose? How do the negative and positive implications of (24) and (25) and their implied ordering come about? We can use the general apparatus developed so far, associating definedness conditions with the operators *earliest* and *max* instead of the connectives themselves or particular constructions in which the connectives appear, to account for the meaning of (21), (24), (25), as well as the exceptional NPI licensing in *since* and *until* clauses.

## 4.1 *Until*

*Until* is lexically a relation between a time and intervals extending up to that time: $\lambda t_1 \lambda t_2 \; t_2 < t_1 \wedge \text{convex}(t_1 \oplus t_2)$. In the relevant NPI licensing cases *until* is construed with *earliest*. As before, main and temporal clauses compose intersectively. (26) gives the analysis of (24).

(26)    a. X = "The package be in the office"

       b. Z = "Anyone notice it"

       c. $[\![ Z ]\!]_w = \lambda t \; at(w, t, \exists x(person(x) \wedge notice(x, \mathrm{p})))$

       d. $[\![ Z^A ]\!]_w = \lambda t \; at(w, t, \exists x(person^A(x) \wedge notice(x, \mathrm{p})))$

       e. $[\![ X ]\!]_w = \lambda t \; at(w, t, \textit{in-office}(\mathrm{p})) \wedge \textit{1 week} \le |t|$

       f. $ut_w = earliest.\lambda t \; at(w, t, \exists x(person(x) \wedge notice(x, \mathrm{p}))$

       g. $ut_w^A = earliest.\lambda t \; at(w, t, \exists x(person^A(x) \wedge notice(x, \mathrm{p}))$

       h. $[\![ \text{until Z} ]\!]_w = \lambda t \; t < ut_w \wedge \text{convex}(ut_w \oplus t)$

       i. $[\![ \text{until Z}^A ]\!]_w = \lambda t \; t < ut_w^A \wedge \text{convex}(ut_w^A \oplus t)$

       j. $[\![ \text{X until Z} ]\!]_w = \lambda t \; t < ut_w \wedge \text{convex}(ut_w \oplus t) \wedge at(w, t, \textit{in-office}(\mathrm{p})) \wedge$ *1 week* $\le |t|$

       k. $[\![ \text{X until Z}^A ]\!]_w = \lambda t \; t < ut_w^A \wedge \text{convex}(ut_w^A \oplus t) \wedge at(w, t, \textit{in-office}(\mathrm{p})) \wedge$ *1 week* $\le |t|$

For any $w$, $ut_w \le ut_w^A$. Therefore, for any defined $Z^A$, $[\![ \text{ until Z } ]\!]$ is either equal to or disjoint from $[\![ \text{ until Z}^A ]\!]$. So, in general, there is no NPI licensing in *until* clauses. But in composition with main clauses like X we get the necessary specificity reversal: $[\![ \text{ X until Z } ]\!] \subseteq [\![ \text{ X until Z}^A ]\!]$, for any defined $Z^A$.

### 4.2 *Since*

Iatridou (2003) looks more closely at *it's been 5 years/a long time since* constructions, what she calls temporal existentials. She argues that in temporal existentials there is a uniqueness presupposition in addition to an existential presupposition associated with the *since* clause. On her approach, the inference in (23) would be reformulated as in (27).

(27)  It's been five years since I saw a bird of prey in this area.
    *The only time I saw a bird of prey in this area I saw an eagle.*
    ∴ It's been five years since I saw an eagle in this area.

However, (28) and (29) clearly show that there is no uniqueness presupposition necessarily associated with the *since* clause. Note that the negative and positive implications of (28a) or (28b) parallel those of the corresponding *until* cases in (24) and (25) but the implied ordering is reversed from that of the *until* cases.

(28)  a. It's been a long time since anyone's died. [Google]
      *For a while people were dying.*
      *Noone has died in a long time.*

    b. It has been over five years since there was any film in our office. That was truly the biggest hurdle for me, shooting with the F6. [Google]
      *There used to be film in the office.*
      *There has been no film in the office for over five years.*

(29)  a. But it's been a long time since anyone even seriously mentioned any of them as possible conference champions. [Google]

    b. It's been a long time since anyone attempted a new side-scrolling beat-em-up, and a much longer time since anyone did it right. [Google]

*Since* is lexically a relation between a time and intervals extending from that time onwards: $\lambda t_1 \lambda t_2 \ t_1 < t_2 \wedge \text{convex}(t_1 \oplus t_2)$. In the relevant NPI licensing cases *since* is construed with *max*. Main and temporal clauses compose intersectively. As in Iatridou (2003), we can take the perfect to scope over the result of main and temporal clause composition. (30) gives the analysis of (22).

(30)  a. X = "It be 5 years"

    b. Z = "I see any bird of prey"

    c. $[\![Z]\!]_w = \lambda t \ at(w, t, \exists x (bird(x) \wedge see(I, x)))$

    d. $[\![Z^A]\!]_w = \lambda t \ at(w, t, \exists x (bird^A(x) \wedge see(I, x)))$

    e. $[\![X]\!]_w = \lambda t \ 5 \ years \leq |t|$

    f. $st_w = max.\lambda t \ at(w, t, \exists x (bird(x) \wedge see(I, x)))$

    g. $st_w^A = max.\lambda t \ at(w, t, \exists x (bird^A(x) \wedge see(I, x)))$

h. $[\![\text{since Z}]\!]_w = \lambda t\ st_w < t \land \text{convex}(st_w \oplus t)$

i. $[\![\text{since Z}^A]\!]_w = \lambda t\ st_w^A < t \land \text{convex}(st_w^A \oplus t)$

j. $[\![\text{X since Z}]\!]_w = \lambda t\ \textit{5 years} \leq |t| \land st_w < t \land \text{convex}(st_w \oplus t)$

k. $[\![\text{X since Z}^A]\!]_w = \lambda t\ \textit{5 years} \leq |t| \land st_w^A < t \land \text{convex}(st_w \oplus t)$

l. $[\![\text{PERF}]\!]_w = \lambda P \lambda t\ \exists t'\ at(w, (t', t], P)$

m. $[\![\text{PRES}]\!] = \lambda P \lambda w\ at(w, now, P)$

n. $[\![\text{PRES(PERF(X since Z))}]\!] = \lambda w \exists t'\ \textit{5 years} \leq |(t', now]|\ \land$
$st_w < (t', now] \land \text{convex}(st_w \oplus (t', now])$

o. $[\![\text{PRES(PERF(X since Z}^A\text{))}]\!] = \lambda w \exists t'\ \textit{5 years} \leq |(t', now]|\ \land$
$st_w^A < (t', now] \land \text{convex}(st_w^A \oplus (t', now])$

For any $w$, $st_w^A$ is a subinterval of $st_w$ Therefore, for any defined $Z^A$, $[\![\text{since Z}]\!]$ is either equal to or disjoint from $[\![\text{since Z}^A]\!]$. So, in general, there is no NPI licensing in *since* clauses. But in composition with main clauses like X we get the necessary specificity reversal: $[\![\text{ X since Z }]\!] \subseteq [\![\text{ X since Z}^A\text{ }]\!]$, for any defined $Z^A$. The inference in (23) can now be reformulated as in (31).

(31) It's been five years since I saw a bird of prey in this area.
*I have seen a bird of prey in this area.*
*At some point I stopped seeing birds of prey in this area.*
*I have seen an eagle in this area.*
*At some point I stopped seeing eagles in this area.*
*The last time I saw an eagle in this area was no later than the last time I saw a bird of prey in this area.*
∴ It's been (at least) five years since I saw an eagle in this area.

The view of *since* clauses presented here is broadly compatible with Iatridou's (2003) observations and conclusions, with the following two differences. First, the requirement for uniqueness will only be present for non-cumulative temporal clauses. Secondly, the requirement is not tied to *since* but ought to be present for any connective construed with *max*.

# 5 Conclusion

Instead of piecemeal analyses we can have a uniform analysis of NPI licensing in temporal clauses. The operators *earliest* and *max*, rather than the temporal connectives, are responsible for quantification over temporal clauses. An implication about the truth of a temporal clause with any kind of temporal connective is a semantic presupposition due to the definedness condition associated with *earliest* and *max*. This allows us to properly factor out presuppositional content in strengthening inferences and apply von Fintel's (1999) presupposition-dependent notion of Strawson-entailment.

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Dutch *ENIG*: From Nonveridicality
to Downward Entailment


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**Abstract**

In combinations with singular count nouns, the Dutch determiner *enig* shows a diachronic distributional shift from nonveridical environments to a subset of negative contexts. Similarities with Greek indefinites of the *kanenas*-series are explored, and an argument is given that *enig* split into two uses, one of which is on its way out.

# 1 Introduction

The Westgermanic languages all have determiners derived from the numeral *one* by means of the affix *-ig* (which developed into *-y* in English), compare German *einig*, Dutch *enig*, and English *any* (Old English *ænig*). While these determiners share a common origin, it is clear that they have developed in different directions. English *any* is now the best-known example of a negative polarity item, German *einig* is not a polarity item, and Dutch *enig* takes a middle position: it is a polarity item when combined with a singular count noun, and not polarity-sensitive with mass or plural nouns (cf. Hoeksema and Klein 1995).

In English, *any* is a classical polarity item, and shows up in the following collection of environments (cf. Klima 1964, Ladusaw 1979, Linebarger 1980, Landman and Kadmon 1993, and much other literature):

- negative sentences
- questions
- protasis of conditionals
- complements of negative ("adversative") predicates
- clausal complements of too
- complements of without
- the scope of  quasi-negative quantifiers such as little, few, seldom, etc.
- relative clauses modifying universal or superlative noun phrases
- comparative clauses (both of equality and of inequality)

This set of environments is also characteristic of the distributional properties of modern Dutch *enig* and of English *ever*, provided we ignore for the moment those uses of *ever* where it signifies 'always': *He was ever the same. Ever since the accident, he was a changed man*  (cf. Israel 1998 for discussion). It is the classical set of downward-entailing or monotone-decreasing contexts (cf. Ladusaw 1979, Zwarts 1981, Van der Wouden 1997). Illustrations of *enig* in the various attested environments are given in (2) below:

(2)  a.  Geen van hen heeft enig dier geslacht.
         none of them has any animal slaughtered
         "None of them has slaughtered any animal"
     b.  Heeft u   ooit enig voorstel verworpen?
         Have you ever any proposal rejected
         "Have you ever rejected any proposal?"
     c.  Als ik enig voorstel verwerp, wordt    hij boos.
         When I any proposal reject,   becomes he mad
         "When I reject any proposal, he gets mad"
     d.  Hij ontkende enig dier    geslacht    te hebben.
         he denied     any animal slaughtered to have
         "He denied having slaughtered any animal"
     e.  Het was te koud om enig kledingstuk       uit te doen
         It   was too cold for any  piece of clothing off to do
         "It was too cold to take off any piece of clothing"
     f.  Hij vertrok zonder enig voorstel verworpen te hebben.
         he left   without   any  proposal rejected   to have
         "He left without having rejected any proposal"
     g.  Weinig mensen hebben enig voorstel ingediend.
         Few    people   have    any proposal submitted
         "Few people have submitted any proposal"
     h.  Iedereen   die  enig voorstel gedaan heeft, krijgt antwoord.
         everybody who any proposal done  has,   receives answer
         "Everybody who has made a proposal, will receive an answer"
     i.  Hij was langer dan / zo lang als enige andere speler.
         He was taller than / as tall as any   other   player
         "He was taller than/as tall as any other player"

Unlike *any*, however, *enig* does not have a use as a free-choice item:

(3)  a.  *Neem een appel, enige appel.
         Take   an apple, any   apple
         'Take an apple, any apple.'
     b.  *Jan kan enig probleem oplossen.
         Jan can any answer    solve
         'Jan can solve any problem'
     c.  *Enig probleem zal opgelost worden.
         Any  problem  will solved   become
         'Any problem will be solved.'

To the extent that the above examples are acceptable at all, they receive an existential, nonspecific reading. E.g. (3b) would read as 'Jan can solve some unspecified problem.' The universal reading of free-choice items is completely absent. For accounts of English *any* that postulate two separate uses, free-choice and NPI *any*, this state of affairs is not a problem: Dutch simply lacks one of the

two uses. For unified accounts of *any*, the Dutch situation is more surprising, and does not receive an easy solution.

# 2 Historical developments

Based on a corpus of over 2700 occurrences of *enig* with singular count nouns (ambiguous cases of nouns that could be either count or mass were kept out of the database), a number of generalizations can be made regarding the diachrony of *enig*.

## 2.1 Contexts in early modern texts

When we look at older texts, even going back 100 years will suffice to show that the distribution of *enig* has not always been what it is now. The following types of environment are all attested:

(4)     *Modal contexts*
          a.     Men moest toch wel enige aanwijzing hebben
                   " One would have to have some clue"
          b.     Ziedaar een paar vragen, waarop ik gaarne eenig antwoord zou
                   willen ontvangen.
                   "These are some questions for which I would like to receive an
                   answer."
        *Imperative*
          c.     Kom daar maar eens om in enig ander land.
                   "Try to find/get that in any other country!"
        *Subjunctive*
          d.     En wie geen steenen kan aandragen storte [..] eenige gift in de
                   offerbus
                   "And who cannot carry bricks, should donate some gift in the
                   offertory-box"
        *Disjunction*
          e.     [..] terwijl mijne oudste Zuster tusschen beide in den Bijbel of
                   eenig stichtelijk boek las
                   " (..) while in between my oldest sister was reading in the Bible
                   or some devotional book"
        *Habitual*
          f.     Vrienden en bekenden hadden de gewoonte om eenig deel van
                   een nieuw gebouw te versieren met een glas
                   "Friends and acquaintances had the habit to decorate some part
                   of a new building with a glass"
        *Sporadic occurrences of "some or other" readings*  (10% of about 300
        "positive" occurrences):

      g.      Hy zondt enige Benden zyner Lyfwachten naar enig Binnen-
landts Dorp, dat wat verre van de handt ligt.
"He sent some groups of his body-guards to some interior
village, that is lying a bit  out of the way.

      h.      Die de minste kennis van de manieren van Den Haag hebben,
weeten, dat het een gerecipieerd gebruik is, dat Jonge
Juffrouwen nooit alleen in een Gezelschap komen, maar altyd
verzeld van hunne Moeders, of eenige andere getrouwde Vrouw
"Those who have the least knowledge of the manners of The
Hague, know, that it is a received custom, that young Ladies
never appear alone in society, but always accompanied by their
Mothers, of some other married Woman"

The examples in this list mostly fall within the category of *nonveridical* contexts (Zwarts 1995, Giannakidou 1997).  Besides occurrences in nonveridical contexts, but less commonly, also nonspecific uses in veridical contexts can be found, even today. Here, the meaning seems to be indifference: some X or other, as in examples g-h above. (Cf. also Haspelmath 1997 and Vlachou 2007 on non-specific and specific/unknown uses of indefinite pronouns.)

      In Table 1 below, diachronic distributional developments are sketched. Note especially the yellow and blue rows, representing categories that become more and less important, respectively, over time.

      I take the driving force behind the developments in this table to be the gradual disappearance of nonveridical occurrences. As a result, other categories that were important already, such as negation, complements of *zonder* 'without' and comparatives, became relatively more important. I assume that the gradual reduction of occurrences in conditional clauses is due to the general reduction of nonveridical environments, although conditional clauses are also among the standard examples of negative contexts (cf. e.g. Landman and Kadmon 1993). Note that in English, a conditional clause is a good host both for *any* and *some* in its 'some or other' sense:

(5)     a.      If you meet any stray dog, shoot it.
        b.      If you meet some stray dog, shoot it.  It has rabies.

It is clear that the two sentences do not have the same meaning. While (5a) has universal force ("shoot every stray dog on sight"), (5b) does not. Moreover, (5a) is emphatic (Landman and Kadmon's *strengthening*) but (5b) is not. Occurrences of *enig* in the protasis of a conditional are, in the absence of emphasis marking, ambiguous between the emphatic *any*-type use and the nonemphatic *some or other* nonspecific use of English *some*. Given the large drop in conditional environments in Table 1, it is likely that the nonstrengthening, nonspecific uses represent the majority of occurrences in the early modern period.

      Also worth pointing out in the table is the jump in negative occurrences for *enig* between the 16th and 17th centuries: I assume this is due to the disappearance of negative concord, which in the 16th century was still an

important competitor of negation + *enig*, much like Middle English preferred *Nobody did nothing* etc. to *Nobody did anything*.

Also note the temporary drop in frequency of *enig* in comparatives of inequality, which seems due to the competition, at least in the written language, of comparatives of equality. After all, if one wanted to state that some woman is very beautiful, one could write that she is *schoner dan enige vrouw* 'more beautiful than any woman' or *zo schoon als enige vrouw* 'as beautiful as any woman.' Comparatives of inequality and comparatives of equality, although they differ somewhat in meaning, nonetheless should be viewed as semantic competitors from the point of view of the writer. Unlike English *any* or *ever*, in Dutch the use of *enig* in comparatives in equality disappeared from the written language, mirroring similar developments in the distribution of the negative polarity item *ooit* 'ever'. Other types of Dutch polarity-sensitive indefinites still appear in comparatives of equality, however, e.g. *wie dan ook* 'who then also = whoever, anyone':

(6)    a.      Jan is groter dan wie dan ook
                  Jan is larger than wie then also
                  'Jan is larger than anyone'
    b.      Jan is net zo slim als wie dan ook
                  Jan is just as smart as who then also
        'Jan is just as clever as anyone'

TABLE 1: ENIG - distribution of singular count occurrences
[minus those of the collocation *op enig moment*]

| Context | before 1600 N=109 | 1600- 1700 N=224 | 1700- 1800 N=375 | 1800- 1900 N=656 | 1900- 1950 N=451 | 1950- 2000 N=524 | 2000- 2007 N=248 |
|---|---|---|---|---|---|---|---|
| Negation | 17 | 29 | 34 | 33 | 33 | 38 | 37 |
| Before | 1 | 2 | 0.5 | 0.5 | 1 | 1 | 0.4 |
| Conditional | 20 | 16 | 9 | 6 | 5 | 3 | 3 |
| Comparative | 12 | 5 | 6 | 10 | 16 | 20 | 19 |
| Comp of Eq. | - | 5 | 5 | 1 | 0.5 | 0.4 | 0 |
| Few/little | - | 0.5 | 0.5 | 0.5 | 0.2 | 0.2 | 0.4 |
| Hardly | - | 0.5 | 1 | 1 | 0 | 0.8 | 0.8 |
| Neg. pred. | 5 | 3 | 6 | 6 | 8 | 5 | 7 |
| Question | 10 | 5 | 7 | 8 | 8 | 7 | 5 |
| Seldom | 1 | - | 0.3 | 1 | - | 0.2 | 0.4 |
| Superlative | 2 | 1 | 0.5 | 1 | 1 | 1 | 0.4 |
| Too | - | - | 0.5 | 1 | 1 | 0.6 | 0.4 |
| Universal | 3 | 4 | 3 | 2 | 1 | 0.2 | 1 |
| Without | 16 | 13 | 14 | 14 | 19 | 19 | 22 |
| Positive | 13 | 17 | 13 | 15 | 8 | 3 | 2 |

## 2.2 Discussion

Its gradual disappearance from positive, mainly nonveridical, uses has turned *enig*, at least in combinations with singular count nouns, into a negative polarity item. This chance is interesting for several reasons. First, it shows that nonveridicality is not an exotic property of some Greek pronouns: Germanic languages, which so far had seemed rather different from Greek in not appearing to have pronouns sensitive to nonveridicality, also show sensitivity to this property. Sensitivity to non-veridicality is of course a sign that a pronoun or determiner is used in a non-referring way. Obligatory nonreferentiality may lead to a pronoun being used only in nonveridical, including negative, contexts. In negative contexts, emphatic use of items may develop into a special use with different distributional properties than nonemphatic, nonstressed occurrences. For Greek *kanenas*, it was shown by Veloudis (1982) and Giannakidou (1997) that stressed occurrences have a far more limited distribution, being acceptable only in negative sentences, the scope of *xoris* 'without', and *prin* 'before.' For English *any*, the role of stress and focus was emphasized by Sahlin (1979) and Krifka (1995). Finally, Hoeksema (1999) argued that Dutch *ooit* 'ever' has developed two prosodically-distinct uses, one allowing for comma intonation, the other for emphatic lengthening of the vowel. The latter is a negative polarity item, the former is not. Let us therefore assume that in certain environments, such as negation, the possibility of stress changed *enig* from an expression primary used to express nonreferentiality, to an expression of emphasis, much like Greek stressed *kanenas*, and with an almost identical distribution (comparatives being the main difference). The main difference with the Greek situation is that the two types of *kanenas* remained equally grammatical, whereas the nonreferential, nonemphatic form of *enig* has all but disappeared.

# 3 Conclusion

On the basis of diachronic data, I have argued that Dutch *enig* changed from a non-referential indefinite found primarily in nonveridical contexts into a regular negative-polarity item restricted to negative contexts. The role of stress was hypothesized to have played a role in this process. The distribution of polarity items tends to be fairly unstable, prone to developing sometimes idiosyncratic collocation restrictions (van der Wouden 1997, Sailer and Richter 2002) and therefore, at any given moment in time, rather messy. Detailed historical and synchronic corpus study of usage patterns will be needed to further expose the general forces behind the chaos.

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Two Types of Negative Polarity Items:
Evidence from VP-ellipsis in Japanese

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**Abstract**[†]

A study of Japanese adverbial Negative Polarity Items (NPIs) suggests that there are two types of NPIs: (i) NPIs that can precede an ellipsis site, and (ii) NPIs that cannot precede an ellipsis site. I claim that the first type, but not the second type, are semantically negative, and license ellipsis.

# 1 Introduction

In this study, I analyze the Japanese phenomenon where some adverbial Negative Polarity Items (NPIs) can precede an ellipsis site, but some cannot. By NPIs, I mean items that always appear with negation. I argue that these different distributions of NPIs are attributed to their semantic property, specifically the negation feature. I claim that the NPIs of the first type, but not the second type, can license ellipsis because they are semantically negative. It has been generally assumed that Japanese does not have VP-ellipsis (VPE) parallel to English VPE. However, my analysis suggests that like English *not*, which can also license VPE (Lobeck 1995; Potsdam 1997), NPIs with the negation feature in Japanese can license VPE. This study, therefore, also contributes to the study of VPE.

# 2 VPE in Japanese

Japanese lacks *do*-support, and its tense, negation, and auxiliary morphemes are bound to verbs. Japanese VPE parallel to the English VPE in (1), therefore, is ungrammatical as shown in (2).

(1) a  John eats sushi.       b  I do [*e*] too.

(2) a  John-wa     sushi-o     tabe.ru.        'John eats sushi'
          -TOP      sushi-ACC    eat.PRESENT

    b * Watasi-mo    [*e*]-ru                    '[intended reading] I do too.'
          I-also          -PRESENT

   In English, *not* can precede an ellipsis site as in (3b). However, the Japanese counterpart to (3b) is ungrammatical, as seen in (4b).

(3) a  John eats sushi.
    b  I do not [*e*].

(4) a  John-wa  sushi-o     tabe.ru.         'John eats sushi.'
          -TOP   sushi-ACC    eat.PESENT

    b * Watasi-wa  [*e*]-nai.                  '[intended reading] I do not.'
          I-TOP        -NEG.PRESENT

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As shown in (5), however, there is a VPE-like phenomenon in Japanese (referred to as "stripping" in Fukaya and Hoji 1999), where the ellipsis site is preceded by a focus particle *mo* 'also' and followed by the copula *da*.

(5) a   John-wa   sushi-o      tabe.ru.          'John eats sushi'

     b   Watasi-mo   [*e*]    da.             'I do too.'

            I-also          COP

This type of ellipsis requires a linguistic antecedent, as seen in (6). In (6), the ellipsis site lacks a linguistic antecedent, therefore, the ellipsis followed by the copula is not acceptable.

(6)        [Situation: Seeing a friend eating sushi...]

      # Watasi-mo   [*e*]   da.           '[intended reading] I'll eat sushi too.'


# 3 Puzzle: adverbial NPIs and ellipsis

Some Japanese adverbial expressions that denote quantity/frequency (e.g., *zenzen* 'at all', *mattaku* 'at all', *sappari* 'at all', *kessite* 'at all', *amari* 'much', and *sukosi-mo* 'even a bit') are NPIs in that they must occur with the negation marker *–nai*, as in (7).

(7) John-wa    {zenzen/mattaku/sappari/kessite/amari/sukosi-mo} sake-o

       -TOP     at all / at all / at all / at all / much / a bit-FOC     sake-ACC

    {noma-nai / *nomu}.

    drink-NEG / *drink

    'John doesn't drink sake {at all/much/even a bit}.'

These NPIs, however, behave differently in relation to ellipsis. Some NPIs (e.g., *zenzen* 'at all', *mattaku* 'at all', *sappari* 'at all') can precede an ellipsis site followed by *da* as in (8b-i), while others (e.g., *amari* 'much', *sukosi-mo* 'even a bit', *kessite* 'at all') cannot, as in (8b-ii).

(8) a   John-wa   sake-o     noma-nai**.**

         -TOP   sake-ACC   drink-NEG

     'John does not drink sake.'

     b-i    Mary-mo      {zenzen/mattaku/sappari}      [*e*]    da.

           -also        at all / at all / at all           COP

        'Mary (~~doesn't drink sake~~) at all either.'

     b-ii * Mary-mo      {amari/sukosi-mo/kessite}     [*e*]    da.

           -also        much / a bit-FOC/at all        COP

  '[intended reading]Mary (~~doesn't drink sake~~) {much/even a bit/at all} either.'


These different distributions are observed not only when the preceding clause is negative, as in (8), but also when the preceding clause is positive, as in (9). For both cases, the recovered meaning of the ellipsis is negative as in (8b-i) - (9b-i).

(9) a   John-wa     sake-o       nomu.

         -TOP     sake-ACC     drink

     'John drinks sake'

$$\left\{\begin{array}{l}\text{b-i \ Mary-wa \quad \{zenzen/mattaku/sappari\} \ [$e$] \quad da.}\\ \text{\qquad -TOP \qquad at all / at all / at all \qquad\quad COP}\\ \text{\quad 'Mary (\sout{doesn't drink sake}) at all.'}\\ \text{b-ii *Mary-wa \quad \{amari/sukosi-mo/kessite\} \ [$e$] \quad da.}\\ \text{\qquad\quad -TOP \qquad much / a bit-FOC/at all \qquad\quad COP}\end{array}\right.$$

'[intended reading] Mary (~~doesn't drink sake~~) {much/even a bit/at all}.'

This paper will address two questions. First, why can the NPIs in (8b-i) and (9b-i), but not the NPIs in (8b-ii) and (9b-ii), precede an ellipsis site followed by the copula *da*? Assuming that ellipsis can occur under syntactic and/or semantic identity with its antecedent, (8b-i) satisfies the identity condition, and so does (8b-ii). However, only the NPIs in (8b-i) can precede an ellipsis site. Second, what allows negative interpretation for the ellipsis site in (9b-i), given that the ellipsis site and an antecedent are not identical? As shown in (6), ellipsis that involves the copula *da* requires a linguistic antecedent. How does the negation occur in the process of recovering the meaning?

Although ellipsis preceded by the NPIs in (8b-i) and (9b-i) allows the negative interpretation without the negation marker *–nai*, these NPIs are not n-words in negative concord. In negative concord languages, n-words can appear with and without other negative markers as in the Spanish examples in (10) and (11) (taken from Herburger 2001:289). In (11), where the predicate appears without the negative marker, an n-word *nadie* 'nobody' can be responsible for the negative interpretation. That is not the case for the NPIs in (8b-i) and (9b-i). As shown in (7), these NPIs cannot appear without the negative marker *–nai*.

(10)     No     vino     **nadie**.          'Nobody came.'
             not    came     n-body

(11)     **Nadie**        vino.          'Nobody came.'
             n-body          came

# 3 Proposal

I propose that phenomena like (8b-i) and (9b-i) are VPE, and that the NPIs in (12-i), but not the NPIs in (12-ii), can license ellipsis, because they are semantically negative. Their negation feature contributes to their emphatic nature. On the other hand, it also causes semantic redundancy of negation in a negative sentence where the negative marker *–nai* appears.

(12)   i. NPIs that can precede ellipsis:
           e.g., *zenzen* 'at all', *mattaku* 'at all', *sappari* 'at all'
         ii NPIs that cannot precede ellipsis:
           e.g., *amari* 'much', *sukosi-mo* 'even a bit', *kessite* 'at all'

In this study, I follow the common assumption of ellipsis as "a device expressing redundancy" (Rooth 1992:4). Assuming NPIs are licensed at a syntactic level, (Chomsky and Lasnik (1993); Fox (2000); Merchant (2001); among others), in this study ellipsis is considered to be a result of PF-deletion.

In a sentence where a semantically negative NPI (e.g., *zenzen*) appears, the negation marker *-nai* is always a candidate for deletion because of the semantic

redundancy. However, since *–nai* is bound to the verb in Japanese, it cannot be elided leaving VP as shown in (13). The VP *sake-o noma* 'drink sake' cannot be elided, on the other hand, because there is no linguistic antecedent for the VP.

(13)  \* Mary-wa    **zenzen**    sake-o    noma-[*e*].    (*e* = nai)

Thus, as shown in (14), for ellipsis like (9b-i) to occur, two conditions have to be satisfied: there is a linguistic antecedent; the NPI is semantically negative.

(14)a    John-wa         sake-o    nomu.
             -TOP         sake-ACC    drink         *Identical VP*
          'John drinks sake'
     b    Mary-wa    **zenzen**    [NEG [VP sake-o    noma]-nai]]    da.

*Semantic redundancy of negation*

Recovery of the meaning of the elided VP in (14b) works as follows. Ellipsis followed by *da* indicates that there are syntactic and/or semantic redundancies. The VP *sake-o nomu* 'drink sake' is available from the preceding clause in (14a), and *zenzen* adds the negative meaning to the VP.

   In contrast, for sentences with NPIs that are not semantically negative (e.g., *amari*), there is no semantic redundancy for *–nai*; thus *–nai* cannot be elided, even if the VP is identical with the one in the preceding clause. This is shown in (15).

(15)a    John-wa         sake-o    nomu.
             -TOP         sake-ACC    drink         *Identical VP*
          'John drinks sake'
     b \* Mary-wa    **amari**    [NEG [VP sake-o    noma]-nai]]    da.

*No semantic redundancy of negation*

It appears that the semantic property of each NPI in (12-ii) varies. *Amari* 'much', which is an attenuating NPI in Israel's (2001) term, makes the negative statement weaker, thus, we can assume that it is not semantically negative. *Sukosi-mo* 'even a bit' is a minimizer that denotes a minimal quantity, with which it is inferred that Mary does not drink sake at all. *Kessite* means 'at all', but unlike the NPIs in (12-i), it expresses the person's strong will.

   As to VPE, Fukaya and Hoji (1999) refer to ellipsis followed by the copula *da* as in (5) as "stripping." However, this type of ellipsis allows backward anaphora as in (16), which is allowed for VPE, but not for "stripping", as pointed out by Lobeck (1995). Therefore, I claim that this type of ellipsis is VPE, rather than "stripping."

(16)    Mary-wa    **zenzen**    [*e*]    da ga,    John-wa    sake-o    nomu.
             -TOP    at all         COP but    -TOP    sake-ACC    drink
          'Mary doesn't at all, but John drinks sake.'

# 4 Further evidence of negation feature

It has been reported that *zenzen* is used not only with negation, but also with affirmation (e.g., Noda 2000). The use of *zenzen* with affirmation is observed especially among the young generation, and it occurs with adjectives or adverbs to emphasize degree, as in (17).

(17)  Kono      keeki-wa      **zenzen**      {oisii/oisiku-nai}
      this      cake-TOP      very/at all     tasty/tasty-NEG
      'This cake {is very tasty/is not tasty at all}

*Zenzen* with adjectives or adverbs, like *zenzen* with verbs, can license ellipsis when the following items are negative, as in (18). However, *zenzen* cannot license ellipsis when the following items are positive, as in (19) and (20).

(18)a  Ano      keeki-wa      oisii.
      'That cake is tasty.'

   b  Kono      keeki-wa      **zenzen**      [*e*] da.      (*e* = oisiku-nai)
      'This cake is (~~not tasty~~) at all.'                 tasty-NEG

(19)a  Ano      keeki-wa      oisii.
      'That cake is tasty.'

   b # Kono      keeki-mo      **zenzen**      [*e*] da.      (*e* = oisii)
      '[intended reading] This cake is very (~~tasty~~) too.'      tasty

(20)a  Ano      keeki-wa      oisiku-nai.
        'That cake is not tasty.'

   b # Kono      keeki-wa      **zenzen**      [*e*] da.      (*e* = oisii)
      '[intended reading] This cake is very (~~tasty~~).'      tasty

This data further supports my proposal that *zenzen* is semantically negative and license ellipsis.

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The Neg Stranding Hypothesis

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**Abstract**

The sentence *All the students have not read the book*, like its equivalents in the other Germanic languages, is ambiguous for a [∀ > Negation] and a [Negation > ∀] reading. Since the negation marker is lower than the universal quantifier in this sentence, the availability of the [Negation > ∀] reading is difficult to explain. It will be shown that this reading is possible because the negation marker, which originates as a specifier in the negated quantifier phrase *not all the students*, can be stranded in the same way a quantifier can be stranded.

# 1 Introduction

It has been argued in Sportiche (1988), Giusti (1990), Shlonsky (1991), Cirillo (2005) and elsewhere that universal quantifiers head a Quantifier Phrase (QP) and can be stranded inside it, as is shown in these English and German examples:

(1)  The students have *all* read the book.

(2)  Die Studenten haben *alle* das Buch gelesen.
      *the  students  have*  all  *the book  read*

As argued in Cirillo (2005) and (2007a), negated quantifiers can also be stranded inside QP, as illustrated in the following English and German examples:

(3)  The students have *not all* read the book.

(4)  Die Studenten haben *nicht alle* das Buch gelesen.
      *the  students  have*  not  all  *the book  read*

The structure posited for negated QPs in Cirillo (2007a) is as follows:

(5)
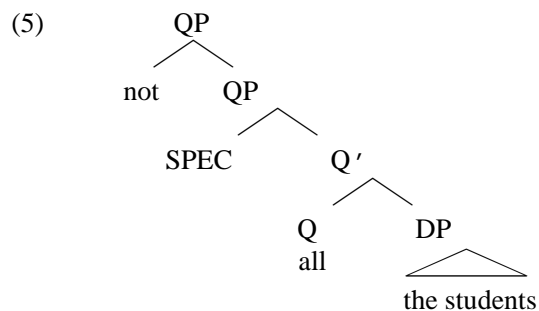
The subject of this paper is the hypothesis that not only a quantifier or negated quantifier but also a negation marker embedded in a QP such as the one in (5) can be stranded. The idea that a negation marker can be stranded, which I refer to as the Neg Stranding Hypothesis, arises from the fact that the following English sentence, like its equivalents in all the Germanic languages, is ambiguous, allowing both a [∀ > Neg] and a [Neg > ∀] reading:

(6) All the students have not read the book.

The derivation of the [∀ > Neg] reading is straightforward if we follow Zeijlstra (2004) and assume that in the Germanic languages both subjects and negation markers are base-generated in a [SPEC, vP] position and that it is possible for the subject to occupy the higher SPEC position, thereby taking scope over the negation marker:

(7)
```
              vP
             /  \
      Subject    vP
                /  \
         Negation   v′
```
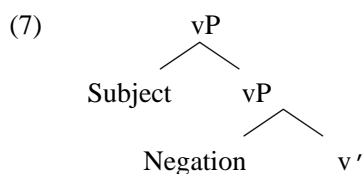
While the [∀ > Neg] reading of (6) is straightforward, the [Neg > ∀] reading is difficult to explain, given the position of the negation marker with respect to the quantifier. It is this [Neg > ∀] reading of (6) that is the main topic of this paper.


## 2 How Neg Stranding Works

Sentences (8) and (9) have the same meaning and contain the same elements as (6). It would thus seem logical to derive all three sentences from one source:

(8) Not all the students have read the book.
(9) The students have not all read the book.

To derive (6), (8) and (9), I assume that the subject of all three sentences is the QP *not all the students* in (5), which is base-generated in [SPEC, vP], as follows:

(10)
```
              vP
             /  \
          QP     v′
```
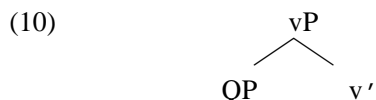
In order to derive (8), we simply move the entire QP in (5) to subject position, with no stranding. To derive (9), we move the DP *the students* out of the QP, leaving behind the negation marker and the universal quantifier. For the

derivation of (6), the lower QP node moves to subject position, leaving behind the negation marker.

The question will arise as to how the negation marker in the [Neg > ∀] reading of (6) can retain scope over the quantifier if the quantifier has moved above the negation marker, particularly in view of my claim, defended in Section 3 below, that negation must be interpreted *in situ*. In (6), the negation marker immediately precedes the main verb and follows the universal quantifier. An *in situ* interpretation would therefore seem to require that the negation marker take scope over vP or v′ but not over the quantifier, resulting in a [∀ > Neg] reading. There are two factors that cause the stranded negation marker in (6) to take scope over the quantifier. First of all, the negation marker does not c-command vP or v′ and thus cannot take scope over them. Secondly, it is embedded in QP and can take scope only over the traces remaining in that QP. In other words, the negation marker is interpreted *in situ*, inside QP, with no c-command relationship with vP or v′. Consequently, even after the stranding of the negation marker, the only possible interpretation of (6) is [Neg > ∀].

The Neg Stranding Hypothesis has the theoretical advantage of being able to derive three surface structures that have the same meaning from one single base structure. Nonetheless, because the Neg Stranding Hypothesis is unorthodox, alternative hypotheses should be considered. I am unaware of any attempts in the literature to account for the [Neg > ∀] reading of sentences like (6) syntactically, and have therefore proposed four alternatives of my own. Under the first alternative hypothesis, the [Neg > ∀] reading of (6) would be obtained by covertly moving the negation marker and adjoining it to the universal quantifier at LF. Under the second alternative hypothesis, the scope of the negation marker would be handled not by moving it but by merging it at the proper time in the derivation. Under the third alternative hypothesis, the negation marker would undergo a type of raising similar to what is seen in a sentence such as *I do not believe that John loves Mary*, derived from *I believe that John does not love Mary*. The fourth and final alternative would involve the copy theory of movement combined with the concept of partial deletion found in Nunes (2004) and elsewhere. Under this approach, in the sentence in (6), there would be two copies of the subject *not all the students*. In the lower copy, everything would be deleted except the negation marker. In the higher copy, only the negation marker would be deleted. This would generate the word order in (6). I argue in Cirillo (2007a) that none of these four alternative hypotheses works as well as the Neg Stranding Hypothesis. However, because of space limitations, only the first of the four alternatives, that of covert movement of the negation marker, will be evaluated here.

# 3 Alternative to Neg Stranding:  Covert Movement

Under this alternative hypothesis, in order to obtain the [Neg > ∀] reading of sentence (6), the negation marker would simply be moved and adjoined to the quantifier *all* at LF. This approach presupposes that the negation marker is not base-generated in QP but rather as an adjunct to vP, in the position that it occupies in the case of sentential negation.  Using examples from Italian, I will argue that this alternative hypothesis is untenable because negation must be interpreted *in situ* and cannot be moved covertly. I assume here, in accordance with Zeijlstra (2004) and Cirillo (2007a), that in the Romance languages the negation marker is not base-generated in a SPEC position of vP or QP but that it is the head of NegP, which dominates vP as shown in the following structure:

(11)

```
              NegP
             /    \
        SPEC        Neg′
                   /    \
              Negation    vP
```
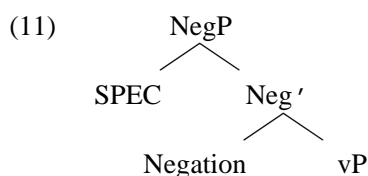
With that background, consider now the following Italian sentences:

(12) ?Tutti gli studenti  non l'hanno letto.
    *all   the students  not it  have  read*

(13)   Non l'hanno letto tutti gli studenti.
    *not it  have  read  all  the students*

(14)   Non tutti gli studenti  l'hanno letto.
    *not  all   the students it have  read*

Unlike its equivalent in the Germanic languages, such as (6), sentence (12) has only a [∀ > Neg] interpretation. (Remember that the negation marker in (12) is not base-generated inside QP and is therefore not limited to taking scope over the quantifier.) Sentence (13) seems to be exactly the same as (12), except that the subject QP has not moved to a higher subject position. One would therefore expect (12) and (13) to have the same meaning. However, sentence (13) has only a [Neg > ∀] reading, the same as (14). Sentences (12) to (14) tell us two things about negation.  First of all, covert movement of negation is not possible. If it were, it would be possible to covertly move the negation marker in (12) to the position it occupies in (14) and obtain the reading of (13) and (14), but this reading is simply not available in (12). Secondly, in all three of theses sentences, negation is interpreted *in situ*.  That is, its position with respect to the quantifier determines its scope.  Related to the idea of covert movement is the concept of reconstruction.  That is, one could argue that in (6) the scope of the stranded negation marker is disambiguated by returning the QP *all the students* to its base-

position below the quantifier at LF. The problem with this solution is that too much evidence has been presented in the literature that there is no reconstruction after A-movement.

Given the indications that negation is interpreted *in situ* and does not move covertly, I conclude that this alternative hypothesis, in which negation is moved at LF, is untenable, and that the Neg Stranding Hypothesis is preferable.

To briefly summarize, if covert movement of negation and reconstruction are unacceptable ways of explaining the [Neg > ∀] reading of (6), and if negation must be interpreted *in situ*, then the Neg Stranding Hypothesis based on the structure in (5) is the desirable analysis. Neg Stranding does not require covert movement of the negation marker or reconstruction after A-movement, and it allows *in situ* interpretation of the negation marker. The *in situ* interpretation of the negation marker in (6) is due to the fact that it is embedded in QP and does not c-command vP or v′. It can therefore only take scope over the traces in QP, and this means that the [Neg > ∀] reading is the only available one.

## 4 Neg Stranding is not QP-Specific

One is tempted to say that the hypothesis that a negation marker can be stranded in QP is independently motivated because quantifiers and negated quantifiers can also be stranded in QP. However, there is reason to believe that Neg Stranding is not limited to QP. For example, topicalized DPs, PPs and VPs can strand a negation marker in German. The following pairs of sentences are cases of negated constituents (DP, PP and VP) rather than cases of v′ (sentential) negation. This is clear from the fact that in the (a) sentences the entire negated constituent is topicalized and contrasted with a non-negated constituent of the same type. The (b) sentences have the same meaning as the (a) sentences, that is, an interpretation of a negated constituent. The difference is that in the (b) sentences, the topicalized negated constituent has stranded the negation marker:

(15) a. Nicht den Hund hat er gefüttert, sondern die Katze.
*not the dog has he fed but the cat*

b. Den Hund hat er nicht gefüttert (sondern die Katze).
*the dog has he not fed but the cat*

(16) a. Nicht auf dem Sofa hat er geschlafen, sondern in dem Bett.
*not on the sofa has he slept but in the bed*

b. Auf dem Sofa hat er nicht geschlafen, (sondern in dem Bett).
*on the sofa has he not slept but in the bed*

(17)  a. Nicht gefüttert hat er den Hund, sondern getreten.
        *not    fed    has he the dog    but    kicked*

    b.  Gefüttert hat er den Hund nicht (sondern getreten).
        *fed    has he the dog    not    but    kicked*

The conclusion is that Neg Stranding is not a QP-specific phenomenon.


# 5 Conclusion

The Neg Stranding Hypothesis can account for the [Neg > ∀] reading of ambiguous Germanic sentences like *All the students have not read the book*. Neg Stranding is not a QP-specific phenomenon, given that DP, PP and VP can also strand a negation marker. Given its descriptive and explanatory abilities and the fact that it is less problematic than alternative hypotheses, the Neg Stranding Hypothesis deserves serious consideration.


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The Structure of Events and the Genitive of Negation with
Measure Adverbials in Russian

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**Abstract**

I study measure adverbials in Russian whose case marking is affected by the presence of negation. While in affirmative clauses they are obligatorily marked with the accusative, in the presence of negation the case marking can change to genitive. I describe semantic conditions that license such change. I show that these conditions are related to the event structure and the scope of negation.

# 1 Introduction

A well-known feature of the Russian grammar is that NP's with the semantic role of undergoer may be marked with genitive in negative clauses, a phenomenon that is known under the name of genitive of negation:

(1) a. *Ivan pisa-l stat'-ju*.
    I. write-PST[1] article-**ACC**
    'Ivan was writing an article.'
  b. *Ivan ne pisal stat'-ji/ stat'-ju*
    I. NEG write-PST article-**GEN**/-**ACC**
    'Ivan was not writing an article.'

This phenomenon was extensively studied from both syntactic and semantic perspective.

However the accusative/genitive alternation under negation is not restricted to such NP's. Certain adverbials that are marked with accusative in affirmative clauses, can be assigned genitive under negation.

(2) a. *Tom Soyer ži-l na ostrov-e nedel-ju.*
    Tom Sawyer live-PST on island-PREP week-ACC.
  'Tom Sawyer stayed on the island for a week.'
  b. *Tom Soyer ne proži-l na*
    Tom Sawyer NEG live-PST on
      *ostrov-e i nedel-i.*
      island-PREP and week-GEN

[1] I use the following glosses: ACC = accusative case, GEN = genitive case, INSTR = instrumental case, PREP = prepositional case, INF = infinitive, PRS = present tense, PST = past tense, IMP = imperative, F = feminine, M =masculine, NEG = negative particle, DISC = discoursive particle, MOD = modal particle.

'Tom Sawyer did not stay on the island even for a week.' (i.e. he left earlier.)

    c. *Tom  i  Gek  podozhda-l-i    minut-u/ \*minut-y.*
       Tom  and   Huck  wait-PST-PL  minute-ACC/\*-GEN.

'Tom and Huck waited for a minute.'

    d. *Tom  i    Gek  ne   zhda-l-i     ni    minut-y/\*minut-u*
       Tom  and   Huck  NEG  wait-PST-PL  NEG   minute-GEN/\*-ACC

'Tom and Huck did not wait even for a minute.' (i.e. they did not wait at all.)

Sometimes genitive-marked adverbials are *bona fide* NPI's, that is, the corresponding accusative-marked NP is at least unfelicitous without negation:

(3) a. *Ne    dozhi-l-a        dv-ux        dn'-ej       do*
    neg   live.until-PST-F  two-GEN.PL day-GEN.PL  until
    *pensi-i.*
    retirement-GEN

'She did not live (the last) two days before the retirement. (i.e. she died two days before the retirement.)'

    b. *Dozhi-l-a         (#dv-a dn'-a)       do   pens'ii*
       live.until-PST-F  (two-ACC.M day-GEN.PL)  until   retirement-GEN.
       'She survived (#two days) until the retirement.'

    c. *Petrovič ne    doshe-l        dv-ux*
       P.       NEG  walk.until-PST  two-GEN
    *shag-ov     do    dom-a.*
    step-GEN.PL  until  house-GEN
    'Petrovich did not walk (the last) two steps towards the house.'

    d. *Petrovič doshe-l     (#dva    shaga)     do    dom-a.*
       P.     walk.until-PST  two-ACC.M step-GEN   until  house-GEN
    'Petrovich walked (#two steps) to the house.'

These adverbials do not get their semantic roles from the verb, and both the accusative marking and the case alternation under negation present a problem to theories of case. This phenomenon has not passed unnoticed by syntacticians, the mechanism of case alternation for such adverbials was analyzed in Pesetsky (1983); Franks and Dziwirek (1993); Borovikoff (1997); Pereltsvaig (1998, 2000a, 2000b).

However, to the best of my knowledge, no-one has ever systematically studied the semantics of such genitive-marked adverbials, nor their corpus studies were carried out. For instance, (Mustajoki and Heino, 1991), the most extensive corpus study of Russian genitive of negation to be ever undertaken, explicitly exclude such expressions from the scope of their study. Timberlake (1975) observes that such instances of case alternation exist and remarks that in these circumstances, accusative marking is preferred to the genitive one.

This paper is based on a corpus study of this phenomenon. For the study, I mostly used the materials of the National Corpus of Russian (NRC), `http://www.ruscorpora.ru`.

## 2 A description of case-changing adverbials

The semantics of accusative-marked adverbial NP's is described in Krys'ko (2006). They fall into the following categories:
Temporal adverbials:
- Temporal localization (few strongly lexicalized expressions[2])

(4) *Zakr-oy       dver' **si-yu        sekund-u***.
close-IMP.SG door   this-ACC.F    second-ACC
'Close the door immediately (lit. this second).'

- Temporal frequency (every Friday etc)

(5) *Ven'a ezd-it      v Petushki **kazhd-uyu    pyatnic-u***.
V.     go-PRS.3SG  to P.        every-ACC.F  Friday-ACC
'Venya goes to Petushki every Friday.'

- Number of times

(6) *Mitrich by-l     v Kreml'-e        **tr-i           raz-a***.
M.    was-PST  in Kremlin-PREP    three-ACC     time-GEN.PL
'Mitrich has been to Kremlin three times.'

- Temporal stage (for the third week etc)

(7) ***Tret'-yu     nedel-yu     p'yo-m           za      zdorov'e Vash-ego***
third-ACC.F  week-ACC    drink-PRS.1PL   for     health     your-GEN
*Velichestv-a*.
majesty-GEN
'We are drinking to the health of Your Majesty for the third week.'

- Temporal extent, see examples 2a, 2c.

Spatial adverbials:
- Spatial extent

(8) The Pravda (01/15/1985), quoted from Krys'ko (2006).
*Do Moskv-y      **des'at'   tys'ach          verst             zaprosto***
to  Moscow-GEN    ten.ACC    thousand.GEN.PL versta.GEN.PL with.ease
*leta-esh',     a      vot    dobezha-t'  **sotn-yu      kilometr-ov***
fly-PRS.2SG but    DISC   run.until-INF hundred-ACC kilometer-GEN.PL
*na elektrichk-e        do     men'a — dux-om        slab*.
on electric.train-PREP  until  I.GEN     spirit-INSTR weak
'You don't hesitate to fly ten thousand versts to Moscow, but you don't have spirit to go a hundred kilometers by train to visit me.'

However, it is only temporal extent, spatial extent and number of times adverbials that admit the case change under negation. Moreover, the case change

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[2] In some non-standard varieties of Russian, the accusative of temporal localization is productive.

can occur only in a limited number of constructions. They can be classified as follows.

|  | Construction | Restrictions on V | Restrictions on NP | Case change | Example |
|---|---|---|---|---|---|
| 1. | *ne pref-V NP*<br>NEG pref-V NP | The prefix[3] should be *pro-*, *ot-*, *do-*, or *vy-* | | optional | 3a |
| 2. | *ne V i*[4] *NP*<br>NEG V and NP | Strong preference for prefixed verbs, prefixes like in 1 | | obligatory | 2b |
| 3. | *ne V daže NP*<br>NEG V even NP | Any non-punctual imperfective verb or prefixed perfective verb, prefixes like in 1. | | optional, genitive more common | |
| 4. | *ne V ni NP*<br>NEG V NEG NP | as in 3. | no modifiers except *odin* 'one' and *ediny* 'single' | obligatory | 3d |

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[3] These prefixes carry certain lexical meanings, but simultaneously they serve as valency change markers. In particular, they introduce temporal and spatial participants.

[4] Etymologically, this negative particle is just the conjunction 'and'. It is perhaps not quite accurate to claim that it coincides with the conjunction synchronically.

In the first three cases the interpretation is always: "The situation took place, but during the period of time less than denoted by the NP.". The fourth construction means that the event has not occurred at all. However, we consider it a pragmatic inference, as it is often the case with expressions that refer to minimal entities, see Krifka (1995).

The reading "The situation did not take place during the period of time denoted by the NP" is sometimes possible, if the NP is marked with the accusative, but absolutely impossible, if it is marked with genitive.

## 3 Conditions licensing the case change

Trivially, the corresponding NP must be c-commanded by NegP. However, additional conditions must be fulfilled:

1. In order for the change of case marking to be possible, the event has to be bounded. For a discussion of this notion see, among others, Kiparsky (1998); Pereletsvaig (2000a, 2000b, Thompson (2006).

2. Genitive adverbials mark the fact that the event has terminated before reaching some expected end-point.

3. In particular, semantically the verb is beyond the scope of negation, and it is only the duration adverbial that is negated.

## 4 Genitive of negation with adverbials and case theories

Under negation, a genitive-marked adverbial can co-occur with genitive-marked direct object, although this is rather unusual and subject to some restrictions, which are not very well understood.[5] That led Franks and Dziwirek (1993) to a conjecture that the case is assigned to such adverbials through a mechanism different from the usual genitive of negation.[6] NRC has some natural examples of this phenomenon:

(9) *ona    by    i    dnya    ne    terpe-l-a        vozle sebya*
she   MOD  and   day-GEN  NEG  suffer-PST-F      near  self-GEN
*et-oy        zdorovenn-oy babishch-i.*
this-GEN.F   huge-GEN.F   female-GEN
'She would not suffer this huge female near her even for a day.'

However, as the structural necessary conditions for the case change with adverbials are exactly the same as with direct objects, the proposal of Franks and

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[5] Contrary to the claim in Pereltsvaig (2000a, 2000b) that such co-occurence is impossible in Russian.

[6] It should be noted that most of their Russian examples were judged ungrammatical by all native speakers I have consulted.

Dziwirek (1993) does not seem satisfactory. However, if we adhere to the modern Minimalist theory of case assignment via feature checking, the feature on NegP that is responsible for the genitive of negation seems to be checked twice, which is problematic to the theory.

## 5 Conclusion

I have shown that the case change for adverbials is governed by semantic, and not purely structural, conditions. I dealt only with semantic issues, but the possibility for two genitive-marked NP's to co-occur within the same clause suggests that there remain purely syntactic problems to be solved.

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Presuppositions as Blockers of Implicature Cancellation

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**Abstract**

We defend, and propose an amendment to, Chierchia's analysis of local implicatures in the scope of attitude verbs. The main observation is that while strict DE operators cancel local implicatures, Strawson DE operators do not, and that non-monotonic operators support local implicatures.

# 1 The problem

## 1.1 The facts to be explained

Observation 1: Some propositional attitude verbs exhibit, what seem to be, "local" implicatures (Chierchia 2004).

(1) John is <u>certain</u> that the boss or his assistant have disappeared.

    John is certain that the boss or his assistant, but not both, have disappeared.

These implicatures can be cancelled explicitly.

(2) John is certain that the boss or his assistant, or both, have disappeared.

Question A: How does the local implicature arise?

Observation 2: Negation cancels local implicatures (Chierchia 2004)

(3) John is <u>not certain</u> that the boss or his assistant have disappeared.

    ¬John is not certain that the boss or his assistant, but not both, have disappeared.

(4) #John isn't certain that the boss or his assistant, or both, have disappeared.

Question B: Why does the local implicature disappear under *not*?

Observation 3: Under "negative" verbs such as *sorry*, the implicature survives in the presupposition part but disappears in the assertion part (cf. Simons).

(5) John is <u>sorry</u> that the boss or his assistant have disappeared.

    John believes that the boss or his assistant, but not both, have disappeared.

    ¬John is sorry that the boss or his assistant, but not both, have disappeared.

(6) #John is sorry that the boss or his assistant, or both, have disappeared.

Question C: If what causes the cancellation in (3) is the "negativity" of *not*, why doesn't *sorry* give rise to exactly the same cancellation effects as *not*?

Observation 4: Non-monotonic operators do not cancel local implicatures.

(7) Exactly two men are certain that the boss or his assistant have disappeared.
Speaker/context variation:

Exactly two men are certain that the boss or his assistant, but not both, have disappeared.

Exactly two men are certain that the boss or his assistant have disappeared, and these men are certain that only one of them did.

(8) Exactly two men are certain that the boss or her assistant, or both, have disappeared.

(9) Exactly two men are certain that the boss or her assistant have disappeared, and they are certain it's possible that they both disappeared.

Question D: If what causes the cancellation in (3) is the lack of "positivity" of *not*, why doesn't the non-monotonic *exactly two* give rise to the same cancellation effects as *not*?

## 1.2  Why are questions A-D interesting?

Until recently, (scalar) implicatures were thought to be the result of purely Gricean (i.e., "conversational") principles. This approach leads to the expectation that all implicatures are global, but Chierchia's work has brought to our attention the possible existence of "local" implicatures. Notice that a globalist approach in the spirit of Grice (such as Sauerland 2004) does not account for the local implicature of (1), only for its weaker, global, implicature. This weaker implicature is obtained by assuming that the stronger alternatives are false.

(10)  John is <u>certain</u> that the boss or his assistant have disappeared.
Alternatives:
{John is certain that the boss or his assistant have disappeared, John is certain that the boss and his assistant have disappeared}
Assuming that "John is certain that the boss and his assistant have disappeared" is false leads to the following implicature:
It is possible, for all John knows, that the boss or his assistant have both disappeared.

Chierchia also observes that local implicatures, like global ones, disappear under negation. Global implicatures are predicted to disappear under negation by the Gricean theory.

(11)  a.  The boss or her assistant have disappeared.

Alternatives: {the boss or her assistant have disappeared, the boss and her assistant have disappeared}
Assuming the stronger alternative to the assertion is false leads to:
Only one of them disappeared.

b. It isn't true that the boss or her assistant disappeared.
Alternatives: {it isn't true that the boss or her assistant have disappeared, it isn't true that the boss and her assistant have disappeared} Since there is no stronger alternative to the assertion, then = It isn't true that only one of them disappeared.

Chierchia's "localist" system generates implicatures alongside standard meanings, yielding pairs of meanings. The strongest member of the pair is always preferred over the weaker one.

(12) a. The boss or her assistant have disappeared.
b. <the boss or her assistant have disappeared; the boss or her assistant, but not both, have disappeared>

(13) a. It isn't true that the boss or her assistant have disappeared.
b. <it isn't true that the boss or her assistant have disappeared; it isn't true that the boss or her assistant, but not both, have disappeared>

(14) a. John is certain that the boss or her assistant have disappeared.
b. <John is certain that the boss or her assistant have disappeared; John is certain that the boss or her assistant, but not both, have disappeared>

(15) a. John isn't certain that the boss or her assistant have disappeared.
b. <John isn't certain that the boss or her assistant have disappeared; John isn't certain that the boss or her assistant, but not both, have disappeared>

(i) If negation is responsible for cancellation, why doesn't the "negative" *sorry* pattern with *not*?

(ii) If relative strength is what generates implicatures, why does the non-monotonic *exactly two* pattern with the "positive" *certain*?

It should be noted that:

(i) The globalist approach predicts global, but not local, implicatures to disappear under *not*.

(ii) Both the globalist approach and Chierchia's approach predict no local implicatures with *exactly two*.

## 2 Is there an alternative to Chierchia's account?

Sauerland (2004) presents an alternative account of some of the data that motivate Chierchia's local, grammatical calculation of implicatures. In particular, Sauerland gives a global solution to certain problems relating to the implicatures of scalar items occurring in the scope of other operators – for example, *some* in the scope of disjunction:

(16)  Kai ate the broccoli or <u>some</u> of the peas.

However, being global, Sauerland's approach cannot produce implicatures in which an alternative scalar term is negated within the scope of another operator. So, Sauerland's theory cannot directly derive (17a) as an implicature of (17), but only the weaker (17b).

(17)  Bill said that Mary or Sue has disappeared.
       a. Bill said that Mary and Sue did not both disappear.
       b. Bill did not say that Mary and Sue both disappeared.

Sauerland (2004) suggests that in many cases such stronger implicatures may result from reasoning about the attitude under discussion. For example, one typical reason for asserting (17) is that Bill made an utterance equivalent to (18).

(18)  Mary or Sue has disappeared.

If we assume that he was following Gricean maxims when he made this utterance, we may then infer that he is certain not both disappeared. How such second-order reasoning could be made a part of Sauerland's formal theory is unclear. Also unclear is whether such reasoning can plausibly be extended to cases of sentence-embedding predicates that describe mental attitudes as opposed to speech acts.

# 3 Extending/amending Chierchia's theory to the case of *sorry* and *exactly two*

## 3.1 A bit more on the data and Chierchia's predictions

(18)  Mary is certain that some students passed.

    Mary is certain that not all students passed.

(19)  Mary discovered that some students passed.

    Mary discovered that not all students passed.

Simons (2006) and Russell (2006) note with respect to (19) that the local implicature may be cancelled while the common ground one (that not all students passed) remains. This is a puzzle for Chierchia.

   Another potential problem (discussed by Simons): Chierchia points to a connection between cancellation of local implicatures and NPI licensing: operators that cancel local implicatures (e.g., negation) license (weak) NPIs.

(20)  *John is certain that he ever proposed to Mary.
(21)  John is not certain that he ever proposed to Mary.
(22)  #John doubts that the boss or his assistant, or both, have disappeared.

(23) John doubts that he ever proposed to Mary.

In view of this, the behavior of predicates such as *sorry* is especially interesting, because they do license NPIs, despite the fact that the implicatures it generates are not exactly the same as the ones generated by *not* and *doubt*.

(24) John is sorry that he ever proposed to Mary.

Simons takes these predicates to be counter-examples to Chierchia's theory. Our position is different: we subscribe to the view (Kadmon and Landman 1993, von Fintel 1999) that *sorry* is a Strawson DE predicate, with the meaning in (25).

(25) $[\![sorry]\!] = [\lambda p \in D_{<s,t>} . \lambda x \in D_e . \lambda w \in W :$ (i) p(w)=True, and (ii) $DOX_w(x) \subseteq \{w' \in W: p(w')=True\} . DES_w(x) \subseteq \{w' \in W: p(w')=False\}]$

(26) f Strawson-entails g iff for every X s.t g(X) is defined, f(X) ==> g(X)
     ('==>' stands for cross-categorial entailment; see von Fintel 1999)

(27) John is sorry that Mary hates professors.
     John is sorry that Mary hates linguistics professors.

Given this assumption, the pair of meanings associated with *John is sorry that the boss or his assistant have disappeared* is the one give in (28).

(28) a. $<[\lambda w \in W:$ (i) the $boss_w$ or his $assistant_w$ $disappeared_w$ and (ii) $DOX_w(John) \subseteq \{w' \in W:$ the $boss_{w'}$ or his $assistant_{w'}$ $disappeared_{w'}\}$ . $DES_w(John) \subseteq \{w' \in W:$ the $boss_{w'}$ or his $assistant_{w'}$ have not $disappeared_{w'}\}]$, $[\lambda w \in W:$ (i) the $boss_w$ or his $assistant_w$ $disappeared_w$ and the $boss_w$ and his $assistant_w$ have not $disappeared_w$ and (ii) $DOX_w(John) \subseteq \{w' \in W:$ the $boss_{w'}$ or his $assistant_{w'}$ $disappeared_{w'}$, and the $boss_{w'}$ and his $assistant_{w'}$ have not both $disappeared_{w'}\}$ . $DES_w(John) \subseteq \{w' \in W:$ it isn't the case that the $boss_{w'}$ or his $assistant_{w'}$ have $disappeared_{w'}$, and the $boss_{w'}$ and his $assistant_{w'}$ have not $disappeared_{w'}\}]>$

   b. <'John is sorry that the boss or his assistant disappeared', 'John is sorry that the boss or his assistant, but not both, have disappeared'>

Neither member of the pair is stronger than the other. So while it is true that Chierchia's theory makes no predictions regarding *sorry*, it isn't true that it makes wrong predictions. The same state of affairs holds for the non-monotonic *exactly two*. The pair of meanings associated with *Exactly two men are certain that the boss or his assistant have disappeared* is the one given in (29).

(29) <'exactly two men are certain that the boss or his assistant have disappeared', 'exactly two men are certain that the boss or his assistant, but not both, have disappeared'>

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## 3.2 The proposal

(A)    "Strengthened" meanings are generated as suggested in Gajewski 2001.

Gajewski suggests that the strong meaning of a sentence S is equivalent to the plain meaning of S conjoined with a set of propositions U, where U contains alternatives to S in which exactly one of the scalar terms in S has been locally strengthened.

(B)    A pair of meanings is generated separately for presuppositions and assertions. In each case, the stronger member is selected.

(30)    John is sorry that the boss or his assistant have disappeared.
Presupposition pair: <John knows that the boss or his assistant have disappeared, John knows that the boss or his assistant, but not both, have disappeared>
Assertion pair: <John wishes [NOT the boss or his assistant have disappeared]; John wishes [NOT the boss or his assistant but not both have disappeared]>

(31)    Mary discovered that some students passed.
Common ground pair: <Some students passed; some, but not all, students passed>
Presupposition pair: <Mary used to not know that some students passed; Mary used to not know that some, but not all, students passed>
Assertion pair: <Mary now knows that some students passed; Mary now knows that some though not all students passed>

Chierchia's account of the local implicatures of *certain*, and his account of the cancellation of these implicatures by *not* are unaffected by our proposed qualification. This is because "classical" entailment implies Strawson-entailment.

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Negation and Polarity:
The View from Child Language

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**Abstract**

A recent study by Hulsey et al. (2004) argued that scope resolution is largely determined by contextual factors. A different view was defended by Musolino and Lidz (2004), which reaffirmed the primary role of syntactic factors. We highlight several theoretical and empirical shortcomings of the critique offered by Musolino and Lidz (2004) and we show how the available data are accounted for by Hulsey et al.'s model.

# 1 Scope in Child Language: The Observation of Isomorphism

Much recent work on children's interpretation of sentences containing negation draws upon work of Musolino (1998). That study investigated English-speaking children's interpretation of several constructions. The sentences which yielded the clearest difference in behavior between children and adults are reported below.

(1)     Every horse didn't jump over the fence.
(2)     The detective didn't find some guys.
(3)     The detective didn't find two guys.

The research question that Musolino (1998) and others have addressed is whether young children are capable of accessing both the surface scope (isomorphic) and the inverse scope (non-isomorphic) interpretation of sentences like the ones above.

The experimental evidence collected by Musolino (1998) suggests that for the sentences in (1)-(3), 4- and 5-year old children consistently resort to their surface scope interpretations. Crucially, across all of the experiments conducted by Musolino, children's behavior runs counter to a strategy that is accepted by most psycholinguistic researchers: namely, the bias to access an interpretation that makes the sentence true. We will adopt the term Principle of Charity for such a bias (see Grice, 1975). The hypothesis offered by Musolino (1998) is that children access the surface scope interpretation for all of the sentences that adults interpret on their inverse scope interpretation. This is the Observation of Isomorphism.

## 2 Scope in Child Language: The Role of Context

The first piece of evidence against the view of Isomorphism proposed by Musolino (1998) comes from Gualmini (2004a,b). Gualmini drew upon the observation that sentences containing negation ordinarily are used to point out a discrepancy between an expected outcome and the actual outcome (see Horn, 1989; Wason, 1965, 1972). In order to evaluate the role of expectations, Gualmini presented children with stories in which a character had a task to carry out. In one of the trials, children were told a story about a troll, who is supposed to deliver four pizzas to Grover. Unfortunately, on the way to Grover's house two pizzas fall off the delivery truck, and the troll only manages to deliver two pizzas. Children were then asked to evaluate (4) or (5).

(4)     The troll didn't deliver some pizzas.
(5)     The troll didn't lose some pizzas.

Notice that both (4) - (5) are true in the context under consideration on the inverse scope interpretation. The two sentences differ in appropriateness, however. Whereas (4) points out that the troll failed in carrying out his task, upon hearing (5) the hearer has the impression that the speaker is not addressing what's at stake. Gualmini (2004a,b) suggested that this difference has an effect on children's responses. Thirty 4- and 5-year-olds participated in the experiment. Children accepted sentences like (4) in 54 out of 60 trials (90%) but they accepted sentences like (5) only in 30 out of 60 trials (50%). More recently, Gualmini, Hacquard, Hulsey and Fox (2005) have shown that the very same contextual maneuver discovered by Gualmini (2004a,b) also leads children to access the inverse scope interpretation of sentences equivalent to (1) and (3).

## 3 The Question-Answer Requirement

A recent proposal by Musolino and Lidz (in press) and attempts to analyze the data as resulting from two factors: a preference for surface scope interpretations and a preference for true interpretations. Specifically, the former factor is supposed to take precedence over the latter. On this view, the cases in which children indeed manage to access true inverse scope interpretations represent the exception. In these cases, the context provides children with an extra-cue which allows them to override their default preference for surface scope interpretations.

    In an attempt to study the role of context, Hulsey et al. (2004) designed an experiment to assess the relative ranking of the factors that influence children's interpretation. Their study provides us with a significant contribution to the current

debate. First, Hulsey et al. (2004) demonstrate that, in certain contexts, English-speaking children access the *inverse* scope interpretation to a larger extent than adults.

Most importantly, the study reported in Hulsey et al. (2004) developed a new model of scope resolution which makes reference to independently motivated principles of communication. According to this model, which Hulsey et al. (2004) call the Question-Answer requirement (hereafter QAR), children select the scope assignment which allows them to address the Question under Discussion (QUD). Focusing on 'yes/no' questions, the case which is most relevant for studies employing the Truth Value Judgment task, an interpretation addresses a question, if that interpretation entails the proposition that is being questioned or the negation of that proposition. According to this model, what is relevant in the pizza story used by Gualmini is the troll's task. At the end of the story, one wants to know whether the troll has carried out his task or not. This is equivalent to asking the 'yes/no' question "*Did the troll deliver all the pizzas?*" Notice that either scope assignment of (4) entails an answer to that question. Since the Question-Answer requirement is satisfied by either scope assignment, children can make use of the Principle of Charity and select the interpretation that makes the target sentence true, namely the inverse scope interpretation. By contrast, consider (5). In this case, only the surface scope interpretation addresses the contextually relevant question, and that interpretation is selected, even though it leads to a violation of the Principle of Charity.

A prediction of the QAR model is that, for any given context and for any given predicate, children will prefer the same interpretation, regardless of whether it amounts to surface scope or inverse scope. Hulsey et al. corroborated this prediction in an experiment testing children's interpretation of (6) and (7), in the same contexts investigated by Gualmini (2004a,b).

(6)     Some pizzas were not delivered.
(7)     Some pizzas were not lost.

The results show that all English speaking children accepted (6), but half of them rejected (7). In particular, half of the subjects interviewed by Hulsey et al. (2004) rejected (7) on the grounds that some pizzas were indeed lost, thereby accessing the inverse scope interpretation of (7) (i.e., *it is not the case that some pizzas were lost*). As predicted by the QAR, the rate of rejection for (7) closely mirrors the rate of rejection for (5) documented by Gualmini (2004a,b).

## 4 A Challenge to the Question-Answer Requirement

The most recent contribution to the debate is due to Musolino and Lidz (2004), who take issue with the QAR model. The first criticism offered by Musolino and Lidz

(2004) is that the Question-Answer requirement does not make the right predictions for quantifiers other than *some*. While it is true that not all of the predictions of QAR had been investigated by Hulsey et al. (2004), we should not take the absence of data as disconfirming data. In fact, a further study by Gualmini et al. (2005) showed that, just like in the case of (4), a context which makes prominent the relevant question will lead children to access the inverse scope interpretation of sentences equivalent to (1) and (3).

A second criticism offered by Musolino and Lidz (2004) is that the QAR does not account for some of the data described by Musolino (1998). In particular, they consider Musolino's experiment on children's interpretation of (1). Musolino and Lidz (2004) set out to offer a charitable rendering of how previous data could be explained by the QAR, by considering whether *any* question would account for the data, according to the QAR model. In particular, they consider to which extent the two interpretations of (1), address the question in (8):

(8)      Will any of the horses jump over the fence?

This is what Musolino and Lidz (2004, p.8) write:

> "Suppose now that (12b) [(8)] is the QUD. In this case, (…) (13a) [i.e., the inverse scope interpretation of (1)] entails the Yes answer to (12b) (8)], and (13b) [i.e., the surface scope interpretation of (1)] entails the No answer."

This claim is incorrect unless we are ready to abandon the distinction between entailment and implicature. The inverse scope interpretation of (1) may *implicate* a 'yes' answer to (8), but there is no entailment. Crucially, however, Hulsey et al. (2004) explicitly define good answers in terms of entailment and in fact argue that children could not make use of implicatures to address the QUD.

The third criticism offered by Musolino and Lidz (2004) that we would like to mention here relates to how one determines the relevant Question under Discussion. Musolino and Lidz (2004, p. 7) claim:

> "The fact that any set of events is compatible with a range of descriptions, and hence a range of possible questions about those events, illustrates a fundamental problem for QAR: how does one determine what the QUD should be?"

This criticism raises an interesting point: there is no good theory of what makes a question salient in a given context. Nevertheless, Hulsey et al. (2004) offer one proposal and argue that the Condition of Plausible Dissent proposed by Crain, Thornton, Boster, Conway, Lillo-Martin, and Woodams (1996) plays a role in shaping the possible answers, and consequently, the possible Question under

Discussion. Musolino and Lidz (2004) do not offer any evidence to disconfirm this hypothesis. Furthermore, one should not see Hulsey et al.'s failure to understand what questions are made salient in any given context as a failure of the theories that explain how those questions could guide ambiguity resolution. By those standards, one would need to reconsider all of the phenomena for which context has been shown to matter.

A final criticism for the QAR is presented in Lidz and Musolino (in press). These authors draw upon findings documenting children's ability to access the inverse scope interpretation of (1) in a context in which all horses jumped over the log before two of them jump over the fence as well. This is what Lidz and Musolino (in press, p. 38-39) write:

> "…, the fact that inverse scope can be primed, leading to improved access to nonisomorphic readings in the absence of contextual support (Viau, Lidz and Musolino 2005), suggests that it is not discourse properties alone that are responsible for children's isomorphic behavior with indefinites or more generally."

We should accept this conclusion with caution. In essence, Lidz and Musolino (in press) are attempting to adjudicate between different theories of scope resolution, something we don't fully understand, by means of a phenomenon we understand even less. The results documented by Viau et al. (2005) demonstrate that inverse scope interpretations can be primed. The question is what primes inverse scope interpretations in the study by Viau, Lidz, and Musolino (2005). The answer is quite simple: we don't know. We do know that syntactic scope is *not* at a possible candidate, since children only hear both scope bearing elements in the target sentence. Furthermore, in absence of an explicit theory of priming, we can't exclude the possibility that the context primes the relevant question.

## 5 Conclusion

To sum up, the objections raised by Musolino and Lidz (2004) miss the mark. A convincing critique of the QAR would be most welcome in the present stage. The same goes for new experiments testing the predictions of QAR. To date, however, the model proposed by Hulsey et al. (2004) remains valid.

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Negation and Downward Entailingness:
Consequences for Learnability Theory

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**Abstract**

In this paper we study a semantic learnability problem, first identified by Crain et al. (1994), concerning the acquisition of ambiguous sentences where one reading truth-conditionally entails the other. We demonstrate that sentences containing downward entailing operators provide children with truth-conditional evidence that would allow them to solve the learnability problem discussed by Crain et al. (1994).

# 1 A learnability problem in the acquisition of semantics

This paper is concerned with a semantic learnability problem. The problem, originally identified in Crain et al. (1994), concerns the acquisition of so-called *privative* ambiguities, that is, ambiguous sentences where one reading truth-conditionally entails the other. Suppose that at a certain stage of language acquisition a child has learned the strong, entailing interpretation of such a sentence, but has not acquired the weak, entailed interpretation. Plausibly, the child could acquire the weak reading when exposed to an utterance of the sentence in a situation where only the weak reading is true, provided the child considers the speaker truthful and reliable. But a child who at some stage has learned only the weak interpretation of a sentence would not be able to access analogous, purely truth-conditional evidence for the strong reading Since the strong reading entails the weak reading, there are no situations in which only the strong reading is true. So in such a case, it would be unclear how the child's linguistic experience might ever provide evidence for the availability of the strong reading. We will refer to this learnability problem as the *entailment problem*.

We agree that the entailment problem is indeed a potential problem facing the child in the course of language acquisition. However, Crain et al. (1994) and Crain and Thornton (1998) argue that this problem would be *unsolvable* if language learners ever had to face it and they accordingly suggest that the Language Acquisition Device is designed to ensure that the problem in question never arises in the first place. More precisely, according to Crain et al. (1994), the Language Acquisition Device prevents children from positing only a weak reading of a

potential privative ambiguity, ensuring that the strong reading is always learned first. Crain et al. (1994) refer to this constraint as the *Semantic Subset Principle*.

## 2 Solving the learnability problem

We would like to argue that the introduction of the Semantic Subset Principle is insufficiently motivated. We believe that the claim that the entailment problem is unsolvable ignores conceivable solutions that may well be open to the child. Below we will first describe a solution that applies in certain special cases. We will then present a more general solution that applies in all cases, a solution that exploits children's knowledge of the semantics of downward entailing expressions.

We start by discussing a specific case of privative ambiguity which has been used to motivate the Semantic Subset Principle in the literature. We will argue that a particular feature of the ambiguity in question could allow the child to solve the instance of the entailment problem at hand, and hence that this particular type of ambiguity, at least, does not establish the need for the Semantic Subset Principle.

Sentence (1) below, discussed in Musolino (1998) and Musolino, Crain and Thornton (2000), permits two readings that differ as to the relative scope of the two operators in the sentence.

(1)     Every horse didn't jump over the fence
(2)     a.     Every horse is such that it did not jump over the fence
        b.     Not every horse jumped over the fence

For English-speaking adults the sentence in (1) is ambiguous between the (dispreferred) surface scope interpretation in (2)a and the (preferred) inverse scope interpretation in (2)b. The ambiguity is privative, with (2)a entailing (2)b. Musolino et al. (2000) accordingly argue that children would not be able to acquire it if their initial hypothesis only included the weak reading in (2)b.

We are not convinced by Musolino et al.'s argument. We think children might plausibly avail themselves of pragmatically-inferred information content to switch from a grammar that only has the reading in (2)b to a grammar that has both readings. As extensively discussed in the literature (e.g. Horn, 1989), negated universal statements typically carry a so-called scalar implicature, a kind of generalized conversational implicature in the sense of Grice (1989). Specifically, the reading in (2)b implicates that some horses did indeed jump over the fence. Therefore, a child who has a complete grasp of the meaning and use of sentence (1) in reading (2)b could after all find evidence for the existence of the additional reading (2)a when hearing (1) in a context in which no horse jumped over the fence.

One comment on the proposal above is in order. Children's computation of scalar implicatures is the subject of a rapidly growing body of research (for a recent

review see Guasti, Chierchia, Crain, Foppolo, Gualmini and Meroni, 2005). A frequent finding is that children do not compute implicatures to the same extent as adults. As a consequence, if a child were to initially acquire only the weak reading, he might not be able to access the solution described above until relatively late. However, this should not be taken as evidence against our proposal. At most, they could be taken as evidence against the claim that children go through the relevant acquisition scenario in the early stages of language development. This is not our claim, however. Our claim is simply that children *could* acquire the strong reading of a privative ambiguity after learning the weak reading. It might take them a long time, but the possibility cannot be excluded on logical grounds.

Thus far we have illustrated how children could use pragmatic knowledge to solve a particular instance of the entailment problem. A question that remains is whether one can find a conceivable solution to the entailment problem that could apply to all instances of the entailment problem and that makes use of purely semantic truth-conditional evidence. We propose that such a solution indeed exists: sentences containing a downward entailing operator could provide children with indirect truth-conditional evidence allowing them to solve the entailment problem.

We illustrate the proposal with an ambiguity attested in sentences containing the focus sensitive operator *only*. Crain et al. (1994) point out that the two readings of (3) give rise to a privative ambiguity, as (4)a entails (4)b.

(3)     The dinosaur is only painting a house
(4)     a.     painting a house is the only thing that the dinosaur is doing
        b.     a house is the only thing that the dinosaur is painting

According to Crain et al. (1994), a child who has only learned the strong, wide-focus reading (4)a could find direct truth-conditional evidence for the weak, narrow-focus reading (4)b through exposure to (3) describing a scenario where the dinosaur is both painting a house and, say, eating a sandwich. But the reverse order of acquisition would run into the entailment problem, that is, no direct truth conditional evidence for the existence of the strong reading (4)a can possibly be available to a child who has only acquired the weak reading (4)b.

Our proposal draws upon the well-known observation that the vocabularies of natural languages contain so-called downward entailing (DE) operators, operators that reverse entailment relations among their arguments. It is conceivable that sentences containing such DE operators provide children with indirect truth-conditional evidence allowing them to acquire a strong reading after having first learned the weak one. To illustrate, consider (5), the negated version of (3).

(5)     The dinosaur is not only painting a house
(6)     a.     painting a house is not the only thing the dinosaur is doing
        b.     a house is not the only thing the dinosaur is painting

Negation being a DE operator, it reverses the direction of entailment between the narrow and wide focus readings. While the wide focus reading in (4)a entails the narrow focus reading in (4)b, the wide focus reading in (6)a is entailed by the narrow focus reading in (6)b. Therefore, a child might use purely truth-conditional evidence to acquire the wide focus reading of (5) after first having learned the narrow focus reading. All the child would need to hear is (5) in a context in which the dinosaur is both painting a house and, say, eating a sandwich, the very same type of context that, according to Crain et al. (1994), a child would need to learn that (3) is ambiguous.

Suppose now a child has learned only the weak, narrow focus, reading of (3). Assuming the child has mastered the DE semantics of negation, he will thereby also have acquired the strong, narrow focus, reading of (5). As demonstrated above, purely truth-conditional evidence could then permit the child to add the weak, wide focus, reading of (5). Under the plausible assumption that an ambiguity that exists in the presence of a higher DE operator is also available in the absence of that operator, the child will then have acquired the strong, narrow focus, reading of (3). In other words, the child will have solved an instance of the entailment problem.

The mechanism described above is completely general. In particular, it applies to scope ambiguities of the sort illustrated by sentence (1) above. The only remaining question is then whether sentences with DE operators that would point a child in the right direction indeed occur in the child's input. A quantitative analysis of the input available to children is beyond the scope of this paper. Nevertheless, we have reasons to believe that the relevant data do in fact exist. We are led to this belief by a proposal which is also due to Crain et al. (1994). As we saw, these authors argued that learnability demands force children to start off from the strong reading of potential privative ambiguities. A second point offered by Crain et al. (1994) concerns adults. Crain et al. (1994) argue that the resolution of privative ambiguities in adults is governed by a principle that leads them to prefer weak readings. They call this the Principle of Parsimony. The fact that adults prefer to use the relevant sentences on exactly those readings that children need to acquire ensures that children will receive robust evidence for such weak readings. Note now that the Principle of Parsimony can play exactly the same role in the alternative acquisition scenario that we have envisioned. We have argued that children could use indirect truth-conditional evidence to add the strong reading to the weak reading of a potentially ambiguous sentence. In particular, children would need to hear a sentence in which the relevant construction is in the scope of a DE operator and the intended reading is generated by the same mechanism that would generate the strong reading of the original construction. Crucially, however, this amounts to the weak reading of the construction containing the DE operator. Unless we have reasons to believe that adults' preference for weak readings doesn't carry over to sentences containing an additional downward entailing operator, we must conclude that the required evidence would indeed be available.

Furthermore, we are encouraged by the results of an informal internet search for scopally ambiguous sentences of the type exemplified by sentence (1) above. The search returned many such sentences. Two relevant examples are presented in (7).

(7)    a.    "There is absolutely no question in my mind that this is the proper way to handle bone growth in young horses," said Fisher. "It's not a guarantee that every horse won't buck his shins because there's an exception to every medical rule.
             www.ctba.com/00magazine/oct00/news2.htm
       b.    No big deal, because it's not as though every person didn't get it, but I hope people figure this out.
             theconstructivecurmudgeon.blogspot.com/2006/04/gospel-of-brutus-evolutionary.html

In both cases, the surface scope reading is clearly intended by the writer, as the reading where *every* takes inverse scope under negation is too strong to be pragmatically consistent with the context provided. Thus, the inverse scope reading of (7)a would convey that every horse might buck his shin, and the inverse scope reading of (7)b, that every person got the point. Cases of this sort, then, could in principle help children solve the particular instantiation of the entailment problem posed by sentences like (1), that is, they could allow children to acquire the surface scope reading in (2)a after initially having learned the inverse scope reading in (2)b.

Let us summarize the proposed mechanism. Given a sentence S and two logically possible readings $S_A$ and $S_B$, where $S_A$ entails $S_B$, we have argued that children could acquire both readings on the basis of truth-conditional evidence, regardless of which reading was posited first. If the child's first hypothesis is that only $S_A$ is available, then all the child needs to experience is an utterance of S in a context in which reading $S_A$ is false, but $S_B$ is true. By contrast, if the child's first hypothesis is that only $S_B$ is available, then evidence for the existence of $S_A$ might come from an utterance of the form $OP_{DE}S$. In this case the mechanisms that generate $S_A$ and $S_B$ would generate $OP_{DE}S_A$ and $OP_{DE}S_B$ respectively, where $OP_{DE}S_B$ entails $OP_{DE}S_A$. In this case, the child could receive truth-conditional evidence in favor of $OP_{DE}S_A$. Then, the child would need to infer that the mechanism that generates $OP_{DE}S_A$ would also be available for the original sentence S, thereby acquiring $S_A$.

We note again that the two paths to the acquisition of privative ambiguity are on equal footing in that by the Principle of Parsimony, the weak reading that the child is assumed to add later ($S_B$ or $OP_{DE}S_A$) is predicted to be adults' preferred reading of the relevant sentence (S or $OP_{DE}S$), which in both cases increases the likelihood of the relevant data being in the child's input. Finally, we note that, if S can have the strong reading $S_A$ but, at the same time, reading $OP_{DE}S_A$ was unavailable for any sentence $OP_{DE}S$, the mechanism we have proposed would fail. However, we are not at present aware of any case of this sort.

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# 3 Conclusion

We have argued that DE operators provide a solution to the putative learnability problem that the Semantic Subset Principle is expected to prevent. The availability of sentences containing DE operators coupled with children's knowledge of downward entailment (see Gualmini, 2003; Gualmini and Crain, 2005) ensures that children could arrive at the conclusion that any given sentence is ambiguous, regardless of what the initial assumption might be. In particular, even when the two readings are related by entailment, either reading could constitute the child's first hypothesis.

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Forms of Negation in Polar Questions

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**Abstract**

In order to examine the controversially discussed (Romero and Han, 2004; Büring and Gunlogson, 2000; van Rooy and Safarova, 2003) meaning of negated polar questions, we have conducted experiments. The results indicate that one kind of negation in polar questions contributes a presupposition that the speaker believes in the truth of the positive proposition. Furthermore, a second kind of negation has the effect that the question is about a negated proposition. What is common to both kinds of negation is that they need a proper context in order to be felicitous.

# 1 Introduction

There is a general agreement that a semantic theory of questions needs to account for the diversity, which exists between the different subtypes of polar questions. It is obviously not sufficient to assume the same meaning for both positive and negative polar questions. The semantic theory of questions (Groenendijk & Stokhof, 1984; Hamblin, 1973), however, predicts all yes/no-questions to denote the set of possible answers *{that p, that not-p}*. This is demonstrated by the examples in 1) and 2) and their denotation in 3).

    1) Is Jane coming?
    2) Is Jane not coming?
    3) Denotation for 1) and 2): {that Jane is coming, that Jane is not coming}

On the other hand, the typology of negated polar questions and what they convey has been controversially discussed in the literature. Ladd (1981) suggests that these questions are ambiguous between an inner (INPQ) and outer (ONPQ) negation reading. A y/n-question with an inner negation questions the negative proposition while a y/n-question with an outer negation questions the positive proposition. Buering and Gunlogson (2000) (B&G) take up this suggestion and introduce a typology of polar questions, which comprises positive and negative ones with the negative polar questions being subdivided into INPQs and ONPQs. B&G assume all negative questions to convey the implication[1] that the speaker believes in the truth of the positive proposition. Further on, Romero and Han (2004) (R&H) expanded the typology and restricted the ambiguity to preposed negation questions (4 and 5). That is, preposed negation questions are ambiguous

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[1] However, the implication of ONPQs is suggested to be stonger than the implication of INPQs

in that they either question the positive proposition or the negative proposition. The reading of a preposed negation question can be disambiguated by the use of *either* and *too*.

      4) Isn't Jane coming too?
      5) Isn't Jane coming either?
      6) Is Jane not coming?

Their typology of negated questions includes NI-questions (≈Ladd's INPQs – 5)), PI-questions (≈Ladd's ONPQs – 4)) and non-preposed negation questions (6). Moreover, they assume NI-questions and PI-questions to contribute an implicature, which says that the speaker has the positive belief that e.g. for 4) and 5), Jane is coming. It is argued that non-preposed negation questions do not convey a speaker's belief. Finally, van Rooy and Safarova (2003) (vR&S) argue that the assumption of an ambiguity pertaining to polar questions should be abolished.

The diverging opinions on the typology and meanings of negated polar questions call for empirical clarification before we are able to suggest a way of theoretically differentiating the different subtypes of polar questions.

## 2 Rating Studies

In the following we will report on the results of experiments carried out to decide between the different opinions on English polar questions. More precisely, we want to find out whether high negation polar questions require the belief of the speaker that the positive proposition is true; whether English high negation polar questions are indeed ambiguous between questioning the positive and questioning the negative proposition; and whether the type of negation (*n't* or *not*) does have an effect on the meaning of a y/n-question.

### 2.1 Experimental Design and Material

Native speakers were asked to rate the naturalness of preposed and non-preposed negation questions in controlled contexts.

The four versions of the English questionnaire were built from eight different lexical items, six different context types and five different question types and included ten filler sequences. For every lexical variant there were 16 conditions. Each of the four versions of the questionnaire was seen by a different group of the 25 raters. For the purposes of this paper, we consider the following conditions:

- Questions with preposed negation/non-preposed negation and *too*[2] in contexts with or without the positive speaker´s belief
- Questions with preposed negation/non-preposed negation and *either* in contexts with and without a positive speaker`s belief

The contexts differed regarding two parameters. Firstly, the contexts included either the speaker's belief that *p* is true; or it indicated that the speaker did not have any belief in terms of the proposition *p*.

The other factor refers to the contextual requirements of *either* and *too*. Note that the question *Is Jane not coming either?* presupposes that somebody else beside Jane is not coming; the question *Is Jane coming too?* presupposes that somebody else beside Jane is coming. Either the statement immediately preceding the question at issue fulfilled the presupposition of a question with *too* or it satisfied the presupposition of a question with *either*.

The appearance of the questions also varied in terms of two parameters. Questions contained either *n't* or *not* and either *either* or *too*. *Too* and *either* had their focus consistently on the subject of the question.

A context was combined with a question if they agreed in the usage of a certain item: A question with *either* was only seen in a context which was in accord with the presupposition of *either*; a question with *too* was only seen in a context which was in accord with the presupposition of *too*.

## 2.2 Results

Considering the results for *either*-questions in contexts with and without a positive speaker´s belief, the ANOVA yields a statistical main effect for NEGATION TYPE (*F1 (1,24)=9.120; p=0.006; F2 (1,7)=16.741; p=0.005*). Preposed negation questions with *either* receive significantly lower ratings than non-preposed negation questions. Since there is no effect of the speaker's belief, there is no evidence that negated questions with *either* presuppose a speaker's belief. Turning to the questions with *too,* questions within contexts with a speaker's belief demonstrate higher ratings than questions within contexts without a speaker's belief. There is a statistical main effect of SPEAKER´S BELIEF (*F1 (1,24)=7.941; p=0.010; F2* (1,7)=5.914; p=0.045). Furthermore, questions with preposed negation receive higher values than questions with non-preposed negation. The statistical main effect of NEGATION TYPE is highly significant (F1 (2,48)=12.732; p< 0.001; F2 (2,14)=17.748; p<0.001).

## 2.3 Discussion

The missing effect of SPEAKER´S BELIEF on the ratings of preposed negation questions with *either* implies that these questions with *either* do not presuppose

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[2] According to R&H, polar questions containing *too* clearly question the positive proposition while questions containing *either* unambiguously question the negative proposition.

the presence of a positive speaker's belief. The main effect of NEGATION TYPE along with the low ratings suggest that preposed negation questions with *either* are evaluated as being less natural than their non-preposed negation counterparts. A possible explanation of the missing effect of the speaker's belief on preposed negation questions is that preposed negation questions with *either* are inherently marked so that the speaker's belief in the context might not be able to improve their status.

The effect of NEGATION TYPE might to be due to *either* demanding a non-preposed negation. We may thus attribute the low ratings of preposed negation questions to that *either* makes a difference between preposed negations and low negations and prefers to appear in questions with low negation. There is actually no other reason for this pattern, since the conditions of preposed negation questions with *either* and low negation questions with *either* were identical except for the position of the negation. In addition, the preposed negation questions with *too* received significantly higher ratings than preposed negation questions with *either,* so that the low ratings of preposed negation questions with *either* cannot be due to a general rejection of preposed negation questions in written language.

Turning to the results of the *too*-questions, the ratings of preposed negation questions containing *too* are in significant excess of the ratings of their low negation counterparts. Hence, there is evidence that low negation questions are marked if containing *too* and that preposed negation questions are marked if containing *either*. Considering this pattern, we would like to suggest the following explanation: Preposed negations are so high within the syntactic structure that *either* has to adjoin to a positive proposition and the question is thus marked. Questions with the negation above *too* within the syntactic tree are unmarked because *too* can take a positive proposition as preferred. 7) illustrates this[3].

7) Isn't John coming too/*either?        8) Is John not coming either/*too?
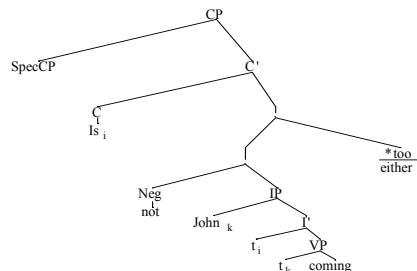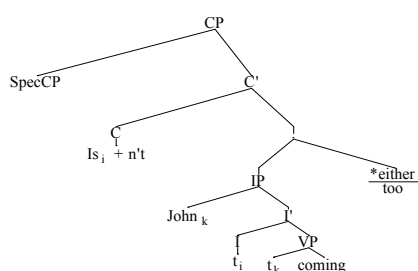


If the negation is low, questions comprising *too* are marked because *too* had to attach to a negative proposition. This might be the causal factor for the

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[3] The negation might have originated in NegP but it is beyond the scope of this paper to discuss the syntactic position of the negation.

ungrammaticality of the question in 8) if containing *too*. If containing *either*, the question in 8) is unmarked because *either* can take a negative proposition as required.

The pattern which *too* and *either* demonstrate suggests that English comprises two different kinds of negation in polar questions. The two types of negation are disambiguated by their syntactic position plus morphology as well as by the behavior of *too* and *either*. The low negation type is used in order to ask about *not-p* no matter whether the speaker has a certain belief about *p*.

Since *too* is known to adjoin to positive propositions while *either* is said to require a negated proposition, we want to argue that preposed negation questions differ from positive questions only in that they convey a positive belief of the speaker. Therefore, it is necessary to specify a special meaning for preposed negations while low negations are treated as taking a positive proposition and yielding its complement as usual. *N′t* – as it occurs in questions - is a presuppositional operator, which we will call *n'tPrO* (PrO = presuppositional operator). Simply put, *n'tPrO* contributes the presupposition that the speaker believes that the complement of *n't*, that is p, is true. The meaning of *n'tPrO* is given in 9). We further assume that *n'tPrO* requires being in the scope of the question operator Q since it can only occur in questions (10). Considering the application of Q to the proposition in the scope of *n'tPrO*, it turns out that Q skips *n'tPrO* and applies to the proposition without even noticing *n'tPrO*. The question operator is a *hole* to the presupposition projection (Karttunen, 1973). Consequently, we assume the whole meaning of a question containing *n'tPrO* to consist of two parts evaluated on different levels. On the presuppositional level (PL) - 13), we add that the speaker believes in p. On a strictly semantic level - 12), the question operator is applied to the proposition just as in any other question and yields *{that p, that not p}*.

9) $[[n'tPrO]]^{g,w} = \lambda p: \forall w' [w' \in Dox (g(s), w) \rightarrow p(w')] . p$

10) **Licenser of *n'tPrO*:** *n'tPrO* requires being in the scope of Q

11) Isn't John coming?

12) **Denotation**: Q [[John is coming]] = {John is coming, John is not coming}

13) **Presupposition**: s believes that John is coming

In sum, the findings suggest that polar questions with preposed negation usually ask about the positive proposition while low negation questions usually question the negative proposition. This in turn challenges the claim that preposed negation questions in English are ambiguous. If *either* preferably adjoins to the proposition of questions containing a low negation and *too* preferably adjoins to the proposition contained in preposed negation questions, then there is evidence for that high negation questions are not ambiguous. Rather, it seems as if they are merely used to express a positive question, which conveys a positive belief of the speaker.

# 3 Conclusion

The results of the experiment on English negated questions indicate that there are two different kinds of negation in polar questions.

In order to account for the differences between different types of polar questions, vR&S suggested to maintain the semantic denotation as supplied before and allow for differences on another level. We would like to pursue this direction and assume that a high negation question receives the entry that this question presupposes the speaker's belief that the positive proposition is true at the presuppositional level. Furthermore, a low negation question might presuppose that there is a reason for the negation. Finally, positive questions do not receive an entry on the presuppositional level because they can be regarded as the default type of polar questions according to vR&S. In this way, the semantic denotation does not need to be changed. By assuming that different types of polar questions give rise to different entries on the presuppositional level and are thus distinguished from each other, the denotation may remain as supplied before.

Concluding, B&G's typology of polar questions is best conformable with the findings from the experiments. There are two different kinds of negated polar questions. The low negation questions the negative proposition. High negation questions ask about the positive proposition and clearly presuppose that the speaker believes in the truth of the positive proposition. The experimental results do not support R&H's typology, which assumes three types of negated polar questions.

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A new look at Ladusaw's puzzle

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**Abstract**

We argue that the internal semantics of NPIs does not fully explain Ladusaw's puzzle, the question of why NPIs are licensed in downward entailing contexts. Instead, we propose that though it is no accident that NPIs have the semantics they have, ultimately, it is the presence of a syntactic feature that determines whether a semantically predisposed expression is an NPI or not. We spell out the implications of this analysis for the licensing of NPIs and their historical development.

## 1 Introduction

Negative polarity items (NPIs) are generally held to be licensed in downward entailing environments (cf. English *any* in (1)) (Ladusaw (1980); cf., however, Giannakidou (1998) for a different view).

(1)  a.  Negation: I don't have *any* ketchup.

   b.  Universal restriction: Everyone who talked to *anyone* at the party had fun.

   c.  *Without*: He came without *any* friends.

While Ladusaw's generalization has been extremely successful in describing the distribution of NPIs, it does not explain, or pretend to explain, **why** a sentence's entailment pattern should have to do anything with grammaticality or why it should affect the choice between *any* and *some*, for instance. Current discussion of solutions to 'Ladusaw's puzzle', as we will refer to the question, is largely inspired by Lahiri (1998)'s analysis of NPIs in Hindi, by Lee and Horn (1994) and by Krifka (1995).

We first discuss the analyses that try to solve Ladusaw's puzzle in terms of the semantics of the NPIs themselves. We show that these proposals, though they represent important progress, ultimately do not succeed in **completely** explaining why NPIs are only licensed in downward entailing contexts. We consider an alternative proposal that relies on a syntactic feature. We try to show that this kind of approach has more advantages than one might initially assume.

## 2 Challenges for an 'even' account of NPIs

On the version of the 'even' account proposed in Lahiri (1998) the distribtution of Hindi NPIs is elegantly reduced to their internal morphological makeup. Lahiri, following Karttunen and Peters (1975), assumes that 'even' carries the presupposition (implicature) that the element it associates with is the least likely among

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the relevant alternatives. This in combination with low scalar elements denoting quantity (e.g. *one, a bit*) predicts that the relevant expressions are only sensible in contexts where the least quantity counts as the least likely among the alternatives. And this happens to be the case in downward entailing contexts. For instance, since whenever two persons came, one did, it is less likely for one person not to come than it is for two.

Note that on this account the Hindi sentences where an NPI appears in an unlicensed context should strictly speaking not be ungrammatical, but merely pragmatically bizarre, similar to *Even one person came.* It is not obvious that this coincides with speakers' judgements.

Another general question this analysis has to contend with is the fact that there are a great many NPIs that do not seem to contain an instance of 'even', for instance *any* and *ever*. Why are these elements also restricted to downward entailing contexts? On the account in question one could of course propose a tacit 'even' in the relevant cases. But then there would have to be independent evidence for positing it. One might attribute the presence of a tacit 'even' to the element in question being a low scalar element, denoting the bottom rung on a Horn scale (cf. also Fauconnier (1975)). There is, however, no correlation between low scale elements and NPIs: many low scale elements are not NPIs (e.g. *some*) and the 'understating' NPIs (e.g. *much*) are not low scale elements, as shown in Israel (1996).

Even when restricted to those cases where 'even' is morphologically discernible, the analysis in questions has a cost, for it requires 'even' to take scope over the element that creates a downward entailing context. This, it turns out, sometimes requires implausibly high scope for 'even'. On the other hand, if 'even' can take scope in a local fashion below the negative element, then it itself no longer picks out the least likely (or most surprising) among the alternatives, but has a meaning where it picks out the most likely element. Since this kind of reading of 'even' is restricted to downward entailing contexts (Rooth, 1985), this syntactically sound option results in circularity on Lahiri's analysis–the distribution of one NPI is reduced to the distribution of another.

Another argument for not deriving the distribution of NPIs entirely from their internal structure has to do with the historical tendency of NPIs to change to negative elements. This tendency, described as part as part of Jespersen's Cycle, can be observed in the history of English *nobody*, which used to be an NPI but has ceased to be one (at least in standard English). Interestingly, the change is also visible, we argue, in cases where the morphology of the NPI suggests the presence of 'even', as is the case in Modern Hebrew *af exad* 'anyone', which is literally 'even one'. As we show, many young speakers are starting to use these expressions in subject position as negative expressions in their own right, but still continue to use them as NPIs elsewhere. If the NPI distribution depended entirely on the internal structure of the relevant expressions, then, given that the internal structure presumably does not change for individual speakers depending on syntactic environment, this change would be hard to explain.

## 3 A syntactic feature account

In light of the issues just stated we think it is reasonable to set aside Lahiri's elegant account (and similar ones) and conclude instead that whether an element is an NPI or not is ultimately a property that is not determined by its semantics. Instead, we claim that what determines whether an expression has the distribution of an NPI is a morphological feature, which we simply name [+NPI]. It is this feature alone that distinguishes two elements that seem semantically synonymous but where only one is an NPI, e.g. *any* vs. *some* and *ever* vs. *sometime*.[1] Crucially [+NPI] is not a semantic feature (cf. Israel (1996)'s i-value), but a purely grammatical feature. This is so because, as we noted above, there is no way to semantically define the class of NPIs; though a lot of them are low scale elements, not all of them are. Neither are all low scale elements NPIs. On the present account the difference between *some* and *any* does not reside in their truth-conditional meaning, which we assume is identical, but merely due to *any* but not *some* carrying the [+NPI] feature. Since the restriction to downward entailing contexts is no longer viewed as a consequence of the presence of 'even', this analysis is not limited to accounting only for NPIs where the morphology suggests the presence of 'even', which is the vast majority of NPIs. Similarly, the analysis can also account for the existence of 'understating' NPIs like *much*.

The scope problem we noticed earlier also disappears. On the account we are positing the 'even' NPIs in Hindi and Hebrew are restricted to downward entailing contexts for mechanical reasons, because they bear the [+NPI] feature. No longer is there a need to posit that 'even' takes scope over the element that creates the downward entailing context.

Though speakers do not seem to parse the Hindi and Hebrew 'even' NPIs as two separate words, as also noted in Lahiri (1998), it seems likely that initially they were compositionally analyzed, where the 'even' component itself was an NPI, picking out the most likely (or least surprising) among the alternatives, which helps explain why these elements as a unit acquired the [+NPI] feature.

Regarding the change that NPIs are currently undergoing in Modern Hebruew, we can hypothesize that *af exad* is ambiguous in the minds of the relevant speakers between an expression that bears the [+NPI] feature and one where this feature has changed from being a purely morphological feature signalling 'I need a negative context' to a semantically contentful 'I create a negative context'. We believe that this general mechanism also captures what happens during the Jespersen Cycle in other instances, where an element that initially functions as an NPI comes to be a

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[1]Contra Kadmon and Landman (1993), we do not think that *any* differs from a *some* in that *any* induces a widening of the domain of quantification. It seems that the examples in (1a) relate to each other in the same way as the examples in (1b):

(1)    a.   I don't have potatoes./I don't have **any** potatoes.

        b.   I have potatoes./I have **some** potatoes.

negative element in its own right.

# 4 Questions this approach raises

## 4.1 Why are only certain kinds of expressions NPIs?

If what makes an element an NPI is a particular, uninterpretable feature that it bears, as we are arguing, then one question that arises is why only lexical items of a certain type bear this feature. As we noted above, NPIs seem to fall into two classes. Many of them are low scalar expressions (but many low scalar expressions are not NPIs) and some are expressions that correspond to a medium high rung on a Horn scale (understating NPIs like *much*). First, following Jespersen (1917) and many others since him, we want to point out that elements that occupy the bottom part of a scale are functionally useful in negative contexts in that they lead to very strong statements. Thus, saying that one did not read a single page licenses the inference that one did not read anything containing a single page, for instance a chapter or a book. Because of their functional usefulness in downward entailing contexts some of the low scalar expressions seem to become restricted to these contexts. In other words, they acquire the [+NPI] feature.

Whereas low scalar elements lead to strong claims in negative contexts, elements that occupy a place in the upper part of the scale lead to a very weak claim in negative contexts, cf. *I didn't read many books*. Some of these expressions come to be used in downward entailing contexts because they are useful in these contexts insofar as they allow one to make an understated claim rather than an emphatic one, which may be desirable at times. When one says *I didn't like it much*, neo-Gricean reasoning would lead one to infer that the person in question liked it some. This is so because via Quantity the speaker is assumed to have made the strongest possible claim, which in turn leads to the implicature that a higher alternative claim, in this case *I didn't like it to any degree* would be false, implicating the speaker liked it a bit. At the same time, making such a statement can be a way of avoiding strongly negative claims, which is desirable in certain contexts and speech styles. In this case, the implicature is not generated. Rather, it is assumed that something stronger than what was actually said holds, namely that the speaker didn't like it to any degree. Again, given their functional usefulness, some of these expressions come to be restricted to negative contexts.

## 4.2 How the syntactic licensing works

Even though we are arguing that NPIs bear an uninterpretable feature, which needs to be checked, we are not arguing for reinstating a modern day version of Klima (1964)'s analysis. In particular, we do not want to say that the [+NPI] feature is checked in any construct that would directly involve the element that creates the downward entailing context, e.g. a determiner. As shown in Ladusaw (1980) such an analysis has serious difficulties in capturing the difference between *every* and

*no*, in particular the fact that *every* only licenses NPIs in its restriction but *no* does both in its restriction and its scope.

The failure of a Klima style syntactic account does not mean that there is no syntactic account at all to be given of NPI licensing. In fact, Ludlow (2002) offers what seems to be a successful one. His project forms part of a long-standing attempt to explain the syllogism patterns catalogued by medieval logicians in terms of natural language: rather than just specifying the environments in which syllogisms hold, he aims to predict them from the linguistic structures of the sentences involved. He first shows that the class of inferences can be reduced to two rules, the *dictum de omni* and the *dictum de nullo*, which correspond to upward entailment and downward entailment respectively. As a second step, he then argues that if we assume that the logical forms of sentences are represented in the logic of what he calls L\*, then upward and downward entailment can be read off by the number of negations in the scope of which a variable occurs. Finally, he shows how all of this can be done as part of the syntax by assigning elements that create downward entailing contexts particular (pairs of) of negation features which are then checked by operators that correspond to the connectives of L\*. NPIs can therefore be viewed as having features that are checked by a local negation. We would like to briefly illustrate how this works by using two simple examples. First, *some* and *all* are defined as follows:

(2)    a.   Some A is B: $\exists \geq_1 x(A(x) \wedge B(x))$

      b.   All As are Bs: $\forall \geq_1 x(\neg A(x) \vee B(x))$

Taking A to be the restriction and B to be the scope in both sentences, not that neither is in the scope of a negation in the case of *some* and only the restriction is in the case of *every*. Ludlow then proposes a way of mapping these definitions into the syntax. First, he proposes two rules of interpretation under which the quantifiers are eliminated, simplifying the logical forms. The connectives—$\neg$, $\vee$ and $\wedge$— are then associated with operators in the syntax. Each connective introduces a functional projection (PolP or ConjP), and for the derivation not to crash, operators that can check the uninterpretable features introduced by the determiners—[$\wedge$] for *some* and [-restric, $\vee$] for *all*—must appear in those projections. The resulting trees are then:

(3)    a.   $[_{ConjP} [_{NP} n(x), A(x)][_{Conj'} [_{Conj} \wedge] [_{VP} B(x)]]]$

      b.   $[_{ConjP} [_{PolP} [_{Pol'} [_{Pol-} \neg] [_{NP} n(x), A(x)]]] [_{Conj'} [_{Conj} \vee] [_{VP} B(x)]]]$

On this analysis, downward entailing contexts can be discerned from the syntactic tree; any variable in the scope of a local negation is in a downward entailing context. This means that NPIs check their [+NPI] feature against the local negation, thus providing a syntactic analysis that can account for the differences between *every* and *no*.

Finally, we intend to compare the account argued for here with Chierchia (2006) proposal, which also reaches the conclusion that NPIs are marked with uninterpretable features, but for other reasons.

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Polarity and 'Bipolar' Constructions:
Epistemic Biases in Questions

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## Polarity and 'Bipolar' Constructions:
## Epistemic Biases in Questions

## 1. Introduction

The interest of this paper is in questions of knowledge and negation. We will discuss the different representations of epistemic implicatures/biases in polar (or *yes-no*) and bipolar (i.e., A-not-A) constructions by centering around the following two kinds of formation of questions:[1]

A.  Epistemic biases are influenced by the use of PPIs and NPIs, such as *some* and *any*.

B.  Different epistemic biases are contributed by employing pre-posed or non-preposed negation (cf. Romero and Han, 2004).

## 2. Epistemic biases in questions
### 2.1 The patterns of epistemic bias

The patterns of epistemic bias can be briefly illustrated in the following examples. These patterns show that NPIs have the negative-biased force (cf. Ladusaw, 1979; Fauconnier, 1980; Lahiri, 1998), and PPIs possess the positive-biased force.

(1)  a. Has he left <u>yet</u>?                                    (Negative bias)
     b. Has he left <u>already</u>?                               (Positive bias)

(2)  a. Ni        you   tingjian      <u>renhe</u> shengyin   ma?
        You       have  hear          any    sound      Q
        'Have you heard any sounds?'                       (Negative bias)
     b. Ni        you   tingjian      <u>yixie</u>      shengyin    ma?
        You       have  hear          some        sound      Q
        'Have you heard some sounds?'                      (Positive bias)

(3)  a. Isn't it raining?                                        (Positive bias)
     b. Is it not raining?
     c. Is it raining or not?                                    (Neutral bias)

(4)  a. Ni        bu    xihuan      zhe-dong     fangzi      ma?
        You       not   like        this-CL      house       Q
        'Don't you like this house?'                       (Positive bias)
     b. Ni        xi-bu-xihuan      zhe-dong          fangzi?
        You       like-not-like     this-CL           house
        'Do you like this house or not?'                   (Neutral bias)

(1a) with an NPI *yet* conveys a negative implicature that the speaker thinks or presupposes that the person in question hasn't left, while (1b) carries a positive

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[1] In what follows, we attempt to deal with epistemic bias or implicature in nearly context-free conditions, if possible, trying to consider the non-compositional meaning that a sentence itself presents by involving some kind of lexical items, say, polarity items, or due to the different positions of negation. The epistemic bias or implicature that a sentence is claimed to have just means the predominant one that we take into consideration. Any other possibilities are also allowed, but beyond the scope of this paper.

bias triggered by the PPI *already*.   The same pattern is also exhibited by the Mandarin data in (2).   The negative bias may be generated due to the NPI *renhe* involved, while the PPI *yixie* makes clear the speaker's bias towards a positive proposition.   (3a) with the so-called pre-posed negation is argued to be positively biased, and (3c) is obviously neutral.   Whether (3b) is positively biased or not is determined by the stress on the non-preposed *not* (e.g., Han and Romero, 2004).   With respect to negation and epistemic bias in certain interrogative constructions, Mandarin behaves differently from English.   Unlike English, (4a) is positively biased with the negator *bu* staying in situ.   In (4b), the A-not-A constituent is argued to undergo LF-raising to CP (e.g., Hsieh, 2001), conveying a neutral bias, but not a positive one.[2]

## 2.2 Biased questions with polarity items

More patterns of epistemic bias are exhibited as follows.   When biased questions contain a polarity item, the context-changing force of PIs still remains.
(5)   a. Wasn't I right?
        b. Wasn't I right about <u>anything</u> else?   (Huddleston and Pullum, 2002)
(5a) implies a positive bias.   It is changed into a negative one in (5b) when the NPI is added.   The domain-widening resulting from *any* or the compounds formed by *any* creates a stronger or more informative proposition, in which an exhaustive set of alternatives is considered doubtful.   The selection of *anything* causes (5b) to have a negative interpretation.

Different choices corresponding to different discourse considerations generate different results.   PPIs like *some* denote specificity or particularity, probably carrying presuppositions, and contain a collective sense.   Therefore, the positive bias in (6a) would be reinforced by the selection of PPI *something* in (6b).
(6)   a. Didn't you know it?
        b. Didn't you know that <u>something</u> happened last night?

Like the English data (5) and (6), the Mandarin data—(7a) implies a positive bias, which is cancelled by the NPI involved in (7b), but strengthened in (7c), due to the addition of PPI *yixie*.
(7)   a. Zhangsan        mei    bang       ni      mang ma?
          Zhangsan        not     do          you     favor Q
          'Didn't John help you?'
        b. Zhangsan        mei    bang       ni      <u>renhe</u> mang ma?
          Zhangsan        not     do          you     any    favor Q
          'Didn't John give you any help?'
        c. Zhangsan        mei    bang       ni      <u>yixie</u> mang ma?
          Zhangsan        not     do          you     some favor Q
          'Didn't John give you some help?'
The example in (8a) has the negative-bias interpretation that the speaker thinks

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[2] See Hsiao (2006) for the account of the difference between English and Mandarin bipolar constructions, in which a base-generated analysis is argued to apply to Mandarin data, as well as ones in English, to account for the different epistemic effects contributed by the different positions of negation.

the addressee did not hear any sounds, and the NPI underlined in (8b) reinforces this interpretation. This negative interpretation would be cancelled by the PPI in (8c).

(8)   a. Ni       zhende   you      tingjian   shengyin  ma?
           You      really     have     hear        sound      Q
           'Have you really heard sounds?'
       b. Ni       zhende   you      tingjian   <u>renhe</u> shengyin  ma?
           You      really     have     hear        any   sound    Q
           'Have you really heard any sounds?'
       c. Ni       zhende   you      tingjian   <u>yixie</u>    shengyin  ma?
           You      really     have     hear        some   sound     Q
           'Have you really heard some sounds?'

### 2.3 Questions with minimizers

Questions containing minimizers are always biased towards a negative answer, since minimizers may be associated with focus encoded by a hidden *even* (e.g., Guerzoni, 2004). When minimizers are present in the questions where positive biases exist, as (9b) illustrates, the questions would sound odd. (9c) shows that minimizers are compatible with the negative contexts. Therefore, we get the exclusive bias condition. That is, for any minimizer, i.e., a strong NPI with emphatic stress denoting a minimal value on a scale, its acceptability in questions determines the existing biases the questions convey. Negatively-biased questions allow such NPIs, while positively-biased questions do not.

(9)    a. Did John (ever) <u>lift a finger</u> to help Mary?
       b. ??Didn't John <u>lift a finger</u> to help Mary?
       c. Did John really <u>lift a finger</u> to help Mary?

## 3. The "enriched composition" model

The "enriched composition" model in the sense of Jackendoff (2002) is given to explain how PIs interact with the existing biases, why some PIs can reverse the polarity or bias in the questions, and why others are ruled out by the exclusive bias condition. In what follows, we use several representative examples to demonstrate the explanatory power of the model.

(10)  a. Doesn't John like Mary?
      b. LF: $[_{CP}$ Q $[NOT_F$ $[_{IP}$ John likes Mary$]]]$
           = $[_{CP}$ Q $[VERUM^3$-NOT $[_{IP}$ John likes Mary$]]]$

      c. [Doesn't John like Mary?]
        = $\lambda A [(\forall p)(A(p) \leftrightarrow p = {}^\wedge LIKE(j, m)) \vee (\forall p)(A(p) \leftrightarrow p = {}^\wedge \neg LIKE(j, m))]$
        = $\{\{{}^\wedge LIKE(j, m)\}, \{{}^\wedge \neg LIKE(j, m)\}\}$
        = $\{\{{}^\wedge LIKE(j, m)\}\}$             [after conditionalization[4]]

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[3] VERUM, a term borrowed from Romero and Han (2004, p. 624), is an epistemic conversational operator, the presence of which can be overtly spelled out with *really* or signaled by stress on a polarity item. Moreover, its presence triggers an epistemic bias of the opposite polarity to the questioned proposition.

      d. Inf. Str.: Common Ground     Focus

               (POS-bias)       (not)

      e. John likes Mary, doesn't he?

The question in (10a) is represented at LF as (10b), in which negation carrying focus can be reformulated as VERUM having scope over negation. (10c) is the semantic realization of this biased question, showing that the positive proposition is supposed. The information structure tier for this question is depicted in (10d), where the positive proposition is assumed by the speaker to be a part of the Common Ground, and the bias trigger occurs as part of focus, conveying new information. Based on the information in (10d), hence, the transformation of (10a) as a tag question like (10e) clearly shows us the speaker's strong bias in favor of a positive answer. In a similar way, the negatively biased question in (11) can be explained.

(11)  a. Does John really like Mary?

      b. LF: [$_{CP}$ Q [VERUM [$_{IP}$ John likes Mary]]]

      c. [Does John really like Mary?]

          = $\lambda$ A [($\forall$p)(A(p) $\leftrightarrow$ p = ^¬LIKE(j, m))]    [after conditionalization]

          = {{^¬LIKE(j, m)}}

      d. Inf. Str.: Common Ground     Focus

               (NEG-bias)      (really)

      e. John doesn't like Mary, does he?

     When the positively biased question further contains a PI, the representations in various tiers, which are compacted to construct the sentential meaning of the question, are illustrated in the following examples. In (12b), *someone* (included in the set of persons P) has to be moved before NOT$_F$ or VERUM-NOT at LF, taking a wide-scope reading. This can be demonstrated in (12d), where the circumscribed part indicates the interaction between these two lexical items in "Lexical Inheritance Structure" by applying some lexical transformational mechanisms in the four levels of semantic representations proposed by Pustejovsky (1995). Hence, at the lexical level, *someone* scopes over negation, and a positive tendency is yielded at information structure tier accordingly. Due to this, the bias of the opposite polarity triggered by VERUM, namely the positive bias in this case, is enhanced by the positive tendency at the information structure level.

(12)  a. Doesn't John like someone?

      b. LF: [$_{CP}$ Q [NOT$_F$ [$_{IP}$ John likes someone]]]

          = [$_{CP}$ Q [VERUM-NOT [$_{IP}$ John likes someone]]]

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[4] The notion of "conditionalization" proposed by Higginbotham (1997) is originally used for the analysis of the presuppositions of a question. It can also be used to account for the semantics of biased questions. According to Higginbotham (1997), a neutral question induces a bipartition on the set of sets of propositions; when it is biased, the proposition that is considered more relevant to the question by the speaker is conditionalized into the bipartition, and due to this, one of the two sets is reduced to empty propositional content, and would then be left out ultimately. So, a bipartition made by a neutral question would become the mono-partition for a biased question.

$= [_{CP} \text{Q} [\text{someone}_i [\text{VERUM-NOT} [_{IP} \text{John likes } t_i]]]$

c. [Doesn't John like someone?]

$= \lambda \text{A} [(\forall p)(\text{A}(p) \leftrightarrow p = {}^{\wedge}\exists x(\text{P}(x) \wedge \text{LIKE}(j, x)))]$ [after conditionalization]

$= \{\{{}^{\wedge}\exists x(\text{P}(x) \wedge \text{LIKE}(j, x))\}\}$

d. Inf. Str.: Common Ground    First Focus Focus

            (POS-bias)      (not)       (someone)
                                          POS

e. John likes someone, doesn't he?

Similar to the case in (12), the circumscribed part in (13d) signifies the scoping relation between negation and *anyone* at the lexical level, because of which a negative tendency is brought out at the information structure tier. Such a negative tendency affects and indeed to some degree reverses the existing positive bias to less positive at the information structure tier. The context-changing force that PIs have is attested.

(13)  a. Doesn't John like anyone?

     b. LF: $[_{CP} \text{Q} [\text{NOT}_F [_{IP} \text{John likes anyone}]]]$                (1)

         $= [_{CP} \text{Q} [\text{VERUM-NOT} [_{IP} \text{John likes anyone}]]]$       (2)

         $= [_{CP} \text{Q} [\text{anyone}_i [\text{VERUM-\underline{NOT} } [_{IP} \text{John likes } t_i]]]]$   (3)

         $= [_{CP} \text{Q} [\text{NOT}_j\text{-anyone}_i [\text{VERUM-}\underline{t_j} [_{IP} \text{John likes } t_i}]]]]$  (4)

     c. [Doesn't John like anyone?]

       $= \lambda \text{A} [(\forall p)(\text{A}(p) \leftrightarrow p = {}^{\wedge}\neg\exists x(\text{P}(x) \wedge \text{LIKE}(j, x)))]$

       $= \{\{{}^{\wedge}\neg\exists x(\text{P}(x) \wedge \text{LIKE}(j, x))\}\}$       [after conditionalization]

     d. Inf. Str.: Common Ground    First Focus    Focus

              (POS-bias)      (not)   $>_{NEG}$   (anyone)

Minimizers like *lift a finger* possess an inherent focus, exhibiting a negative bias as part of their meaning. As illustrated in (14d), such a bias will be embedded in the Common Ground, working at the information structure tier as the speaker's expectation that the negative answer will be picked up.

(14)  a. Did John lift a finger to help Mary?

     b. LF: $[_{CP} \text{Q} [(\text{LIFT-A-FINGER}_i)_F [_{IP} \text{John } t_i \text{ to help Mary}]]]$

     c. [Did John lift a finger to help Mary?]

       $= \lambda \text{A} [(\forall p)(\text{A}(p) \leftrightarrow p = {}^{\wedge}\neg\text{LIFT-A-FINGER}(j, \text{H}(j, m)))]$

       $= \{\{{}^{\wedge}\neg\text{LIFT-A-FINGER}(j, \text{H}(j, m))\}\}$     [after conditionalization]

     d. Inf. Str.: Common Ground    Focus

                                (lift a finger)
                                (NEG-bias)

When minimizers are put in a positively-biased question, the sentence becomes odd. In (15), VERUM triggers a positive bias, under which *lift a finger* occurs. The negative bias derived from *lift a finger* and the positive bias invoked by VERUM clash at the information structure tier, as shown in (15c). Minimizers are incompatible in positively-biased questions, just because the negative bias leads to a conflict with the positive bias existing in the questions at the same plane, namely the information structure tier, while the positive bias originally encoded in the questions does not affect *any* and other NPIs, in that they work on different planes, complying with the Non-crossing constraint in a spirit similar to that of Autosegmental Phonology (cf. Goldsmith, 1989).

(15) a. ??Didn't John lift a finger to help Mary?

b. LF: [$_{CP}$ Q [NOT$_F$ (LIFT-A-FINGER$_i$)$_F$ [$_{IP}$ John t$_i$ to help Mary]]]

= [$_{CP}$ Q [VERUM-NOT (LIFT-A-FINGER$_i$)$_F$ [$_{IP}$ John t$_i$ to help Mary]]]

c. Inf. Str.:    Common Ground        First Focus        Focus

| (POS-bias) | (not) | (lift a finger) |
| | | (NEG-bias) |

According to such an analysis, it can be inferred that minimizers are acceptable in negatively-biased questions, since the negative bias derived from minimizers is consistent with the bias originally existing in the questions.

(16) a. Did John really lift a finger to help you?

b. LF: [$_{CP}$ Q [REALLY$_F$ (LIFT-A-FINGER$_i$)$_F$ [$_{IP}$ John t$_i$ to help Mary]]]

= [$_{CP}$ Q [VERUM (LIFT-A-FINGER$_i$)$_F$ [$_{IP}$ John t$_i$ to help Mary]]]

c. Inf. Str.:    Common Ground        First Focus        Focus

| (NEG-bias) | (really) | (lift a finger) |
| | | (NEG-bias) |

## 4. Conclusion

As illustrated in the model, the PIs like *any* and *some* interact with negation or VERUM at the lexical structure tier, changing the "co-compositional" (Pustejovsky, 1995) contexts of questions, while minimizers themselves further generate negative implicature, which clashes with the biases originally existing in the questions at the information structure tier, so that they are subject to the exclusive bias condition. This analysis also accounts for NPI licensing in biased questions, involving as it does the relation between NPIs and their licensors at every tier in the conceptual structure.

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On the diachrony of polarity types of indefinites

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**Abstract**

The typological distinction of different polarity types of indefinites leads to new insights in the history of negation beyond Jespersen's Cycle. It allows one to capture a whole range of changes in the marking of negation and polarity that have gone virtually unnoticed in classical philology, viz. the shifts and extensions in polarity type of individual indefinite pronouns and adverbs leading to changes in type of entire indefinite systems with such drastic syntactic consequences as the loss or emergence of NC. This is illustrated in a cross-linguistic perspective but with special emphasis on the developments in German. Furthermore, it is shown that, while it is common for indefinites to become 'more negative', the opposite change is also attested, i.e. there is no unidirectionality.

# 1 Background: Basic typologies

As a background to the discussion of diachrony, a few basic distinctions need to be made. On the basis of the features [±affective], where affective is used as a cover term for NPI-licensing contexts cf. Klima (1964); Ladusaw (1979);[1] Giannakidou (1998)[2] etc., and [±negative], three types of contexts can be distinguished with respect to polarity: [- affec, - neg], i.e. positive polar contexts, [+ affec, - neg] contexts, also referred to as weak NPI contexts (van der Wouden, 1997), and [+ affec, + neg] contexts or strong NPI contexts, the scope of negation. Among the weak NPI contexts there are questions, conditionals, the standard of comparison, clauses dependent on negated matrix clauses ('indirect negation') or on adversative matrix predicates such as 'deny', 'forbid', 'fear', 'refuse' etc., restrictive clauses on universal quantifiers, and the context of lexical items meaning 'hardly', 'rarely', 'before' etc.

This basic tripartition of contexts with respect to polarity is evident in a number of languages that accordingly differentiate three polarity types of indefinite pronouns and adverbs cf. Dahl (1979); Bernini/Ramat (1996): 'normal' or PPI indefinites such as English *some, something, somewhere* etc., NPI indefinites such as *any, anything, anywhere*, and n-word indefinites such as *no, nothing, nowhere* etc. I will follow current theory in assuming that there is no basic semantic difference between NPI indefinites and n-word indefinites (cf. Penka/Stechow, 2001) but that the latter indefinites differ from the former in that they bear a formal neg-feature, are often morphologically neg-marked, are restricted to [+ affec, + neg] contexts in most languages, and - most importantly - give rise to a negative interpretation in elliptical contexts for instance in one-word answers.

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[1] Ladusaw (1979) proposes to identify 'affective' with 'downward-entailing'.
[2] Giannakidou (1998) proposes to identify 'affective' with 'non-veridical'.

Not all languages differentiate three polarity types of indefinites. There is also underspecification with respect to [±affective] or [± negative] which gives us a whole typology of indefinite systems.

(1)     Typology of indefinite systems

| I | II | III | IV |
|---|---|---|---|
| [- affec, - neg] | [- affec, - neg]] | [± affec, - neg] | [± non-aff, ± neg] |
| [+ affec, - neg] | [+ affec, ± neg]] | | |
| [+ affec, + neg] | | [+ affec, + neg] | |

These are instantiated by different languages (cf. Weiß, 2002) but also by different indefinites within one language. This typology can be made even more fine-grained by further subdividing the weak NPI contexts,[3] but also by distinguishing between inclusive and exclusive distribution of different polarity types. Thus, while there is a certain amount of optionality to chose an NPI or an n-word indefinite in the scope of negation in English and to some extent in Romance languages, the most specific indefinite possible has to be chosen for instance in Slavic languages. In the scope of negation, that is the n-word indefinites. The NPI indefinites are thus excluded in one central subset of their licensing contexts, which has been referred to as the Bagel problem (Pereltsvaig, 2004). This is, however, merely an example of the common phenomenon in language as also captured in Kiparsky's (1973) Elsewhere-Condition, of the existence of a more specific form precluding a less specific form from occurring (Jäger, 2006). The same mechanism is presumably also responsible for 'normal' or underspecified indefinites turning out as PPIs: if in a language the NPI and n-word indefinites have to be used wherever possible, the 'normal' indefinites will be blocked in all other contexts but [- affec] ones.

## 2 Typology of diachronic developments

Looking at language change against the background of the above distinctions, one may observe the shift or extension in distributional type of indefinites. One particularly common path of language change in this respect is the development of NPI indefinites into n-words. This has for instance occurred in Irish, Italian, Spanish, Catalan, and Greek. It is currently taking place in the case of French *aucun* whose Italian cognate *alcuno* is an NPI, however French *aucun* can already give rise to a negative interpretation in elliptical contexts.

Tracing this development in Romance further back, we find that there was a previous shift from PPI to NPI status from the Classical Latin predecessor

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[3] One way to do this is to differentiate among the downward-entailing contexts those that also satisfy the first half of de Morgan's law (anti-additive contexts) and those that in addition also satisfy the second half of de Morgan's law (antimorphic contexts) arriving at the following neg-hierarchy: antimorphic $\subseteq$ anti-additive $\subseteq$ downward-entailing $\subseteq$ nonveridical.

*aliquuus*. In view of these two types of shifts one might assume a unidirectionality in development towards 'more negative'.

However, the opposite changes are also attested. Thus the Slovene NPIs *nekdo, nekaj* etc. are still morphologically marked for negation by their initial neg-morpheme. They were replaced as n-words by the new formations *nikdo, nic* etc. In Kroatian, the development went even one step further: while *nitko* etc. form the n-word indefinites, the morphologically negative *netko* etc. further developped from NPIs to 'normal' indefinites (Ranko Matasovic, p. c.). In sum, there is evidence for the following changes:

(2)          Types of diachronic shift or extension of distribution

| 'normal' or PPI indefinite | ↓ | | | ↑ |
|---|---|---|---|---|
| NPI indefinite | | ↓ | ↑ | |
| n-word indefinite | | ↓ | | |

These shifts in polarity type can be understood as enrichment with or loss of formal features of individual lexical items that are only licensed in certain syntactic or semantic contexts, notably in the case of development from or towards n-word status, the formal neg-feature.

A closer look at one particular language shows the kind of effects these individual developments may have on the entire system of indefinites and syntax of negation of a language. I will illustrate this with the help of German where several of the above mentioned changes occurred.

# 3 Case study: The development in German

The standard historical grammars of German (Paul, 1998; Braune, Reiffenstein 2004) basically only list indefinites according to their semantic restriction, i.e. person, entity/thing, time, place etc. Against the background of the typological distinctions above, one may however observe that Old High German, unlike Modern German, had a mostly intact three-set system of polarity types of indefinites (cf. Jäger, 2006) consisting of 'normal' or PPI indefinites notably of the *ete(s)*-series (*eteslih* 'some', *ete(s)waz* 'something', *ete(s)wer* 'somebody', *ete(s)wenne* 'some time', *etewar* 'somewhere') but also the cognate of *some*, Old High German *sum(ilih)*, NPI-indefinites notably the *io*-series (*iowiht* 'anything', *ioman* 'anybody', *io* 'ever', *iowergin/ioner* 'anywhere') but also the cognate of *any*, Old High German *einig*, and *dehein(ig)* ('any'), and finally the n-word indefinites of the *ni(o)*-series (*nihein(ig)* 'no', *ni(o)wiht* 'nothing', *ni(o)man* 'nobody', *nio* 'never', *niowergin/nioner* 'nowhere'). These occurred in inclusive distribution, i.e. n-words as well as NPI indefinites were possible in the scope of negation.

Crucial changes in the indefinite system took place during and at the end of the Middle High German period. A number of indefinites underwent a shift or

extension in distributional type, others died out or completely changed their meaning. Among the determiner indefinites, the NPI *einig*, that is still occasionally used as 'any' even in Early New High German, eventually changed its meaning to 'a few'/'several'. The PPI *sum*(*ilih*) died out. The same happened in the Standard language with the n-word Det *nihein*, Middle High German *nehein/enhein*, which only survives in some Swiss German dialects as *ekei*. The former n-word indefinite Det was replaced by the former NPI *dehein/kein* which changed into n-word. This shift in polarity type explains the long-standing puzzle of German linguistics why *kein* could have both 'positive' and 'negative' meaning. Even in Middle High German, it could still be used in some weak NPI contexts, but could already occurr as the only marker of negation in a clause:

(3)    *sol   kein man  radt darzu  geben, das thust auch du.*
       should any man advice to-that give,  that do  also you
       'If any man should give advice on this, so should you'
       Lanc 88, 521

(4)    *roub   unde diepheit daz mac  kein  amt      gesîn.*
       robbery and theft    that may  any/no profession  be
       'Robbery and theft cannot be a profession'
       Bert I, 94

The 'normal' indefinite Det *ein* remained. Among the indefinites corresponding to *something, anything* and *nothing*, the n-word *niowiht>niht* remained (in its genitive form *nichts*). The NPI *iowiht>iht* showed similar tendencies as *dehein/kein* of turning into an n-word. However, it became extinct in the Standard language.[4] As the NPI died out, the former PPI *ete*(*s*)*waz>etwas* extended in distribution and is now used in all [- neg] contexts including weak NPI contexts.

Among the indefinites with a restriction to person, the n-word *nioman>niemand* remained again. However here, the PPI *ete*(*s*)*wer* died out and the former NPI *ioman>jemand* was extended in distribution and developped into a 'normal' indefinite that covers all [- neg] contexts. Interestingly, in some Upper German dialects, on the other hand, the development was parallel to that of *etwas*: The former PPI *ete*(*s*)*wer* survived as Bavarian *ebba* and Swiss German *öpper* and was extended in distribution to all [- neg] contexts, while the NPI *ioman* died out. As far as the indefinites with a restriction to time are concerned, the PPI *ete*(*s*)*wenne* died out and was replaced by the new formation *irgendwann* (from the former indfinite place-NPI + wh-adverb 'when') that is licensed in all [- neg] contexts. The n-word form *nio>nie* remained again, but also the NPI *io>je* remained in Modern German. Among the place indefinites, the n-word *nioner>niender* became extinct, but *niwergin>nirgends* survived. The PPI *ete*(*s*)*wa>etwa* changed its meaning to 'approximately'. The NPI *ioner>iener* died out, but *iowergin>irgen*(*d*) survived in combination with wh-elements with which it formed a new set of 'normal' indefinites licensed in all [- neg] contexts: *irgendein* 'some/any', *irgendwas* 'some/anything', *irgendwer* 'some/anybody',

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[4] In some Upper German dialects, e. g. Swabian, it survived as a neg-marker it/et.

*irgendwann* 'some time/ ever', *irgendwo* 'some/anywhere', and even an indefinite manner adverb for which there is no n-word counterpart in German *irgendwie* 'some/anyhow'. The following table summarises the main developments:

(5)     Development of the indefinite system in German

| | Det | | 'entity' | | 'person' | |
|---|---|---|---|---|---|---|
| 'normal' / PPI | *sum(ilih)* *ein* *eteslih* | *ein* | *ete(s)waz* | *etwas* | *ete(s)wer* | *jemand* |
| NPI | *einig* *dehein(ig)* | | *(io)wiht* | | *ioman* | |
| n-word | *nihein(ig)* | *kein* | *ni(o)wiht* | *nichts* | *ni(o)man* | *niemand* |

| | time | | place | |
|---|---|---|---|---|
| 'normal' / PPI | *ete(s)wenne* | *irgendwann* | *etewar* | *irgendwo* |
| NPI | *io* | *je* | *(io)wergin* *ioner* | |
| n-word | *nio* | *nie* | *niowergin* *nioner* | *nirgends* *nirgendwo* |

What becomes evident when looking at the indefinite system of the language as a whole is that, while the developments of individual indefinites occasionally went into opposite directions (towards 'more positive' or towards 'more negative'), there is one overarching effect these changes had in German: the system of indefinites was basically reduced from a three-set to a two-set system with underspecification with respect to [± affective]. In Modern German, there is only the opposition between 'normal' indefinites and n-words, apart from the temporal adverbs where *je* remained as an NPI. Otherwise, the category of NPI indefinites disappeared from the language system.

This had far reaching consequences for the syntax of negation in general: as the NPI-indefinitess basically disappeared, there ceased to be a choice between NPI or n-word in the scope of negation, the main source of optionality of NC in OHG. N-words became virtually obligatory in negative contexts so that a negative context containing an indefinite was already sufficiently marked by the indefinite. In combination with the reduction and loss of the clitic neg-particle, this facilitated the loss of the original type of NC in German, of Neg-Doubling between the clitic neg-particle and an n-word, which significantly decreased already from Old High German to Middle High German and basically died out in the course of the latter period. Interestingly, the subsequent rise of a new type of NC in some varieties of German can also be linked to the change of indefinites with respect to polarity type: The original NPI *dehein/kein* could of course co-

occur with negative XPs. As it turned into an n-word in Middle High German, the learner encountered instances of an n-word co-occurring with other negative XPs. This pattern was presumably generalised to other n-words so that NC of the kind found e. g. in Modern Bavarian between several negative XPs emerged.

# 4 Conclusion

In a number of languages, indefinites changed in their polarity type both towards 'more negative' and towards 'more positive'. As one can observe in German, these changes could result in a change in the type of the entire indefinite system (from a three-set to a two-set system) and the syntax of negation (loss of original type of NC, rise of a new type in some German varieties).

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Generalizing the Immediate Scope Constraint
on NPI Licensing

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**Abstract**

We show in this paper that Korean NPIs are universal-like in nature, scoping over negation. Specifically, a Korean NPI takes negation in its immediate scope, respecting a generalized form of the Immediate Scope Constraint of Linebarger (1987).

## 1. Introduction

Korean has different expressions of negation: lexical negation, short-form negation, or long-form negation. Any of these forms can license a negative polarity item (NPI) anywhere in the clause, even in subject position. The examples in (1) show this with the simple NPI *amwu-to* ('anyone'):

(1) a. amwu-to cip-ey eps-ess-ta                    (lexical negation)
       *anyone* house-at not.be-PAST-DECL
       'No one was at home.'

    b. amwu-to ku chayk-ul an ilk-ess-ta       (short-form negation)
       *anyone* that book-ACC NEG read-PAST-DECL
       'No one read that book.'

    c. amwu-to ku chayk-ul ilk-ci    anh-ass-ta (long-form negation)
       *anyone* that book-ACC read-COMP NEG-PAST-DECL
       'No one read that book.'

Several researchers have suggested that Korean NPIs are not in the scope of negation. This is quite prevalent view, in fact (see for example, Chung and Park, 1998; K.-S. Kim, 1999; H. Lee, 2001; A.-R. Kim, 2002; Han et al., 2005; Sells, 2006). An example like (2) shows that lexical negation cannot scope over the subject position, even though an NPI is licensed in the same position in (1a).

(2)    manhun salam-tul-i    cip-ey eps-ess-ta
       many    people-PLU-NOM house-at not.be-PAST-DECL
       'Many people were not at home.' (the only scope order is *many > Neg*)

Further, the contrast in (3) shows that the scalar NPI *han salam-to* is licensed in a position over which negation cannot scope.

(3) a. han salam-i      o-ci        anh-ass-ta
       one person-NOM come-COMP NEG-PAST-DECL
       'One person did not come.' (the only scope order is *one > Neg*)

    b. han salam-to     o-ci        anh-ass-ta
       *one person (NPI)* come-COMP NEG-PAST-DECL
       'Not one person came.'

We present several pieces of evidence which show that NPIs in Korean are universals, taking wide scope over the licensing negation. In fact, they take immediate wide scope over negation, due to the Immediate Scope Constraint, which we propose to generalize to these wide scope universal NPI cases. Further, even though

¬∃ and ∀¬ are logically equivalent, we will show that there are identifiable semantic consequences to the choice of these two semantic structures for NPIs, and that Korean clearly has the latter. We do not intend the NPI-as-universal analysis to necessarily mean that NPIs have all the semantic and pragmatic properties of standard universal quantifiers: for our purposes here, we use 'universal' as a label for the type of NPI which outscopes the negation which licenses it.

In particular, Korean NPIs outside the scope of negation can lack the presupposition of existence often assumed for a regular universal quantifier such as *every* in English. An example such as (4) with *amwuto* does not require a presupposed set of individuals (equivalent examples with an *n*-word in Greek are supposed to be pragmatically odd (cf. Giannakidou 2000, 505)).

(4)     totwuk-un amwu huncek-to namki-ci     anh-ass-ta
        thief-TOP  *any trace*      leave-COMP NEG-PAST-DECL
        'The thief didn't leave any trace.'

There is no commitment in this example to the existence of traces of the thief; if the NPI were presuppositional, the example would be pragmatically odd at best. (5) also shows that a Korean NPI does not have an existential presupposition.

(5)     ku-nun Mary-eykey amwu kwansim-to eps-ess-ta
        he-TOP Mary-DAT  *any interest*      not.be-PAST-DECL
        'He didn't have any interest in Mary.'

## 2.   The Immediate Scope Constraint

Assuming that English NPIs are existentials in the scope of negation, Linebarger (1987) showed that a simple scope condition on NPIs is not strong enough: their relation to the licensing negation is subject to a locality condition. For this, she proposed the Immediate Scope Constraint, according to which an NPI can be licensed only if it is in the 'immediate scope' of a negation.

(6)     *Immediate Scope Constraint (ISC)*   (Linebarger, 1987, 338)
        A negative polarity item is acceptable in a sentence S if in the LF of S the
        subformula representing the NPI is in the immediate scope of the negation
        operator. An operator is in the immediate scope of NOT only if (i) it
        occurs in a proposition that is the entire scope of NOT, and (ii) within this
        proposition there are no logical elements intervening between it and NOT.

The ISC is a kind of minimality requirement on NPI-licensing which ensures that no other logical operator can intervene between an NPI and its licensing negation, The 'logical elements' in (6) correspond roughly to propositional operators (e.g., quantificational NPs and adverbs). The effect of the ISC is seen in the contrast in examples like those in (7), from Honcoop (1998, 116):

(7) a.    Nobody gave John *a red cent/anything*.
    b.    *Nobody gave most beggars/every beggar *a red cent/anything*.

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By the ISC, an NPI must be in the immediate scope of its licensor, so (7b) fails as *every beggar*, a scope-bearing element, intervenes between the negation and the NPI *a red cent/anything*.

Now, for a language in which an NPI outscopes negation, something like the ISC would require that an NPI as universal takes immediate wide scope with respect to negation (see e.g., Horn, 1972, chap. 3; Lasnik, 1972; Kroch, 1974; LeGrand, 1975; Eisner, 1994 – cited in Horn, 2005). We show that Korean NPIs are universal-like in nature, and take immediate scope over negation, respecting the ISC. The relevance of the ISC is noted already in Kim (1999), who proposes the same generalizations for Korean NPIs as we argue for here, though with only a limited set of data. Specifically, we argue for a generalized version of the constraint:

(8)   *Generalized Immediate Scope Constraint (GISC)*
      An NPI and negation are in an immediate scope relation with each other.

The universal analysis plus the GISC can explain several interesting facts in Korean (and, we believe, in other OV languages like Japanese or Turkish). An immediate question for a universalist analysis of NPIs is whether examples can be found with the interpretation $\forall > QP > Neg$. Although such interpretations have occasionally been claimed for Japanese, the Korean data is unequivocal: such scope configurations do not exist. However, we argue, this is not a mark against the universal analysis of Korean NPIs, but, rather, it is evidence that the GISC applies.

## 3.   Korean NPIs are Universals

As we noted above, if Korean NPIs were existentials in the immediate scope of negation, we would have to show that negation can scope over the subject. It is especially clear in (non-NPI examples in) Korean that this is not possible with short-form or lexical negation. These forms of negation never c-command and scope over the subject, but subject NPIs are nevertheless possible:

(9)  a.   han salam-i       an    o-ass-ta
          one person-NOM NEG come-PAST-DECL
          'One person didn't come.'   (*one > Neg, *Neg > one*)

     b.   han salam-i       cip-ey    eps-ess-ta
          one person-NOM house-at not.be-PAST-DECL
          'One person wasn't at home.'   (*one > Neg, *Neg > one*)

(10) a.   mila-man an    o-ass-ta
          Mira-only NEG come-PAST-DECL
          'Only Mira didn't come.'   (*only > Neg, *Neg > only*)

     b.   mila-man cip-ey    eps-ess-ta
          Mira-only house-at not.be-PAST-DECL
          'Only Mira wasn't at home.'   (*only > Neg, *Neg > only*)

(11) a.   amwu-to an    o-ass-ta
          *anyone*   NEG come-PAST-DECL
          'No one came.'

b. amwu-to cip-ey eps-ess-ta
*anyone* house-at not.be-PAST-DECL
'No one was at home.'

We can directly show that a Korean NPI is not in the scope of negation. In the 'VP-focus construction' with *nun* on the verb, negation must take wide scope.

(12) a. mila-to ca-ci-nun anh-ass-ta
Mira-also sleep-COMP-FOC NEG-PAST-DECL
'It's not the case that also Mira slept.' (*Neg > also, *also > Neg*)

b. mila-man ca-ci-nun anh-ass-ta
Mira-only sleep-COMP-FOC NEG-PAST-DECL
'It's not the case that only Mira slept.' (*Neg > only, *only > Neg*)
(Other people slept too.)

In these examples, negation must scope over the expression in the subject position. However, an NPI in that position leads to unacceptability:

(13) *amwu-to ca-ci-nun anh-ass-ta
*anyone* sleep-COMP-FOC NEG-PAST-DECL
'No one slept.'

If *amwu-to* were an existential in the scope of negation, (13) should be grammatical with this focus construction. Only the analysis in which *amwu-to* is a universal with negation in its immediate scope predicts the unacceptability of (13). (13) is in fact grammatical when it is the verb *sleep* that is focused and negation targets it. In this case (13) means something like 'Whoever it was, it wasn't sleeping that he/she did.', and in this case the scope relation is *anyone > Neg > Focus*. (14) also shows that *amwu-to* is compatible in principle with this focus construction, as long as negation can associate with some focalizable element besides the NPI.

(14) amwu-to mila-man manna-ci-nun anh-ass-ta
*anyone* Mira-only meet-COMP-FOC NEG-PAST-DECL
'No one met only Mira.'

## 4. Generalizing the Immediate Scope Constraint

Here we provide evidence that in conjunction with the universal analysis of Korean NPIs, the Generalized ISC (GISC) makes several correct predictions.

Korean examples with multiple quantification tend to be interpreted with scope being isomorphic to linear order. On the assumption that the GISC holds, we correctly predict that (15a) is very unnatural, while (15b) is perfect.

(15) a. ?*amwu-to taypwupwun-uy kyengwu cip-ey eps-ess-ta
*anyone* most-GEN case house-at not.be-PAST-DECL
(*any > most > Neg → *GISC*)

b. taypwupwun-uy kyengwu amwu-to cip-ey eps-ess-ta
most-GEN case *anyone* house-at not.be-PAST-DECL
'In most cases, there was nobody at home.'
(*most > any > Neg*)

The contrasts in (15) also argue against any analysis which treats the true semantic negation as a high abstract negative operator which takes both NPIs and Neg in its scope. The only reason to posit such an abstract negation would be to license NPIs in subject position, but then (15a) should be acceptable, as the effective scope relations would be *Neg > any > most*. Similarly, if the NPI *anyone* were an existential, (15b) would require that negation scope over the subject; and if that were possible, it ought to be possible too for (15a), giving the scope order just cited. These are all incorrect predictions. Now, if logical scope corresponds closely to linear order, as in (15b), negation has the lowest scope, consistent with the universal analysis of the NPIs; and the infelicity of (15a) shows that negation cannot scope much higher than its surface position. Only the universal analysis of NPIs predicts the contrast in (15), in conjunction with the GISC.

Finally, there is one class of interactions which clearly favor the universal analysis. Ladusaw (1983, 389) observed that neither the 'Attraction to Focus' negation nor denial negation (if they are distinct) is an acceptable licenser for English NPIs. The NPI in (16) is acceptable only if the negation is not attracted to focus.

(16)     John didn't meet anyone on Sunday$_F$.

    a.    It was on Sunday that John didn't meet anyone.    (no attraction to focus)

    b.    *It wasn't on Sunday that John met anyone.    (attraction to focus; cannot licence NPI)

In the interpretation(s) of the example (16), negation cannot both license an NPI and associate with focus; attraction to focus would require a scope structure *Neg > Focus > anyone*, which the ISC disallows.

However, significantly, Korean does allow an extra focus in the same clause as the NPI which can be targeted by the negation (see also (14)).

(17)     mila-nun   amwu-to ilyoil$_F$-ey      manna-ci-nun
        Mira-TOP *anyone*   Sunday-DAT meet-COMP-FOC
        anh-ass-ta
        NEG-PAST-DECL
        'Whoever Mira met, it wasn't on Sunday that Mira met him.'

This difference between English and Korean can only be traced to the relative scope properties of negation. In Korean, negation can both license an NPI (intuitively, 'above' negation), and target a separate focus (intuitively, 'below' negation).

(18) illustrates a similar contrast between the languages. We include here an example from Turkish, which patterns just like Korean.[1]

(18) a.    kutul-un   amwuil-to wanpyekhakey$_F$ ha-ci-nun
          they-TOP *any work*  perfectly      do-COMP-FOC
          anh-ass-ta
          NEG-PAST-DECL
          'They didn't do any work perfectly$_F$.' (adverb negated)

---

[1] We are grateful to Jaklin Kornfilt for assistance with the Turkish examples.

    b.    onlar hiçbir iş-i        <u>kusur-suz-ca</u>$_F$ yap-ma-dı-lar
            they *any work*-ACC fault-less-ly    do-NEG-PAST-3.PL
            'They didn't do any work <u>faultlessly</u>$_F$.' (adverb negated)
    c.    *They didn't do any of the tasks <u>perfectly</u>$_F$/<u>faultlessly</u>$_F$.
            (adverb negated; cf. Linebarger, 1980)

The interpretations in these languages show that the scope relations must be *NPI > Neg > Focus*, so that the NPI outscopes Neg on the one hand, and Neg can negate another constituent on the other – an account that is only consistent with the universal analysis of NPIs, respecting the GISC. This interpretation is impossible in English. The precise basis of the typological difference between Korean and English, and whether it correlates with OV/VO, remains to be explored. However, the evidence we have surveyed argues strongly that the GISC holds, allowing languages to have either the existential or universal type of NPI.

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Licensing of Negative Polarity Particles

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# Licensing of Negative Polarity Particles in English

## 1  Introduction

In this paper I discuss a class of Negative Polarity Items (NPIs) in English that I will call Negative Polarity Particles (NPPs). I observe that these items are only licensed by a subset of downward entailing (DE) environments. To distinguish the DE environments that can license NPPs I propose an additional condition of *assertivity*. I show that only environments that are both DE and assertive can license the NPPs. The combination 'DE and assertive', which I call *semantically negative*, is then shown to be helpful in explaining other semantic and pragmatic phenomena.

## 2  Negative Polarity Particles

### 2.1  The items and their properties

The items I discuss in this paper are the following: negative aspectual particles *yet*, *anymore*, and the negative additive focus particle *either*. I call this class Negative Polarity Particles (NPPs). All these particles have positive counterparts: *already, still* and *too*, respectively. The NPPs rarely receive special attention in the NPI literature. Notable exceptions are papers on *either*, Rullmann (2003) and works referenced therein, and works on positive *anymore*. This is despite the fact that the class of NPPs has sometimes been identified (Krifka 1995).

Typical polarity items, including the frequently discussed *any* and *ever*, denote either minimum or, less frequently, maximum quantities. This creates an effect of emphasis or, less frequently, understatement (Israel 1996). In the most common case, the emphasis is achieved in downward entailing (DE) environments, and this was the motivation for DE as a licensing condition for the NPIs (Ladusaw 1980). This reasoning does not apply to the NPPs, therefore, there is no motivation for DE by itself as the licensing condition for the NPPs.

In this paper I investigate the distribution of the NPPs, propose a licensing condition and provide a motivation for the proposed licensing condition.

### 2.2  Distribution: a subset of DE environments

While DE is a necessary condition for the licensing of the NPPs, it is not a sufficient condition. The following DE environments license NPPs: Negation, *doubt*, *barely*, *few*, *rarely*; negative implicative verbs like *fail* and *refuse*, *without*.

(1)    <u>Few</u> tourists are here *yet*.

(2)    It didn't rain yesterday, and I <u>doubt</u> it will rain today, *either*.

(3)    They <u>barely</u> talk *anymore*.

On the other hand, the following DE environments do not license NPPs: antecedent of conditionals, restrictor of universals, complements of factives, comparatives, superlatives, emotive factives, *before*.

(4)    <u>If</u> you *ever* go to Brussels, you should buy me some Belgian chocolates.

(5)    I have never been to Amsterdam.*<u>If</u> I go to Brussels *either*, I will buy you some Belgian chocolates.

(6)    I <u>regret</u> that I *ever* went to Spain.

(7)    *I <u>regret</u> that I'm in Spain *anymore*.

(8)    *Everyone who is here *anymore* will receive a prize.

*A counterexample to the De Morgan hierarchy*

The most widespread classification of DE environments and their licensing capabilities is into anti-morphic, anti-additive, and other DE environments (Zwarts 1995). In van der Wouden's (1997) terms, strong NPIs require an anti-morphic environment, medium strength NPIs require an anti-additive environment, and weak NPIs require a DE environment of any kind.

However, the NPPs cannot be categorized as belonging to either the weak, medium or strong NPI class. On the one hand, the environments created by the quantifiers *few* and *rarely* are DE, but not anti-additive, and the NPPs are licensed by them, suggesting that the NPPs are weak NPIs. On the other hand, antecedents of conditionals and restrictors of universals, both anti-additive environments, fail to license the NPPs, as if the NPPs were strong NPIs. Therefore, the NPPs are a counterexample to this hierarchy as a universal classification of the distribution of NPIs. This also refutes the claim (Szabolcsi 2004) that *yet* is a medium strength NPI licensed by anti-additive environments.

## 3   My proposal: semantic negativity

### 3.1   The concept of an 'assertive' environment and the licensing of NPPs

In order to distinguish between those DE environments that license NPPs and those that do not I introduce the notion of an *assertive environment*. The environment of a predicate/proposition is *assertive* if the sentence makes a claim regarding the extent of the realization of the predicate/proposition. Examples of assertive and non-assertive environments will be given below.

More definitions:

(9)    An environment is *semantically negative* iff it is **both downward entailing and assertive**.

(10)  An environment is *semantically positive* iff it is **both upward entailing and assertive**.

I propose the following licensing condition for the Negative Polarity Particles:

(11)  The NPPs are licensed by an environment which is **semantically negative, that is, both downward entailing and assertive**.

This explains why some DE environments license the NPPs and some do not: those that license the NPPs are assertive, and those that do not license the NPPs are not assertive.

I will demonstrate the concept 'assertive' on DE environments; however, this notion applies to environments regardless of their monotonicity properties. Compare the following two sentences, both containing the phrase *participated in the marathon* in a DE environment:

(12)  Few people *participated in the marathon*. [DE and assertive]

(13)  Everyone who *participated in the marathon* received a certificate. [DE, not assertive]

Example (12) makes a claim regarding the realization of the predicate *participated in the marathon*, namely, that the predicate holds of few people. Therefore, the environment in which the predicate appears is assertive. The environment is also DE, so it is semantically negative, and the NPPs are licensed in such sentences.

Example (13) refers to the individuals for which the predicates holds, but makes no claim regarding the realization of the predicate. Therefore, the environment in which the phrase appears is not assertive. Although it is DE, it is not semantically negative, and the NPPs are not licensed in such sentences.

The following two sentences contain the proposition $p = it\ will\ rain\ today$ in a DE environment:

(14)  I doubt *it will rain today*. [DE and assertive]

(15)  If *it rains today*, the hike will be canceled. [DE, not assertive]

Example (14) makes an epistemic claim regarding the extent of realization of $p$, so the environment of $p$ is assertive. The environment is also DE, so it is semantically negative, and the NPPs are licensed in such sentences.

Example (15) makes no claim regarding the extent of realization of $p$. Therefore, the environment in which $p$ occurs is not assertive. Although it is DE, it is not semantically negative, and the NPPs are not licensed in such sentences.

Although I adopt the term *assertive* from Hooper (1975), my definition and extent of application of the term differ significantly. For Hooper (1975), it is a property of a predicate receiving a sentential complement; moreover, this was applied only to positive predicates. My definition applies to an environment, and the assertion can be either positive or negative.

What is the reason for (11) as a licensing condition? One possible explanation is the argumentative orientation. Positively oriented clauses are used to make claims in the opposite direction of the negatively oriented clauses. In the negative clauses the main predicate is in a semantically negative environment, and the NPPs mark the negative argumentative orientation. This is elaborated in the following section.

## 3.2  NPPs as markers of negative argumentative orientation

It has been noticed that, depending on the quantifiers, a sentence can have a positive or negative argumentative orientation, and the argumentative orientation affects the way a sentence can be used in inferences. Such inferences have been used to determine whether the quantifier is positive or negative (Ducrot 1973; Horn 2002).

Let's consider the case in which we are interested in having as many as possible working printers (example adapted from Horn 2002). In this case the more printers work, the better the situation. In the examples below we see that "good news" can be said when *work* is in a semantically positive environment, "bad news" is the appropriate conclusion when *work* is in a semantically negative environment, and neither can be used when *work* is in a non-assertive environment.

(16)   Good/#Bad news: This printer works.

(17)   Good/#Bad news: Many printers work.

(18)   Bad/#Good news: This printer doesn't work.

(19)   Bad/#Good news: Few printers work.

(20)   #Bad/#Good news: If this printer doesn't work, I'll try to fix it.

In the sentences with the negative argumentative orientation the main predicate is in a semantically negative environment, and these are the sentences that license the NPPs.

Another test for the argumentative orientation is substitution of clauses in sentences with discourse connectives. For *but*, sentences of the kind *p but q* are felicitous if *p* and *q* make claims towards opposite conclusions (Winter and Rimon 1994; Ducrot 1973). Consider the following sentences, uttered when someone went to do shopping and the question addressed is whether he will be able to buy something.

(21)   #He went to the store, but the store is *open*.
       [positive]

(22)   He went to the store, but I doubt the store is *open*.
       [negative]

(23)   He went to the store, #but if the store is *open*, he'll buy something. [non-assertive]

What are the sentences that license inferences like syntactically negative sentences? The answer can be given using the definitions in this paper: sentences in which one of the constituents is in a semantically negative environment. The quantifiers that license negative inferences are exactly those that license the NPPs. This can explain the licensing condition proposed in this paper: the NPPs are markers of argumentative force. The NPP accompanies a clause that can be used for negative inference: a semantically negative clause.

### 3.3  Semantically negative predicates and tests for negation

Some of the environments, defined in this paper as DE and assertive, were sometimes described in earlier literature as a natural class, without a formal definition. Jespersen (1917) described sentences with quantifiers like *hardly, scarcely*, and *little/few* as "approximate negation". Klima (1964) classifies some NPI-licensing quantifiers as "negatives" by proposing that they contain the *neg* feature; all these create assertive environments, and also license NPPs. Klima also proposed a number of syntactic tests for 'negativity', but no semantic definition of negativity was provided. One of the tests is *neither*-tags:

(24)   He didn't read it, and neither did I.

(25)   *He read it, and neither did I.

After the proposal of DE as a licensing condition for the NPI like *any* and *ever* (Ladusaw 1980), the distinction between the "negative" DE environments and "non-negative" DE environments have been usually unnoticed. Huddleston and Pullum (2002), with principally the same tests for negativity as in Klima (1964), notice that the "approximate negators" pass these tests (26), and claim that it is DE that creates the negation. However, the DE environments that are not assertive do not pass these tests (27):

(26)   She <u>hardly</u> goes out these days, and *neither* does her son.

(27)   *<u>If</u> she goes out these days, we will meet her, and *neither* does her son.

The environments that do pass the tests are all semantically negative, that is, DE and assertive. The definition of semantic negativity proposed in this paper explicates what these tests are sensitive to.


## 4   Conclusion

In this paper I demonstrated that the Negative Polarity Particles require a special licensing condition in addition to DE, and proposed *assertivity* as such a licensing condition. This introduces a new hierarchy of the DE environments. DE and assertivity together constitute *semantic negativity*, the combined licensing condition for the NPPs. The analysis also explicates the notions of 'negativity' and negative argumentative orientation in the previous literature.

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Two negative markers in Scandinavian

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**Abstract**

In this paper I present data from two Norwegian dialects which each have two different negative markers with different distribution. In the dialect of Setesdal, as in the dialect of Älvdalen, the verb can move across a short form of negation but not the full form in non-asserted embedded clauses. In the dialects of Trøndelag the short negation may among others induce a peculiarity in imperatives. I discuss the possible explanation that these facts are related to the different syntactic status of the short negations, one being both a head and a specifier, the other being a specifier marked as a clitic.

# 1 Introduction

In this paper I will show that certain Scandinavian dialects have two different negative markers, which exhibit different syntactic patterns. These patterns have not been discussed in detail in previous syntactic analyses on negation in Mainland Scandinavian (henceforth 'MSc.')(such as Christensen 2005; Jensen 2003; Zeijlstra 2004). In section two I present data from the Norwegian dialects of Setesdal and Trøndelag which differ from the 'standard' Eastern dialect, and in section three an analysis is proposed.

# 2 Variation across Mainland Scandinavian varieties

## 2.1 The dialect area of Trøndelag

Weak pronouns in MSc. usually shift across adverbs and negation. In some of the varieties of the Trøndelag dialect (Central Norwegian), weak pronouns do not shift across the negation marker *itj* (Haugen 1982) but they do when the negation marker *ikke* is used (Endresen 1988) and also with all other adverbs. The form *ikke* is generally not accepted in the position before weak arguments.

(2)    a. I går    såg    **itj**    æ    dæ
           *yesterday*    *saw*    *not*    *I*    *you*
        b. I går    såg    æ    dæ    **ikke**
           *yesterday*    *saw*    *I*    *you*    *not*
        c. *I går    såg    ikke    æ    dæ
        'I didn't see you yesterday'

---

The forms *itj* and *ikke* also behave different in imperatives. In Norwegian the imperative is generally speaking identical to the verbal stem. In the Trøndelag dialect area when forming imperatives, one group of verbs show homophony between the imperative and the infinitive, while the other group has unambiguous infinitival morphology. The presence of *itj* in imperatives allows the infinitival marker *å* to precede the verb (cf. 3a), but *å* is not necessary (cf. 3c). The form *ikke* cannot combine with *å* (3b) or the distinct infinitival form (3d), i.e. *ikke* can only combine with the imperative form. The distinct infinitival form cannot be followed by negation (cf. 3g), contrary to the claim in Jensen (2003) that all MSc. languages can generally have verb initial imperatives. Adverbs are preferred in post-verbal position.

(3)  a.   Itj        å      lesa        Donald no!
          *not*      *to*   *read.inf*  *Donald now*
     b.   *ikke      å      lesa        Donald no!
          *not*      *to*   *read.inf*  *Donald now*
     c.   Itj               lesa        Donald no!
          *not*             *read.inf*  *Donald now*
     d.   ?/??Ikke          lesa        Donald no!
          *not*             *read.inf*  *Donald now*
     e.   Ikke              les         Donald no!
          *not*             *read.imp*  *Donald now*
     f.   ??Itj             les         Donald no!
          *not*             *read.imp*  *Donald now*
     g.   ??Lesa            itj/ikke    Donald no!
          *read*            *not*       *Donald now*
          'Don't read Donald Duck now!'

## 2.2 The dialects of Setesdal and Älvdalen

In the dialects of Setesdal (Southern Norwegian) and Älvdalen (Sweden) there exist two different negative markers that affect the syntax of embedded clauses (Heggstad 1916; Wiklund 2006). As Bentzen (2005) shows for Northern Norwegian, movement of the verb from V-to-T in subordinate clauses cannot take place over negation. However, in the Setesdal and Älvdalen dialects the verb can move across the short negative marker, but not the longer negative marker. Note that these contexts are not contexts which allow in general embedded V2 across Scandinavian.

The data from Heggstad is partly confirmed by my own investigations, but today verb movement is only possible in non-presupposed clauses. The marker *itj* has the same distribution as *inkji* in these contexts:

(4)   The dialect of Setesdal (Heggstad 1916)
a.   Koss   va    det   laga   at     du    (**inkji**) kom    (**kji**)
     *how*  *was* *it*  *made* *that* *you* *not*      *came* *not*
     'Why didn't you come?'

b.     Dei     spure     kvi     han     (**inkji**)   køyre     (**kji**)     stokkan
       *they     asked     why     he     not       drives     not      logs.the*
       'They asked why he doesn't drive the logs'

c.     Her     va     ein     mann     som     (**inkji**)   fann    (**kji**)
       *here     was     a       man      who     not       found    not*
       hesten          atte
       *horse.the      again*
       'Here is a man who didn't find his horse'

d.     Itt     du     (**inkji**)   vi     (**kji**)     me     de     goe,     so
       *if      you     not       will     not      with     the     good,    then*
       lyt     du     me     de     vonde
       *must    you     with     the     bad*
       'If you won't go with the good, then you have to go with the bad'

(5)     The dialect of Älvdalen (Wiklund 2006)

a.     John aunggrar    at      an     **int** (\***it**) ar     tajdh     examen
       *John regrets    that     he     not       has     taken     exam.the*

b.     John aunggrar    at      an     ar        (\***int**) **it** tajdh examen
       *John regrets    that     he     has      not      taken exam.the*
       'John regrets that he didn't take the exam'

## 2.3 Summary

In the dialect of Setesdal (and Älvdalen, see Garbacz 2007) the presence of the short form seems to be dependent on verb movement. The presence of the form *itj* in the dialects of Trøndelag does however not seem to be dependent on verb movement. In the rest of the paper I will focus on the Norwegian dialects.

# 3 Analysis

The exceptional distributional patterns are related to the forms *itj* (Trøndelag) and *kji* (Setesdal); *ikke* and *inkji* behave as Norwegian negation in general. In the following I will mainly consider the two short forms. Historically speaking the form *itj* is the result of phonological reduction and apocope of the unstressed final vowel of a previous form \**inte/injtje > injtj > itj* (Endresen 1988; Haugen 1982), in other words *itj* constitutes the stress bearing syllable of the original form. The Setetsdal short form *kji* on the other hand has a different status: it constitutes a part of the full form *inkji*.

      The form *inkji* is homophonous to neuter of *ingen* ('nobody'), i.e. meaning 'nothing'. In the dialect of Oppdal 'nothing' is formed by negation *itj* and the existential quantifier *nå*. I nevertheless assume that these forms have the same structure, where *itj/kji* are heads with *-in* and *-nå* generated in their complement position. I also assume that *kji* is lexically marked as a clitic, hence *kji* always needs a host. The form *itj* on the other hand, does not have this feature. Accordingly, I propose the following for the internal structure of *kji, inkji, itj* and *itjnå*:

(6)     a. *kji*:   [NegP [Neg° *kji*]]
        b. *inkji*: [NegP *in* [Neg° *kji*] [DP ~~in~~]]
        c. *itj*:   [NegP [Neg° *itj*]] or [Neg° *itj*]
        d. *itjnå*: [NegP [Neg° *itj*] [DP *nå*]]

I adopt Platzack's (1998) *Visibility Condition on the C-domain* stating that each projection in the C-domain must have phonological features, and Vangsnes' (1999, 2001) principle of 'identification' which requires each functional projection to be 'identified' by an overt element at some step of the derivation. This principle is trigger for movement, as well as for insertion of functional elements. I furthermore adopt Westergaard & Vangsnes' (2005) assumption that the C-domain in declaratives contains a TopP and a FinP, where FinP has to be identified by the verb and TopP by either the subject or the topicalized constituent. I suggest that the bare structure [NegP [Neg° *kji*]] is licensed when it is in the complement position of the verb. When the structure [NegP [Neg° *kji*]] is not licensed, *in* is generated in the complement position and rolled up in the specifier position in order to host *kji*. The form *ikke* is regarded as an XP.

## 3.1 Imperatives

Evidence from the diachrony of negative imperatives in the dialect of Oppdal (Haugen 1982) supports the historical development of *itj*. Haugen (1982: 149) notes that imperatives with the infinitive of the verb is an innovation, referring to 'old' imperatives where the verb has imperative morphology and negation following it: *Jær **itj** ta* versus ***Itj** jårrå ta* ('Don't do that'). The hypothesis that a language that bans true negative imperatives[1], exhibits an overt negative marker X° (Zeijlstra to appear), supports the view that *itj* can be a syntactic head, because *itj* occur with the infinitive form in imperatives.

It seems to be problematic in general to account for negative imperatives in Norwegian, since negation-initial imperatives are perfectly grammatical. This led Jensen (2003:159) to propose the following two structures for negative imperatives in Norwegian: (i) [$_{TimpP}$ V [$_{vP}$ NegP ~~V~~]]] and (ii) [$_{PolP}$[2] [$_{TimpP}$ V [$_{vP}$ ~~V~~]]]. For imperatives with infinitive morphology in the dialects of Trøndelag, I adopt the second structure where *itj* is the head of Pol° licensing an (abstract) infinitival marker in T$_{IMP}$, and where the verb remains *in situ* (or possibly has moved to a low position in the IP-domain since the verb can precede adverbs).

## 3.2 Verb movement

Modern Norwegian does generally not allow verb movement in embedded clauses, whereas Old Norse and Middle Norwegian did. The data from Setesdal may be seen as a relic from that time, and a 100 years ago it seems that there

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[1] When the verb has imperative morphology.
[2] A negation/emphasis projection (of the split imperative IP) (Jensen 2003: 138)

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were general verb movement across negation in the dialect, but not across emphasized negation. Today the possibility for verb movement is dependent on the presuppositional status of the embedded clause.[3]

At least three different stages of verb movement can be identified. In the first stadium the verb moves in all types of embedded clauses. This seems still to be the case in the dialect of Älvdalen. In the second stage verb movement cannot apply in presupposed clauses (the dialect of Setesdal), and at the third stage there is never verb movement (the dialects of Trøndelag). The crucial question is why the verb no longer moves. This loss can be related to the verbs loosing capacity to identify the features on Fin° in embedded clauses.

I assume that the C-domain in embedded clauses for stage two and three contain ForceP and FinP. The variation is due to what identifies FinP. In the grammar of stage three the subject alone can identify FinP. For the dialect of Setesdal I propose that there is a grammar saying that both the head and the specifier of Fin° have to be identified, where the difference between presupposed and non-presupposed clauses is the assumption that the factive complementizer introduces an iota-operator that turn the clause into a definite description (cf. Fitzpatrick 2005), by identifying Fin°, while in non-presupposed clauses the verb is still able to identify Fin°:

Presupposed: [$_{ForceP}$ comp$_{FACT}$ [$_{FinP}$ Subject [$_{Fin°}$ ι [$_{NegP}$ *inkji* [....~~Subject~~ verb]]]]]
Non-presupposed: [$_{ForceP}$ comp [$_{FinP}$ Subject [$_{Fin°}$ verb [$_{NegP}$ *kji* [...~~Subject verb~~]]]]]

# 4 Concluding remarks

I have shown that the differences between the two short negative markers *itj* and *kji* can be regarded as a consequence of their syntactic status and ultimately of their etymology. I assumed *itj* to be both an X° and an XP, while *kji* is an XP and lexically marked as a clitic. This explains the different behaviour in imperatives. Being a clitic, *kji* always needs a host – either the finite verb or a negative pronoun, the latter yielding the form *inkji*. Hence, the word order patterns identified with *kji* and *inkji* in embedded clauses are a result of verb movement or not.

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[3] I am not considering asserted embedded clauses, which quite generally allow V-to-C-movement and topicalization in the Scandinavian languages

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# Dynamic Intervention
# A DRT-based Characterization of Interveners in
# NPI-Licensing

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**Abstract**

I argue that the class of interveners for NPI-Licensing matches exactly with the class of operators that are treated as establishing a dynamic relation between two Discourse Representation Structures within Discourse Representation Theory (Kamp and Reyle, 1993).

# 1    Data

Negative Polarity Items (NPIs) such as English *ever*, *any*, *give a damn* in (1) must occur in the scope of a licenser — negation or another appropriate items (Klima, 1964). NPIs are underlined in this paper.

(1)     Kim didn't give a damn about this issue.

If a universal quantifier takes scope between the negation and the NPI, the licensing is blocked, as in (2-b). This has led Linebarger (1980) to postulate that the NPI must be *in the immediate scope* of the licenser. Consequently, a universal quantifier an *intervener* (for NPI licensing), i.e. the quantifier shows an *intervention effect*.

(2)     a.    Kim didn't give any apple to every teacher.
        b.    *Kim didn't give every teacher any apple.

Other quantified NPs (such as *most N*) and adverbial clauses (*because*-clauses) also constitute interveners. In this paper, I focus on the difference in intervention between *and* and *or*: While *or* does not block NPI licensing, *and* is an intervener.

(3)     a.    I doubt that Kim did her homework or went to any classes this week.
        b.    *I doubt that Kim did her homework and went to any classes this week.

According to Postal (2005), the difference between conjunction and disjunction in intervention in NPI-licensing was first mentioned in Ross (1967). The data, however, did not receive much attention in NPI research until recently, for example Chierchia (2004). Postal (2005) shows that *and* blocks NPI licensing in all of its conjuncts, whereas *or* is transparent for NPI licensing in either disjunct.

(4)     a.    I did not investigate any verbs or/ *and any nouns.
        b.    I did not investigate that verb or/ *and any nouns.
        c.    I did not investigate any verbs or/ *and that noun.

I will argue that the few existing accounts for the contrast in (3) are not satisfactory. Taking a DRT perspective, however, the quantificational interveners and *and* group together in a natural way: they can all be captured as a dynamic connection of two DRSs; i.e. the first DRS can change the information state with respect to which the second DRS is evaluated. In contrast to this, the non-intervening elements, including disjunction, do not establish such an internally dynamic relation.

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## 2   Previous Approaches

**Linebarger (1980)** heavily relies on intervention effects in her theory of NPI licensing. An NPI must be in the immediate scope of a negation at the Logical Form of the sentence in which it occurs, or at the Logical Form of an implicated sentence (the so-called *negative implicatum*, NI). This theory predicts the disjunction-conjunction asymmetry, since the *or*-sentence in (3) has (5) as its NI.

(5)    I think that Kim did not do her homework and that Kim did not go to any classes this week.

Here, the NPI *any* is in the immediate scope of a negation. For the conjunction in (3) we cannot find a similar NI. While this is a very simple account of the facts, there are general problems with Linebarger's theory. To account for NPI licensing by *few N* in (6-a), Linebarger derives an NI of the form in (6-b).

(6)    a.    Few students <u>ever</u> enjoyed syntax classes.
       b.    Many students didn't <u>ever</u> enjoy syntax classes.

Note that (6-b) is only an implicature on the strong reading of *few*, i.e. the reading where there is a presupposed set of students. The NPI licensing in (6-a), however, also works with the weak reading of *few*. I conclude that while the NI approach could account for the data in (3), it has independent, fundamental problems.

**Chierchia (2004)** presents the class of interveners for NPI licensing as a natural class: they are maximal elements on a contextually relevant scale. Thus, *and* is the maximal element on the scale ⟨*or*, *and*⟩, whereas *or* is not. Similarly *every* is maximal, whereas *some* is the minimal element on the same scale. This characterization accounts for the asymmetry in (3).

Chierchia shows with example (7) that while universal quantifiers are interveners for NPI licensing, *if*-clauses are not. This is a potential problem for a theory which treats implication as a universal quantification over situations and relates intervention effects to universal quantifiers. Instead, Chierchia argues, the data follow from the fact that *if* is not a maximal element on a scale.

(7)    I doubt that if John gets drunk, <u>anyone</u> will be surprised.

Chierchia neglects the fact that there are two readings of *if*-clauses which do form a scale and that, contrary to Chierchia's expectation, the maximal element on this scale can be found in the complement clause of *doubt*. (8) repeats the standard examples for the two readings of *if*-clauses. In (8-a) every donkey that is owned is taken care of, whereas in (8-b) only some dime needs to be put into the parking meter. This puts the two readings of *if*-clauses on a scale. Chierchia would predict that under negation only the weak reading, (8-b), is possible.

(8)    a.    If John owns a donkey, he cares for it.
       b.    If John has a dime, he puts it into the parking meter.

(9)     I doubt that if Jane gets an invitation to a Halloween party, she will miss it.

However, (9) is true in a situation in which Kim gets two invitations but only goes to one party. This corresponds to a strong reading in the scope of negation. This shows that Chierchia's explanation for (7) is not compatible with his own system. We will show in Section 5 that there is a much simpler explanation for the non-intervention of *if*-clauses.

**Postal (2005)** provides many data on the conjunction-disjunction asymmetry. He assumes that the disjunction cases are derived from an underlying coordination, where a negation is present in each conjunct. This negation is extracted "across the board", and as a consequence the *and* is realized as *or*. Even though the nature of the assumed lexical substitution of *and* with *or* is unclear, the NPI licensing in disjunction is correctly accounted for. However, it remains questionable whether Postal also accounts for the ungrammaticality of the *and* examples. For instance, how and why is across the board extraction of negation from disjunction banned?

## 3   Discourse Representation Theory

I assume that the semantic representation of a sentence is a Discourse Representation Structure (DRS, Kamp and Reyle (1993); von Genabith et al. (2004)). A DRS is a pair consisting of a universe of discourse referents ($U$) and a set of conditions ($C$). Conditions are either atomic ($x_1 = x_2$, or $R(x_1, \ldots, x_n)$) or of the form $\neg K$, $K_1 \mathbf{or} K_2$, $K_1 \Rightarrow K_2$. In addition I use the sequencing/merge operator ";" from Muskens (1996), which combines two DRSs into a new DRS. The sequencing operator is the representational reflex of syntactic co-ordination. The interpretation of a DRS is formulated in terms of its *context change potential*. In other words, a DRS maps an input information state $g$ into some output information state $h$, where an information state is conceived of as a partial function from the set of discourse referents to the individuals in the model. Following Muskens (1996), a DRS denotes a set of pairs of information states, where $[\![ \langle x_1 \ldots x_n | C_1 \ldots C_m \rangle ]\!] = \{ \langle g, h \rangle | \ g[x_1 \ldots x_n]h \ \& \ h \in [\![ C_1 ]\!] \cap \ldots \cap [\![ C_m ]\!] \}$ and $[\![ K_1; K_2 ]\!] = \{ \langle g, h \rangle | \exists i (\langle g, i \rangle \in [\![ K_1 ]\!] \& \langle i, h \rangle \in [\![ K_2 ]\!]) \}$. A condition denotes a set of information states, where $[\![ x_1 = x_2 ]\!] = \{ g | g(x_1) = g(x_2) \}$, $[\![ R(x_1 \ldots x_n) ]\!] = \{ g | \ \langle g(x_1), \ldots g(x_n) \rangle \in [\![ R ]\!] \}$, $[\![ \neg K ]\!] = \{ g | \ \neg \exists h \langle g, h \rangle \in [\![ K ]\!] \}$, $[\![ K_1 \mathbf{or} K_2 ]\!] = \{ g | \ \exists h (\langle g, h \rangle \in [\![ K_1 ]\!] \ \text{or} \ \langle g, h \rangle \in [\![ K_2 ]\!]) \}$, and $[\![ K_1 \Rightarrow K_2 ]\!] = \{ g | \ \forall h (\langle g, h \rangle \in [\![ K_1 ]\!] \rightarrow \exists i \langle h, i \rangle \in [\![ K_2 ]\!]) \}$

When two DRSs, $K_1$ and $K_2$, are combined into a condition or a DRS, the second DRS, $K_2$, can either be interpreted with respect to the information state of the combination or with respect to the output state of the first DRS, $K_1$. In the latter case, I speak of an *internally dynamic* DRS-combination. It follows from the indicated semantics of DRSs and conditions that $K_1 \Rightarrow K_2$ and $K_1; K_2$ are internally dynamic, whereas $K_1 \mathbf{or} K_2$ is not.

The basic DRT language is enriched by conditions of the form **Quant**$x K_1 K_2$,

* I don't think that every student read <u>any</u> book.    * John didn't drink wine and <u>any</u> coffee.
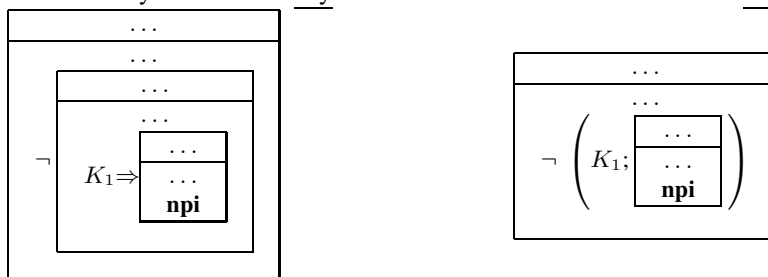


Figure 1: Potential DRSs with interveners.

where **Quant** is some determiner, $x$ is the variable bound by this determiner, $K_1$ is the restrictor and $K_2$ is the nuclear scope. The interpretation of such conditions depends on the choice of the quantifier, but in each case the condition is internally dynamic (von Genabith et al., 2004).

# 4 Analysis

Leaving aside details of NPI licensing, I assume that an NPI must occur in the scope of an appropriate operator. In (10) the licensing operators are characterized as negation and the antecedent of an implication. This allows for NPIs in *if*-clauses and in the restrictor of universal quantifiers.

(10)    **NPI Licensing:** An NPI is licensed if it occurs within a DRS $K$ which occurs in a negation ($\neg K$) or as the antecedent of a conditional ($K \Rightarrow K'$).

The semantics of DRSs gives us a natural characterization of the interveners from Section 1: They all introduce internally dynamic operators.

(11)    **Intervention:** An internally dynamic operator may not intervene between the semantic representation of an NPI and its licensing operator.

This constraint accounts for the intervention effect found with universal quantifiers and co-ordination, since it excludes the potential DRSs in Fig. 1. It is important for our approach that the sequencing operator ";" occurs as an explicit representation of the co-ordination particle *and* instead of merging the DRSs of the two conjunctions. With this representation, the parallelism between universal quantification and co-ordination is captured in the presence of the internally dynamic operators ("$\Rightarrow$" and ";"). If there is a disjunction, as in Fig. 2, the constraint in (11) does not lead to a blocking of the licensing relation, since **or** is not internally dynamic.

The definition of the intervening operator correctly excludes NPIs in both conjuncts and allows them in both disjuncts. It also excludes them in the nuclear scope of a universal quantifier, but allows them in its restrictor, since principle (10) licenses NPIs in this position.
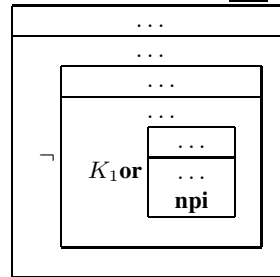
John didn't drink wine or <u>any</u> coffee.



Figure 2: DRS for a sentence with disjunction

# 5  Extensions

This account also extends to generalized quantifiers. As mentioned in Section 3, generalized quantifiers are internally dynamic. Thus, they are correctly predicted to show intervention effects. The same is true for numerals. It has been observed that numerals show intervention effects if they have a quantificational interpretation. Under such an interpretation, the numerals will be treated a generalized quantifier rather than as an indefinite, and the intervention effect follows directly.[1]

Chierchia's observation that *if*-clauses are not interveners can also be accounted for. Consider the example in (12-a), whose paraphrase is given in (12-b), showing that the negation is interpreted in the consequent of the conditional. If the negation had wide scope over the entire complement clause, we would get a reading $\neg(\phi \rightarrow \psi)$, which is equivalent to $\phi \wedge \neg\psi$. This reading is not available for (12-a), as shown by the inadequacy of (12-c) as a paraphrase for (12-a).

(12)  a.  I doubt that if Mary goes to the party, she will wear a red dress.
       b.  = I think that if M. goes to the party, she will not wear a red dress.
       c.  $\neq$ I think that M. goes to the party and she will not wear a red dress.

Following common practice in DRT, I assume a lexical decomposition of verbs that incorporate a negation. Thus, I treat *doubt* as *think that not*, which gives us the operators needed to represent (12-a) as in (12-b). The resulting DRS condition for the complement clause is $K \Rightarrow \neg K'$. It follows from the NPI licensing condition in (10) that an NPI is licensed if it occurs within $K'$.

Since the *if*-clause is not in the scope of the negation, Chierchia's argument against the analogy of conditionals and universal quantifiers vanishes.

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[1] An NPI which is embedded inside a definite NP is also not licensed (*I would not kill a/\*the man who has <u>ever</u> helped me.*, Hoeksema (2000)). This follows immediately in a DRT-based perspective, since the definite description is not constructed in the scope of a licensing operator such as negation but rather enters the DRS via presupposition accommodation. Thus, the blocking of NPI-licensing inside definite NPs is an issue independent of the intervention effects discussed in this paper.

# 6 Conclusion

Using a DRT perspective, the operators that show intervention effects for NPI licensing can be characterized in terms of their inherent dynamic properties. This immediately explains the asymmetry in intervention between disjunction and conjunction and derives the similarity between conjunction and universals and generalized quantifiers without further stipulation.

The question arises, of course, why the inherent dynamics of an operator should block an NPI licensing relation. Nonetheless, it could be shown that the dynamic perspective can shed new light on intervention effects.

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N-words and PIs in Non-Standard British English

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**Abstract**

Data from the FRED and the BNC-SpS corpora show that most varieties of non-standard British English allow n-words to co-exist with polarity items (PIs) in NC constructions. Two separate licensing mechanisms operate in such cases. *Never* is argued to bear [iNeg] features in some occasions, and [uNeg] features in some others. By means of real data, the assumption that, unlike Standard English, Non-Standard English has n-words instead of negative quantifiers is strengthened.

# 1 Introduction

Negative Concord (NC) is a defining feature of non-standard varieties of English (Anderwald, 2002; Labov, 1972; Ladusaw, 1992; among many others). NC constructions contain more than one apparently negative element, but double negation does not arise. Consider the example in (1).

(1)     You couldn't do no papers nor nothing.          (FRED, NTT_014)

While it is often the case that only n-words (Laka, 1990) occur in NC constructions, the data from the FRED (Freiburg English Dialects) and the BNC-SpS (the spoken sub-part of the British National Corpus) corpora reveal that n-words and polarity items (PIs) of the *any*-set co-occur in a remarkable number of examples. For Non-Standard English, n-words are indefinites of the *no*-series like *nobody*, *nothing*, etc. which show a double-sided behaviour in being interpreted as quantifiers in certain occasions but as negative polarity items (NPIs) in some others. The purpose of the present piece of research is to present and analyse a number of observations that stem from real NC data in Non-Standard British English.

# 2 Data

For the present study, 1,470 examples from the FRED corpus, and 274 from the BNC-SpS have been considered. While in the two sources there is a very high percentage of examples of NC between a negative element with [iNeg] features and one or more n-words, in both corpora there are also a number of examples where NC seems to 'skip' some elements that could have possibly been affected by NC. Some of these examples have been grouped under (2).

(2)     a. They doesn't do no cultivating for any other.   (FRED, HEB_030)
        b. But we dinnae have any nowhere.               (FRED, SEL_002)

        c. Can't get lights or nothing on.               (BNC. KCN 5406)
        d. There wasn't no violence or anything like that. (FRED, SOM_003)

In (2a) the PI *any* occurs instead of its n-word counterpart *no*, which is what would be expected if NC were a pure 'spreading' phenomenon. In (2b), *any* occurs instead of *none*, and it can be observed that an n-word is also present. Finally, (2c) and (2d) illustrate two different cases related to the conjunction *or*. In neither of the two cases does *or* occur as *nor*, as is indeed observed in a number of examples from FRED, including (1). In (2d), in addition, *or* is followed by the PI *anything*.

Similar examples are reported in the literature of other non-standard varieties of English such as Afro-American Vernacular English (AAVE). The examples below are from Labov (1972: 148).

(3)     a. We don't ever see none of them guys.
        b. From then on, I didn't have any trouble at school no more.

That n-words and PIs co-occur in the same sentence in AAVE and most of the non-standard British English varieties represented in the FRED corpus (and in the BNC-SpS to a lesser extent) makes them comparable to NC languages. NC languages (all but Polish[1]) allow the simultaneous presence of n-words and PIs in negative contexts.

# 3 Analysis

## 3.1 Conventional NC data

Adopting Chomsky's (2005) Phase Theory, it is possible to account for those examples which contain a sentential negative marker and one (or more) n-words as cases of (Multiple) Agree (Zeijlstra, 2004). In other words, a negative element with an [iNeg] feature in NegP Agrees with one or various indefinites with matching uninterpretable features within the $v$*P phase. This is shown in (4).

(4) a. I have [$_{NegP}$ [$_{Neg0}$ n't$_{[iNeg]}$] [$_{vP}$ had none ~~[uNeg]~~ for weeks]]
                                        (BNC, KBE 5015)

    b. So you could [$_{NegP}$ [$_{Neg0}$ n't$_{[iNeg]}$] [$_{vP}$ get nothing ~~[uNeg]~~ out of nothing ~~[uNeg]~~]]
                                        (FRED, SFK_010)

For those varieties that allow Strict NC[2], the analysis is also valid if the Verb Phrase Internal Subject Hypothesis is assumed to be correct. According to the VPISH, the subject is base-generated within $v$P and later moves out from it to end up in Spec, TP, where it can have its uninterpretable case features valued.

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[1] Thanks to an anonymous reviewer for this observation.
[2] Strict NC is observed in some of the speakers of the following dialectal areas and counties in the FRED corpus: the Hebrides (South Uist), Midlands (Shropshire), the Southeast (Kent and Suffolk), the Southwest (Wiltshire, Cornwall, Somerset and Oxfordshire) and Wales (Glamorgan).

Zeijlstra's (2004) analysis for Strict NC languages is based on the assumption that the sentential negative marker bears a [uNeg] feature, as it is semantically non-negative. Thus, an Op¬ with [iNeg] features is merged in Spec, NegP. The checking of the [uNeg] features takes place before extracting the n-word to Spec, Neg, the edge of the *v*\*P phase (Weiss, 2002), so that it can participate in the next phase.

(5)     Nobody did [$_{NegP}$ Op¬ [$_{Neg0}$ n't $_{[uNeg]}$] [$_{v*P}$ (nobody) $_{[uNeg]}$ notice it]]
                                                                    (FRED, SAL_023)

## 3.2 Unconventional NC data: a distributional restriction

Two main observations can be made after inspecting the data. First, the licensing of n-words takes place within the *v*\*P phase and, second, in those examples where n-words and PIs co-occur, only one n-word tends to participate in NC[3]. This is illustrated in the examples in (6) and (7).

(6)     a. None of them wouldn't do anything.          (FRED, HEB_018)
        b. None of them would [$_{NegP}$ Op¬ [$_{Neg0}$ n't $_{[uNeg]}$] [$_{v*P}$ (none of them) $_{[uNeg]}$ do anything]]

(7)     There wun't nobody with any herring.          (FRED, SFK_006)

The second observation is further supported by the figures from FRED and the BNC-SpS. These are displayed in Table 1 and show that no occurrences of Multiple Agree involving n-words are attested in sentences also containing PIs. Multiple Agree, however, is regularly found in both corpora with n-words only. Further research should determine to what extent the observed tendency follows from the interaction of the two different syntactic mechanisms that are at play in such cases and which I address in the remainder of the section.

Table 1. *Co-occurrence of n-words and NPIs in FRED and the BNC-SpS*

| FRED corpus (dialectal areas) | Total of examples of NC | Negator + n-word(s) | One n-word + PI(s) | Various n-words + PI |
|---|---|---|---|---|
| Hebrides | 25 | 23 | 2 | 0 |
| Isle of Man | 7 | 7 | 0 | 0 |
| Midlands | 130 | 127 | 3 | 0 |
| North | 93 | 92 | 1 | 0 |
| Southwest | 441 | 431 | 10 | 0 |
| Southeast | 722 | 708 | 14 | 0 |
| Wales | 31 | 28 | 3 | 0 |
| Scotland High | 2 | 2 | 0 | 0 |
| Scotland Low | 19 | 16 | 3 | 0 |
| **BNC-SpS** | 275 | 273 | 2 | 0 |

Moscati (2006) argues that apart from the semantic requirement of occurring in non-veridical contexts, PIs also need to have a widening feature they bear

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[3] Labov (1972: 148) reports the following example: *Ain't nobody ever thought about pickin' up nothin'.*

checked by a universal operator, which is inserted in the derivation after merging an element with valued [Neg] features. This is represented in (8) for Standard English.

(8)  a. John didn't see anyone.

b. [$_{NegP}$∀$_{[iW: ]}$ [$_{Neg0}$ n't $_{[iNeg]}$]] [$_{vP}$ John [$_v$ see anyone $_{[uW: val]}$]]

The syntax of n-words is thus different from the syntax of PIs in non-standard varieties of English. However, both elements coincide in that their licensor must bear [Neg] features. In the case of n-words the interpretability of these features is crucial, as n-words are assumed to carry a [uNeg] feature that has to be deleted via Agree with a negator with [iNeg] features. For PIs, on the other hand, valuation is at work[4]: PIs carry an uninterpretable valued widening feature, [uW:val] which is probed by the interpretable but unvalued widening feature of a universal operator. Such an operator is triggered by the presence of the valued negative features of the negator. The two licensing mechanisms are represented in (9) for the example in (2a).

(9)  They$_i$ does [$_{NegP}$∀$_{[iW: ]}$ [$_{Neg0}$ n't $_{[iNeg]}$]] [$_{vP}$ t$_i$ [do no$_{[\text{uNeg},]}$ cultivating for any$_{[uW:val]}$ other.

## 3.2 N-word + n-word combinations

Examples of n-word + n-word combinations, which are also observed in our data, can be divided into two types: (i) sentences with *never* + other n-words and (ii) true cases of n-word + n-word. In the former case, the analysis that has been assumed for the example in (4) could be maintained if *never* were a negator (Cheshire, 1998). I argue that this is the case in those examples where *never* is not clearly an n-word (i.e. when co-occurring with an n-word in the absence of the sentential negative marker). As a negator, it would be a bearer of [iNeg] features in those varieties of non-standard English that implement Non-Strict NC. In Strict NC varieties, on the other hand, *never* bears [uNeg] features, as sentential negative markers in languages like Czech. This would mirror the situation of sentential negative markers in Strict and Non-Strict NC languages (Zeijlstra, 2004).

(10)  a. We never got nothing.                              (FRED, DUR_003)
      b. We [$_{NegP}$ [$_{Neg0}$ never $_{[iNeg]}$] [$_{v*P}$ got nothing $_{[uNeg]}$ ]]

(11)  a. Nobody never went away in them days.         (FRED, NTT_009)
      b. Nobody [$_{NegP}$ Op¬ [$_{Neg0}$ never $_{[\text{uNeg}]}$] [$_{v*P}$ (nobody) $_{[\text{uNeg}]}$ went away in them days ]]

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[4] Torrego and Pesetsky (2001) assume that valuation and interpretability of features are independent concepts.

N-word + n-word combinations would be analysed as in (5), (6) and (11). That is, an Op¬ is merged to the structure to check the [uNeg] features of the n-word(s) in the sentence. Op¬ is triggered so that no uninterpretable features remain unchecked and the sentence receives a negative interpretation (Zeijlstra, 2004).

As for *nor*, it is not the n-word counterpart of the conjunction *or*, so cases like (2d) are actually what is expected if only one n-word engages in an NC relationship with a negative element with [iNeg] features (cf. section 3.2). Likewise, cases of *or nothing* would in fact be instances of Multiple Agree between a negator with [iNeg] features and various n-words with [uNeg] features.

It is also observed in the data that *hardly* and *hardly ever* are best analysed as NPIs (rather than negative quantifiers or n-words) in some of the varieties that constitute the FRED corpus. Examples such as the ones in (12) show that *hardly* and *hardly ever* are always licensed by a negator and do not express negation themselves.

(12)    a. You never hardly ever read.    (FRED, SOM_016)
          b. He never changed his crew, not hardly ever.    (FRED, SFK_017)
          c. You never hardly see a woman in a pub in them days.
                                   (FRED, KEN_001)

## 4 Conclusion

After close inspection of the data obtained from the FRED and the BNC-SpS corpora, it was concluded that most varieties of non-standard British English allow, like other NC languages, the possibility of having n-words and PIs co-occurring in negative environments. This is possible because NC is not a spreading phenomenon. That is, the occurrence of PIs instead of n-words is not a consequence of NC 'skipping' an element that can potentially belong to the *no*-set. Rather, two independent syntactic mechanisms are available to license n-words and PIs in negative contexts.

The data that have been considered, however, show that whenever n-words and PIs co-occur in the same sentence, the number of n-words is often limited to one. Such an observation could be established as a restriction on the application of Multiple Agree under certain conditions in negative contexts, but further research should determine what exactly these conditions are.

By means of real (i.e. non-idealised or invented) data further support has been given to the claim that, unlike Standard English, Non-Standard English does not have a set of true negative quantifiers, but a set of n-words that can act like NPIs in some occasions and like quantifiers in some others. This does not exclude the possibility that *any*-PIs occur in negative contexts yielding the same meaning as n-words, or that they co-occur with the latter.

It has also been argued in the paper that *never* is to be analysed as a negator in some occasions. Unlike other n-words, *never* occurs extremely often with

other n-words in the absence of the negative marker. I have argued that it is underspecified for the interpretability of its negative features. This makes it possible to analyse it as an n-word with [uNeg] features when it co-occurs with the sentential negative marker. Such an analysis is also consistent with Zeijlstra's (2004) semantic characterisation of sentential negative markers in Strict and Non-Strict NC languages.

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Prosody and the Syntax of *Shika*-NPIs in Tokyo Japanese

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**Abstract**

We made a really important discovery; *Shika*-NPI construction in Tokyo Japanese, like Wh-questions, exhibits not only the prosodic, but also the interpretive property which is closely related to the former. This result provides further support for the necessity of an interdisciplinary approach to the theory of grammar, which seriously take prosody into consideration to the syntactic analyses.

# 1 Introduction

A number of recent works have shown that prosody plays a pivotal role in accounting for the nature of Wh-questions in (Tokyo) Japanese (Deguchi and Kitagawa 2002, Ishihara 2002, 2003, 2004, Kitagawa 2005, Kitagawa and Deguchi 2002, Kitagawa and Fodor 2003, 2006, Kuroda 2005, among others). It is argued that the licensing and interpretation of Wh-phrases are closely tied to the Focus Intonation Prosody (FIP) that Wh-questions exhibit, and there is a close correlation between FIP and the interpretation/scope of Wh-phrases, which is referred to here as the Prosody-Scope Correspondence (PSC). This paper argues that the same is true with the licensing and interpretation of *shika*-NPIs in Tokyo Japanese,[1] which require not only syntactic but also prosodic conditioning (i.e., FIP; Ishihara 2005), and demonstrate the PSC.[2] Our conclusions provide further credence to the interdisciplinary approach to the theory of grammar, in particular along the

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[1] Throughout the paper, I only deal with Tokyo Japanese (in a broad sense, which includes the surrounding areas of Tokyo).

[2] Since the main purpose of this paper is to show that prosody plays a role in understanding *shika*-NPI constructions, I will not spend much time on the syntactic licensing conditions of *shika*-NPIs (see Yamashita 2007b). The *shika*-NPI examples used in this paper satisfy all syntactic conditions, e.g., the *shika*-NPI must be c-commanded by a clause-mate negation. Also, I won't make any commitment regarding the distinction between 'Negative Polarity Item' and 'Negative Concord Item' (see Watanabe 2004). For the semantics of *shika*-NPIs, see e.g., Yoshimura 2007, and references cited therein.

line of Kitagawa's (2005) research guidelines (1), casting doubt on "syntax-only" approach(es) (such as Hasegawa's 1994 syntax-only analysis of *shika*-NPIs).

(1) **_Kitagawa's 2005 Research Guidelines_**  (Kitagawa 2005: p.303)
"the study of formal aspects of grammar should be conducted with much more careful attention to a larger context of language such as prosody, processing, and pragmatics than usually done"[3]

## 2 Prosody and the Syntax of *Shika*-NPI Constructions in Tokyo Japanese

I argue that what has been noted for Wh-questions in Tokyo Japanese is also observed with the *shika*-NPI constructions in Tokyo Japanese, which provides additional evidence for the interdisciplinary approach to the theory of grammar, along the line of Kitagawa's research guidelines in (1).[4]

### 2.1 The Syntax of *Shika*-NPI Constructions (without Prosody)

Hasegawa (1994) observes that otherwise ambiguous (2) becomes unambiguous when *shika*-NPI is scrambled to the vicinity of matrix Neg as in (3) (allowing only the matrix scope interpretation), akin to Takahashi's (1993) observation regarding the Wh-movement effect of long-distance scrambling of Wh-phrase (Takahashi 1993: (4b)), and argues that A'-movement of an NPI to NegP-Spec fixes scope (Hasegawa 1994: (18)).[5, 6] (N.B. CC = control complement)

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[3]   For concreteness, I will concentrate on the "syntax-prosody" interface, but other factors such as processing and pragmatics should also be taken into consideration (which I will leave for future investigation). In fact, Kitagawa (2005) argues that not only prosody, but also other factors (such as pragmatics and processing) must be taken into considerations in investigating Wh-questions in Japanese. See also the series of works he is involved with, some of which are listed in the references of this paper.

[4]   Due to space limitations, I won't be able to discuss the prosody and syntax of Wh-questions in Tokyo Japanese. See Yamashita 2007c: Sec.2, for a brief summary of this issue, and references/works cited therein.

[5]   All the Japanese examples are transcribed in the modified *Hepburn("Hebon")*-style Romanization (e.g., -*shika*, not -*sika*, which is with *Kunrei*-style Romanization). Most of the examples cited in this paper are modified, but in a way that does not distort the intention of the original data. I use the mark '~' when the cited data are not exactly the same (even if it is a slight modification). The translations are provided to illustrate the rough structures of the examples and are not meant to be "correct" English translations.

[6]   I assume here that *shika*-NPI in (2) stays in-situ inside the embedded clause. 'In-situ' is used here in a broad sense in that *shika*-NPIs are not scrambled out of the clause it is base-generated in. Note that it may be possible to scramble string-vacuously out of the embedded clause to some position in the matrix clause below the matrix indirect object. Such an option may plausibly be blocked by placing an

(2)     Naoya-wa    Mari-ni  [_CC PRO   sono ramu-shika    nomiya-de
        N.-TOP      M.-DAT              that rum-SHIKA    bar-LOC
        noma-*na*-i-yooni]    iwa-*nakat*-ta.
        drink-NEG-TNS-C   tell-NEG-TNS
   a.   'Naoya did not tell Mari [that she should _([Neg]) drink [_NPI only that rum]
        at the bar].'                              (Embedded Scope)
   b.   'It _([Neg]) was [_NPI only that rum] [that Naoya told Mari [not to drink
        at the bar]].'                             (Matrix Scope)
        (~Hasegawa 1994: (4c/16a), with her judgment)

(3)     Sono ramu-shika_i  Naoya-wa    Mari-ni  [_CC PRO t_i   nomiya-de
        that rum-SHIKA    N.-TOP      M.-DAT              bar-LOC
        noma-*na*-i-yooni]    iwa-*nakat*-ta.
        drink-NEG-TNS-C   tell-NEG-TNS
   a. * (Embedded Scope)    = (2)a
   b.   (Matrix Scope)      = (2)b
        (~Hasegawa 1994: (16b), with her judgment)

The judgment in (2) and (3), especially the crucial contrast regarding the unavailability of the embedded scope reading in (3), however, may not be as clear as Hasegawa observes, especially once FIP is taken into consideration.

## 2.2 Focus Intonation Prosody and Prosody-Scope Correspondence in *Shika*-NPI Constructions

Ishihara (2005) has shown, by conducting an experimental study, that essentially the same FIP found in Wh-questions is also found in *shika*-NPI constructions, as stated in (4).[7, 8, 9]

(4)   *Focus Intonation Prosody in* **shika**-*NPI constructions (FIP*_shika*)*:
      *Shika*-NPI constructions require
      (i)   $F_0$-**boosting of XP** -*shika* attaches to ($F_0$ = fundamental frequency),

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appropriate adverb that modifies only the embedded verb. I won't place any such adverb, so as not to make the sentence complex, but I note here that placing such adverb does not interfere with the interpretation of *shika*-NPIs in any significant way.

[7]  I will use the following notations in indicating the prosody. **Bold** for $F_0$-boosting, <u>underline</u> for $F_0$-compression. I will also italicize and shade the relevant licensing head (e.g., *-na-* 'Neg').

[8]  Due to space limitations, I cannot provide any pitch tracks. See Yamashita 2007b.

[9]  Although *shika*-NPI constructions and Wh-questions in Tokyo Japanese exhibit essentially the same FIP, it does not necessarily mean that this holds for other dialects as well. As Tomoyuki Kubo (p.c., Oct., 2006) pointed out to me, *shika*-NPI constructions in Fukuoka Japanese does not exhibit the same FIP observed for Wh-questions. I also note here that FIP of Wh-questions in Fukuoka Japanese is something different from that of Tokyo Japanese. See Kubo 1989 and his subsequent works on the FIP of Wh-questions in Fukuoka Japanese.

(ii) followed by $F_0$-compression until its licensing *Neg*, and
(iii) $F_0$-reset on the material after the licensing Neg, if there is one.
(~Ishihara 2005: (2), "NPI-FI Hypothesis")

In this construction, an XP marked with -*shika* gets $F_0$-boosted and the following sequence up until the licensing negation is $F_0$-compressed, as indicated in (5).

(5)      Mari-ga    **ramu**-shika   nomiya-de   noma-*nakat*-ta.
           M.-NOM    rum-SHIKA   bar-LOC    drink-NEG-TNS
           'Mari $_{([Neg])}$ drank [$_{NPI}$ only rum] at the bar.'
           (~Ishihara 2005: (5B))

     I argue that, once FIP$_{shika}$ is taken into consideration, (3) is in fact ambiguous and is prosodically disambiguated and such ambiguity shows that PSC is at work for *shika*-NPI construction as well, as stated in (6), making Hasegawa's original observation that (3) lacks the embedded scope reading and "syntax-only" analysis (that depends on it) quite dubious. Thus, it is not the type of movement (and/or movement to a particular landing site, e.g., NegP-Spec) but the prosody that determines and indicates the scope of *shika*-NPI.

(6)      ***Prosody-Scope Correspondence in* shika-*NPI constructions (PSC$_{shika}$)***:
      The scope of *shika*-NPIs is determined and indicated by the (post-focus) $F_0$-compression between ***shika*-NPIs** and the sentential negation morpheme (that (once) c-commanded *shika*-NPIs).

(7) and (8) indicate how the FIP$_{shika}$ disambiguates the embedded and matrix scope reading associated with (2), where *shika*-NPI stays in-situ.

(7)    = (2)a; Embedded Scope; $F_0$-compression until the embedded Neg.
        Naoya-wa   Mari-ni [$_{CC}$ PRO **sono ramu**-shika  nomiya-de
        N.-TOP     M.-DAT        that rum-SHIKA   bar-LOC
        noma-*na*-i-yooni]    iwa-nakat-ta.
        drink-NEG-TNS-C   tell-NEG-TNS

(8)    = (2)b; Matrix Scope; $F_0$-compression until the matrix Neg.
        Naoya-wa   Mari-ni [$_{CC}$ PRO **sono ramu**-shika  nomiya-de
        N.-TOP     M.-DAT        that rum-SHIKA   bar-LOC
        noma-na-i-yooni]    iwa-*nakat*-ta.
        drink-NEG-TNS-C   tell-NEG-TNS

Crucially, the disambiguation strategy by FIP$_{shika}$ is at work for the scrambling example in (3) as well, as shown in (9) and (10).

(9)    = (3)a; Embedded Scope; $F_0$-compression until the embedded Neg.
        **Sono ramu**-shika$_j$ Naoya-wa    Mari-ni [$_{CC}$ PRO $t_j$   nomiya-de
        that rum-SHIKA   N.-TOP     M.-DAT          bar-LOC

      noma-*na*-i-yooni]    iwa-nakat-ta.
      drink-NEG-TNS-C   tell-NEG-TNS

(10) = (3)b; Matrix Scope; $F_0$-compression until the matrix Neg.
      **Sono ramu**-shika$_i$ Naoya-wa    Mari-ni [$_{CC}$ PRO  t$_i$   nomiya-de
      that rum-SHIKA   N.-TOP      M.-DAT         bar-LOC
      noma-na-i-yooni]    iwa-*nakat*-ta.
      drink-NEG-TNS-C   tell-NEG-TNS

What is crucial in the present discussion is that, the availability of embedded scope in (3)a, as indicated by the FIP$_{shika}$ in (9), shows that Hasegawa's (1994) analysis, which is based on the absence of such a reading, cannot be maintained. The scope possibilities of *shika*-NPI constructions thus exemplify that the prosodic factors (FIP and PSC) are necessary and indispensable for the proper understanding of *shika*-NPIs, on a par with Wh-questions in Japanese.

# 3 Concluding Remarks

A number of recent works (such as Deguchi and Kitagawa 2002 and Ishihara 2002) which paid attention to the prosodic properties of Wh-questions revealed that certain apparently syntactic effects observed for this construction are actually prosodic in nature. I have shown in this paper that virtually the same holds for the *shika*-NPI constructions in Tokyo Japanese in that it exhibits Focus Intonation Prosody (FIP) and Prosody-Scope Correspondence (PSC), akin to what is found in Wh-questions in Tokyo Japanese. I hope to have shown that <u>the prosodic factors (FIP and PSC) are necessary and indispensable for the proper understanding of not only Wh-questions but also *shika*-NPIs construction</u>, calling for <u>the necessity of an interdisciplinary approach to the theory of grammar</u>, which is couched under Kitagawa's research guidelines in (1). As I see it, we must pay serious attention to the prosodic properties when conducting the syntactic analyses, especially of those constructions which obligatorily exhibit FIP.[10]

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[10] See Yamashita 2007b, c for more discussions on the prosody and syntax of *shika*-NPIs in (Tokyo) Japanese. See also Yamashita 2005/in progress, 2007a where it is shown that prosody plays a pivotal role in accounting the nature of "split indeterminate NPI pronouns" in (Tokyo) Japanese (e.g., … *dare* … V-*mo-si*-Neg, … *dare* … *mo* … V-Neg; see Kuroda 1965: Ch.3, sec.5, pp.93–95, 2005).

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