

# Studies on polarity sensitivity

Lucia M. Tovená

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## **Declaration**

I declare that this thesis has been composed by myself and that the research reported here has been conducted by myself unless otherwise indicated.

Lucia M. Tovená

Edinburgh, 21 May 1996

## Abstract

The aim of this thesis is to investigate the linguistic phenomenon of polarity sensitivity. It is motivated by the belief that the complexity of the phenomenon requires a more articulated analysis than the standard one based on licensing conditions. Traditionally, the term of polarity sensitive is used to identify items whose distribution is considered to be affected by the positivity or negativity of the context of occurrence. The notion of negative context covers more than environments containing overt negation or negative quantifiers. Elements that induce a negative context are potential licensers for negative polarity sensitive items. The phenomenon of polarity sensitivity has been approached from a variety of perspectives in the literature. The cluster of data associated with it raises semantically and syntactically important questions. There is reduced agreement on the definition of pertinent negativity. Sensitive elements show meaning variations when taken in isolation or in context, a fact that calls for investigation. The complementary distribution implied by the current approaches does not fit the data. The idea of a restricted distribution is assumed in the characterisation rather than derived from a particular linguistic function of the items. The argument for a new way of perceiving the phenomenon rests partly on the observation that islands of inadequacy persist in current analyses, as well as on the desire to uncover connections between this and other phenomena of natural languages. There is a strong case for revising the current notion of sensitivity, giving up the assumptions of idiosyncrasy and lexical fragmentation upon which it is built.

After a review of previous research, we explore a broader notion of sensitivity, where polarity is one of many facets, the others being connected with the nature of a given item. The discussion falls into two main parts. First we look at a cross-linguistic selection of temporal adverbials, and we study their distributions and interpretations with respect to factors such as aspectual variations and positive and negative contexts of occurrence. We analyse how the presence of negation in different parts of the sentence can cause variations in well-formedness of the temporal structure and break down/create cross-linguistic equivalences within the group. The results of this cross-linguistic study also reveals the accidental negative polarity labelling of the English item and the stipulative status of licensing requirements. It appears that cases traditionally not covered by the label ‘polarity sensitive’ are expressions which are semantically close enough to fall into the same class, or that an item gets fragmented into parts belonging to different classes because of its articulated functioning. Despite the similarities, the Italian data, for instance, do not fit in the licensing/non-licensing partition defined on the English data.

Then, we consider the English item *any*. In this case too, we detect a web of interactions, this time connected with its function as a quantifier and as an indefinite, as well as with positive and negative contexts of occurrence. Variations in reading are brought about by licensers, and we explore how the effect can be computed in a compositional way. They are also connected with the type of domain *any* quantifies over, a phenomenon common to indefinites in general, with specificity issues and with the type of statement in which *any* occurs. At the end of the thesis, we point to analogies between polarity sensitivity and other negation related phenomena such as negative concord marking.

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*In affettuoso ricordo di Pia Ceccato Bovo.*

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# Chapter 1

## Introduction

### 1.1 Aims and motives

*Negative* and *affirmative polarity items* are terms applied to atomic or compound expressions which are said to be polarized negatively and affirmatively respectively. Broadly speaking, they are attracted by negative (resp. affirmative) contexts and repelled by the complement contexts. The phenomena of negative and positive sensitivity are usually introduced by giving examples of members of the class of lexical items involved. The sentences in (1.1) and (1.2) contain ‘prototypical’ negative and positive polarity items respectively.

(1.1) She did not read *any* books.

(1.2) She read *some* books.

Traditionally, if the sensitive items are negative polarity items (NPIs), as in (1.1), they are required to be within a negative environment, i.e. in the scope of a negative element, hence the dubious status of (1.3)<sup>1</sup>. Whereas, if they are positive polarity items (PPI or API for Affirmative Polarity Item), as in (1.2), they are required to be within a positive environment, i.e. outside the scope of a negative element, hence the dubious status of (1.4). A trigger is an element that validates the occurrence of the polarity item. Its scope is the environment where the ‘licensing’ obtains.

(1.3) #She read any books.

(1.4) #She did not read some books.

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<sup>1</sup>The hash sign is used to mark sentences, not necessarily ungrammatical, in which the negative polarity reading is not available.



The definition of the class of polarity items has to be derived indirectly from the analysis of the phenomenon. The class is a rather puzzling collection of different elements. The sentences in (1.5), adapted from Baker [Bak70], offer some examples of NPIs, ranging over several syntactic categories.

- (1.5) a. He did not say *anything*.  
 b. Chloe won't *ever* accept that proposition.  
 c. The chemist isn't *all that* clever.  
 d. Chloe hasn't eaten *so much as* a bite.  
 e. He did not drink *a drop*.  
 f. Chloe did not *lift a finger*.

In (1.6) there are examples of PPIs.

- (1.6) a. Daphne *would rather* go.  
 b. She is gone *already*.  
 c. He is *pretty* boring.  
 d. He is *far nicer* than his colleague.

The role of negation in the manifestations of the phenomenon has been noted from the start. The notion of polarity, presumably imported from physics, depicts the impression that these items are not evenly distributed in a sample text. Instead, they cluster in negative and affirmative contexts respectively. In spite of the qualification of *negative*, however, it might be worth keeping in mind that their relation to traditional negation is not as straightforward as it might appear, as we will see throughout this dissertation.

The existence of various relations between elements inside a natural language sentence, e.g. anaphoric or thematic links, is an undisputed fact. However, these relations are not necessarily expressed in terms of licensing. For instance, verbs are not said to license NP arguments, rather they are considered to assign these arguments particular functions in the sentence, under certain locality conditions. Licensing is a syntactic form of enforcing cooccurrence of elements, possibly grouped in classes, possibly under particular locality conditions, without providing explanation or understanding of the phenomenon. In the case of negative polarity licensing, little justification is provided for its enforcement, apart from some vague reference to negative feature matching, idiosyncratic requirements, or similar. Given the situation, an analysis based only on licensing would fall short on explanatory ground.

Valuable insights have been gained on the phenomenon of polarity sensitivity. Without anticipating the discussion of the literature in chapter 2, I will mention a few such as the connections with scalar and inferential phenomena (Baker [Bak70], Fauconnier [Fau75]), the generalisation over the class of licensers via the notion of downward entailment (Ladusaw [Lad79]), and the relevance of contextual factors (Linebarger [Lin87]). Two main reasons for objecting the traditional perspective on the phenomenon are the islands of inadequacy that persist and the lack of convincing proposals for the definition of NPIs and motivation for licensing.

This dissertation aims at covering more ground by adopting a broader perspective. The research focuses on the ways in which polarity items interact with negation and with the context of occurrence. The search for the motivations of licensing leads me to play down the notion of licensing, which is rather stipulatory. Instead, I favour compositional treatments and draw attention to the original notion of sensitivity. I concentrate on a group of NPIs with different properties. A link is established between the ‘meaning’ of the phrases inside and outside traditional licensing contexts. The link is the computable effect of the negative environment. I aim to reduce as much as possible the idiosyncratic component, and to bring the phenomenon back to the general functioning of the language. The ambiguity standardly postulated at the lexical level is re-examined as pertaining to the level of the complex expression.

The current situation in the research on polarity is partially a consequence of the hierarchical vision of the issue. Where there is an element dominating the other, it is fairly obvious that the former will set the stage. This is what has happened, more or less, with a great part of the research devoted to a characterization of licensers, and a smaller part to NPIs. Licensers are perceived and treated as the active components in the phenomenon, whereas NPIs are the passive one. This dissertation develops a vision of interaction rather than contraposition. This position implies that every polarity sensitive (PS) item is to be examined in its entirety, i.e. as sensitive to the polarity of the context as well as being a quantifier, a temporal adverb, etc. As a consequence, sensitivity cannot be restricted to polarity, but it shows in the whole of the behaviour of the item, and the variation in ‘meaning’ of PS items follows from the fact that the item interacts with different elements. Moreover, although licensing requirements are concerned with what occurs on the left of each PS item, our research on *any* will show that it is sensitive to variations in its domain of quantification. The idea of establishing ‘horizontal’ relations between PS items, context and licensers, rather than ‘vertical’ ones, has the advantage of giving reasons for considering also the right context of PS items,

and not only the left one, as done in licensing approaches.

## 1.2 Organization of the dissertation

Chapter 2, ‘A journey through the literature’, is a guided tour around the literature on polarity phenomena. Its aim is to look at the definition and conceptualisation of polarity phenomena, and to see how this process is reflected in linguistic theories. At the start, when there wasn’t a standard view on the topic, the relevant works contained features of different trends. Subsequent analyses diverged, and it became possible to distinguish syntactic and semantic approaches. But in recent years, syntactic approaches to negative polarity have paid more attention to semantic facts, such as features for the characterisation of the context of occurrence, interferences of tense and predicate types. Conversely, semantic approaches have paid more attention to syntactic facts, such as locality constraints, and points of contact between the various approaches has tended to increase. This tour reveals that the investigation into the phenomenon of polarity has proceeded without a clear independent way of identifying polarity sensitive items. A typology has developed, but the definition of polarity objects is still an open question. Scholars focus on an implicitly agreed core of items, but diverge on a peripheral group whose identification relies more heavily on the type of analysis adopted.

In chapter 3, ‘Features of a semantic analysis of negative polarity’, we discuss work belonging to the semantic school, which constitutes the theoretical background of this dissertation. First, we look at Ladusaw’s ([Lad79], [Lad80]) contribution. Ladusaw’s work ties together previous studies on the relevance of logical entailment for negative polarity and of scalarity and pragmatic effects. The result is a structured proposal for the conditions triggering occurrences of NPIs. The notion of downward entailment is the salient feature of the class of elements that trigger NPIs. Licensing is studied in terms of scope relations between triggers and NPIs. Downward entailment and other technical notions such as monotonic functions, ideals and filters, are defined in section 3.3 while discussing Zwarts’ ([Zwa91], [Zwa93a], [Zwa93b]) algebraic semantics approach. Zwarts has given a major contribution to the formalisation of the analysis. He has proposed a mathematical analysis of the notion of licensing power, which partitions the class of licensers into hierarchical subclasses. Finally, Dowty’s ([Dow93], [Dow94b]) papers on monotonicity based logic, negative polarity and negative concord marking are presented. This discussion introduces the hot topic of the relation between polarity sensitivity and negative concord.

Chapter 4, ‘Negation, eventualities and ordering relations: sensitive temporal ad-

verbials', contains arguments for revising the central role of *licensing*, typical of the current standard analysis of polarity sensitivity. It shows that licensing does not help in understanding the phenomenon, and that it may be difficult to implement. Several temporal adverbials are examined. The discussion starts from the case of *until*, which has often been argued to be an NPI. The item is analysed as an ordering operator. Its distribution is accounted for in a unified way, by considering the interaction between ordering and negation, and by paying attention to the characteristics of the entities entering the relations. These factors are shown to be relevant to the characterisation as polarity sensitive. Other phenomena such as the availability of inchoative reading are also predicted and find their explanation. The analysis extends to the Italian connective *finché*, highlighting a close semantic functioning, despite the fact that the item does not fit the licensing paradigm. Finally, the Italian adverb *ancora* is examined. Its cluster of uses is accounted for by means of a characterisation as an operator imposing a complex relation with two facets. The referential part is defined as mapping with respect to an identifier; the self-referential part as an effect of continuance on the eventuality.

In chapter 5, 'Negation, domain structure and evaluation procedures: a sensitive determiner', the examination of types of polarity sensitive items is continued with a discussion of a sensitive determiner: the English word *any*. Distributional restrictions for so-called PS and FC *anys* are derived from the modal-like properties of a single element. *Any*-phrases do not allow individuation of the members in the domain. The research highlights connections with several open issues, such as the treatment of indefinites and the notions of specificity and generic statements.

Finally, chapter 6, 'Polarity sensitivity and negative concord marking', discusses similarities and differences between the phenomena of polarity sensitivity and negative concord. Data on free-standing occurrences and constituent negation are examined in support of the independent status of N-words. The bulk of the chapter is devoted to outlining an analysis for negative concord in Italian which gives events and their participants a prominent role. The distinction betweenthetic and categorical statements containing N-words is used in order to account for the pairings between word-order, negative concord marking and interpretation. The proposal provides a criterion for keeping polarity sensitivity and negative concord distinct, but it is also sensitive to the large overlap between the two.

The concluding chapter 7 draws together the threads followed in this dissertation, and points at directions for future developments.

## Chapter 2

# A journey through the literature

### 2.1 Introduction

This chapter contains a guided tour around the literature on polarity phenomena. We present it from two points of view: the evolution of a typology and the shaping of the phenomenon. We address the previous research chronologically, and describe the interaction between the evolution of the research on this topic and linguistic work within the same frameworks; and the treatment of certain items for which an alternative analysis is discussed in the rest of this study. In view of this, this chapter is not to be read as a complete diachronic review.

This tour reveals that the investigation into the phenomenon of polarity has proceeded without a clear independent way of identifying polarity sensitive items. The definition of polarity objects is still an open research question. Scholars focus on an implicitly agreed core of items—considered to require the cooccurrence with licensers—but diverge on a peripheral group whose identification relies more heavily on the type of analysis adopted.<sup>1</sup>

It is general practice to introduce NPIs by giving a non-exhaustive list of items, with the comment that many syntactic categories are represented in the group, and that items can be either atomic or complex. One then attempts a characterisation of the group. The group is defined according to the analysis adopted. The current inability of defining the object of the research, other than by referring to its description, may indicate that an adequate analysis still escapes the research community.

The aim of this chapter is precisely to look at the progressive definition and con-

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<sup>1</sup>It is interesting to note that English *any* is one of the few expressions unanimously acknowledged as negative polarity items. Furthermore, it is also the one for which it is most difficult to find a complete correspondent in another language.

ceptualisation of polarity phenomena, and to see how this process is reflected in the linguistic theories proposed. At the start, when there wasn't a standard conceptualisation of the topic, the relevant works contained features of different trends. Subsequent analyses diverged, it became possible to distinguish syntactic and semantic approaches. But in recent years, syntactic approaches to negative polarity have paid more attention to semantic facts, such as features for the characterisation of the context of occurrence, interferences of tense and predicate types. Conversely, semantic approaches have paid more attention to syntactic facts, such as locality constraints, and points of contact between the various approaches have tended to increase.

The organisation of the chapter is as follows. In section 2.2, we discuss Klima's [Kli64] work. His paper is concerned with negative phenomena in general, but it has contributed a wealth of data to subsequent research on polarity effects. Although there is no direct reference to the existence of a phenomenon of negative polarity, most of those that will subsequently become the traditional features of the phenomenon appear already in the discussion: the restricted distribution of the items, the connections with negation, the observation that other contexts not directly tied with negation are also suitable hosts for NPIs, cases where clause boundaries may be irrelevant, and ties with indefinites. From the presentation, it will be clear that Klima's work should not be classified as exclusively syntactic, even though the treatment proposed consists of syntactic rules.

Then, in section 2.3, we look at a period where most of the shaping of the phenomenon takes place: it is singled out from the negation-related mass of data, it is given a name and a basic conceptual structure. First, we discuss Baker's [Bak70] article on double negatives, which, to the best of our knowledge, contains the first official occurrence of the terms negative and positive polarity as applied to linguistic data. Second, we briefly discuss work done by Ladusaw [Lad79]. A more detailed presentation of Ladusaw's work is delayed until the next chapter, section 3.2, where the theoretical background of this study is presented. Ladusaw's work ties together the relevance of logical entailment noted by Baker with the scalarity and pragmatic entailment effects studied by Fauconnier [Fau75]. Finally, we look at Linebarger's ([Lin80a], [Lin87]) work. She proposes a split analysis similar to Baker's in style.

A period of relative systematisation follows this phase of conceptualisation. In section 2.4, we review works produced in the second half of the eighties. These works develop the theoretical possibilities introduced in the conceptualisation phase, and apply them to languages other than English. On the one hand, Progovac [Pro88], and to a certain extent Laka [LM90], define degrees of locality for licensing, in a syntactic

framework. Progovac exploits a version of binding theory in order to tailor the scope of licensing. On the other hand, Zwarts ([Zwa91], [Zwa93b]) defines degrees of licensing in a semantic framework. He proposes a mathematical analysis of the notion of licensing power, which partitions the class of licensors into hierarchical subclasses. A more detailed discussion of his contribution can be found in chapter 3 section 3.3.

Then, in order not to get chronologically too out of step, in section 2.5, we make a pause in our review to discuss some connected questions. The issue of the lexical split characteristic of polarity items is raised. For instance, it has been proposed that there are two *anys*, two *untils*, etc. The bulk of the section is devoted to the issue of positive polarity items. This is one of the mirror effects induced by the notion of polarity.

Recent developments in the field are discussed in section 2.6. Kadmon and Landman ([KL89], [KL93]) renew attention on pragmatic factors affecting the distribution and interpretation of *any*, and put forward a unified analysis of this item. Locality issues for sentences containing multiple licensors, already discussed in Baker [Bak70], come up again in Dowty's ([Dow93], [Dow94b]) work, together with the question of how to relate polarity phenomena to the wider range of negation related phenomena. His work is discussed in more detail in the next chapter, section 3.4.

Finally, I present a few general comments on these thirty odd years of investigation, in section 2.7. The discussion focusses on the issues of the identification of polarity items, the role of licensing in the definition of the phenomenon and its impact on the assumption of a one-to-one relation between readings and lexical items so widespread in the negative polarity community.

## 2.2 A starting point

Klima's article [Kli64] on negation in English is widely considered a corner stone paper in the field, so it will be taken as the starting point for this tour. Klima proposes a transformational approach for modelling the distribution of elements such as *any* and *some*, thus his work is part of the syntactic trend. The central idea is that the distribution of most of what has come to be known as polarity sensitive items results from different derivations that, starting from abstract components, lead to the realization of lexical items. His treatment is compatible with the positions of the generative semantics school at that time. On the other hand, this author could be considered to be somehow connected also with the semantic trend, because he stressed the relevance of indefiniteness in the meaning of items like *any*, and he proposed that negative polarity items are acceptable thanks to the presence of "affective" expressions. Despite the fact that his

proposals are, to a large extent, no longer accepted, this paper is still relevant for its historical role and the large collection of data that it contains. Almost all the cases that constitute the traditional negative polarity typology are introduced in this paper.

The observation that there are linguistic items whose meaning is made up of several components is expressed in terms of a combination of abstract components with other constituents. Klima defines a mobile preverbal particle *neg*, which is the grammatical element common to *not*, *never* and *neither*, and which is involved in the derivation of many elements associated with negation. It is realised as surface form *not* whenever it is not combined with other constituents. The numerous “superficial asymmetries” in the set of sentences in (2.1) are resolved by referring to different derivative processes of *neg*. The transformational rule which operates, the so-called rule of *neg*-incorporation, belongs to a group of ordered rules.

- (2.1) a. The students did not believe that it had happened.  
 b. The students never believed that it had happened.  
 c. The students hardly believed that it had happened.  
 d. None of the students believed that it had happened.

Klima discusses the irregular distribution of indefinite quantifiers like *any* in (2.2).

- (2.2) a. There wasn't any snow falling anywhere else.  
 b. \*There was any snow falling anywhere else.  
 c. Not even then did any snow fall anywhere else.  
 d. \*Even then did any snow fall anywhere else.

The hypothesis according to which indefinites are base-generated and have a distribution limited to sentences in which they cooccur with *neg* is considered, but discarded because of counterexamples such as (2.3), where *any* and negation are not clausemate. Klima observes that the distribution of indefinites is not restricted to one constituent in a sentence, e.g. *anyone*, *anything*, *anywhere* etc., nor are they motivated by *neg* only within the clause in which *neg* occurs, see (2.3). In modern terminology, he notes that licensing can take place across clausal boundaries. The discussion results indirectly in an opportunity for introducing the basic components of a negative polarity typology.

- (2.3) a. They don't think that any rain fell anywhere else.  
 b. He hadn't realized that any time had elapsed.



Klima adopts the hypothesis according to which items such as *any*, as contrasted with *one*, are derivative forms of indefinites produced in cooccurrence with *neg*. Sentences (2.4) are proposed in support for this hypothesis inasmuch as they are all acceptable subordinate clauses, but not all of them correspond to well formed simple sentences.

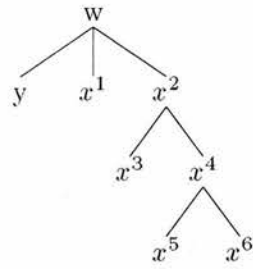
- (2.4) a. They think that rain fell somewhere else.  
 b. \*They think that rain fell anywhere else.  
 c. He had realized that some time had elapsed.  
 d. \*He had realized that any time had elapsed.

Klima considers *some* and *any* as alternative phonological realizations of one indeterminate quantifier. The distribution in (2.4) is analysed by means of a transformational rule that changes what would become the word *some* in positive contexts into what would become *any* in negative contexts. The application of the rule depends on syntactic factors within the sentence, identifiable on the superficial form. A comparison of cases like (2.5a) and (2.5b), where it is shown that *not* appears before quantifiers but not indefinites, and (2.5c), where sentence negation is possible without negative preverbal adverbs, leads Klima to argue that *nobody* is derived from a sequence containing *neg* and an indefinite.

- (2.5) a. Not everyone came.  
 b. \*Not anything happened.  
 c. Nobody rejects suggestions.

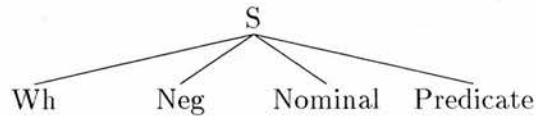
The Indef-incorporation and *neg*-incorporation rules involve the structural relation of dominance *in construction with*. This corresponds to strong c-command, as it appears from Klima's description:

A constituent (for example  $x^4$  or  $x^5$ ) is "in construction with" another constituent (in this case  $x^3$ ) if the former is dominated by (that is, it occurs somewhere lower down the branch of) the first branching node (that is,  $x^2$ ) that dominates the latter ( $x^3$ ). Similarly,  $y$  is "in construction with"  $x^1$  as well as  $x^2$ , since  $y$  is dominated by  $w$  (in fact, all three,  $y$ ,  $x^1$  and  $x^2$ , are "mutually in construction"). On the other hand,  $y$  is not "in construction with"  $x^3$  since  $y$  is not dominated by  $x^2$ . [Kli64, p.297]



*neg* original position is assumed to be pre-sentential, in Klima's terms, as depicted in (2.6).

(2.6)



The scope of *neg* is what it is "in construction with". Klima distinguishes between the pre-verbal particle, to which he attributes *full scope* over the sentence, and negative affixes, to which he attributes *reduced scope* over certain structures. This is the case of *un-* in *unhappy*, but also of *not* in (2.7). This treatment of constituent negation is then exploited, for instance, to account for the absence of subject inversion in (2.7).

(2.7) Not long ago it rained.

*Nobody* is the form that the indefinite quantifier *anybody* assumes when in subject position, see the active-passive set in (2.8). Negation is incorporated into the first element of the series of indefinites, as in the case of "multiple licensing" in (2.8b).

- (2.8)
- a. Nobody gave much to anyone.
  - b. No one was given much by anybody.
  - c. Not much was given to anyone by anybody.

Examples like (2.9) are meant to show that negation can combine with different elements, even when it motivates the occurrence of indefinites in subordinate structures. Sentences (2.9) are examples which contain 'indefinites not directly subordinate to the constituents in which *neg* ultimately appears' [Kli64, p.278].

- (2.9)
- a. Not a single writer thinks that any rain fell anywhere else.
  - b. Never before had they realized that any time had elapsed.
  - c. No one thinks any rain fell anywhere else.

The restricted distribution of 'indefinite quantifiers' is characterised in the following way:

...the presence of the pre-verbal particle *neg* provides a favourable environment for the occurrence of the indefinite quantifiers within the clause in which *neg* occurs, as well as in any clause subordinate to the latter clause. [Kli64, p.279]

This characterisation is overpredictive, as shown in Baker's [Bak70] paper on double negatives, discussed below. Apart from *neg*, other constituents such as the question marker *wh-* in (2.10), the restrictive *only* in (2.11), and conditionals and adversatives in (2.12), are said to provide a favorable environment for "indefinites".

(2.10) Who expects him to write any more novels?

(2.11) Only young writers ever accept suggestions with any sincerity.

(2.12) I doubt that I need ever consider the problem.

The grammatical similarities of *neg*, *wh-* and *only* result from the presence of the common grammatico-semantic feature *Affect(ive)*. Klima attributes to all these elements the property [+ Affective]. This property is first postulated as a separated morpheme, and then it is redefined as a syntactico-semantic feature associated to all morphemes and constructions that legitimate NPIs.

In conclusion, the notion of sensitivity could be said to dawn in the particular attention given to the interaction of elements like *any* with the environment. Locality constraints are still *in nuce*. However, there is the subdivision between *affective* elements and affected items, with a geometrical relation connecting them. Licensing power is detected in negative elements other than overt negation, such as *scarcely*, *few* and *too*. But the definition of where *any* can occur is already perceived to be problematic. The solution proposed is an abstract feature *Affect*, present in all relevant constructions. The content of this feature is left underspecified, and constraints on its distribution are not tackled. As a matter of fact, the issue shows up again in more recent proposals, where a surface null operator is postulated as a licenser in questions, but it must be present only when *any* has polarity sensitive (PS) reading, whereas it cannot be present when *any* has free-choice (FC) reading.

Klima's paper has had a great impact on research. Its limitations, however, were soon noticed. With respect to polarity issues in particular, Lakoff [Lak69] argues against the idea of allomorphic pairs of items. In [Kli64], the presence of pairs of items is not strictly required, but it is more or less implied by the fact that negated forms are treated as derived from positive ones. Through observing the limitations of Klima's transformational treatment, Lakoff calls for a broader, pragmatic approach to negative polarity. The indefinite incorporation rule has to be made optional in order to account for sentence types where *some* and *any* are found in identical syntactic environments. Other

things remaining equal, no difference should be noted between sentences containing *some* or *any*, which is due only to the occurrence of one rather than the other of these two words. On the contrary, examples (2.13) and (2.14) are presented to show that there are differences, because the two questions are used in different contexts. The difference between promise and threat in (2.15) is assumed to be in their presuppositions.

- (2.13) a. Who wants some beans?  
       b. Who wants any beans?
- (2.14) a. Do you think those men want to do some work?  
       b. Do you think those men want to do any work?
- (2.15) a. If you eat some candy, I'll whip you.  
       b. If you eat any candy, I'll whip you.

When the speaker expects or hopes the answer to be positive, and the antecedent of a conditional to be fulfilled, *some* is used. In case of negative or neutral presupposition, *any* is chosen. Hence, *some* and *any* must be distinct lexical items.

In footnote 1, Lakoff mentions two distinct uses of *any*. She distinguishes between an unstressed *any*, which has come to be known as PS, and which she paraphrases as 'a given quantity', and a stressed *any*, which since [Lad79] is known as FC *any*, whose meaning is paraphrased as 'any at all'. The approach proposed consists of discussing their distribution as different items, identified via different sentence readings. This is a very important issue, and some of the contributions found in the literature are summarised in chapter 5 subsection 5.2.2.

With respect to negation in general, Jackendoff [Jac69], [Jac72] discusses problems connected with the assumption that *neg* is always base generated attached to the sentential node. He also highlights the irregularity of the group of items that undergo Indef incorporation, and the lack of matching non-affective form for all the 'indefinites'. Jackendoff [Jac72] emphasises that there aren't positive counterparts for certain elements, for instance *any more* or *at all*. He proposes that all NPIs are basic lexical items, rather than items derived from positive polarity items via a transformation rule.

Klima's rule for the positioning of negation is a transformation that modifies the meaning of the sentence to which it applies. At the end of the seventies, transformation rules, their power and the objects to which they apply were hot topics in generative linguistics. Jackendoff was against transformation rules that manipulate specific words or phrases. His position on polarity must be considered in this context.

Subsequently, in his comparative study, Dahl [Dah79] has shown that there is little cross-linguistic support for treating negation as base generated in sentence initial posi-

tion, and then moving it to whatever element it negates [Dah79, p.93]. He also notes that the preferred position of negation as close to the verbal element carrying tense, mood and agreement finds no motivation in Klima's transformational syntactic treatment of negation [Dah79, p.97].

### 2.3 Setting the stage

At this point of the research, there was an intuitive perception of the existence of a connected group of linguistic data. All the main elements that will be found in subsequent discussions have been mentioned. The seeds of the three hypotheses on the nature of the phenomena syntactic, semantic and pragmatic have also already been sowed. The next step is to create a special label of *polarity sensitive*, to identify this set. In general, Baker's [Bak70] paper on double negatives is considered to contain the first official occurrence of the terminology of (positive) affirmative and negative polarity, which is now widely attested. The work done in this period sets the stage for future developments, inasmuch as it provides a conceptualisation of the phenomenon. *Negative and affirmative/positive polarity items* are terms applied to atomic or compound expressions which are said to be polarized negatively or affirmatively, i.e. these expressions are subject to extra constraints, on top of the general constraints derived from the lexical and syntactic categorization. This characterisation is not that informative *per se*, rather its potential value resides in the definition of these constraints, which vary according to the framework adopted. Yet, it is conceptually constraining, since it says that licensers and polarity items are linked by cooccurrence, and that once the relation has been verified, it holds for any polarity item *qua* polarity item. It is constraining also because it has to be read in the perspective of a research centered on the issue of licensing, hence locality, rather than on sensitivity. The latter term has nearly disappeared from many studies on the phenomenon.

Baker's [Bak70] paper on double negatives opens with an explicit mention of negative and affirmative facets of the phenomenon. Instances of affirmative polarity items are *already* in (2.16), *would rather* in (2.17) or *still* in (2.18).

- (2.16) a. The Sox have already clinched the pennant.  
 b. \*The Sox haven't already clinched the pennant.
- (2.17) a. I would rather go to New Orleans.  
 b. \*I wouldn't rather go to New Orleans.

- (2.18) a. John still plays golf.  
 b. \*John doesn't still play golf.

Instances of negative polarity items are (unstressed) *much* in (2.19), *ever* in (2.20) or the idiom *lift a finger* in (2.21).

- (2.19) a. He didn't say much.  
 b. \*He said much.
- (2.20) a. George won't ever see that movie.  
 b. \*George will ever see that movie.
- (2.21) a. George hasn't lifted a finger lately.  
 b. \*George has lifted a finger lately.

From the examples it appears that Baker constitutes his pairs so that the starred sentences in (2.16)–(2.18) are either ungrammatical or are unsuitable, because they are not the logical negation of the original. Therefore, in cases like (2.16), the classification as affirmative polarity follows not from the impossibility of *already* of cooccurring with negation, but from a particular evaluation of the representations assigned to negative sentences. The rough idea that Baker seems to pursue is that, contrary to what he appears to expect as natural, the temporal relation in (2.16) is not reversed by negation. But it is falsified, hence the reference to logical negation. In this respect, the constitution of the pair *already–yet* is revealing. The external negation shown in (2.16b) is discarded. The same applies to (2.18). Sentence (2.22) is not considered the denial of (2.18a), since *still* is understood as outside the scope of negation. The pairs are built in analogy to the contradictories *some–not any* in (2.23a) and (2.23c), whereas (2.23b) is the odd one.

- (2.22) John still doesn't play golf.
- (2.23) a. Georges ate some of the pie.  
 b. Georges didn't eat some of the pie.  
 c. Georges didn't eat any of the pie.

The paper focusses on cases of double negation such as those in (2.24).

- (2.24) a. There isn't anyone in this camp who wouldn't rather be in Montpelier.  
 b. I find it impossible to believe that someone else couldn't do a far better job than our present governor.

The issue raised by Baker is twofold. First, the question of the definition of suitable environments for polarity items cannot receive a strictly 'local' answer, since the contrast between (2.17b) and (2.24a), where the same item appears in analogous contexts, part of main and embedded clauses respectively, must be accounted for. Second, it appears that

a link between ‘local’ and ‘global’ perception of the environment cannot be established by counting the number of affective operators in a sentence from the root down to the occurrence site and cancelling them out in pairs by means of a polarity-reversal rule. In fact, with this in view, Baker [Bak70, p.173-174] first explores a possible extension of Klima’s and Jackendoff’s analyses. Each of the polarity elements carries a specification of the type of environment in which it can occur. Whenever these items cooccur with an affective element, some feature is added in the reading of the affective element. The sentence is then marked as semantically anomalous whenever inherent and assigned features disagree at the end of the derivation. A rule that reverses the value of a feature, and which can be applied cyclically, is too simple a solution. The method is shown to make incorrect predictions, for instance for (2.25a), since (2.25b) is also acceptable, and for (2.26). In (2.26a) there should not be reversal in the subordinate clause. In (2.26b) there should be reversal.

- (2.25) a. Someone didn’t eat some of his porridge.  
           (Someone left some of his porridge behind)
- b. Someone didn’t eat any of his porridge.  
           (Someone left all of his porridge behind)
- (2.26) a. There isn’t anyone here who doesn’t care to do anything down town.  
       b. There isn’t anyone here who wouldn’t rather do something down town.  
       c. \*There isn’t anyone here who wouldn’t rather do anything down town.

If the application of the rule is made optional, and is connected with the presence of certain items, then a further restriction is required in order to rule out (2.26c). It is necessary to say that a rule cannot affect one element within a clause unless it can affect all elements.

Baker’s final analysis is expressed in terms of two principles. The first principle draws inspiration from the directional treatment of Klima [Kli64] and Jackendoff ([Jac69], [Jac72]). It defines a sufficient condition for the use of polarity sensitive items with respect to the presence or absence of a negation and to a scope defined on a surface structure representation. In keeping with contemporary work, the condition is formulated as a syntactic filter, inasmuch as it is a structural condition defined without referring to syntactic properties. That is to say: no property is identified as being able to define the relation of scope to which the rule can refer. The filter refers to portions of syntactic representations in which certain elements occupy given positions. The lack of definition for NPIs and APIs is a clear weakness.

- (2.27)       Negative polarity items are appropriate in structures within the scope

of negations, whereas affirmative polarity items are appropriate elsewhere. [Bak70, p.179]

The second principle consists of a semantically motivated procedure for carving out from the representation of a sentence a suitable subset that satisfies the first principle. The aim is to provide a treatment for double negatives and to find a way to reduce to the first principle cases where there is no overt negation. The method adopted is first to identify a sentence containing a polarity item whose acceptability will have to be defined according to the first principle. Then, if the existence of a certain semantic relation between a semantic representation of this sentence and of the sentence under examination can be verified, it can be said that the polarity item appearing in the latter is appropriate or licensed. As Baker himself notes, the snag is that the operation of carving out a subset is not defined because there is no indication of what counts as a legitimate subset.

- (2.28) Given semantic representations  $P_1$  and  $P_2$  satisfying the following conditions:  
 (A)  $P_1 = X_1YZ_1$  and  $P_2 = X_2YZ_2$  where  $Y$  is itself a well-formed semantic representation;  
 (B)  $P_1$  entails  $P_2$ ; then the lexical representation appropriate to  $Y$  in  $P_2$  (by the first principle) is also appropriate to  $Y$  in  $P_1$ . [Bak70, p.179]

The application of the principles to example (2.24a) goes as follows. This sentence is paraphrased in the notation in (2.29a), which in turn entails (2.29b). The formula in (2.29b) can be expressed in natural language as in (2.29c).

- (2.29) a.  $\text{neg } \exists x \text{ neg } x \text{ would rather be in Montpelier.}$   
 b.  $\forall x x \text{ would rather be in Montpelier.}$   
 c. Everyone in this camp would rather be in Montpelier.

The formulae in (2.29a) and (2.29b) share the subformula in (2.30). The first principle is said to be satisfied because the positive item *would rather* is not commanded by negation in the subformula (2.30), hence it is appropriate as part of the lexical representation of (2.29b) and thereby of (2.29a).

- (2.30)  $x \text{ would rather be in Montpelier}$

Once the transformational rules have been abandoned, and the different items are considered to be base generated, locality issues immediately step in overtly. It is no



longer the case of a self referential relation between an element and the features it incorporates, but a relation between different elements. Thereby, the notion of licensing elements has made its implicit appearance. The distribution of polarity items is seen as a matter of being in the scope of a suitable element, where 'scope' and 'suitable element' want definition. From now on, these two issues are at the heart of the research.

With respect to the typology, Baker has introduced negative polarity idioms. Schmerling [Sch71] points out that Baker's first rule crucially refers to NPIs without defining them. As shown in this chapter, this situation will remain the common one. She introduces minimisers in the typology and argues that it is not possible to define NPIs by giving a finite list of expressions, because, for instance, the class of minimisers is open. We note that this does not necessarily implies that it has an infinite number of members. However, since the class can be easily extended, listing remains a preliminary step, with no predictive power.

The work done by Ladusaw [Lad79] at the end of the seventies firmly established the semantic trend. Ladusaw gives a precise semantic content to the vague idea of *affectedness* proposed by Klima [Kli64], (see [Lad80]), and develops the connection between negative polarity and entailment introduced by Baker [Bak70] and the use of pragmatic scales studied by Fauconnier [Fau75], [Fau77]. The content of his proposal is discussed in chapter 3 section 3.2. In short, from the formal point of view, Ladusaw develops the anaphora-style approach expressed by licensing, which from a conceptual point of view is taken as standard today. The issue of the scope of the licensing is formalised by treating licensers as functions, and identifying their scope with their arguments. From the point of view of the content, Ladusaw formalizes the role of semantics introduced by Baker [Bak70] by exploiting the notion of logical entailment to draw a generalisation over the group of licensers. In this way, he manages to avoid the dichotomy postulated by Baker's two principle treatment. Such a result is obtained by defining a weaker notion of negativity in terms of downward entailment. Ladusaw proposes a semantic treatment, however he is aware of ordering restrictions that seem to apply. For this reason, he adds to his rule a clause on the linearization of trigger and licensed element. In conclusion, he exploits previous hints and develops them into a new solidly structured treatment. From here on, all works on negative polarity refer to triggers/licensers as an essential part of the phenomenon. So, despite the fact that Ladusaw's and subsequent approaches are relational, i.e. they require different components to stand in certain relations, NPIs are treated as encapsulated units. In other words, the relation of licensing is established between the classes of licensers and of polarity sensitive items. In section

3.3, I discuss why Zwarts' [Zwa91] classification of licensers and polarity items does not really question this assumption. The perception of the phenomenon in terms of licensing constraints is reflected in the choice of partitioning the distribution of a lexical form into areas that belong to different lexical items whenever data contradict the licensing predictions. There seems to be no programmatic attempt to read the distribution of each item as a single big composite picture.

Baker's style of proposal is taken up about ten years later by Linebarger [Lin80a]. She emphasises the variety of cases which are not directly reducible to the presence of negation. Her effort to account for more linguistic data, however, leads to a formulation of the conditions that is less clear cut than the original. What was the first principle in Baker's proposal, see (2.27), becomes the Immediate Scope Constraint in Linebarger [Lin80a, p.30].

A negative polarity item is acceptable in a sentence S if in the logical form of S the subformula representing the NPI is in the immediate scope of the operator NOT. An item is in the immediate scope of NOT if

- (1) it occurs only in the proposition which is the entire scope of NOT, and
- (2) within this proposition there are no logical elements intervening between it and NOT.

"Logical elements" are defined here as elements capable of entering into scope ambiguities; that is, the occurrence of the surface realization of  $n$  logical elements in a sentence S results in the association of S with up to  $n!$  logical forms expressing the possible and acceptable orderings of these elements.

The two main differences between Baker's and Linebarger's treatments of the prototypical case of licensing are, first, that the licensing capacity of overt negation is no longer controlled on the surface structure, but on the logical form<sup>2</sup>, a level of representation which is supposedly unambiguous. Second, it is restricted by a requirement of immediate contiguity with the triggered element, expressed in a clause of the constraint.

The change in level of representation to which the licensing constraint applies is directly connected with the issue of the locality conditions for licensing. The move is intended to solve problems given by sentences like (2.31) and (2.32).

- (2.31) a.\*John's paper didn't hold a candle to Mary's because he had (any) help  
 b. ... but because he worked hard.

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<sup>2</sup>During the seventies, the 'interface' between syntax and semantics is relocated. Deep structures are no longer considered the locus of relationship between structure and meaning, in Chomskyan generative grammar. This role is taken up by the *logical form*, a syntactic level of representation which is mapped onto semantic representations by semantic rules. The move is paired with a general shift from conditions on the application of rules to conditions on representations.

- (2.32) a. John's paper didn't hold a candle to Mary's because he got drunk the night before
- b. ... but because he's dumb.

In (2.31), the continuation in (2.31b) forces the unacceptable reading of (2.31a). Whereas, the continuation in (2.32b) is acceptable for sentence (2.32a). Their logical skeleton is represented in (2.33).<sup>3</sup> *Any* is acceptable only if the proposition in the *because*-clause is false.

- (2.33) a. NOT CAUSE (S1, S2) = (2.31a)
- b. CAUSE (S1, NOT S2) = (2.32a)

In both cases, the negative polarity item in S2 is adjacent to *not* in surface structure. For Linebarger, the different status of (2.31a) and (2.32a) is connected with the item in S2 being semantically 'distanced' from NOT by the predicate CAUSE in (2.31a). The two readings are expressed by two different scopes of negation, and that surface adjacency is not meaningful in this case. Presumably, she locates negation always above the discriminating point, and believes that the context is always downward entailing. Thus, the contrast between (2.31) and (2.32) would be problematic for Ladusaw's analysis. However, the evidence provided may not motivate *per se* change in the level of application of the constraint. Furthermore, a special case has to be considered, in order to allow other negative polarity items to occur between a licenser and a licensed item. For instance, in (2.34) the two orderings among polarity items are possible.

- (2.34) He hasn't lifted a finger to help anybody yet.

A direct consequence of the fact of imposing more restrictive conditions in the filter is the increased number of cases that have to be treated by a 'rescuing' technique.

Pragmatic aspects are introduced under the form of a derived licensing, which constitutes the second part of the treatment. This part is a modification of Baker's (2.28). In fact, both authors consider certain sentences acceptable 'because they in some way allude to the paradigm case' [Lin80a, p.67]. The novelty is that it does not refer exclusively to semantic information, but it relies on a notion of negative implicatum (NI) to establish licensing conditions via relations between pairs of sentences. In short, the NI is the licensing statement.

<sup>3</sup>These representations are Linebarger's [Lin80a] number (3) of chapter 3.

1. **Expectation of a negative implicatum is itself a conventional implicature.** A negative polarity item contributes to a sentence S expressing a proposition P the conventional implicature that the following two conditions are satisfied.
2. **Availability of negative implicatum.** There is some proposition NI (which may be identical to P) which is implicated or entailed by S and which is part of what the speaker is attempting to convey in uttering S. In the LF of some sentence S<sup>1</sup> expressing NI, the lexical representation of the NPI occurs in the immediate scope of negation. In the event that S is distinct from S<sup>1</sup>, we may say that in uttering S the speaker is making an *allusion* to S<sup>1</sup>.
3. **NI strengthens P.** The truth of NI, in the context of the utterance, virtually guarantees the truth of P. [Lin87, p.346]

The condition can be paraphrased as follows. Either a negative polarity item is in the immediate scope of a negation in the LF representation of a sentence S, or such a configuration is verified with respect to a proposition NI which is entailed or implicated by S and which virtually guarantees the truth of the proposition expressed by S.

The change from a semantic to a pragmatic relation between pairs of sentences and implicatures generated from their literal meanings is motivated by the conviction that the existence of such pairs is not sufficient to guarantee the acceptability of negative polarity items. The implicatures generated from a sentence S affect the appropriateness of uttering S and *vice versa*. Inferences and beliefs about the real world have to be taken into account. In other words, well formedness cannot be established via the syntax and compositional semantics of a sentence alone, the context of utterance is relevant too. Linebarger argues for this on the basis of 'trigger squishes' such as (2.35) or (2.36). With respect to (2.35a) and (2.36a), sentences (2.35b) and (2.36b) contain a 'semantically similar expression which does not license [the negative polarity item]' [Lin80a, p.68].

- (2.35) a. I was surprised that she contributed a red cent.  
       b.\*I was pleasantly surprised that she contributed a red cent.
- (2.36) a. If you give a damn about the whales, you'll contribute.  
       b.\*If you give a damn about the whales, you must be George Smith.

It is interesting to note that among the types of 'squish' that she performs there are alternation between specific or non-specific readings of nominals or events, e.g. (2.36), and a move to expressions whose denotation is a subset of the denotation of the original, e.g. (2.35). Example (2.37), presented as a syntactic variation between relative clauses headed by nonspecific noun phrases, involves semantically different generic predicates.

- (2.37) a. A doctor who knows anything about acupuncture is worth his weight in gold.  
 b.\* A doctor who knows anything about acupuncture is easy to find.  
 c.\* A certain doctor who knows anything about acupuncture was not available.

These changes cannot be considered ‘semantically neutral’, a point which weakens her argument. However, (2.38) and (2.39) are probably the most convincing type of pairs, and do not contain self evident semantic shifts.

- (2.38) a. Cows fly more often than he lifts a finger to help.  
 b.\* The sun rises more often than he lifts a finger to help.
- (2.39) a. He doesn’t give a damn about enough people to qualify him as a member of the human race.  
 b.\* He doesn’t give a damn about enough people to qualify him for sainthood.

These sentences remain a challenge to date. Other data added by Linebarger to the typology of negative polarity are the case of *attraction to focus* presented in (2.40)<sup>4</sup>, the case of *external negation* presented in (2.41), and the observation that adversatives such as *dislike* and *doubt* usually do not license clausemate NPI, exemplified in (2.42a). Sentence (2.42c) is claimed to be acceptable if the NP within which the NPI occurs receives propositional interpretation, and the availability of example (2.42d) is taken to support such an interpretation. Sentence (2.42b) shows that the verb *dislike* can license *any* within the embedded clause.

- (2.40) \*I don’t have ANY interest in the project – I have a LOT of interest in it.
- (2.41) \*She DID NOT lift a finger to help.
- (2.42) a.\* I dislike any of his friends.  
 b. I dislike having to put up with any of his friends.  
 c. I dislike any food on the counter.  
 d. I dislike there being any food on the counter.  
 e.\* I dislike there being any of his friends.

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<sup>4</sup>I follow the common use of marking prosodic stress with capital letters.

Linebarger's [Lin80a], [Lin87] and Ladusaw's [Lad79] proposals differ in their predictions with respect to the cases of NPI in the scope of downward operators in a sentence that does not entail nor implicate a NI, e.g. in (2.38) and (2.39), and outside the scope of such operators in a sentence that entails or implicate a NI. Against the background of Ladusaw's [Lad79] theory, Heim [Hei84] discusses the case of conditionals, where 'if' can be considered a downward entailing element in the analysis that identifies it with the truthfunctional connective of material implication. However, natural language conditionals such as in (2.43a) do not support the inference schema in (2.43b), corresponding to Heim's [Hei84] examples (10) and (9) respectively, where 'q' is a stronger proposition than 'p', i.e. the former entails the latter.

- (2.43) a. If you put a pinch of salt in this soup, I will throw it out.  
 $\not\models$  If you put a pinch of salt and another pound of leeks and some more water in this soup, I will throw it out.
- b. If p then r.  
 $\models$  If q then r.

This case is not so strong because, as Linebarger [Lin87, p.361] herself notes, Ladusaw proposes a necessary but not sufficient condition on NPI. Furthermore, the notion of downward entailingness may be restricted. The NPI signals downward entailingness along the scale specified by the NPI. A stronger objection is encapsulated by (2.44) [Lin87, ex.143a,b].

- (2.44) a. The mad general kept issuing orders long after there was anyone to obey them.
- b. The mad general kept issuing orders (even) when there wasn't anyone to obey them.
- c.\*The mad general kept issuing orders seconds after there was anyone to obey them.

Linebarger accounts for the difference by arguing that (2.44a) and (2.44b) have negative implicata, whereas (2.44c) doesn't. It should be noted that (2.44c) is bad even without *seconds* in the sentence. The issue is more complex than stated. One has to compute *after* in order to compute the '*long*' *after* bit of information. The contrast seems to be connected with the more general question of how one computes relevant intervals and boundaries.

The research done in the seventies set the stage for future work. First, the strategy of analysis adopted in general is to start from cases where there is overt negation and expand towards others where there are other types of negation or there is no element which can be considered of negative nature. Sometimes a dichotomous treatment ensues. Second, an attempt to reunify the manifestations in a unique phenomenon is done by means of a dominance of the notion of licensing, see Ladusaw's work [Lad79], upon the notion of sensitivity. Linebarger attempts to define the notion of sensitivity to a variety of factors [Lin80a]. However, such an attempt has reduced impact because it is done in terms of derivative licensing and not in terms of the properties of polarity items.

## 2.4 Opening up the cross-linguistic perspective

At this stage of the research, the phenomenon has received a label and, more importantly, it has been conceptualised. It is no longer a seemingly connected set of natural language data, but a phenomenon with a status in linguistic theory. A class of polarity items has been sketched, as well as a class of licensors. It has been established that the members of the former can appear in a sentence only when they cooccur with a member of the latter. The reading variations of phrases containing polarity items are treated by postulating lexical splitting of the polarity items.

A minor change has taken place in the terminology, from triggers to licensors. There is a potential content change behind the new terminology. In Linebarger [Lin80a, p.7] a trigger is defined as 'any expression by virtue of which an NPI is acceptable'. A trigger is a mechanical device, whose effect once produced cannot be undone by definition. In order to be able to account for cases where triggers seem to be ineffective, the notion is changed into that of 'licenser', whose effect can be neutralised by a contrasting operator. However, one must note that the terminology is not always used in a consistent way.

Once the concept of polarity phenomenon is established, discussions concerning its relation to other phenomena and the extent of its internal variation become more pregnant. The issue of the variation across languages is connected with that of the identification of proper negative polarity items.

The research in the eighties exploits in full the premises of the preceding proposals. Two main directions are explored. One is the development of the algebraic side of the semantic analysis. Building on work presented in [Zwa81] and his doctoral dissertation of the early eighties, Zwarts [Zwa91] proposes an analysis which exploits boolean semantics. In fact, he formalizes the preceding semantic proposals by using more sophisticated tools developed in formal semantic theory. His contribution is discussed in more detail in

chapter 3. In short, he studies the strength of licensers and identifies proper subset relations among members of the group. The modifications introduced allow him to pin down variations of the type exemplified in (2.45) and (2.46) from Dutch.

- (2.45) a. Hoogstens één kind zal zich hoeven te verantwoorden.  
           at most one child will himself need to justify  
           ‘At most one child need justify himself’
- b. Niemand zal zulk een beproeving hoeven te doorstaan.  
           no one will such an ordeal need to go through  
           ‘No one need to go through such an ordeal’
- (2.46) a.\* Hoogstens zes kinderen hebben ook maar iets bemerkt.  
           at most six children have anything noticed  
           ‘At most six children noticed anything’
- b. Niemand heeft van de regenbui ook maar iets bemerkt.  
           no one has of the rain anything noticed  
           ‘No one noticed anything of the rain’

In (2.45) the polarity item *hoeven* is licensed either by *hoogstens één* and *niemand*. In (2.46), the former licenser is not able to license *ook maar iets*. The variation is accounted for in terms of licensing power. The two licensers are assigned varying semantic strength, and this difference is reflected on the polarity items. The items are classified as weak or strong depending on the type of licenser that they admit. The observation of these variations is used to support the claim that polarity sensitivity is a lexical phenomenon.

In contrast, Progovac [Pro88] explores the applicability of a geometrical (syntactic) relation to paradigmatic and derived cases. In her doctoral dissertation, she attempts to develop a syntactic analysis of the polarity phenomenon in a unified frame. The idea is to capitalize on the observation that has been gaining ground in syntactic and semantic approaches to the phenomenon, that there is an antecedent anaphor-like relation between members of the class of negative polarity items and members of the class of licensers. Polarity sensitivity is one among the numerous cases in natural language where two elements must co-occur in a certain relation for the sentence to be acceptable. She exploits the similarities between NPIs and reflexives, i.e. their need of a licenser and the locality of the licensing, and she models this phenomenon according to a modified version of Binding Theory. The move is fairly successful because of the relatively shallow



definition of such a tool, and the imprecise characterization of features it refers to.<sup>5</sup> In fact, binding was originally proposed to control coindexing, i.e. identity of agreement features on NPs, since anaphors are elements with a referential function that are referentially dependent upon another category. Here, binding is used to control licensing, where no feature sharing, matching or checking is performed with respect to a referent. The question of where the relevant features in a negative polarity idiom are situated remains an open question.

Inside this unified frame, the analysis develops into the two branches we have come to know, i.e. licensing via negation on the one side, and via non-negative licensors on the other. Adapting Binding Theory to polarity phenomena requires a modification of the original version.<sup>6</sup> Principle A defines the conditions under which coindexing is possible, and by the same means it defines the category of anaphora. Principle B defines the conditions under which coindexing is not possible, and by the same means it defines the category of pronoun. Principle C defines the conditions for referential expressions. Stated in this way, the original theory is circular, because the categories are identified via their behaviours, and the behaviours are defined with respect to the categories. Subsequent work by Burzio [Bur92] has tried to escape circularity by grounding the categories morphologically.

If the categories are identified by the bundle of features [ $\pm$ anaphoric,  $\pm$ pronominal], four combinations are possible. The generalised binding theory by Aoun [Aou86] proposes a way to accommodate the A versus A' distinction. Progovac [Pro88] refers to Aoun's version of the Theory. The counterpart of an antecedent for a negative polarity item is its licensor. Negative polarity items are never free, by definition. Hence Binding Theory is used only to impose locality constraints between licensors and licensed elements, and the only combinations that can subsist are those containing the [+anaphoric] characterisation. The theory allows the possibility of establishing two different scopes for licensing [+anaphoric] items, identified by means of the labels 'anaphor' and 'anaphoric pronominal' on the polarity items, and retaining a generalisation over the two. The core of the proposal is the following [Pro88, p.75].

**Universal:** All NPIs are A'-anaphors, subject to Principle A of the Generalized Binding framework.

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<sup>5</sup>Binding is defined as coindexing with a c-commanding antecedent. It must take place inside a governing category, which is a local domain specified in a certain way.

<sup>6</sup>In [Cho81, p.188], the theory is formulated as follows:  
 (A) An anaphor is bound in its governing category  
 (B) A pronominal is free in its governing category  
 (C) An R-expression is free

**Parameter 1:** Some NPIs are subject to Principle A only (e.g., Serbo-Croatian NI-NPIs and English NPIs), whereas others are subject to Principles A and B simultaneously (e.g., Serbo-Croatian I-NPIs).<sup>7</sup>

**Parameter 2:** Some NPIs raise at LF (e.g., English NPIs and Serbo-Croatian I-NPIs), whereas others do not (e.g., Serbo-Croatian NI-NPIs).

Certain negative polarity items are labelled as anaphors, hence they require a clause-mate licenser. Licensing is enforced directly via a binding relation holding between overt negation and NPI according to principle A. Since the question is about anaphora and not traces of movement, a relation of antecedent-government and not of head-government must hold. A valid antecedent of a polarity item can be a negation or an operator. In sentences in which there is negation, the items must be bound by the negation within their governing category. Other items, labelled as anaphoric pronouns, are licensed by a licenser occurring one clause higher up. The group of negative polarity items regains uniformity by reducing the non-negative licensing case to the anaphoric treatment via the notion of indirect licensing. The author claims that in all cases of non-negative licensing, these licensers operate only indirectly, by selecting a polarity operator situated in the specifier of Comp. In these cases, the binding relation holds between the NPI and the operator selected. A similar idea has been proposed by Laka [LM90], who discusses only the case of licensing by what she refers to as inherently negative verbs, like *deny*. She makes use of a negative feature situated in the head of Comp and selected by these verbs. In chapter 5 subsection 5.3.2, these proposals are discussed in more detail, and it is shown that such a generalisation was established on an incomplete set of linguistic data. Its validity is questioned by new systematic evidence.

The morphologic grounding of the proposal is done by the classification of the polarity items in two groups, the NI-items, from the Serbo-Croatian *niko* ('nobody') type of items, which are anaphors, and the I-items, from the Serbo-Croatian *iko* ('anybody') type, which are pronominals. This type of grounding, however, is not exportable across languages. There is no way of predicting to which category an element belongs.

The cross-linguistic variation between Serbo-Croatian and English is captured by exploiting three independent devices, expressed under the form of parameters. The first parameter, introduced above, is the pronominal/anaphoric characterisation. The second parameter consists of different raising possibilities at LF, that is no raising at all or raising at the LF level of representation, and to different positions, spec/COMP, adjoined to IP or both. The third parameter is the variation in the basic position in which negation is generated in different languages. The contrast in (2.47) is treated by

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<sup>7</sup>I-NPIs and NI-NPIs will be defined shortly.

assuming that negation is adjoined to VP in English and therefore it does not c-command the subject and cannot act as an antecedent for the anaphoric *any*. In Serbo-Croatian negation is assumed to be preverbal, and therefore it c-commands the subject position and can bind the anaphoric *niko*.

- (2.47) a. Niko ne poznaje Mariju  
           noone not knows Mary-ACC  
           ‘No one knows Mary’
- b.\*Anyone does not know Mary.

In her [Pro92a] paper, Progovac elaborates on her previous proposal, by mixing together a semantic characterization of licensers with a syntactic definition of scope. The approach remains fully within the syntactic school because in practice the modifications amount to accepting the characterization of licensers via downward monotonicity within the previous treatment. Such a characterization remains underexploited, inasmuch as its unificatory power over the whole class of licensers is disregarded. It seems also to be used in a problematic way, because although, on the one hand, it is true that by switching from a definition of licensing based on downward monotonicity to a filter specifying non-licensing in the case of upward monotonicity, one allows the possibility to cover the case of questions, without having to affirm their decreasing monotonicity; on the other hand, it is also true that all the non monotonic cases are drawn in as well — and they are a well defined class, not just some odd cases, as implicitly suggested in her footnote 5. A few examples of quantifiers of this class are shown in (2.48).

- (2.48) a#Exactly three dancers knew any steps.
- b#More than two and less than five dancers knew any steps.

The issue of interrogative clauses is still open. Questions are licensing environments, but they also host occurrences of FC *any*. Postulating an operator which takes the polarity item in its scope predicts the impossibility of having the FC reading in (2.49), contrary to facts. Not postulating it makes it impossible to account for the PS reading. The question cannot be solved by assuming optionality of the null operator, because this would correspond to saying that the licensed item selects/licenses its licenser, which leads to the question of what prevents this selection from taking place in any contexts.

- (2.49) Does anybody like Daniel?

## 2.5 Connected questions

So far, various types of variations have been mentioned. First is the variation in the typology of the phenomenon. Second, there is distribution of the polarity items. This issue has two facets. On the one hand, there is the issue of the distribution of individual items. The solution almost universally adopted is that of assuming a lexical split of the item. On the other hand there is the issue of varying licensing power of licensors. Aside from the cases mentioned above, there is the issue of the licensing power of subjunctive, brought about by the blending of negative polarity and negative concord marking, see Giannakidou's work on the topic [Gia93].

Third, there is the variation which is a 'mirror image projection'. Studies on negative polarity sometimes devote some attention to positive polarity. Despite what their name may suggest, there is no clear complementary distribution between NPIs and PPIs, but holes and overlaps are possible. As noted by Baker [Bak70], positive polarity items induce a clear effect of outscoping, rather than ungrammaticality.

There is an imbalance between the two types of polarity in current proposals. The notion of positive polarity presented is usually far weaker and more contradictory, and it seems to rest more on the opposition with negative items. The cardinality of the two sets is quite different too. There is also a strong difference between the definition of trigger and of anti-trigger, i.e. the element whose scope is avoided. The latter is identified with a single element, the overt negation, and apparently not with a class. NPIs are submitted to licensing conditions, whereas PPIs undergo some restrictions only.

In his doctoral dissertation, Ladusaw rejects the idea of considering negative polarity and positive polarity items as symmetric reflexes of the same property. He claims that the terminology traditionally used to describe the phenomena contains incorrect assumptions. The names NPI and PPI suggest that these items are sensitive to whether a sentence is negative or positive, and that they show complementary cooccurrence restrictions to this single feature of the sentence. Ladusaw [Lad79, p.2-3] argues that

the property to which NPI's are sensitive is not a property of sentences, it is a property that only expressions with functional meanings can have. [...] NPI's are items which must be semantically interpreted as being in the semantic scope of an expression with an appropriate meaning. [...] API's on the other hand are more reasonably analysed as expressions which are sensitive to whether the sentence is negative or affirmative. But we must make a distinction between sentences which are negative propositions (like (a)) and sentences which are the contradiction or denial of affirmative propositions (like (b)).

(a) John hasn't talked to any of the students.

(b) ? John hasn't already talked to some of the students.

The idea of the mirror image of NPI and PPI shows up again in more refined terms in analyses of the phenomena of polarity sensitivity inspired by the theory of generalized quantifiers. For instance see van Eijck [vE88], where it is claimed that positive polarity items are allowed in the scope of monotone increasing or non monotone operators. This analysis gives some more formal content to the claim of the existence of PPI. Further evidence is proposed in van der Wouden [vdW94b], who argues for the existence of similar subclasses for NPIs and PPIs.

It must be pointed out that there is a contrast between the large number of idioms among NPIs and their reduced or null presence in the class of PPIs. Krifka [Kri89] has proposed a parallelism between the idea of NPIs as endpoints of decreasing pragmatic scales and of PPIs as endpoints of increasing pragmatic scales, and has presented the expression *bags of money* as an example of top of the scale idiomatic PPI. As I have already pointed out in [Tov93], there are at least two problematic aspects of this proposal. First, such a top of increasing pragmatic scale can be easily pushed down, as suggested by the sentence in (2.50), where the expression *bags of money* identifies two distinct positions on the scale. It may be more appropriate to say that the expression identifies a class rather than the scalar endpoint.

(2.50) Lisa and Lea both have bags of money, but Lisa has more than Lea.

Second, the idiomatic interpretation is possible also inside the scope of the anti-trigger *not*, see (2.51). This means that, in order to accept Krifka's proposal, the definition of PPI must be modified.

(2.51) I am sure that I won't get bags of money out of that business.

## 2.6 Towards unified accounts

Kadmon and Landman ([KL89], [KL93]) propose a unified treatment of *any* as an operator that indicates reduced tolerance of exceptions, which aims at accounting also for the similarities with generic statements. These authors start from the discussion of examples like (2.52) and (2.53), which show that '*any* (on both its PS and FC uses) systematically rules out exceptions'[KL93, p.356].

(2.52) A: Do you have dry socks?  
B: I don't have ANY socks.

(2.53) A: Perhaps some dry socks would help?  
B: ANY socks would help.

The analysis is articulated in three points. *Any* is an indefinite, and it has two additional characteristics: *widening* and *strengthening*, defined as follows:

#### WIDENING

In an NP of the form *any* CN, *any* widens the interpretation of the common noun phrase (CN) along a contextual dimension. [KL93, p.361]

#### STRENGTHENING

*Any* is licensed only if the widening that it induces creates a stronger statement, i.e., only if

the statement on the wide interpretation  $\Rightarrow$

the statement on the narrow interpretation [KL93, p.369]

Kadmon and Landman claim that the expression *any* CN corresponds to the indefinite NP *a* CN with the additional semantic/pragmatic characteristics (widening, strengthening) contributed by *any*. In an NP of the form *any* CN, *any* widens the denotation of the CN. The widening effect in (2.52) is an extension of the interpretation of *socks* to include non-dry socks as well. This is a pragmatic effect, which is lexicalised in *any* and can be evaluated in semantic terms. The function of *any* is to create a stronger statement. Strengthening is a semantic constraint between the meaning of a statement in which *any* occurs before and after the widening.

On the basis of common features of its meaning, these authors suggest that it is not an accident that free-choice and negative polarity *any* are the same lexical item. These considerations are also consistent with the proposals by Ladusaw [Lad93] that there is a link between negative polarity expressions and indefinite meaning. As seen above, precursors of these considerations can be traced back to Klima [Kli64].

The notion of widening and strengthening can be viewed as special expressions of the more general notions of scalar endpoint and scale, although the link with Fauconnier's work is not discussed in [KL89]. In [KL93], it is mentioned, but its relevance is rejected when discussing Krifka's [Kri89] idea of set of alternatives. The authors argue that informativity, or lack thereof, is not a source of ungrammaticality, thus it cannot be invoked in order to exclude a sentence such as *I saw anything* as in [Kri89]. However, on the one hand, scales would allow them to tie the case of *any* to other negative polarity manifestations, for instance with minimisers. On the other hand, they would allow them to situate the issue under examination in a broader perspective, since scales are relevant for other domains of grammar.

Krifka [Kri94, p.195] points out that the widening effect seems to take place only when *any* is stressed. The dialogue presented in (2.54), which corresponds to Krifka's (1), can be modified substituting the first answer by *No, I don't have any potatoes*. This

change would not express the intention of widening along a dimension whatsoever, and this *any* would not be stressed, contrary to the *any* in the second answer.

- (2.54) A: Will there be French fries tonight?  
 B: No, I don't have potatoes.  
 A: Not even just a couple of potatoes that I can fry in my room?  
 B: Sorry, I don't have ANY potatoes.

A similar point can be made with respect to (2.55), where the partitive delimits the domain, and (2.56). It is not straightforward to show that the denotation of the modified phrase in (2.56b) has higher cardinality than that in the unmodified phrase in (2.56a). In both (2.55) and (2.56b) *any* does not bear particular stress.

- (2.55) Any of those screwdrivers will do.  
 (2.56) a.\*Yesterday, he ate any buns.  
 b. Yesterday, he ate any buns he found on the tray.

Krifka [Kri94, p.196] notes that there are contexts where the notion of reduced tolerance to exceptions is at least problematic. Talking about mathematical concepts, it is implausible that *any prime numbers* induce a widening in (2.57).

- (2.57) This set doesn't contain any prime numbers.

Finally, Kadmon and Landman equate *any N* with *a N* modulo widening and strengthening. However, they do not explain why *a N* can be both referential and non-referential, whereas *any N* cannot be referential. In order to save the equation, one ought to work out the loss of a referential reading from the extra properties of *any N*. They do not say how to proceed.

The last work touched upon in this journey through the literature is Dowty's ([Dow93], [Dow94b]) papers on monotonicity based logic, negative polarity and negative concord marking. Dowty takes on the issue of 'locality' in semantics. He tackles the question of cross-clausal licensing and double/multiple negation, and tries to create a bridge between polarity sensitivity and negative concord phenomena by using the logic developed by Sánchez [SV91]. The resulting proposal is that negative polarity and negative concord are ways in which natural language signals overtly the downward direction of possible inferences. His work is described in chapter 3 section 3.4.

## 2.7 Comments

The phenomenon of polarity sensitivity presents several points of interest. First, there are considerable syntactic differences among the members of the class of NPIs, which implies that the class is generally defined only indirectly, on the basis of the behaviour of the members. But what is more peculiar, and that contrasts with the other linguistic phenomena, is the “patchy” representation of each class. There is no syntactic category to characterize the entire group of NPIs, but also, not all the members of every category picked are involved. For instance, sentences (2.58a) and (2.58b) contain the same sequence of syntactic categories, but only the latter contains a polarity element.

- (2.58) a. Daphne did not see two dancers.  
b. Daphne did not see any dancers.

Only some noun phrases, some quantifiers, some adverbs, etc., are sensitive to the polarity of the environment. Furthermore, NPIs are members of syntactic open classes. Thus, the class of NPIs cannot be identified safely by listing members. A proper definition of the set of elements concerned is a first challenge to face.

A second problematic issue is that of defining the behaviour of NPIs. Several analyses have been proposed in the last three decades. They may be grouped in two main trends, semantic and syntactic, although some of them use mixed resources, and some of them refer to pragmatic notions. Ladusaw [Lad79] can be considered the first consistent proposal starting the semantic analysis trend. This trend seems to have evolved in a fairly smooth way, without drastic disclaimers of fundamental points previously adopted. For instance the semantic property originally identified with the licensing property has never been rejected. Positions belonging to the syntactic trend have undergone more impressive changes. From the transformational approach of Klima’s analysis of negation in English of the mid sixties, through the adoption of syntactic filters coupled with semantic or pragmatic constraints in the seventies up to the mid eighties, (see Baker [Bak70] and Linebarger [Lin80a], [Lin87]), to the more recent analyses, which appeal to surface null entities to account for the phenomenon (see Progovac [Pro88]). Basic feature of all proposals of this trend is that overt negation is considered to play a main role, which is to be defined separately as paradigmatic case. Differences can be quite impressive, for instance no semantic approach would consider an NPI as a pronoun, but when looking at their content from a certain distance, the differences pale face to the solid vast consensus on the centrality of the ‘licenser–item’ relation. The



whole conception of negative polarity phenomenon revolves around the key figure of the licenser. Anticipating slightly on chapter 3, the remainder of this section contains comments on the literature in general.

### 2.7.1 On licensing

Nobody considers ‘restricted distribution’ a major feature in the definition of reflexive pronouns, albeit they cannot ‘appear freely in any context’, see the ungrammaticality of (2.59) and (2.60).

(2.59) \*She talked to himself.

(2.60) \*Chloe accepted to write the book with herself.

In fact, the referential function of this class of items is well established. In this manner, the restrictions on the distribution fall out from the conditions required for the accomplishment of the function. The connection between *Chloe* and *herself* in (2.61) is not dubbed as plain licensing, because a goal has been identified in their working together.

(2.61) Chloe talked to herself.

Since *herself* establishes referential connections with an identified entity, then the presence of this entity is required. Thus, *Chloe* is not described as a licenser, or if it were, more information would be provided in order to substantiate this form of licensing. On the other hand, the role of polarity sensitive items is still an open question<sup>8</sup>, and holes in the distribution have made salient features of the items. What’s said for the characterisation of a Ps item applies also for the relations it can entertain with other elements in the sentence. What, if anything, licensers and PS items do together, apart from cooccurring, is also not yet clearly understood. Hence, licensing is considered the main feature describing the behaviour of PS items, and potential epiphenomena are seen as core elements.

In sum, licensing is an idiosyncratic requirement which generally constitutes the characterisation as NPI. The notion of polarity licensing seems to have been introduced explicitly by Ladusaw [Lad79]. Depending on the framework adopted, it has been implemented in different ways in the literature, for instance in terms of the semantic relation functor-argument in Ladusaw [Lad79] or of the structural c-command relation in Linebarger [Lin80a], but it always refers in some way to a trigger and its scope.

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<sup>8</sup>Cf. Dowty [Dow93] for a recent proposal.

The idea of licensing has been holding fast. All counterexamples, like the non complementarity of the groups, have been taken to discredit this or that approach, but not as repeated evidence that the general strategy might require some reshaping. The increased focus on the notion of licensing, at the expenses of a more compositional approach, has led to a decomposition of the phenomenon in a multitude of subcases. The decomposition is hidden behind the adoption of a variety of labels for NPIs and a 'parametrised' behaviour, see Progovac's thesis [Pro88], or expressed by invoking idiosyncrasy overtly, see van der Wouden's [vdW94a].

Two options for licensers and licensing conditions have been explored. Analyses based on semantics properties define a class of licensers in which negation is just one of the members. The generalization encompasses the opposition between cases with negation and without negation by selecting some sort of 'greatest common divisor', i.e. a common weaker notion of negativity. The definition ought to characterize all and only the acceptable cases. The other option is to rely on negation as the unique licenser, and try to extend this characterization to all the other cases. In this approach, all the cases where there is no negation are treated as cases where the negation is hidden or it is a feature that does not affect the interpretation of the sentence. This is the option taken in analyses based on syntax. The extension is done by resorting to negative features or negative operators. The problem to be solved is the theoretical justification of the peculiar status of these features. In fact, they are called negative, but they must be ineffective with respect to truth conditions, which is not a property characterizing negation.

What polarity licensing is about is still open to debate. If, on the one hand, the idea of passing/sharing a negative feature seems intuitively correct in the case of *any*, which is interpreted as denoting the empty set, on the other hand, it is not immediate in the case of *yet*, which is and remains a temporal adverb and never becomes a negative quantifier over time, or in the case of *until*.

The observation that the licensing power of licensers is not uniform has received much more attention inside the semantic trend than in any other. Zwarts ([Zwa91], [Zwa93a], [Zwa93b]) has accounted for these differences in terms of different degrees of negativity, defined on the basis of algebraic properties. Subsequently, the hypothesis has been further explored by van der Wouden [vdW94a], who offers a detailed analysis of the licensing gradient in Dutch. The increase in the number of classes is a fairly predictable result. van der Wouden eschews the potential explosion of their number, and the danger of reaching a number equal to that of the elements to be classified, by attributing part

of the differences to the idiosyncrasy of the various items, hence considering them not relevant for the purposes of the classification. The data are seen as pointing in the direction of arbitrariness, hence his next step is to convert PS items into collocations. In fact, licensing is another way of stating collocational restrictions without providing a motivation.

In the syntactic trend, the solution adopted to the question of the variation in licensing power is twofold. On the one hand, there is the distinction between negative licensing and non-negative one (Linebarger [Lin80a], Progovac [Pro88]). This distinction does not tackle the issue of variation directly, but it does it indirectly by allowing the imposition of extra-constraints in particular cases, like reducing the possibilities of intra-clausal licensing. On the other hand, there is the option of attributing different possibilities of movement to NPIs and the checking at different levels of representation [Pro88].

The readings of *any* in questions on the one hand, cf. (2.62), and fresh data in chapter 5 section 5.3.1 on the other, make the definition of the suitable collocational context particularly difficile, if not impossible. If it is true that the appearance of a collocation cannot be predicted, and so the existence of a certain PS item in a certain language, it is not true that one cannot predict ‘the exact form that collocational combinations will take’ [vdW94a, p.204] as far as NPIs are concerned. If an NPI is a temporal adverb imposing an order, as *until*, its sensitivity will be to polarity and to aspect, and the variation will be in the direction of the order.

(2.62) Did any lady from Marchmont attend the reception?

### 2.7.2 On the identification of polarity sensitive items

The notion of licensing comes from the idea that PS items are elements with a restricted distribution. The standard strategy proposes a sort of two-pass analysis, first one deals with licensing, and once these requirements have been satisfied, and only then, one cares about the single items. Thus, polarity sensitivity is considered to impose a set of constraints that is added upon those that condition the distribution of any lexical element, and the peculiarities of the types of PS items step in only in a second moment.

A characterization of the notion of PS item is still in progress. From an initial small set of expressions, we moved to a set which is broader but is not structured, i.e. the set is acknowledged but it is little studied as such. In fact, the example studied are a relatively small number. The composition of the set for different languages is left largely to the approach of the individual researcher. The generalizations operated

consists either of emphasizing similarities, cf. semantic approaches adopting a broader notion of negation, or of erasing differences, cf. syntactic approaches postulating similar locality constraints in every case.

The question of the definition of the items has been approached from two different sides. One mathematical way to define the object of an investigation is by identifying the minimal set of characterising properties. This is more or less the strategy adopted in analyses belonging to the semantic school. This strategy raises the issue of the possibility of uniquely identifying the object of study. Haspelmath [Has93] has shown that many of the items that could be considered of negative polarity are polyfunctional, where polyfunctionality is defined as a spectrum of related functions.

The strategy adopted inside the syntactic school is that of identifying the class by describing the behaviour of its members. A clear shortcoming is that the behaviour described does not cover the entire distribution of the item. This is to say that the definition provided is unable to identify uniquely the group that it is meant to characterize. The general way out is to partition the data as belonging to different lexical items sharing the same form. The partition is done mainly along the lines of an interpretive variation. However, each individual interpretation is not clearly identified, since the content of the readings is not made explicit. Thus, the partitioning is not unambiguously done, and the parts are not complementary. If what counts as 'other items' is identified on the basis of what does not fit the polarity behaviour described, the argument becomes circular. Furthermore, little or no explanation is provided for the shared features and shared form. Because the emphasis of the research in this school is on the distribution of the items, and the nature of the relation between licensors and licensed elements is not submitted to thorough scrutiny, analyses concentrate on a geometrical rendering, i.e. on locality constraints.

The issue of the definition of the object of study is crucial. Let us look at an example of definition from the geometry field. A term like 'round' is said to be defined by a set of things. If one takes this way of defining seriously, one cannot carry on by saying that the principle of construction of such a set is that one includes all and only round things in it. It is hardly illuminating to say that it just happens that all and only round things are in the set defining 'round'. If one says this, he has given up the idea of explaining how to construct a set for defining 'round'. A non question-begging procedure for inclusion in the defining set is based on the assumption that one is able to determine whether two things are very similar in shape. The very idea of such a set means that we know how to go on to add to its membership: we then stipulate that no object that could be

found to be sufficiently similar to those already included is excluded from membership.

### 2.7.3 The issue of the lexical split

A point generally taken for granted is the lexical ambiguity of polarity items. An analysis of PS items formulated in terms of licensing has to come to terms with data that, on the one hand often show mismatches between the predicted and the actual distribution of the items, and on the other show variations in the ‘meaning’ of the items. The solution commonly adopted is to follow the rule ‘One reading, one item’. Usually, no motivation is provided for the common form. The split in the items may be seen as the corollary of the licensing theorem, or as its motivation. In practice, they justify each other, but it is far from clear whether they have external justification, apart from the historically established perception of the data that they express.

Considering the question from another point of view, one has to note that a syntactic approach presupposes the existence of an isomorphic mapping of the representation of the syntactic structure onto the semantic one. It tries to account for variations of interpretation of a given element in terms of a different distribution of several different objects having the same surface form. Thus, it concentrates on finding some appropriate level of grammatical description at which to filter out possible combinations and to restrict the distribution of the items in question. A clear example is *any*, considered both a universal and an existential quantifier. So, a question containing an *any*-phrase must get multiple syntactic representations in order to account for the reading variations.

Since the attention focuses mainly on defining one or more licensing configurations, and not on the nature of such licensing power or the nature of the licenser, licensing entities are little more than points on geometric representations.

As noted already by Baker [Bak70], even when licensing requirements are not satisfied, the result can be grammatical, albeit a different interpretation, i.e. a change in reading, is perceived. This is true of both negative and positive polarity sensitivity. For instance, *any* is said to have a polarity sensitive reading in (2.63a), usually paraphrased as *not even one x*, and the so-called free-choice reading in (2.63b), paraphrased as *whichever thing counting as x*.

- (2.63) a. Daniel did not take any books.  
 b. Any book is good for Daniel.  
 c. Every student who has any book from the library is asked to fill in a form.

One could ask why the *any* which means 'none' as in (2.63a), is usually not distinguished from the *any* which means 'at least one', as in (2.63c), both being labelled PS. The absence of an answer for why the difference between the two should be less interesting than that between them and the *any* which means 'whichever' is to be taken as contributing information on the understood concept of polarity sensitivity. This is a distinction that analyses of polarity have decided to ignore, but that is perceivable nonetheless. So much so that it is at the basis of studies on N-words, cf. chapter 6.

## Chapter 3

# Features of a semantic analysis of negative polarity

### 3.1 Introduction

This chapter contains a discussion of work by Ladusaw ([Lad79], [Lad80]), Zwarts ([Zwa91], [Zwa93a], [Zwa93b]) and Dowty ([Dow93], [Dow94b]); the theoretical background of this dissertation. They propose analyses of negative polarity based on notions like monotonic functions, filters and ideals.<sup>1</sup>

Section 3.2 discusses Ladusaw's early work. Ladusaw identifies the crucial role of monotonicity in the phenomenon of polarity sensitivity. He makes a generalisation over the class of elements that license occurrences of NPIs, and analyses the phenomenon in terms of scope relations between licensers and NPIs.

Zwarts' analysis, discussed in section 3.3, is a natural offspring of Ladusaw's approach and of the work on generalized quantifiers, e.g. Barwise and Cooper [BC81]. Zwarts' main concern is the variations in the distribution of negative polarity items. He notes that not all licensers can license all items, and refers to mathematical notions in order to identify subclasses of licensers with more restrictive properties. He projects onto the class of polarity items the classification defined on licensers, and expresses it in terms of increasing requirements imposed by the items on the licensers.

Section 3.4 discusses recent contributions by Dowty ([Dow93], [Dow94b]). This work analyses negative polarity as one of the manifestations of negativity in natural language. He considers sensitivity together with negative concord marking and sets them in the

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<sup>1</sup>These technical notions are defined within this chapter, but, for ease of presentation, the introduction of most of them is delayed until section 3.3.

framework of monotonic reasoning patterns. This goal makes Dowty's work relevant for the treatment of negative polarity in general. Another point of interest in his contribution is that in some sort he puts locality issues back on the agenda of semantic analyses. As we saw in section 2.3, Baker [Bak70] formulated triggering conditions in order to account for the distribution of polarity items in double negative contexts. Baker's proposal was meant to improve Klima's [Kli64] and Jackendoff's [Jac72] idea of evaluating the polarity of each node of a tree-like representation by cancelling out negations in pairs starting from the root. Such a strategy was shown to have poor predicting power.

The chapter closes with a discussion of the points where this study ties in with preceding research and expands on them.

## 3.2 Polarity sensitivity as inherent scope relations

The basic idea put forward in Ladusaw's thesis [Lad79] is that occurrences of polarity items are ruled by semantic principles. The phenomenon is analysed in terms of a single semantic notion, namely downward entailment. This property is used to define a notion of negativity which is weaker than the traditional one, therefore it is possible to identify licensers even in cases where there is no overt negation. The analysis is structured in terms of scope relations between members of the class of licensers and NPIs.

In the following subsections, we discuss the treatment proposed, devoting particular attention to the notion of downward entailment adopted and to the compositional analysis of meaning in which it is made to fit.

### 3.2.1 Triggers, downward entailment and scope

Ladusaw [Lad79, p.112] gives the following rules to determine the distribution of polarity items.

- (3.1)
- a. A NPI must appear in the scope of a trigger. If its trigger is in the same clause as the NPI, the trigger must precede the NPI.
  - b. A NPI must appear in the scope of a trigger. If its trigger is in the same clause as the NPI, the trigger must precede the NPI.

Ladusaw explicitly says that the expression *downward entailing* can be replaced for the term *trigger* in the rules. His definition of downward entailing draws mainly from Fauconnier's [Fau75] analysis of scalar implicatures, but it benefits also from Baker's [Bak70] examination of licensing. The analogy drawn between (3.2a) and (3.2b) constitutes the starting point.



- (3.2) a. Louise couldn't read the easiest book  
 b. Louise couldn't read anything

Fauconnier claimed that it is possible to state a relation between the reversed link existing between relations expressed, for instance, by words like *harder* and *easier*, and the licensing of negative polarity elements. One can consider a list of things which are progressively easier to do, and rank them on a scale based on degrees of easiness. For example, let us consider a pragmatic scale ranging from *Ulysses* to *The tale of Peter the Rabbit* along the dimension of toughness of books. This scale is associated with a propositional schema  $y$  reads  $x$ , where  $x$  is the variable in which we are interested. The variable  $y$  is replaced by the constant *Louise*.

- (3.3) ↓  
 Louise can read the book *Ulysses*.  
 ...  
 Louise can read the book *Alice in wonderland*.  
 ...  
 Louise can read the book *The tale of Peter the Rabbit*.

Then, we can further abstract and generalize by reformulating the propositional schema as  $P(x)$ , where  $P$  stands for *Louise can read the book ...*, and  $x$  is the title of the book. Following the Gricean maxims of conversation, if the proposition  $P$  is true for the element *Alice in wonderland*, then it is true for all the elements on the scale from that position upwards, i.e.  $P(\textit{Alice in wonderland}) \rightarrow P(\textit{The tale of Peter the Rabbit})$  holds (see Levinson [Lev83, ch.3] on scalar implicatures).

*Hardest* and *easiest* stand at the two extremes of the scale. Fauconnier had shown that, although superlatives do not mean the same thing as universal quantifiers, some superlatives in some contexts can have the strength of a universal quantifier. These superlatives are precisely those that express the lowest point on the relevant scale. Examples (3.4) and (3.5), from [Lad79, p.139], support this intuition.

- (3.4) a. Alexei could lift the heaviest weight  $\rightarrow$   
 b. Every weight is such that Alexei could lift it
- (3.5) a. Alexei could lift the lightest weight  $\nrightarrow$   
 b. Every weight is such that Alexei could lift it

Sentence (3.4a) can be used to convey (3.4b), but this cannot be said of the pair in (3.5). The reverse holds when negation is added. Fauconnier refers to the notion of pragmatic scale associated with a propositional schema, in order to account for the quantificational effect. He correlates the scale reversing effect of negation with some of the contexts that were treated by the second part of Baker's [Bak70] proposal. Ladusaw suggests that, instead of reverting scales, one can associate a scale with both the schemata  $P(x)$  and  $\neg P(x)$ . Then, entailments from positive sentences would run up the scale towards more informative steps, and those from negative sentences would run downwards. Thus, it could be shown that the scale-reversing property, and triggerhood, can be predicted from the meanings of expressions.

It is this property of negation and its interaction with inference, which I will call "downward-entailing", which makes *not*, *no one*, *never* and other overtly negative expressions and covert negations like *few* and *rarely* triggers for NPI's like *ever* and *any*. [Lad79, p.143]

The idea of scale reverser is connected to a compositional semantic analysis by identifying the semantic contexts which have the effect of licensing downward inferences

[...] with the functor meanings which take the items on our scales as their arguments (their scopes). These functions may have the properties that when applied to a value  $x$  which is a subset of a value  $y$ ,  $f(y)$  will be a subset of  $f(x)$ . [Lad79, p.145]

Thus, in the laws presented in (3.1), it is said that NPI can occur only within the scope of functors licensing downward inferences, and that API must avoid the scope of a negation appearing in the same clause. The clause on linear order contained in (3.1a) is discussed in the next subsection.

### 3.2.2 NPI and a compositional analysis of meaning

As just discussed, the distribution of polarity items is defined in semantic terms. However, the strength of the premises seems not to be exploited in full in this approach, for instance when a condition on surface ordering is allowed to interfere in the definition of the distribution of negative polarity items. Another example is when *any* is analysed as having a double nature in order to account for the spectrum of its occurrences and interpretations. These positions stem mainly from combining several assumptions with the choice of adopting a compositional analysis of the meaning of sentences.

The need for a clause on linear order derives from the fact that Ladusaw assumes *not* to express sentential negation unequivocally [Lad79, p.78]. However, see the discussion on the difference between assertion of a negation and negation of an assertion [Lad79,

ch.7]. According to such an assumption and the functional definition of scope adopted, and presented here below, negation is analyzed as having the subject and the verb of a sentence both inside its scope.

*The scope of  $m$ , a meaning in  $\phi$  is the meaning (if any) which is its argument in  $\phi$ . For two meanings,  $m_1$  and  $m_2$  in  $\phi$ ,  $m_2$  is in the scope of  $m_1$  in  $\phi$  iff either  $m_2$  is in the scope of  $m_1$  in  $\phi$ , or  $m_2$  is used in the composition of the scope of  $m_1$  in  $\phi$  [Lad79, p.64].*

As a result, in order to account for the ungrammaticality of (3.6), a linear order requirement is added to the *Inherent Scope Convention*, which defines the behaviour of composition rules.

#### *Inherent Scope Convention*

##### A. Inheritance

- (i) A meaning  $m$  inherits the properties associated with the meanings which are its immediate components except as provided for in (ii) and (iii).
- (ii) When an N-meaning becomes the scope of a trigger, the resulting meaning is no longer an N-meaning. If the NPI is clausemate with the trigger, the trigger must precede.
- (iii) A sentence with a W-meaning produces a neutral meaning as an  $S'$ .

##### B. Filtering

- (i) No N-meaning of  $\alpha$  is a member of  $t^-(\alpha)$ .<sup>2</sup>
- (ii) No W-meaning can be the scope of a negation [Lad79, p.113].

(3.6) #Anybody did not love Louis.

Each node of the syntactic representation of a sentence has an associated set of interpretations. Every meaning assigned by the semantic component is an interpretation of  $\gamma$ . So an interpretation is a way of assigning meaning compositionally.

Thus, although in (3.6) *anybody* is inside the scope of the trigger *not*, it is not properly licensed because *not* does not precede it. In general terms, the clause says that the occurrence of the negative polarity item must be ‘announced’ by the trigger. This may not seem a serious interference in the treatment, because it could be viewed as a case of feature matching. However, roughly speaking, it begs the question of what is

<sup>2</sup>Ladusaw works on ambiguous sentences, interpreting them directly, thus he adopts a procedure which takes an English sentence and returns a set of translations, that is a set of meanings. Consequently, the composition rules operate on n-tuples of translation sets, since the interpretation procedure associate sets of translations with expressions of English. “The translation procedure  $t$  is a function from structural descriptions of English expressions to sets of n-order sequences of expressions of IL” [Lad79, p.28]. So,  $t(\gamma)$  is the translation set of the expression  $\gamma$ . The set  $t^-(\gamma)$  is a subset of  $t(\gamma)$  which contains all and only the members which do not have NP-meanings in store, i.e. meanings for  $\gamma$  which are completely composed.

triggering what. Is the trigger coming first to license the NPI, or is the NPI letting a trigger precede it, in order to announce its presence?<sup>3</sup>

The second issue, i.e. the choice of attributing to *any* a double nature, seems to originate from more complex considerations. On the one hand, there is the question of licensing, that leads to considering *any* as an element that is endowed of its own well defined, self-contained meaning and that gets plugged into suitable contexts. When *any* is plugged into (3.7a) or (3.7b), the results are quite different. Therefore, the two different meanings are the result of the functional composition of different elements. We will see later in chapter 5 that the variation in meaning of the *any*-phrases might be ascribed to the use of different evaluation procedures.

- (3.7) a. Every dancer rehearsed any steps of the ballet.  
 b. Every dancer did not rehearse any steps of the ballet.

On the other hand, the discussion is made more complex by the fact that the distribution of FC *any* does not receive a precise characterization, and neither does its meaning. Ladusaw concentrates his attention on the existential reading of the negative polarity item. This choice leads to another question. Ladusaw seems to be somehow trapped in the use of the existential quantifier  $\exists$  of first order logic to represent the meaning of *any* and *some*. Here, Ladusaw presupposes that at the level of semantic interpretation it is possible to distinguish between a positive and a negative polarity item. At the same time, by using  $\exists$ , he runs into difficulties, because negative polarity *any* gets the same representation as positive polarity *some*, while having different distributions. More precisely, they are said to have different scope preferences, when appearing in the same context. In conclusion, Ladusaw retains the same representation for *any* and *some*, and expresses the difference in the scope preference by means of two features, W for wide scope preference and N for narrow scope [Lad79, p.107,207]. The rules of semantic composition are sensitive to their presence during the process of combination to get the meaning of the whole sentence.

Despite the attention to the semantics of the items, in the polarity treatment only the semantics of the licensers matter, except for the N and W features.

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<sup>3</sup>A similar question can be asked with respect to the idea of postulating a polarity operator at the beginning of sentences like questions, as has been done in syntactic approaches. It is not clear on the basis of which precise criterion the presence of such an operator can be restricted. The possibility of having both free-choice and polarity sensitive *any* in questions rules out pure optionality. Strictly theory internal motivations cannot count as independent evidence.

### 3.2.3 Comments

A positive aspect of Ladusaw's proposal is its unifying power. It accounts for the whole phenomenon by referring to a single semantic notion, namely downward entailment. This property represents the connection among the cases considered, and a way to systematize the contexts of occurrence. In fact, it allows him to identify licensers even in cases where there is no overt negation, and therefore to apply uniformly the same analysis with no need for a dichotomous approach like that proposed by Baker [Bak70]. The shortcomings are, first that negation is represented as the operator of first order logic, i.e. it is assumed to have always sentential scope. A linear order clause is needed to get around this assumption in certain cases. Second, two occurrences of negation cancel each other out in first order logic, but not necessarily so in natural language. Baker's insight on the issue are left aside.

Another interesting point is the association of negative polarity items with scales of propositions, and the observation that NPIs always occupy the bottom position of such pragmatic scales. Unfortunately, the idea is not pursued when the meaning of *any* is examined, see more in chapter 5 subsection 5.2.2.

Finally, the formulation in terms of scope relations may lead one to believe that locality constraints is what it is all about. This is in fact what has happened in Progovac [Pro92a], where downward monotonicity is used only as a way to identify the class of licensers, but it has no relevance in the understanding of the role of NPIs.

## 3.3 An algebraic semantics analysis

Developing positions presented in [Zwa81] and in his doctoral dissertation, Zwarts ([Zwa91], [Zwa93a], [Zwa93b]) presents a formal semantic analysis of the phenomenon of negative polarity along the main lines of the theory of Ladusaw [Lad79]. At the core of Ladusaw's proposal we have seen the idea that the licensing environment for negative polarity items is characterized by the presence of expressions denoting a monotone decreasing function. The novelty of Zwarts' proposal is twofold.

First, Zwarts introduces a characterization of different degrees of polarity sensitivity among NPIs. As mentioned in chapter 2 section 2.3, the phenomenon had already been pointed out by Linebarger [Lin80a, p.68] and Horn [Hor70]. Zwarts discusses it thoroughly. He accounts for the variations by partitioning the basic set of licensers, i.e. of monotone decreasing functions, by means of the property of anti-additivity.

The proposal contains another very strong claim, that negative polarity is a lexical

phenomenon. This claim, in its explicitness and strength, constitutes the second novelty of the analysis. This direct claim implies that a proper characterization of the relevant properties in the lexicon entries is necessary and sufficient for the treatment of polarity phenomena. The need for licensing is considered to be an intrinsic property of NPIs. The identification of strong/weak licensing requirements is presented as evidence for the lexical nature of negative polarity sensitivity. On the basis of such a claim, the mechanism ruling the distribution of NPIs is defined in terms of properties of the two elements involved in the relation, i.e. the licenser and the NPI.

In the following subsections, Zwarts' proposal is discussed in more detail. First, we introduce the technical concepts of downward monotonic, anti-additive and antimorphic functions used to classify licensers. Next, we give the laws that are assumed to rule the phenomenon. Then, the classification of negative polarity items is presented. Finally, we discuss some merits and shortcomings of the proposal.

### 3.3.1 Characterization of licensers

As a start, Zwarts makes use of the more refined study of monotonic properties of lexical elements developed in the theory of generalized quantifiers. He refers to the analysis of determiners as binary functions in order to give a precise account for variations in licensing power. Such a power is asserted separately for each argument of the generalized quantifier, and may vary among arguments of the same quantifier. This change, which increases the degree of organization of the semantic analysis, implies the relinquishment of the notion of trigger in favour of the more flexible notion of licenser. It becomes possible, for instance, to give a precise definition of the licensing power of *every*, and to account in a more formal way for the different grammatical status of the examples in (3.8) and (3.9), from Ladusaw [Lad79, p.149–150]. In fact, *every* is a decreasing monotone quantifier in its first argument and increasing in its second, while *no* is decreasing in both arguments.

- (3.8) a. No student who had ever read anything on phrenology attended the lectures.  
 b. Every student who had ever read anything on phrenology attended the lectures.
- (3.9) a. No student who attended the lectures had ever read anything on phrenology.  
 b.\*Every student who attended the lectures had ever read anything on phrenology.

The central point of the analysis remains the connection between negative polarity sensitivity and negation. Negation, however, is neither identified using the traditional vague terms of *overt* and *covert*, nor reduced to the semantic notion of negativity characterized by downward monotonicity. That is to say, the notion of downward monotonicity is used to define a rather weak notion of negation, characterizing a feature general enough to be identifiable in all the members of the class. But then the various manifestations of negation are catalogued according to the different properties of downward monotonicity, anti-additivity and antimorphism, which are ordered by a subset relation. This classification constitutes the core of the analysis, around which the proposal develops. So, the “uneven” distribution of NPIs is not accounted for by asserting a dichotomy between cases of licensing with overt negation and the others, but by defining a concentric architecture ruled by set inclusion. This results in a more stringent structure within which to arrange all the manifestations of the phenomenon, and also the ‘other’ case, i.e. the case of expressions which do not manifest sensitivity to negation.

The similarity between Zwarts’ notion of downward monotonicity and the one adopted by Ladusaw [Lad79] is immediately apparent, although Ladusaw defined it by referring to pragmatic entailment. The basic feature of both definitions is the ability of reversing the subset ordering of the domain.

### Monotonicity

The class of licensers is characterized through the minimal semantic property of downward monotonicity. A definition of monotone decreasing function is presented in (3.10).

(3.10) A function  $f$  is called monotone decreasing iff for all  $X, Y$  in the domain of  $f$ :  
if  $X \subseteq Y$ , then  $f(X) \supseteq f(Y)$ . [Hoe83, p.420]

We can apply this definition to some natural language quantifiers. In a generalized quantification approach, determiners are functions taking nouns and VP as arguments. One of the properties of determiners, of interest for us, is based on increasing and decreasing the number of entities in one of the relevant sets interpreting the arguments. Assuming that the set of *fat boys* is a subset of the set of *boys*, we can observe that the quantifier *no* allows us to make the following inference.

(3.11) No boys arrived  $\rightarrow$  No fat boys arrived

By assuming, as Zwarts does, that a VP can be assigned a subset of some universe  $U$  as semantic value, “the universe of possible semantic values of verb phrases may henceforth be equated into  $P(U)$ , that is the first power set of  $U$ ” [Zwa91, p.17]. Assuming

also that each NP is assigned a collection of subsets of  $U$  as its semantic value, “the universe of possible semantic values of noun phrases may be equated with  $P(P(U))$ , that is to say the second power set of  $U$ ” [Zwa91, p.17]. This algebraic characterization of the syntactic categories of NP and VP makes it possible to define a quantifier on a boolean algebra as a subset of such an algebra. Monotone decreasing quantification can be taken as counting down towards  $\emptyset$  from the upper bound represented by such a subset, which varies depending on the quantifier.

Noun phrases can be regarded as quantifiers, for if their semantic value is a collection of subsets of  $U$ , they can be equated with a subset of  $P(U)$ . Therefore, “noun phrases which invariably receive a monotone decreasing quantifier on the VP-algebra as their semantic value will henceforth be called monotone decreasing noun phrases” [Zwa91, p.18]. For instance, assuming that the set of those who *run fast* is a subset of the set of those who *run*, we can observe that the quantified noun phrase *no boy* allows us to make the following inference.

(3.12) No boys run  $\rightarrow$  No boys run fast

Determiners are interpreted as relations among sets, or, which is equivalent, as functions from sets to collections of sets. Zwarts provides details of different ways of defining monotone decreasing quantifiers. In the following theorem, (a) identifies  $Q$  as defined in (3.10). In (b), Zwarts defines the quantifier in the perspective of the relation between superset and set, e.g. a coordination and its components. The perspective of the relation between set and subset is adopted in (c).

### Theorem

Let  $B$  be a Boolean algebra. The following three statements about a quantifier  $Q$  on  $B$  are equivalent:

- (a)  $Q$  is monotone decreasing;
- (b) if  $X \cup Y \in Q$ , then  $X \in Q$  and  $Y \in Q$ ;
- (c) if  $X \in Q$  or  $Y \in Q$ , then  $X \cap Y \in Q$ . [Zwa91, p.19]

Downward monotonicity is not the property of one syntactic category, and not all the elements of a syntactic category share it, as it can be seen from examples (3.13) and (3.14).

(3.13) Some boys arrived  $\nrightarrow$  Some fat boys arrived

(3.14) Every boy ran  $\nrightarrow$  Every boy ran fast

As a matter of fact, examples (3.13) and (3.14) contain monotone increasing quantifiers. These quantifiers allow for the possibility of drawing inferences from sets to



supersets. This is exemplified in (3.15), with respect to the first argument, and (3.16), with respect to the second.

(3.15) Some fat boys arrived  $\rightarrow$  Some boys arrived

(3.16) At least two boys ran fast  $\rightarrow$  At least two boys ran

Monotone increasing quantification involves the increase of the cardinality of the subsets constituting  $P(U)$  from a given lowest bound, established in the definition of each quantifier, towards  $U$ . In the following theorem, Zwarts provides details of several different ways of defining monotone increasing quantifiers.

### Theorem

Let  $B$  be a Boolean algebra. The following three statements about a quantifier  $Q$  on  $B$  are equivalent:

- (a)  $Q$  is monotone increasing;
- (b) if  $X \cap Y \in Q$ , then  $X \in Q$  and  $Y \in Q$ ;
- (c) if  $X \in Q$  or  $Y \in Q$ , then  $X \cup Y \in Q$ . [Zwa91, p.21]

Finally, (3.17) and (3.18) present an example of a quantifier that is not monotone. The first argument is tested in (3.17) and the second in (3.18).

- (3.17) a. More than three and less than seven boys arrived  $\not\rightarrow$   
           More than three and less than seven fat boys arrived
- b. More than three and less than seven fat boys arrived  $\not\rightarrow$   
           More than three and less than seven boys arrived
- (3.18) a. More than three and less than seven boys run fast  $\not\rightarrow$   
           More than three and less than seven boys run
- b. More than three and less than seven boys run  $\not\rightarrow$   
           More than three and less than seven boys run fast

### De Morgan's Laws

Zwarts maintains that De Morgan's laws express a logical pattern that describes the use of negation in natural language. They are reproduced in (3.19), splitting the two equations into four conditionals for ease of subsequent reference.

- (3.19) 1 - a.  $(X \cup Y)' \rightarrow X' \cap Y'$   
           b.  $(X \cup Y)' \leftarrow X' \cap Y'$
- 2 - a.  $(X \cap Y)' \rightarrow X' \cup Y'$   
           b.  $(X \cap Y)' \leftarrow X' \cup Y'$

These laws define complementation. Zwarts claims that such a characterization can be applied correctly to natural language only with respect to sentential negation [Zwa93a, p.4]. In (3.20), there is the full pattern, presented with respect to the expression of the sentential negation *it is not the case that*. The functions that satisfy the entire De Morgan's laws are called antimorphic.

- (3.20) a. It is not the case that Daphne sang or Chloe danced  $\leftrightarrow$   
 It is not the case that Daphne sang and it is not the case that Chloe danced
- b. It is not the case that Daphne sang and Chloe danced  $\leftrightarrow$   
 It is not the case that Daphne sang or it is not the case that Chloe danced

Natural language contains a variety of negative expressions, which show different logical behaviours. Part of the laws can be used to identify other types of negation. For instance, the members of the class of monotone decreasing functions obey only to (3.19-1a) and (3.19-2b). Zwarts calls this class *minimal negation*. Items of this type allow inferences running from sets to subsets. These two conditions define closure under inclusion, i.e. in the case of stability or contraction of the cardinality of the set the inference still holds. *Few N* is an example of item of minimal negation.

A monotone decreasing item that obeys the entire first De Morgan's law and the second half of the second De Morgan's law is called a *regular negation*. The property defined by the satisfaction of these parts of De Morgan's laws is called anti-additivity. As shown below, this property is more precisely characterized by means of the mathematical notion of an ideal. Elements of this group are closed under unions. *None of the N*, *no N*, *neither N*, *no one* are examples of the group of regular negation.

In (3.21), it can be seen that *not all N* obeys only the first half of the first De Morgan's law, and the second in full. This type of expressions forms the class of anti-multiplicative functions. The members of this class are characterized by closure under intersection.

- (3.21) a. Not all girls sang or danced  $\rightarrow$   
 Not all girls sang and not all girls danced
- b. Not all girls sang or danced  $\nrightarrow$   
 Not all girls sang and not all girls danced
- c. Not all girls sang and danced  $\rightarrow$   
 Not all girls sang or not all girls danced



- d. Not all girls sang and danced ←  
 Not all girls sang or not all girls danced

The third type of negation, the *classical negation*, is a monotone decreasing, anti-additive expression with the property of being consistent, i.e. it creates a context that satisfies the condition  $f(\neg X) = \neg f(X)$ .<sup>4</sup> This type of expressions form the class of antimorphic functions.

In conclusion, Zwarts [Zwa91] submits the set of licensers to closer scrutiny, and identifies a relation between the presence of anti-additive property and increased licensing power. He argues that while anti-additive functions are ‘strong licensers’ that can license any NPI<sup>5</sup>, this is not the case for monotone decreasing functions in general, which are ‘weak licensers’. This claim should not be seen as in contrast with Ladusaw’s idea of favouring the prediction of triggering properties from meanings, rather it restricts itself to lexical elements.

(3.22) None of these examples will convince anyone.

Ladusaw was proposing this idea as a way of reconciling functional composition with the need of making *none* license *anyone* in (3.22)<sup>6</sup>. A generalized quantifier analysis resolves the question, because the NPI is in the second argument of the negative quantifier. The generalised quantifier analysis makes it possible to describe cases where the presence of a trigger seems not to be sufficient, without resorting to the counter-intuitive idea of ‘untriggering’ a trigger. Zwarts stresses the different algebraic properties of sentential negation of the type *it is not the case that*, and the negation *not* on the auxiliary. This is an abandonment of the idea of *not* as a functor applying exclusively at clausal level adopted by Ladusaw, for the possibility of applying *not* at VP level too. In fact, Zwarts develops this point in a separate paper [Zwa93a], where he shows that sentence negation and predicate negation are two different forms of negation. He gives a description of the logical connections between the two by reference to the semantic nature of the subject noun phrase. ‘With a consistent and complete noun phrase as subject the use of sentence negation is equivalent to predicate negation.’ [Zwa93a, p.7]<sup>7</sup>

<sup>4</sup>Cf. footnote 7 for more details.

<sup>5</sup>In [Zwa93b], Zwarts constrains this claim. This point is discussed in the next subsection.

<sup>6</sup>This example corresponds to Ladusaw’s [Lad79, p.163] number (107).

<sup>7</sup>A quantifier associated with a noun phrase is consistent in nature when it cannot contain a given set of individuals and the complement of that set. This property is defined hereafter.

#### Definition

Let B be a Boolean algebra. A quantifier Q on B is said to be consistent iff for each element X of the algebra B: if  $\neg X \in Q$ , then  $X \notin Q$ . [Zwa93a, p.2]

From there it follows that in (3.23a), for instance, the action of *doubt* contrasts with the counteraction of *not*, because the two elements, two valid licensers as shown in (3.23b) and (3.23c), share the same scope. As a result, the two downward monotonic functions produce a monotone increasing environment, and hence are unsuitable for an NPI. The issue of double negatives is more complex than this, as already seen in chapter 2 section 2.3. It is discussed further towards the end of this chapter, and in chapter 6.

- (3.23) a.\*Daniel did not doubt that Chloe had done anything.  
 b. Daniel did not say that Chloe had done anything.  
 c. Daniel doubted that Chloe had done anything.

### Quasi-ideals and quasi-filters

We have observed different logical behaviours among the members of the class of downward monotonic functions. As mentioned above, there are cases in between downward monotone and full De Morgan's Laws. In (3.24) it is shown that not all the inferences permitted by *no flower* are justified under downward monotonicity. Downward monotonicity explains (3.24a), but (3.24b) must be attributed to the closure under unions that characterizes *no flower*.

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In the following corollary, the conditions that have to be fulfilled for an NP to be consistent are shown.

#### Corollary

A noun phrase is consistent iff the following schema is logically valid:

- (1) NP (NEG VP)  $\rightarrow$  NEG (NP VP) [Zwa93a, p.3]

The quantifier which is associated with the noun phrase *most N* is an example of consistent quantifier. Whenever a consistent noun phrase is used as subject, the use of predicate negation entails sentence negation.

A quantifier associated with a noun phrase is complete in nature when it cannot be that neither the complement of a given set nor that set itself is its member.

#### Definition

Let B be a Boolean algebra. A quantifier Q on B is said to be complete iff for each element X of the algebra B: if  $X \notin Q$ , then  $\neg X \in Q$ . [Zwa93a, p.6]

It is clear that the notion of completeness is the reversal of the notion of consistency. In the following corollary, the conditions that have to be fulfilled for an NP to be complete are shown.

#### Corollary

A noun phrase is complete iff the following schema is logically valid:

- (1) NEG (NP VP)  $\rightarrow$  NP (NEG VP) [Zwa93a, p.6]

This is to say that whenever the subject is a complete noun phrase, the use of sentence negation implies predicate negation. Proper names are an example of complete quantifier.

- (3.24) a. No flower will dry up or will fade  $\rightarrow$   
 No flower will dry up and no flower will fade
- b. No flower will dry up and no flower will fade  $\rightarrow$   
 No flower will dry up or will fade  
 [Zwa91, p.22]

The logical behaviour of downward monotone quantifiers which are also closed under unions can be described by the algebraic notion of ideal. Broadly speaking, this notion makes it possible to identify with a name inferences permitted by *no flower* and brings out the difference for instance with *not all flowers*. Quasi-ideals are the class of ideals including the empty set, i.e. a slightly more general notion. The definition of quasi-ideal is presented in (3.25).

- (3.25) **Quasi-Ideal**  
 Let B be a boolean algebra. A quantifier  $Q$  on B is quasi-ideal iff for each two elements  $X$  and  $Y$  of the algebra B:
1. if  $X \cup Y \in Q$ , then  $X \in Q$  and  $Y \in Q$
  2. if  $X \in Q$  and  $Y \in Q$ , then  $X \cup Y \in Q$
- [Zwa91, p.23]

“A quantifier on a boolean algebra B is simply a subset of B.” [Zwa91, p.17] Since the semantic value of noun phrases is a collection of subsets of U, semantically they can be equated with a subset of  $P(U)$ . In short, they are regarded as quantifiers. The notion of ideal tells one about the structure of the subset which corresponds to the quantifier.

Similarly, differences in logical behaviour can be found inside the class of upward monotonic functions. The inference in (3.26a) is justified under upward monotonicity, but (3.26b) must be attributed to the closure under intersection.

- (3.26) a. All monks rob and kill  $\rightarrow$   
 All monks rob and all monks kill
- b. All monks rob and all monks kill  $\rightarrow$   
 All monks rob and kill  
 [Zwa91, p.24]

Upward monotonic functions like *all N* are closed under intersections. They can be described by means of the notion of filter. Quasi-filters are the class of filters including the empty set. They are defined as in (3.27). *Several N* is not a filter, it does not satisfy (3.27-2).

(3.27) **Quasi-Filter**

Let  $B$  be a boolean algebra. A quantifier  $Q$  on  $B$  is quasi-filter iff for each two elements  $X$  and  $Y$  of the algebra  $B$ :

1. if  $X \cap Y \in Q$ , then  $X \in Q$  and  $Y \in Q$
2. if  $X \in Q$  and  $Y \in Q$ , then  $X \cap Y \in Q$

[Zwa91, p.24]

**3.3.2 Laws of negative polarity**

Zwarts endorses the assumption that the phenomenon of negative polarity can be captured in a unified way by means of the notion of decreasing monotonicity. He argues that its various manifestations are governed by the following rules.

- a. Only sentences in which an expression of minimal negation occurs, can contain a negative polarity item of the weak type.
- b. Only sentences in which an expression of regular negation occurs, can contain a negative polarity item of the strong type.[Zwa91, p.6]

Subsequently, in [Zwa93b], Zwarts opts for a tripartite classification, where part of the cases covered by rule b. are treated separately. This results in the following third law of negative polarity.

Only sentences in which an expression of classical negation occurs, can contain a negative polarity item of the superstrong type.[Zwa93b, p.12]

As described above, the classes of negation are defined in terms of algebraic properties, thus the laws can receive the more precise formulation as follows.

- a. Only sentences in which a monotone decreasing expression occurs, can contain a negative polarity item of the weak type.
- b. Only sentences in which an anti-additive expression occurs, can contain a negative polarity item of the strong type.
- c. Only sentences in which an antimorphic expression occurs, can contain a negative polarity item of the superstrong type.[Zwa93b, p.47]

Zwarts considers these conditions necessary and sufficient. Necessary because the property of monotone decreasing is considered to be the minimal common characterization of the group of licensers. The set of monotonic downward entailing items is then carved up by defining a property which identify a proper subset. Sufficient because these rules are supposed to capture all the variations in the behaviour of NPIs.

**3.3.3 Characterization of NPIs**

The distinction among licensers is then brought to bear on the classification of NPIs themselves. The phenomena of polarity sensitivity are considered to be essentially lex-

ical. The property of requiring the presence of an expression of negation is intrinsic to negative polarity items. At first, the treatment proposed splits the class into two types. The Dutch data in (3.28) and (3.29) constitute the empirical motivation for such an internal partition.

- (3.28) a. *Weinig handelsreizigers blijken hem te kunnen velen.*  
 few salesmen appear him to can abide  
 'It appears that few salesmen can abide him'
- b. *Geen van de leerlingen schijnt haar te kunnen velen.*  
 none of the students seems her to can abide  
 'It seems that none of the students can abide her'
- (3.29) a.\* *Weinig ouders hebben bijster veel brieven ontvangen.*  
 few parents have very many letters received  
 'Few parents received very many letters'
- b. *Geen van de kooplieden toonde zich bijster tevreden.*  
 none of the merchants showed himself very content  
 'None of the merchants showed himself very content'

As shown in (3.28), an NPI like *kunnen velen* (can abide) can be licensed by both expressions *weinig N* (few N) and *geen* (none). Instead, see (3.29), *bijster* (very) imposes stronger restrictions on the environment in which it can appear, and is licensed by a smaller set of licensers. These and similar data provide Zwarts with empirical support for his claim that licensers do not have all the same negative strength. He concludes that NPIs come in different types, some of them are satisfied with a rather weak form of negation, but some others require a more explicit/stronger form.

Those NPIs that place on the licensing expressions no other restrictions than that of belonging to the class of minimal negation are regarded as *weak* NPI. The attribution of the weak type is a consequence of the minimal nature of the expression of negation sufficient for the licensing. However, as discussed at length, every expression of regular negation is also an expression of minimal negation, which means that the group of weak NPI is licensed by any licenser. Those NPIs that place stronger restrictions on the licensing expressions are called NPIs of the *strong* type. They are licensed only by a subset of licensers. Zwarts claims that the distribution of weak and strong NPIs in licensed positions matches the strength of the licensers.

Besides these two groups, there is a third type called *superstrong*. The English expression *one bit* and the Dutch *mals* (tender) belong to this type. The examples in

(3.30) and (3.31) show that minimal or regular negation are not enough for these items.<sup>8</sup>

(3.30) a.\*Few people were one bit happy about these facts.

b.\*No linguist was one bit happy about these facts.

c. The men weren't one bit happy about these facts.

(3.31) a.\* *Weinig van zijn oordelen waren mals.*

few of his opinions were tender  
'Few of his opinions were soft'

b.\* *Niet één van zijn oordelen was mals.*

not one of his opinions was tender  
'Not one of his opinions was soft'

c. *Zijn oordelen waren vaak niet mals.*

his opinions were often not tender  
'His opinions often weren't soft'

In the next subsection of this chapter, merits and shortcomings of Zwarts' proposal are discussed. The two sides are more closely related than it might seem at first. In fact, what may count as merit or shortcoming for the analysis as it stands at present, might turn out not to be so in a wider perspective.

### 3.3.4 Comments

Zwarts' analysis is a systematization and expansion of preceding ideas. It is a systematization because he gives precise definitions to concepts that were not well-defined previously, for instance he defines the property of anti-additivity precisely by means of algebraic ideals. It is an expansion because the space between overt negation and downward monotonicity is explored, and the findings are used to classify the manifestations of the phenomenon.

The interpretation of polarity sensitivity as a lexical phenomenon is an important aspect of Zwarts' analysis. This justifies the variety of syntactic categories represented in the class of NPIs, as well as the variety of types of expressions, i.e. atomic or complex. Several aspects of an NPI's meaning, such as indefiniteness, and scalar-endpoint role, can interact to produce the negative polarity part of that meaning.

<sup>8</sup>Krifka [Kri94, p.198] raises doubts on the existence of this class of polarity items. He suggests that they may be best analysed as idioms that contain overt negation in their core forms. It is interesting to note that, at odds with what is the case for minimisers, the English expression contains a cardinal number and not an indefinite determiner.



The claim that licensing conditions are semantic in nature is necessarily very strong for at least two reasons. First, usually they are expected to be cross-linguistically valid, and second, the only possibility of accounting for exceptions or parametrizing variations is via the identification of other semantic properties that consistently interfere with licensing. When it does not work as predicted, these other properties should be realized in the lexical element in question. There is no need to say that it should be shown why such properties can interfere, since not all combinations of properties are relevant.

The proposal has shown cross-linguistic validity. Zwarts himself tests it on Dutch, English and German. In Tovenà [Tov93, sec.4], it was shown that the main tenets apply also to Italian, in particular for idioms.

A strength of this proposal, but a possible weakness too, is the central role played by downward monotonicity. It is a strength because stating a generalization that encompasses many manifestations of the phenomenon becomes possible. It is a weakness because, since downward monotonicity is considered to be the unique relevant property, the analysis as it stands cannot be reconciled with any case of licensing where such a property does not intervene. Licensing by generics is problematic, for example (Heim [Hei84]). The perspective centered on licensors produces a shortcoming with respect to the question of identifying instances of licensors in all cases of licensing, and excluding them where NPIs cannot occur. With a change from *licenser* to *licensing environment*, the proposal can be made to account for NPIs in comparative clauses. In his paper [Hoe86], Hoeksema has shown that these environments are monotone decreasing. However, questions, and the cases of pragmatic licensing described in Linebarger [Lin80a], [Lin87] for instance, remain hard to account for.

A shortcoming to Zwarts' analysis is that he does not exploit in full the claim that polarity sensitivity is a lexical phenomenon. This is a valid claim, but it is mainly implemented in the form of an analysis of the semantic characteristics and peculiarities of the class of licensors. However, with respect to NPIs, it reduces to attributing to these items features like *weak type* or *strong type*, which are grounded on distinctions defined outside the class itself. Zwarts does not perform a semantic analysis of the NPIs themselves which makes the distinction clear. Therefore, no real independent motivation is presented for the classification of NPIs, except for the existence of different licensors. This means that the classification can be fragmented by any idiosyncratic element. In fact, the proposal for missing intermediary classes, see van den Wouden [vdW94b], could easily lead to a proliferation of classes up to the point of equating the number of NPIs, in the worst case. As long as the new classes are also lacking motivation, there is little

guarantee for their stability. In other words, although polarity sensitivity is a lexical property, it is defined in a way that is insensitive to the internal semantics of NPis.

Negative polarity is perceived by Zwarts as a licensing issue, one of the many cases of relational dependency expressed in natural language. It is hardly perceived as a phenomenon of sensitivity. For this reason, when the contribution of the environment to the building of the negative polarity meaning is strong, and therefore little is left to the NPI itself, such an NPI is still called strong. This is, for instance, the case of the Dutch *bijster* (very), which can be licensed by *geen* (none), but not by *weinig N* (few N), as shown in (3.28) and (3.29). The strength of the NPI refers to the semantics of the context in which the NPI can occur. Similarly, if the item can express its negative polarity meaning with just a little external contribution, it is called weak. This is, for instance, the case of the Dutch *kunnen velen* (can abide), which can be licensed by both *geen* and *weinig N*. From there it follows that weak negative polarity meaning can result out of the contribution weak licensors, and, of course, even more so with strong ones.

Finally, one can mention the issue of the limited licensing power of so-called inherently negative verbs, like *deny* or *doubt*. The incapacity of describing their presumed limited licensing power has been pointed out in the literature as a weakness of semantic approaches in general. The particular relevance here is due to the fact that it has been used as evidence to support the need of a syntactically defined scope of licensors<sup>9</sup>. In chapter 5, this issue is discussed in more detail, and the claim of their ‘reduced power’ is disproved.

### 3.4 A bridge between polarity sensitivity and negative concord marking

Dowty’s ([Dow93], [Dow94b]) proposal springs from the observation that monotone inference patterns play a very important role in human reasoning. In these papers, he investigates the possibility of having a formal deductive theory for natural language. The core of the proposal is to treat negative polarity and negative concord marking (NC) as ways in which natural language overtly signals the downward direction of possible inferences, hence facilitating the application of deductive rules.<sup>10</sup> He suggests that downward rather than upward contexts are marked in natural language because the latter are much more common. As a consequence, the phenomenon of affirmative polarity is

<sup>9</sup>However, in his dissertation, Kas [Kas93] put forward a semantic analysis that predicts such a limited licensing power.

<sup>10</sup>Jespersen [Jes17] had proposed to interpret NPI as strengthening negation.

marginalised, a fact which seems to match the effectively smaller size of the phenomenon as well as the much more controversial characterization of PPIs.

From the point of view of polarity sensitive studies, this work also has the merit of renewing interest in multiple licensors.

### 3.4.1 Using monotone inference patterns

By contraposing discourse anaphora licensed solely on the basis of the semantics of the antecedent and pragmatic factors, Dowty emphasises the relevance of the monotonicity of the antecedent NP in determining anaphora possibilities. More precisely, Dowty suggests that monotonic properties of determiners are part of the explanation of their anaphora-generating possibilities.<sup>11</sup> In short, the argument proceeds as follows. ‘NPs in upward monotone contexts semantically “license” the establishment of discourse referents in a way that NPs in downward monotone contexts never do.’ [Dow93, p.95] The discourse referent established by the noun phrase subject of a clause is semantically equal to the intersection of the sets denoted by the N' and the VP. A determiner which is upward monotone for both arguments entails that this intersection is non-empty, see (3.32). The downward entailing determiner *no* does entail that this intersection is empty, see (3.33).

(3.32) Many armadillos<sub>*i*</sub> wandered the hills. They<sub>*i*</sub> had little to eat.

(3.33) \*No armadillos<sub>*i*</sub> wandered the hills. They<sub>*i*</sub> found little to eat.

Then, it is shown that a determiner which is downward monotone for one argument cannot entail that this intersection is non-empty. Dowty says that the tendency to infer the existence of such a set is widely believed to be a pragmatic effect. Thus, it is proposed that the entailed existence of such non-empty sets is the referential anchor for anaphoric reference. In cases where such an entailment does not exist, either the context gives pragmatic assistance, as in (3.34), or anaphora is unsuccessful, as in (3.35).

(3.34) a. Few first-year students<sub>*i*</sub> came to my party last night. But they<sub>*i*</sub> had a very good time (anyway).

b. Every first-year students<sub>*i*</sub> in the department came to my party last night. They<sub>*i*</sub> left earlier than the advanced students, however.

<sup>11</sup>This position has been explored also by Kanazawa [Kan94] with respect to donkey-sentences.

- (3.35) a.\*Few first-year students<sub>i</sub> who came to the lecture, if indeed any did, will go to the reception. They<sub>i</sub> will have a good time anyway.
- b.\*Every glottocronology major<sub>i</sub>, if there is any, was at the party. They<sub>i</sub> kept out of sight, though.

In order to describe in a general way monotone inferences in natural language across categories, Dowty adopts the two principles which refer to expansion or contraction of the relevant set. They are ‘Expressions occurring in upward monotone positions may be replaced by terms with a larger denotation’, and ‘Expressions occurring in downward monotone positions may be replaced by terms with a smaller denotation’. The characterization of monotone functions is the standard one presented above in this chapter. Dowty adopts Sánchez Valencia [SV91] recursive characterization of expansion and contraction which generalises from the subset relation to an ordering relation for all types.<sup>12</sup> In this way, knowing what function is the denotation of a lexical expression is to know the monotonic property of such a function. Knowing the monotonicity of the denotation of an expression is to know the entailments that follow. The monotonicity of complex expressions can be computed compositionally. A logic which derives such inferences is a deductive system which manipulates linguistic expressions as uninterpreted objects. The goal of building such a system is to clarify the relationship between model-theoretic descriptions of semantic properties and relations, and reasoning or other cognitive processing of information conveyed via natural language.

Certain determiners such as *every* lead to downward entailments for their CN, but when there is a negative auxiliary, object-position *every* results in an upward entailment. Other determiners such as *a* often but not always lead to upward entailments. Again, in object position the entailment is reversed when there is a negative auxiliary. Thus, Dowty contends that lexical monotonicity marking does not suffice to identify downward and upward positions. A mechanism for marking complex expressions for monotonicity is required. This is done by first adopting and then re-elaborating van Benthem’s ([vB86], [vB87]) and Sánchez Valencia’s [SV91] proposal of Marking Rules. Some of these rules, namely the Monotonicity Marking Rules, allow for the possibility

<sup>12</sup>The generalization across types goes as follows:

- a. A function  $z \in D_{(\alpha,\beta)}$  is upward monotone iff for every  $x, y \in D_\alpha$ ,  $x \leq_\alpha y$  entails  $z(x) \leq_\beta z(y)$ .
  - b. A function  $z \in D_{(\alpha,\beta)}$  is downward monotone iff for every  $x, y \in D_\alpha$ ,  $x \leq_\alpha y$  entails  $z(y) \leq_\beta z(x)$ .
- The recursive characterization follows the usual definition of types, derived from  $D_e$  (entities),  $D_t$  (truth values), and functions constructed from these.
- a. If  $c, d \in D_e$ , then  $c \leq_e d$  iff  $c=d$ .
  - b. If  $c, d \in D_t$ , then  $c \leq_t d$  iff  $c=0$  or  $d=1$ .
  - c. If  $c, d \in D_{(\alpha,\beta)}$ , then  $c \leq_{(\alpha,\beta)} d$  iff for each  $a \in D_\alpha$ ,  $c(a) \leq_\beta d(a)$ .
- Quoted from [Dow94b, p.9].



upward monotonic operators affect the monotonicity of the environments in which they occur. Non monotonic operators and lexical items in general are ‘indifferent’ to the monotonic properties of the environment. The hypothesis I explore in chapter 5 is that a polarity sensitive item such as *any* is an element whose monotonicity is not lexically specified, but which is sensitive to the monotonic properties of the environment in which it occurs.

On the other hand, the operation of marking monotonicity on the tree nodes brings us back to the issue of double negation discussed in Baker [Bak70]. It also brings us to the issue of the connections between polarity and negative concord.

### 3.4.2 A proposal for polarity sensitivity

The account proposed for the existence of NPIs in natural language is that NPIs morphologically mark positions which are subject to downward inferences. In short, NPIs provide short-cuts to monotonic inferences.

In the literature, Ladusaw [Lad79] and Zwarts [Zwa91] have hypothesised that NPIs are scope disambiguators. Dowty argues that the disambiguation that follows from the use of an NPI or API is a consequence of the difference in appropriate monotonicity marking for each reading, not a marking of the scope ambiguity itself. This position is supported by the observation that NPIs are appropriate also in contexts where no disambiguation takes place.

Since the focus of his papers is on reasoning patterns, Dowty does not say anything about NPIs in questions. As far as questions are concerned, it is not clear how easily the morphological mark idea outranks the disambiguation mark one. They both offer an explanation that refers to the speaker’s expectations. The selection of an NPI should be interpreted as marking a subset of the possible answers as suitable.

Dowty claims that marking certain lexical expressions for monotonicity requirements makes it possible to use Sánchez Valencia monotonicity-determining rule to describe the distribution of NPIs. This is done first by adding a new notation on syntactic categories. The ‘o’ subscript in *any*’s category in (3.42) is mnemonic for ‘odd’ as in ‘odd number of –’s’. The determiner is assumed to be assigned to the corresponding object-position category as well.

(3.42) **any** is assigned to:  $((e, t)_o^+, ((e, t)_o^+, t))$

Then, he adds the well-formedness condition in (3.43), which is a filter on the output of the Marking Rules. This rule expresses conditions on the syntactic structures deductive rules operate over.

- (3.43) *o*-Marked Category Condition (*Condition on Well-Formedness of Monotonicity-Marked Derivations (trees) with o-Marked Categories*):  
 A derivation D is only well-formed if the argument  $\alpha$  with which each category  $(\alpha_o, \beta)$  combines has an odd number of “-” ’s in the path from  $\alpha$  to the root of D.

Apart from the exceptions discussed by Lakoff [Lak69] and the study of the correlation between intonation and readings by Ladd [Lad81], there is also the problem of sentences like (3.44b), from Hoeksema [Hoe86], where NPIs are acceptable despite the presence of the two downmarked functors *if* and *not* in the path to the root, contrast with (3.44a).<sup>13</sup>

- (3.44) a. If he knows anything about logic, he will know Modus Ponens.  
 b. If he does not know anything about logic, he may still know Modus Ponens.

Dowty’s [Dow94b] proposed solution is to weaken the NPI condition from requiring an odd number to requiring at least one such functor in the path. Two points need consideration. First, the differences between the new version and the previous one aren’t trivial, because the former takes in a large amount of new cases. Second, the new condition leaves unexplained the contrast in (3.45). It wrongly predicts that all the sentences in (3.45) are fine because it cannot distinguish among them. The analysis of the relevance of the scope of downmarked functors seems to be too coarse grained. The difference between (3.45b) and (3.44b) is that here, as well as in (3.23a) above, negation has constituent scope, and it applies precisely to the verb *deny*. In this case, the two functors *not* and *deny* effectively cancel each other.

- (3.45) a. He denied that any child had taken my book.  
 b.\*He didn’t deny that any child had taken my book.  
 c. He didn’t say he denied that any child had taken my book.

Categorial grammar encodes all its syntactic rules in its category assignments. Thus, a negation with sub-clausal scope is treated via a particular assignment. Zwarts [Zwa93b] discusses precisely the case of verb negation. His representation of a case of constituent negation is given in (3.46). Here negation has scope only over the verb.

<sup>13</sup>It is interesting to note that both sentences in (3.44) contain occurrences of PS *any*, but that their interpretation is different. The *any* in (3.44a) reads as ‘at least something’, whereas the one in (3.44b) reads as ‘nothing’.

(3.46)	John	didn't	see	some of the paintings
	S/VP	((VP/NP)/(VP/NP))	VP/NP	NP
	↑	↓	↑	
		VP/NP		
		↑		
	S/NP			
	↑			

This should be contrasted with (3.47), which is a case of predicate negation.

(3.47)	John	didn't	see	any of the paintings
	S/VP	VP/VP	VP/NP	NP
	↑	↓	↑	
		VP/NP		
		↓		
	S/NP			
	↓			

His solution creates a sort of negative island, i.e. an area from which negation does not spread. The case of constituent negation is discussed more extensively in chapter 6 section 6.4. Here we add only that an analysis formulated in these terms might account for cases where a downmarked functor may be unable to make the presence of an NPI acceptable, as in (3.48).

(3.48) ?\*I do not think that the bark of any tree will cure his illness.

### 3.4.3 A proposal for negative concord

The discussion on negative concord marking is based on a set of dialects of English which show several types of negative concord, as described by Ladusaw ([Lad91],[Lad92]). Dowty's hypothesis is that N-words are ambiguous between negation and NPI, following Ladusaw [Lad92], but they all are uniform in signifying downward monotone positions.

Negative Concord Hypothesis: Given that ↓M vs. other positions are very important to natural language inference, ↓M positions are more important for a natural language to mark syntactically than "where the negation is" in logical form. Hence natural languages may sometimes use words or morphemes which are indeterminate as to signifying a negation operation itself (i.e. are ambiguous between negative and NPI interpretations) but these words are nevertheless uniform in signifying ↓M positions. [Dow93, p.113-114]

He proposes the following characterisation of a NC language:



A negative concord language is one in which every morpheme that can express negation as one of its meanings also necessarily marks its argument(s) as a  $\downarrow M$  position (in all of its meanings). [Dow93, p.114]

Every morpheme that can express negation marks its arguments as downward monotone. In (3.49) there is the category assigned to the determiner *no* in standard English. In (3.50) there is the category assigned in a negative concord system. In both cases, an object-position category must be assigned too. The parenthesized superscript in (3.50) indicates that *no* has downward monotone deductive behaviour in its negative reading, and upward monotone deductive behaviour in its NPI reading.

(3.49) **no** (SE) is assigned to:  $((e, t)^-, ((e, t)^-, t))$

(3.50) **no** (BE) is assigned to:  $((e, t)_o^{(-)}, ((e, t)_o^{(-)}, t))$

Dowty claims that a common semantic feature is established for all negative marked constituents, as in Ladusaw's proposal. However, first, in his own proposal there is a difference between the negative and polarity sensitive interpretations. Second, there is no structural negation meaning or invisible negation operator, contra [Lad92]. The latter difference is fairly clear, whereas the former one seems fuzzier. The 'trick' is inside the word *signify*, which allows negative operators either to reverse monotonicity, or simply to check it, so to speak. Slightly simplifying the positions, it can be said that these operators are as ambiguous in Dowty's as in Ladusaw's proposal, but they differ in terms of lexicalisation patterns, as for the former author the whole meaning is expressed in one location, i.e. the operator itself, while for the latter the negative feature is 'stranded' at the beginning of the clause in the form of a surface-null operator. However, it should be emphasised that Dowty's proposal does not imply a semantic decomposition of an element such as the Italian *nessuno* (nobody), which should be independently motivated.<sup>14</sup>

According to Dowty, signalling the downward monotonicity of a position is the most important task of a downward marked element. Nevertheless, it does not follow that all negations must merge, or cancel each other out. Dowty's proposal consists of double marking certain elements, for certain syntactic positions, and here is where the lexical ambiguity comes in. For instance, *nessuno* in object position requires a downward environment, i.e. a negation higher up, but it does not reverse the monotonicity itself;

<sup>14</sup>Ladusaw seems to try to get around the issue by assuming that the negative operator is constructional, but then he supposes that it is licensed by the presence of N-words. The impression that whenever the 'licensees' start licensing their licensers the argument becomes circular is somewhat confirmed by Ladusaw himself, who alludes to the possibility of N-words being self-licensing expressions.

whereas in subject position it is a reverser with no requirements on the context. Marking variations produce the different types of NC languages.

### 3.4.4 Extending the proposal for negative concord

Dowty views PS and NC as imposing ‘conditions on natural language syntactic forms relative to deductive properties of these forms within a formal deductive system.’ [Dow93, 117-118] In other words, on the one hand there is the patterning of downward monotone semantics, and on the other one the syntactic structures. The relation between the two is constrained by polarity and negative concord markings. This vision of these two negation related phenomena makes it possible to describe linguistic variations fairly easily, e.g. by appealing to different deductive-class assignments for negative marked elements. In this subsection, I discuss how to tweak Dowty’s proposal for Italian. The modifications proposed assure a fair coverage of the data, with an exception which could be considered a sort of idiomatic usage. However, this exception left here unexplained will trigger the new hypothesis for NC discussed in chapter 6 section 6.4.

As already noted by Zwarts [Zwa81], not all negative elements have the same behaviour with respect to PS, and I add that the same holds in Italian with respect to NC. There are elements that can start a new ‘negative chain’, so to speak, as well as be an intermediary or final ring of a chain.<sup>15</sup> But there are also elements that can only be heads of chains. This fact has at least two direct implications; first, double negation is possible in Italian without stress effect, as in (3.51), second, it is possible to have more than two negations in a sentence, as in (3.52).

(3.51) Nessuno è partito senza salutare.  
 nobody is left without say goodbye  
 ‘Nobody left without saying goodbye’

(3.52) Nessun cittadino non mangia per non pagare la tassa sul cibo.  
 no citizen not eats in order not pay the tax on-the food  
 ‘No citizen does not eat in order not to pay the tax on food’

The potential objection that *senza* is not an N-word is highly costly, because it raises the question of with what else *nessuno* is negatively concording in examples (3.53), in order to get its NPI meaning.

<sup>15</sup>I use here the term chain in an intuitive way, to refer to a sequence of negative elements which correspond to a single logical negation. I will abandon the idea in the analysis developed in chapter 6.

- (3.53) a. Daniele ha distribuito il suo questionario senza aspettarsi che nessuno  
 Daniel has given out the his questionnaire without expecting that nobody  
 lo riempisse.  
 it fill  
 'Daniel gave out his questionnaire without expecting anybody to fill it'
- b. Daniele ha promosso tutti gli studenti senza che facessero nessun  
 Daniel has passed all the students without that take no  
 esame.  
 examination  
 'Daniel passed all the students without them having taken any examination'

Examples (3.53) are relevant in another respect, namely that only certain negative functors can trigger NC across clausal boundaries. These functors are precisely those that can be only heads of chains, contrast (3.53) and (3.54a) with (3.54b) and (3.54c).

- (3.54) a. Non penso che sia venuto nessuno.  
 not pence that is come nobody  
 'I do not think that anybody came'
- b. Nessuno ha distribuito il suo questionario aspettandosi che nessuno lo  
 nobody has given out the his questionnaire expecting that nobody it  
 riempisse.  
 fill  
 'Nobody gave out her/his questionnaire thinking that nobody would fill it'
- c.\* Nessuno pensa che sia venuto nessuno.  
 nobody thinks that is come nobody

Then, examples (3.55) may prompt the idea that the different lexical type assignments for subject and object positions proposed by Dowty should be made equal in order to allow also for an NPI *nessuno* subject (in postverbal position). In fact, the sentences in (3.55) illustrate that a variation in the position of the subject causes a different negative marking of the verb. The incorrect NPI reading of *nessuno* in sentences like (3.55a), where *nessuno* is both the subject in preverbal position and the only negative-marked element, is ruled out by the filter in (3.43). On the other hand, the change suggested above would make it possible to account also for (3.53a) and (3.54a), where *nessuno* occurs in subject position with NPI reading, as well as for (3.55b), where the subject is in post verbal position. However, it would predict a non-existing NC reading for

(3.54b), which then should be ruled out by constraining the domain of a chain headed by *nessuno* to be clausebound.<sup>16</sup> In (3.54a) there is no marking on the *be* verb, i.e. no *non*, otherwise a new chain would be started. So, *non* and *senza* seem the only good candidates for a negative type only. When there is another negation higher up, the verb is not marked with negation. Otherwise, it would break the chain, since it does not have an NPI reading.

- (3.55) a. Nessuno è venuto.  
           nobody is come  
           ‘Nobody came’
- b. Non è venuto nessuno.  
           not is come nobody  
           ‘Nobody came’

If we assign only the NPI type to non-subject words, as suggested by Dowty, (3.56) and (3.57) would be predicted to be impossible.

- (3.56) A nessuno interessano le enciclopedie.  
       to nobody interest the encyclopaedias  
       ‘Nobody is interested in encyclopaedias’
- (3.57) A niente sono serviti i nostri sforzi per convincerlo a restare.  
       to nothing are served the our efforts for convince-him to stay  
       ‘All our efforts to convince him to stay were in vain’

As examples (3.56) and (3.57) show, N-words in preverbal position can be interpreted as fully negative, independently from their syntactic functions. If the possibility of having a negative in non-subject position is combined with the constraint of occurring in preverbal position, then not only is it possible to account for (3.56) and (3.57), but Dowty’s erroneous prediction of a negative reading for (3.58) is corrected. The constraint could be that a negative chain headed by a double marked element, i.e. *nessuno* and other negative quantifiers, is well-formed only when started from a pre-verbal position, and cannot stretch across a clausal boundary. This still does not provide an explanation for (3.59)<sup>17</sup>, though, which is ruled out by the filter.

<sup>16</sup>It is not clear if and how a locality constraint like ‘be clausebound’ applying only to certain elements can be accommodated in the system. Monotonicity patterns involve a ‘global’ view of the sentence. Dowty [Dow94a] proposes a modification of the *o*-marking condition whereby the computation of the –’s is done from the element down to the next S-node rather than to the root. Both clause bound and non-clause bound versions might be necessary for Italian.

<sup>17</sup>Thanks to Davide Turcato for bringing example (3.59) to my attention.

(3.58) \* *E' venuto nessuno.*  
is come nobody

(3.59) *Sei venuto per niente.*  
are come for nothing  
'You came for nothing'

In conclusion, structural constraints seem to be stronger than predicted by Dowty. In chapters 5 and 6, we will discuss how word order changes can be interpreted as ways to express different types of statements. *Non* and *senza* are only of negative type, they can cause double negation and also trigger NC across clausal boundaries. All the other N-words are assigned a double type, on the one hand their NPI interpretation is controlled by the filter, and on the other hand their negative interpretation is restricted by a constraint on clausal domain.

Example (3.59) deserves further comment. This sentence is special in many ways because no other N-word can be substituted for this occurrence of *niente*, see (3.60), and also it cannot serve as an answer to question (3.61). A negation on the verb introduces ambiguity, see the glosses of (3.62), which pair with different prosodic patterns. The sentence is marginal when *per niente* is preposed, as in (3.63).

(3.60) \* *Sei venuto per nessun motivo.*  
are come for no reason

(3.61) *Per cosa sei venuto?*  
for what are come  
'What did you come for?'

(3.62) *Non sei venuto per niente.*  
not are come for nothing  
'You did not come at all'  
'It is not the case that you came for nothing'

(3.63) ?? *Per niente sei venuto.*  
for nothing are come  
'For nothing you came'

The negative PP in example (3.59) looks like an expression of manner/goal. It is a well known fact that expressions of manner undergo particular restrictions, for instance they have only reduced possibilities of wh-extraction, as discussed in chapter 5. The contrast between (3.59) and (3.60) is close to other cases of variation due to the presence

vs. absence of an overt restrictor discussed in chapter 6 section 6.5.3. More generally, examples of the type of (3.59) will prompt the reshaping of the analysis presented in that chapter.

Finally, a language like Catalan allows sentences with a negatively marked subject to have either a negatively marked or non-marked verb. It is possible to introduce optionality in the system by double marking the negation on the verb. This marking would account for the fact that Catalan does not have all those DN readings present in Italian. In fact, negation on the verb does not break a negative chain, see (3.64). What is to be explained is why this negation, when intermediary, can be dropped whereas the *ni* before minimizers can never be dropped, see (3.65) and (3.66).

(3.64) a. Ningú no ha vingut.  
           nobody not has come  
           ‘Nobody came’

b. Ningú ha vingut.  
       nobody has come  
       ‘Nobody came’

(3.65) a. No va dir ni una paraula.  
           not go say not a word  
           ‘She didn’t say a word’

b.\* No va dir una paraula.  
       not go say a word

(3.66) Ningú va dir ni una paraula.  
       nobody go say not a word  
       ‘Nobody said a word’

DN reading is possible in Catalan with *sense* (without), see (3.67). Thus, *sense* seems to be the unique element marked only as negative. Interestingly, negated clauses expressing a goal also bring about DN; compare (3.68) and the Italian (3.52).

(3.67) En Joan no va marxar sense despedir-se.  
       the John not go leave without say goodbye  
       ‘John does not leave without saying goodbye’

(3.68) Ningú va venir por no mangiar res.  
       nobody go come for not eat nothing  
       ‘Nobody came in order not to eat anything’

### 3.4.5 Comments

In conclusion, the proposal is noteworthy, not least because it puts NPIs rather than licensers at the centre of the polarity phenomena. However, since the idea of semantic licensing still lingers, it is not clear how it can accommodate the classic problematic cases, e.g. pragmatic ‘licensing’.

The calculus of +’s and –’s in Baker [Bak70] is done from the root downwards. In Sánchez Valencia it is done bottom up, thus Dowty’s example (3.37) has ‘armadillo’ marked as – for monotonicity, although two reversers are in the path between this node and the root, namely *n’t* and *every*. The polarity marking is done top down, so the same ‘armadillo’ is marked + for polarity. This consistently ‘global’ evaluation of negation runs into problems in the case of constituent negations. As pointed out, neither a filter counting downward monotonic operators in pair such as (3.43), nor its revised version which refers to ‘at least one’ operator, are satisfactory solutions.

Then, no proposal is made for explaining the presence of both PS and NC strategies in natural language. The treatment developed makes one believe that they serve the same purpose. There are languages which exploit the two (Labov [Lab72]). This suggests that PS and NC ought be appreciated inside a general evaluation of the system of negation in a language and beyond.

Finally, there is the issue of double negation. The system devised by Dowty partially predicts DN, in the sense that it contains strong and weak negations, but it seems to make unaccurate predictions when it evaluates all the negations in the context of all the sentence up to the root, no matter how far it is and what comes in between.

## 3.5 Concluding remarks and plan for development

In conclusion, semantic analyses of negative polarity offer a valid framework, but still contain some unresolved questions.

The role played by downward monotonicity in constructing licensing environments is confirmed. The strong and neat generalization over the set of licensers is acknowledged inside both the semantic and syntactic schools. Its relevance, however, should be further explored.

Next, the existence of variations inside the set of PS items is a fact that can be directly accounted for in a semantic analysis. The explanation proposed, in terms of requirements for licensers of different strength, seems more sophisticated and cross-linguistically consistent than the distinction between I–NPI and NI–NPI (Progovac

[Pro88]). It is more sophisticated inasmuch as individual cases are made to fit into a unique frame defined on the basis of algebraic semantic properties. The notion of exception to a general rule need not be invoked. It shows also a high degree of cross-linguistic consistency, because it does not rely on a characterization defined on morphological properties of a particular language, nor requires further characterization of other factors, like different structural positions for negation.

Inside this framework, the research described in this dissertation has grown from the dissatisfaction of the crucial and yet trivial role played by licensers. Even in semantic approaches, the notion of licensing is little different from an idiosyncratic constraint of cooccurrence with locality restrictions. In the rest of this study, I explore what I perceive as a way out of the current *impasse*. The goal is to explain distributional properties of polarity items in terms of their semantic content and their contextual requirements. The starting point is the conviction that the role of the licenser should be scaled down a little, and relative prominence should be given to the notion of sensitivity. A wider notion of sensitivity appears more appropriate for the various types of context dependencies found in negative polarity phenomena. This move allows me the possibility of accounting for the influence of other factors on the acceptability of occurrences of PS items, for instance aspectual factors for sensitive temporal adverbials, discussed extensively in chapter 4, or the quality of the domain of quantification in quantifier PS items, as discussed in chapter 5.

The term of polarity sensitive item is used hereafter to refer to items which exhibit 'sensitive' and 'non-sensitive' manifestations. This is not to be taken as a way of reasserting Klima's [Kli64] idea that PS items are derived from positive counterparts. In fact, it is never a case of pairing different lexical items, rather it is always the distribution of one item at the time that is discussed. It is also not to be taken as a way of denying some sort of sensitivity to negation to verbs such as the Dutch *hoeven*, which has been classified as NPI (cf. [Zwa91], [vdW94b] *inter alia*). However, as it appears from the discussion of negative concord in chapter 6, not all negation related phenomena and negation sensitive items have to be gathered in the same group.

The origin of the lexical split that generally characterises the class of polarity items is largely ignored in existing proposals. Zwarts has claimed that negative polarity is a lexical phenomenon. Similarly, it is also often claimed that negative polarity items are idiosyncratic. I try to replace the label idiosyncrasy with some content, and analyse the split as belonging to the level of complex expressions, rather than lexical items.

I adopt the following approach: I start by investigating the possibility of building



a unique core meaning for an item in its sensitive and non-sensitive manifestations. I evaluate the contribution of several factors in what could be termed as different uses of the item. Then, I analyse what a licenser can contribute to the construction of the meaning of the complex expression, depending also on the nature of the item.

## Chapter 4

# Negation, eventualities and ordering relations: sensitive temporal adverbials

### 4.1 Introduction

As discussed in the past two chapters, explanations of negative polarity have been dominated by the idea of complementarity. Items are either sensitive or non-sensitive; if sensitive, they are either positive or negative; if negative, they are either licensed or non-licensed. Two features are particularly relevant for the discussion which follows. The first one is that the literature offers no direct definition of NPI. As we have seen, the standard procedure is to give a provisional list of items and to characterise them by means of their behaviour. The second one is that it is usually taken for granted that the vast majority of NPIs are lexically ambiguous. To the best of my knowledge, the reasons for such ‘schizophrenic’ behaviour are not explained. The claim for such a split fits the standard approach to negative polarity, which accounts for the variation in meaning of the items in terms of satisfaction or non-satisfaction of licensing conditions, whereas the reverse is not so certain.

This chapter contains arguments in support of revising the central role of *licensing*, typical of the current standard analysis of polarity sensitivity. We look at temporal adverbials. The English adverbial *until* and the Italian *finché* and *ancora* are discussed in detail. Their distribution is explained in terms of ordering/mapping functors, by considering the interaction between ordering and negation, and by paying attention to the characteristics of the entities entering the relations. These factors are relevant to

the characterisation of these items as polarity sensitive.

Section 4.2 talks about the general issue of relations between intervals. We examine the relevance of the borders of eventualities<sup>1</sup> for identifying temporal intervals, and for defining orders among them. Allen's [All84] classification of ordering relations among intervals is extended so that it handles intervals with poorly-defined borders. Finally, we introduce the hypothesis that negation operates on the relation between intervals rather than eventualities.

Section 4.3 opens the discussion on sensitive temporal adverbials. The first case considered is the English connective and preposition *until*. We review evidence for an analysis of *until* as an operator that provides a terminating point for the eventuality instantiating its first argument via information contained in its second argument. The result can be read as a scale, identified and accessed by its top endpoint. Then, data on *until* where the main clause contains a negation are analysed as cases where the scale is reversed by negation, and the point of access becomes the lowest rather than the highest one. We conclude with a discussion of other ways in which negation can operate in the sentence, and of restrictions in its distribution in main and subordinate clauses.

Then, in section 4.4, the case of the polarity sensitive *until* is contrasted with *jusqu'à* and *ne ... que* (French) as well as with *erst um* and *bis* (German), operators which are classified as non polarity sensitive because their orderings are not reversed by negation.

We then extend our examination to a cross-linguistic group of adverbs that can also be used to express the temporal structure paraphrasable as A STOPS AT B imposed by *until*, namely *finché* (Italian) and *amíg* (Hungarian), in section 4.5. These elements have argument A that must be eventuality denoting, and argument B whose role is to provide information on the stopping point of A. The semantics of *finché* is studied by looking at the different eventualities that it can relate, and at the effect on the relation of occurrences of negation in the main and subordinate clauses. There are also cases where a negation in the subordinate clause does not seem to have a semantic effect. This apparent absence of effect can easily be accommodated in the analysis proposed. Finally, extending the analysis to Hungarian supports the validity of the analysis, but also reveals points of variation.

The investigation moves on to an operator which is not a connective. Section 4.6 discusses the case of Italian *ancora*, which can be used in contexts where English uses *still*, *yet* and *again*. The different syntax introduces new issues. On the one hand, the second argument of the operator is not overtly instantiated. On the other, the operator

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<sup>1</sup>This is a cover term for states and events (Bach 1986).

can occupy a wider range of positions within the sentence. We start by defining the core function of *ancora*, and we look at how it can be affected by negation. Then, we study the dependency between aspectual variations and the range of possible readings for the sentences. Finally, we discuss how the various readings can be connected with preferred positionings of *ancora* in the sentence by referring to the type of information that must be accessible to *ancora* in each case.

The hypothesis underlying the discussion of these operators is the following. The main feature characterising sensitive items is their capacity to interact directly with negation. The notion of compositionality constitutes the link between such a capacity and the presumed lexical ambiguity of these items. The interaction takes place between operators. The conventional interaction, i.e. between negation and a function, which is a way open to all functional items, and which results in a modification of the truth value of the relation, is also possible, often as a marked option. My approach in terms of reversed orders makes it clear why analyses in terms of duality have been proposed both for *until* [Dec95] and *still, yet* [Löb89].

## 4.2 Tools

A discussion of temporal adverbials is connected with the general question of what modifies temporal order. There is a division in the research, on whether eventualities are directly involved in relations, or a relation holds between two reference points and the eventualities are placed through tensing. The former approach is followed by Heinämäki [Hei74]. The latter characterises the Reichenbachian tradition. This chapter concentrates on the effect of some ordering operators. The analysis takes into consideration ordering and aspectual classes at the same time. In order to do so, we need to talk about relations between intervals. This section introduces a few key notions and the tools adopted for representing temporal relations.

### 4.2.1 Eventualities and intervals

We adopt the conventional representation of time as a semitree<sup>2</sup> like structure  $\langle T, < \rangle$ , not branching to the past [Lan91, p.103], where ‘ $T$ ’ is the set of temporal instants and ‘ $<$ ’ the earlier-later relation. This relation is assumed to be a partial ordering of  $T$ . The intervals considered are subsets of some branch  $b_i$  in  $\langle T, < \rangle$ . For the purposes of this chapter, I assume a time granularity that allows one to evade the issue that an activity

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<sup>2</sup>Semitrees differ from trees inasmuch as they do not have an origin.

such as *run* holds at every subinterval down to a certain limit in size, and that there may be short subintervals of falsity in intervals described by iterated eventualities.

A simple case is that of an interval which is designated by a temporal expression such as *from eight to ten*, which carries overt information for the identification of both boundaries. The interval is represented by the thick line in Figure 4.1.

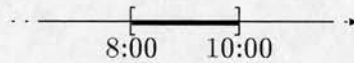


Figure 4.1: The the interval *from eight to ten*

The directed line in Figure 4.1 is the timeline, and the arrow marks explicitly the earlier-later relation. The dotted lines at the ends are used to represent the fact that no information is available on whether and where there is a border. We follow the conventional distinction between open and closed intervals. Open intervals do not include their endpoints, and are notated by means of ‘)’. Closed intervals include their endpoints, and are notated by means of ‘]’. The open interval *before 2:00* is represented by the thick line in Figure 4.2. It is potentially infinite, because no information is provided on its beginning.

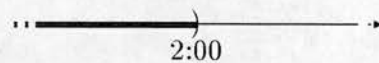


Figure 4.2: The interval *before 2:00*

When an interval is identified by an eventuality describing it, its borders are more or less clearly identified depending on the nature of the borders of the eventuality, but also on the indication given for fixing them. The distinction in aspectual classes is relevant primarily for defining the status of the ending point. In this respect, verbs are first categorized into four groups<sup>3</sup>. They are statives such as *know*, activities such as *run*, accomplishments such as *draw a circle* and achievements such as *reach the top*. Then, the classes can be gathered into the two groups of accomplishments and achievements, which are telic eventualities, and statives and activities, which are atelic. Telic eventualities have well-defined termination points, describing intervals with a well-defined border. Atelic ones have poorly-defined termination points, and describe intervals with a poorly-

<sup>3</sup>Cf. Dowty [Dow79] and references therein.

defined border. Starting points are generally assumed to be well-defined, although they may be unspecified. The absence of overt indication for identifying them has direct consequences on the ordering possibilities of the intervals to which they belong. Since the beginning of the eventuality can be set arbitrarily, the left border of the interval is to be considered as poorly-defined.

Temporal adverbials help in associating a temporal interval with the predicate. This interval specifies the time at which the predicate has to be evaluated. In the literature, prepositions heading temporal adverbials have been treated as binary operators which take eventualities as arguments (Hitzeman [Hit91]). This perspective allows one to focus on the properties of the eventualities and to highlight the relevance of the distinction between eventualities with well-defined and poorly-defined termination points. I adopt this view of temporal adverbials as operators, but I do not deem necessary for both arguments to be instantiated by eventualities. Rather, the constraint is that at least one must be an eventuality. In this situation, an interval described by an eventuality is identified in relation to a point or another interval described by an eventuality or an expression of time. As it will be shown shortly, in the temporal relation introduced by *until*, the information provided by an argument specifies the time at which the state of affairs in the other argument ceases to obtain, i.e. it identifies the right border of the interval. The interval into which the state of affairs is mapped is potentially infinite, with one poorly-defined border.

Order relations are defined building on Allen's [All84] classification. Allen defines a temporal logic based on intervals  $t_i$ . He identifies a basic set of thirteen mutually exclusive primitive relations [All84, p.129]. Three relations, two of which have inverses, are particularly important for the discussion to follow. The first one is FINISHES( $t_1, t_2$ ), where time interval  $t_1$  shares the same end as  $t_2$ , but begins after  $t_2$  begins, and its inverse where  $t_1$  begins first. The second relation is STARTS( $t_1, t_2$ ), where interval  $t_1$  shares the same beginning as  $t_2$  but ends before  $t_2$  ends, and its inverse where  $t_1$  ends second. The third is EQUAL( $t_1, t_2$ ), where  $t_1$  and  $t_2$  are the same interval, i.e. they have coinciding beginning and end.

Allen's classification requires full knowledge of the borders of the intervals in order to be applied. First, it is essential for intervals to have well-defined borders. Second, information on the positioning of the borders of both intervals is also required for the identification of the relation holding between them. Such information need not be given in absolute terms, it may be relative, for instance as identifying one border by means of the length of the interval.

However, certain temporal adverbials appear to be able to establish relations on the basis of partial information. They do so by focussing on one border only. In the case of Italian *finché* (for as long as/until), the time at which the state of affairs begins to obtain is irrelevant. It is the time at which it ceases to obtain that is considered. Therefore, as far as *finché* is concerned, a situation might be describable as an instance of FINISHES( $t_1, t_2$ ) or EQUAL( $t_1, t_2$ ), without this being verifiable or its making a difference. This is because there is a constraint of identity on termination points but not enough information for deciding about the beginnings. I will refer to this situation as a case of Finishes( $t_1, t_2$ ).

(4.1) **Definition**

Finishes( $t_1, t_2$ ): the time intervals  $t_1$  and  $t_2$  have coinciding termination points. The relation between their beginnings is left unspecified.  $t_1$  cannot have coinciding beginning and end.

The existence of a mutual constraint on just one end forces an unbalanced perspective on the intervals. The focus is on the constrained end.

Similarly, a situation might be described as STARTS( $t_1, t_2$ ) or EQUAL( $t_1, t_2$ ), because the operator asserts the identity of beginning points but nothing is said on the ends. This case will be identified as Starts( $t_1, t_2$ ).

(4.2) **Definition**

Starts( $t_1, t_2$ ): the time intervals  $t_1$  and  $t_2$  have coinciding beginning points. The relation between their ends is left unspecified.

Finally, I will describe as Meets( $t_1, t_2$ ) a situation which seems to be somewhere in between many cases. It has features of FINISHES( $t_1, t_2$ ), because the relation helps in identifying the terminating point of  $t_1$ , and because  $t_2$  might happen to have coincidental beginning and end. It also has features of OVERLAP( $t_1, t_2$ ), where interval  $t_1$  starts before  $t_2$  [All84, p.129], they share a subinterval, and  $t_2$  ends after  $t_1$ . In fact, since  $t_1$  and  $t_2$  share a border, this coincidental point is a minimal overlap. Finally, it might look like MEETS( $t_1, t_2$ ), where interval  $t_1$  is before interval  $t_2$ , but there is no interval between them, because the two intervals share exclusively the location of one border. But this isn't quite right, because Meets( $t_1, t_2$ ) expresses a relation of dependence of  $t_1$  upon  $t_2$ , rather than pure sequenciality. It is essential for them to share their beginning and end points respectively.

(4.3) **Definition**

Meets( $t_1, t_2$ ): the termination point of the time interval  $t_1$  coincides with the

beginning of  $t_2$ . The locations of the beginning of  $t_1$  and end of  $t_2$  is left unspecified.

The relation has been named after  $\text{MEETS}(t_1, t_2)$  rather than after  $\text{OVERLAP}(t_1, t_2)$  because it is the result of relating the ordering in  $t_1$  with the reversed ordering in  $t_2$ . For this reason, it is important to maximise the information on the ‘disequation’ of the intervals. The interaction between the Italian connective *finché* and negation gives rise to instances of this relation. The potential poor definition of the beginning of  $t_1$  and the end of  $t_2$  can never be ignored. It makes it impossible to distinguish between  $\text{Finishes}(t_1, t_2)$  and  $\text{Meets}(t_1, t_2)$  exclusively on temporal grounds, whenever  $t_2$  has a coincidental beginning and end. The presence versus absence of negation in the subordinate clause will be used as discriminating criterion. Linguistic evidence in support of this position is provided in subsection 4.5.4. For brevity, I may refer to  $\text{Meets}(t_1, t_2)$  as a case where negation disjoins intervals  $t_1$  and  $t_2$ , but it should be clear that the ordering in the second argument has been reversed, and that the two intervals share a border. Anticipating on the next subsection, I add the following. In  $\text{Finishes}(t_1, t_2)$  and  $\text{Starts}(t_1, t_2)$ , the focus of the relation is on one end of the intervals. This end is respectively the maximal and minimal point of a bound order, depending of the relation between this order and the earlier-later relation of the timeline. Whenever the point focused upon in the relation matches the latest time on the timeline, it represents the highest endpoint of the bound order. Whenever it matches the earliest time, it is the lowest endpoint. The scalar use of operators expressing  $\text{Finishes}(t_1, t_2)$  and  $\text{Starts}(t_1, t_2)$  relations is due to the reason that, by virtue of the fact that there is a bound order and the focus is on one endpoint, inferences can be drawn with respect to any other position on the scale. From this viewpoint, the  $\text{Meets}(t_1, t_2)$  relation is less informative, inasmuch as it provides only the relative positioning of the two arguments. Because of this, I consider that an operator which expresses  $\text{Finishes}(t_1, t_2)$  can be used to express  $\text{Meets}(t_1, t_2)$  only under strong co-textual constraints, such as the presence of a negation, and the possibility for  $t_2$  to have disjoint borders. The former requirement, as discussed in the next subsection, allows the endpoint of  $t_2$  to become the minimal point of its own order. The latter ensures that the whole interval is not coincidental with the maximal point of  $t_1$ , so that there are positions on the scale before and after the ‘meeting point’ as a result.

Next, these modifications enable one to consider ordering and aspectual classes at the same time. A relation may be defined between an eventuality and a point in time. This point may or may not belong to an interval described by an eventuality. If it does, its possible locations depend on the aspectual properties of the eventuality. Atelic even-



tualities occur in all subintervals, because atelic predicates have distributive reference. A naturally prominent point is the inception. Telic eventualities do not have distributive reference. In achievements and accomplishments, the prominent point is the culmination. As a result, for instance in the case of *until*, on the one hand, it is possible to detect the stable temporal relation holding between the interval described by the eventuality in the main clause and the point in time provided by the subordinate clause. On the other hand, it is possible to accommodate the variations in the relation between the intervals described by the eventualities in the main and subordinate clauses, corresponding to aspectual variations of the latter.

These tools make certain predictions, for instance about the availability of inchoative readings in stative predicates. The inchoative reading is due to atelic eventualities occurring in all subintervals, including the initial ones, of their location times. However, since termination points are poorly-defined, beginnings are the only naturally prominent points available from which to establish a dependency. Furthermore, whenever the relation identifies the earliest location time of an eventuality, as in an upward ordering, stative predicates will exhibit an apparent inchoative reading. This reading is a case of focus on the inception, see also subsection 4.3.4.

Predictions are made also with respect to an eventuality with a poorly-defined beginning. A durative verb like *last* is atelic and non distributive, i.e. the eventuality cannot be said to happen at every subinterval. Since it doesn't have a well-defined termination point, an eventuality of this type may participate in a relation that identifies its latest location time. However, it cannot contribute a point from which to establish a dependency.

#### 4.2.2 Negation

Often, studies on time and aspect treat negation as an operator that returns a durative when applied to an eventuality. Similarly to a constant function, it coerces the input into a unique aspectual type [Moe87, p.55]. Presumably, this idea of aspectual conversion stems from the intuition that the not-happening of an event is an internally homogeneous sort of eventuality, and that it describes an interval with poorly-defined boundaries. It is assumed that negative events are a subset of states.

According to this view, in a sentence like *he did not wake up until three*, negation applies to the non-homogeneous event of 'waking up', and forms a negative state which is homogeneous. The negative state predicate denotes states that are characterised by the non-occurrence of an event of waking up. This hypothesis that negative sentences

introduce negative events leads to ontological problems, such as the event of no event ever taking place. This view competes with other interpretations of negation<sup>4</sup>, for instance as an operator affecting the truth values of a proposition, negating existential quantification over an eventuality. In this way, one might get around the ontological problem of negative events. However, this does not explain why *he did not wake up until three* is perceived as conveying the information that he woke up at three. Subsections 4.3.4 and 4.3.5 discuss the difficulties involved in considering this interpretation as the exclusive output of inferences.

This study explores a different option for sentences containing temporal adverbials. The effects of negation are evaluated primarily with respect to the relation holding between intervals, and secondarily to truth values, rather than on aspect types. This allows one to remain close to the standard definition of negation as a complementation function.

When a sentence contains a time adverb which is not sensitive to polarity, negation may apply to the relation established by the adverb and falsify it. This is mainly the case of the German and French operators discussed in section 4.4. When the time adverb is polarity sensitive and imposes an ordering with respect to a point, negation may apply to the relation and reverse the order.

The starting point is the idea that negation on an interval refers to one complement, where the complement consists of all the points not included in the original interval. When the expression has identified borders, as in the case of *from eight to ten*, the complement is taken as represented in Figure 4.3.

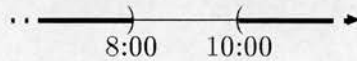


Figure 4.3: The complement of the interval *from eight to ten*

In case the original interval has one well-defined border and is potentially infinite, the complement is taken from the well-defined endpoint. For instance, a representation of the open interval before 2:00 was provided in Figure 4.2. Its complement is the closed interval emphasised in Figure 4.4.

As we said earlier, when an interval is identified by an eventuality describing it, its borders are more or less well-defined depending on the nature of the borders of the

<sup>4</sup>The reader is referred to Amsili and Le Draoulec [ALD95], and references therein, for a recent discussion of the issue.

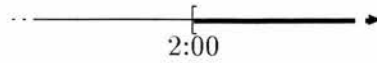


Figure 4.4: The complement of the interval before 2:00

eventuality, and on the indication given for fixing them. In the absence of overt indication of the onset of the eventuality, the left border of the interval is poorly identified. As a consequence, it is not possible to take complements with respect to that border.

Intervals can be considered as objects to be ordered, this is more or less the position adopted in Allen [All84]. They can also be considered as scales, that is to say bounded orders. The latter perspective forces one to consider the dependencies holding within the interval, and in particular between its boundaries. Directionality is proper of the notion of scale, and is not imposed upon the interval as a consequence of its belonging to a time structure. Then, the earlier-later relation of time is also considered. These potentially different orderings are relevant in the assessment of the effect of negation.

We propose to adopt a notion of sensitivity which goes beyond polarity, and involves the whole semantics of an item. A sensitive item is defined in terms of capacity of taking into account the characteristics of the context and of interacting with operators of compatible type. In the case at hand, negation is an order reverser, and the adverbs are temporal ordering operators. Their interaction can be formalised as function application of negation to the ordering operator, which results in a complex operator with the ordering relation altered.

In chapter 3 section 3.2 we looked at the effect of negation on scales. Considering the partial order representation of time, if the order is introduced via the identification of its topmost position, the reversed ordering means what was the topmost position now acts as the bottom position. Thus, the time the operator focus on no longer identify the end of the suitable interval, but its beginning. This is the case of the English operator *until* respectively alone or in combination with negation discussed in section 4.3.

In case the interval is perceived as a scale with an unspecified border, the original closed interval is represented in Figure 4.5. The complement is also a closed interval, represented in Figure 4.6.

Each negation applies once, thus one occurrence of negation reverses the ordering in one interval, that of the predicate to which it is attached. In case both intervals involved in the relation may have disjoint beginning and end, like in the case of the Italian *finché*, Hindi and Hungarian operators discussed in section 4.5, negation must occur in matrix



Figure 4.5: An order



Figure 4.6: A reversed order

and subordinate clauses for the relation to be fully reversed.

The idea of function application of *not* to another element is not entirely new. The resulting operator bears some similarities to a proposal made by Hoeksema [Hoe86, p.37] with respect to the interaction of *not* with the quantifier *all*. Hoeksema argues that the monotonicity of the generalized quantifier *not all students* can be accounted for compositionally if one adopts the structure  $[[not\ all]\ students]$ , with a complex determiner, rather than  $[not\ [all\ students]]$  where the negation modifies the NP. I extend this idea to polarity sensitive temporal operators.

Negation and the temporal adverb need not be adjacent for the former to apply to the latter. The result is to be perceived as a complex rather than discontinuous functor. This phenomenon of negation zooming in on a particular element has been known for a long time. Jackendoff [Jac72] calls it attraction to focus.

### 4.3 The case of *until*

#### 4.3.1 Introduction

The presentation of sensitive temporal adverbials begins with the case of *until*.<sup>5</sup> *Until* is sometimes classified as a special negative polarity item which, contrary to all other temporal expressions considered sensitive to polarity, is subject to further aspectual restrictions (Karttunen [Kar74], Linebarger [Lin80a], Vlach [Vla93], *inter alia*). The contrast in (4.4) is explained by considering *until* an NPI, and ruling out (4.4b) as licensing failure. The lack of contrast in (4.5) is then accounted for by postulating two

<sup>5</sup>Material presented in this section has been discussed in [Tov95a]. Thanks to the audiences at the Pioneer Colloquium (Groningen 1994), the LAGB Autumn Meeting (1994), and the 19th Penn Linguistics Colloquium (1995) for comments.

different words, a durative and a punctual *until*, and by imposing extra requirements on the type of verb with which the latter, i.e. the NPI, must cooccur.

(4.4) a. He did not awake until the alarm went off.

b.\* He awoke until the alarm went off.

(4.5) a. She did not sleep until the sun rose.

b. She slept until the sun rose.

Several points make this analysis unattractive. The main weakness, acknowledged by Karttunen himself, is that, following his terminology, it leaves open the question of what causes the impression of a shift in ‘focus’ between examples (4.4a) and (4.5b), or (4.4b) and (4.5b). A further weakness is that the common practice of splitting negative polarity items into a PS part and a non-PS one produces a lexical ambiguity which is not supported by clear semantic arguments. Finally, this item has to be given special status, with aspectual constraints that don’t apply to any other NPI in general, or polarity time adverb in particular, e.g. *yet*.

Another trend in the literature, which could be referred to as the tense and aspect analysis, treats *until* as a unique element, see Klima [Kli64], Smith [Smi75], Mittwoch’s [Mit77] reply to Karttunen, Hitzeman [Hit91] and references therein. Although there are noticeable differences among these analyses, their characterization of *until* as a durative adverbial rests on the crucial assumption that negated eventualities are duratives.

The proposal put forward hereafter has points in common and in contrast with both trends. I argue against the double-*until* approach, showing that a unified treatment of *until* is possible once it is recognized that this item is an ordering operator, and that the characteristics of the instantiators of its arguments affect the felicity of the relation. I do not subscribe to the assumption of negation as a stativizer, and argue that we do not need to refer to negated eventualities at least as far as the distribution of *until* is concerned.

### 4.3.2 *Until* as a binary operator

Hitzeman [Hit91] claims that the primary function of temporal adverbials is to order eventualities, and derives from there the relevance of their borders in the assessment of the relation. She also shows that this type of analysis applies to temporal adverbials in general. With respect to *until*, she claims that this adverbial is an instance of the schema [A P<sub>i</sub> B], where the phrases **A** and **B** introduce two events into the discourse,

and  $P_i$  is a preposition of class  $i$ , i.e. a preposition that orders the intervals over which the eventualities are true in one of the three modes classified as ‘prepositioning’, ‘post-positioning’ or ‘concurrency’. In particular, the order imposed by *until* is prepositioning. She argues that previous treatments fail to characterise durativity in an adequate manner, because accomplishments like eating a sandwich in example (4.6) have duration, but are unsuitable instantiations for A. In order to exclude it, she adds the constraint that the interval identified by A must have poorly-defined termination point.

(4.6) \*Joe ate a sandwich until noon.

I consider the roles for the two arguments of *until* to be asymmetric. *Until* temporally locates the eventuality instantiating argument A by establishing a dependency with respect to the information provided by argument B. Hence, argument A must be eventuality denoting, because it contains the ‘entity’ which is to be mapped. Argument B contributes a point in time, independently from its being instantiated by an expression of time or an eventuality. As a matter of fact, when discussing *until*, Hitzeman usually refers to the eventuality in A and a well-defined point within B, hence introducing in practice the asymmetry not acknowledged in theory.

The asymmetry between the arguments is represented in the semantic structure of the relation. *Until* does not convey just the constraints that there is an order relation between A and B, and which are their relative positions. It also tells one that B is the endpoint of the scale. In some sort, it provides also absolute information which translates into B being the focus of the temporal relation in (4.7). A graphic representation is given in Figure 4.7, where the shaded area represents the eventuality in A, and the vertical arrow points to the time identified by B.

(4.7) A UNTIL B

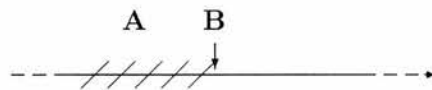


Figure 4.7: Until in positive context

Since *until* is sensitive to the characteristics of the instantiators of its arguments, it is sensitive to the existence of a prominent point in the instantiation of B, with no need of imposing selectional restrictions on B. The instantiation of A, e.g. his walking in (4.8)

stretches up to the location time of B, e.g. *three* in (4.8a), or a point in it when B is an interval identified either by an expression denoting an interval, e.g. *the morning* in (4.8b), or an eventuality occurring over it; the point is the beginning in the inchoative reading of his feeling tired in (4.8c), i.e. when he realises his tiredness, or the end in the culminative process of her building him a house in (4.8d).

- (4.8) a. He walked until three.  
 b. He walked until the morning.  
 c. He walked until he felt tired.  
 d. He walked until she built him a house.

*Until* imposes a  $\text{Finishes}(t_1, t_2)$  relation, where  $t_1$  is the interval described by the eventuality in A, and  $t_2$  is provided by B. There is a further restriction. Interval  $t_2$  is required to have coinciding beginning and end, because *until* uses a point in B for the mapping. Whenever argument B is instantiated by an expression denoting an interval or an eventuality describing an interval with disjoint borders, this interval  $t_3$  either fully contains  $t_2$ , or it shares with it the same beginning or end, depending on the characteristics of the instantiation of B. This is to say that  $\text{Finishes}(t_1, t_2)$  holds even in cases when  $\text{Finishes}(t_1, t_3)$  does not. This gives us a unified analysis for *until* as temporal connective and preposition. It is often the case that  $t_2$  coincides with the onset of  $t_3$ , but not necessarily so, as shown in (4.8d). The end of  $t_3$  can be selected also by using tense, see (4.9). [Tov95b] showed that it is possible to generalise over the various cases by assuming that  $t_3$  is not visible to *until*. For this reason, and because  $t_2$  constitutes the top endpoint of the bound order considered<sup>6</sup>, this operator cannot be said to impose a  $\text{Meets}(t_1, t_3)$  relation.

- (4.9) He slept until she had run a kilometre.

In (4.10a), her sleeping lasts up to the calling from the butler. Argument A is instantiated by a process and the example is grammatical. Example (4.10b), where argument A is instantiated by an instantaneous event is ruled out. *Until* introduces a stopping point for the eventuality in A, and this point cannot coincide with a well-defined termination point of the whole eventuality, because it must be freely identified by any suitable instantiation of B. Hence the suitability of duratives in A.

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<sup>6</sup>See the discussion in section 4.2.

(4.10) a. She slept until the butler called her.

b.\*He awoke until the butler called him.

Since it is not durativity *per se* that matters, rather it is the atelicity of the eventuality that is required, the verb in (4.11) means doing many dances or an endless one. Similarly, (4.12) is acceptable, but only in the atelic reading where the painting of the ceiling is an open process. Next, atelicity in A is obtainable also via unbound iteration of the eventuality, cf. (4.13), and by adding an expression of time that overtly expresses unbounded repetition, see for instance (4.14).

(4.11) She danced until the sun rose.

(4.12) She painted the ceiling until three.

(4.13) Guests arrived until midnight.

(4.14) The polling was repeated several times until a consensus was reached.

Finally, in the discussion of example (4.8), it was noted that argument B can be instantiated by expressions of time, such as *three*, or by eventualities. However, not any eventuality is a suitable instantiator of B. The instantiator of B must provide an identifiable point. (4.15) is well-formed only with an inchoative reading of B.

(4.15) Daniel studied until he was sleepy.

In case B is instantiated by a durative verb like *last*, which is atelic and non distributive, no point in B can be selected and the relation cannot be imposed. The ill-formedness of (4.16) is accounted for without referring to presuppositional properties, (cf. Karttunen [Kar74, p.289]).

(4.16) \*Daniel drank until the party lasted.

### 4.3.3 The complex operator

When one considers *until* as a connective, then from the formal point of view, overt negation *not* is predicted to occur freely in either clause connected by this item. This section and the 4.3.5 one discuss why this prediction is not borne out (contra Brée [Bré85, p.36]), and, in particular, how negation affects the sentences in which it occurs. The analysis put forward rests on the hypothesis that *until* is able to interact directly with negation. This capacity constitutes the polarity facet of the sensitivity of *until*.



The interaction is possible giving the type compatibility of the operators, i.e. *until* is an ordering operator and overt negation is an order affecting operator. It results in a case of function application of the latter to the former. The configuration in (4.17) represents the main way in which *until* interacts with negation.

(4.17) A [  $\neg$  UNTIL ] B

The result is analysable as a complex operator which has the characteristics of the simple one, with the difference that the ordering relation is reversed. In this situation, a consequence of the asymmetric roles of A and B becomes apparent. *Until* still takes B as the scalar endpoint, but the scale has been reversed by negation. Negation occurs in argument A and affects the interval where A is mapped. B is no longer the top but the bottom endpoint of the scale, and marks the beginning of A. The relation is now  $\text{Starts}(t_1, t_2)$ . The extra constraint that  $t_2$  has to have coincidental beginning and end still holds, see (4.18) and its graphic representation in Figure 4.8.

(4.18) Daniel did not eat a sandwich until his mother arrived.

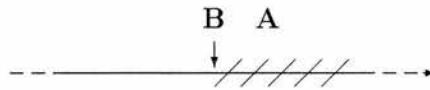


Figure 4.8: Example (4.18)

Because of their new relative positions, the requirements on the arguments are modified. B provides a clearly identifiable beginning for the eventuality instantiating A. This reversed order is responsible for the shift in perspective already noted in the literature, cf. [Kar74] *inter alia*. The characteristics of the terminating point of A are no longer a pertinent issue. The constraint on B remains the same, as shown by the ill-formedness of example (4.19), where the eventuality in B does not contain a prominent point.

(4.19) \*Daniel did not drink until the party lasted.

Let us go back to examples (4.4) and (4.5), repeated here as (4.20) and (4.21). It can be seen that our proposal accounts for the judgements of (4.20) with respect to the question of the aspect of the verb, because the event of his awakening has a well-defined termination point, so it cannot occur as a first element of the ordering, see (4.20b). Furthermore, since B in (4.20a) does not just identify an interval, but marks the first suitable time for the mapping, A is not required to be a durative.

(4.20) a. He did not awake until the alarm went off.

b.\*He woke up until the alarm went off.

(4.21) a. She did not sleep until the sun rose.

b. She slept until the sun rose.

In addition to accounting for the distribution of *until*, this treatment accounts also for the distribution of the readings of the verbs. There is no need to invoke a presupposition of his awakening in (4.20a), because its effective occurrence follows from A being the eventuality to be ordered. The inchoative reading of *sleep* in (4.21a), and its absence in (4.21b), are explained because only in (4.21b) is her sleeping first in the ordering. In this case its right border is relevant for the assessment of the relation, whereas the inchoative reading focuses on the left border, i.e. the inception. The inchoative reading in (4.21a) is predicted because B identifies the beginning of the interval occupied by A and indicates the convergence of the left borders of B and A. The presence of the inchoative reading in (4.21a) is unexpected in analyses that characterise *until* as a durative adverbial. Furthermore, this reading is impossible to obtain if negation is treated as an operator that returns a durative when applied to an eventuality (Moens [Moe87]). Similarly, the inchoative reading of *sleep* in (4.22) is due to the fact that the border of B identifies the end of the interval occupied by A. As argued with respect to example (4.8c), this is the only possible reading, because this is the only one that allows the selection of a prominent point in B.

(4.22) She sang until the child slept.

I would like to conclude this subsection by saying that the use of the term ‘complex operator’ does not imply a process of lexicalisation such as in an idiom. The compound is more fragile, as shown by the existence of alternative scope relations, discussed below in subsection 4.3.5. It is also fully compositional, inasmuch as a scale, identified via its endpoint, gets reversed by negation. I take it to be a sort of precompiled interpretation.

#### 4.3.4 Other positions

Before continuing the analysis of *until* in sentences containing negation, it is useful to review some positions in the literature. We discuss first Hitzeman [Hit91] and Declerck [Dec95], who both maintain some kind of special relation between *not* and *until* other than licensing. Then, we turn to the issue of the presupposition in sentences containing

*not...until*. Finally, the Discourse Representation Theory (DRT) approach to *until* is discussed.

There are similarities between Hitzeman's treatment and ours; for instance *until* is always considered an operator and the characterisation of negation as a complementation function is central. But there are also significant differences in what such a function applies to. Hitzeman [Hit91, p.115] assumes that negation takes scope over the adverbial phrase, the *until B* compound, and claims that the interval selected for placing A in the negated case is the closed complement of the interval identified by the compound. In my analysis, negation does not intervene after the identification of a first interval, in a complementation step, rather it affects the very selection. The function of *until B* is to identify a scale via its highest endpoint, thus it is not the interval 'to B' but 'from B' that is used for placing A in the negated cases. B cannot be left out from the selected interval, and remains in focus. As a welcome side effect, this explains the inchoative readings reported for stative predicates in negated sentences. This also explains why the event in A takes place in the proximity of B, and not just somewhere in the closed complement.

Second, from the fact that it is the eventuality in A, and not the negated eventuality, that is mapped in the complement interval [Hit91, p.117], it follows that A is outside the scope of negation. But then, the constraint on A which says that it has to be instantiated by an eventuality with poorly-defined termination point forces Hitzeman to assume that, in cases such as (4.20b), negation also applies to the eventuality instantiating A in order to perform the aspectual class conversion required for obtaining an atelic event. In other words, the same occurrence of negation has two effects, one outside and one inside A, namely selecting a complement interval and performing an aspectual transformation. The effect of negation on the instantiation of A is taken into account only for the purposes of the restriction on A, and not with respect to the role of A in the whole relation.

Finally, by considering the complement of the interval identified by the adverbial phrase as a closed interval, the point identified by B in the 'positive' relation is predicted to be always outside it. This position is debatable. Sentences (4.23a) and (4.23b) can be represented as Figure 4.9 and Figure 4.10 respectively.

- (4.23) a. She slept until he came home.  
 b. She did not sleep until he came home.

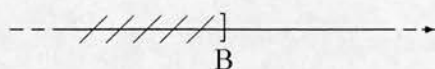


Figure 4.9: Example (4.23a)

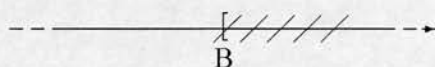


Figure 4.10: Example (4.23b)

A few points need to be made also with respect to the contribution by Declerck [Dec95], because of the apparent similarity between our approaches. We both refer to the compound *not...until*. However, Declerck's paper is concerned only with *until* in cooccurrence with overt negation, and analyses it as a 'stereotyped unit' [Dec95, p.54] expressing restrictive evaluation. As a result, the adverb is split into two, one item occurring as component of the idiom, and the other in positive and some negative contexts, e.g. with metalinguistic negation. Because of the standard definition of idiom, as complex expression of reduced analysability and modifiability, the question of why and how negation gets together with *until* does not arise in his analysis. It is interesting to notice that the approach to negative polarity discussed in van der Wouden [vdW94a], who argues in favour of close connections between NPI and collocations, minimizes the advantages Declerck ascribes to his approach with respect to the polarity trend of analysis.

The case for treating the compound as an idiom is not solidly established. From the empirical point of view, one should note that from the possibility of fronting a negated temporal adverbial it does not follow that there is a stereotyped unit [Dec95, p.60]. Otherwise (4.24) would be wrongly predicted to be unacceptable.

(4.24) Not before then will I come.

Similarly, the fact that *not...until X* can function as a single syntactic constituent does not necessarily imply that it is an idiom. Where it to be used only as a single syntactic constituent, then the case would be stronger. However, this is not true, and Declerck acknowledges the need for a non-idiomatic analysis besides the idiomatic one.

From the methodological point of view, I note the following. On the one hand, negation is required to provide a particular contribution, for the idiom to be recognized as such [Dec95, p.64ff.]. On the other, in order to account for the presumption of lateness that forms part of the interpretation of certain sentences, Declerck [Dec95, p.73] refers to the semantic contribution of the *until* component of the idiom. Thus, if it is possible to trace back the features of the meaning of the idiom to its particular components, the characterisation as an idiom boils down to a way to evade the controversial question of how to relate *until* and negation, precisely because it is a covert stipulative answer to the question.

In order to strengthen his claim that *not...until* is a discontinuous idiom, Declerck [Dec95, p.59] proposes a comparison with the corresponding French expression *ne...que*, which is said to differ inasmuch as it applies to all kinds of scales. This is a weak analogy, since the two expressions translate different strategies.<sup>7</sup> As shown by the standard (4.25a) and colloquial (4.59b), where the preverbal negative particle *ne* has been dropped, the French expression conveys a fixed perspective on the scale. The perspective changes if one drops *not* from the putative idiom *not...until*.

(4.25) a. La jeune fille n'a téléphoné qu'à 8 heures.

'The girl did not phone until 8.

b. La jeune fille a téléphoné qu'à 8 heures.

'The girl did not phone until 8.

Declerck [Dec95, p.53] appeals to the notion of 'actualization', a presupposition<sup>8</sup> triggered by restrictive particles, in order to rule out cases similar to (4.26), which shows that the eventuality in A must hold at the point identified by B.

(4.26) \*He did not sleep until three, when he gave up and made himself a cup of coffee.

In our analysis, the change in the direction of the order caused by negation explains the 'veridicality' of *until* in this case. However, since the positioning of A depends on B, whenever B identifies a moment which may not exist, the position of A may not be identifiable. Example (4.27) tells one that the end of his nagging at you depends on your fixing the bicycle. Contra Declerck [Dec95, p.53], there is no assertion of the stopping, and no certitude that it will ever take place.<sup>9</sup>

<sup>7</sup>See below section 4.4 for a discussion of the French case.

<sup>8</sup>The sense of actualisation is not 'implicature', but 'assertion' at X.

<sup>9</sup>The issue is further discussed in relation to example (4.34).

(4.27) He won't stop nagging at you until you fix your bicycle.

It is also possible to distinguish the use of *until* in configuration (4.17) from that of *before*. So, although both (4.28a) and (4.28b) are compatible with the situation where the party started at nine, only (4.28b) is compatible with a party having started at ten. In fact, B indicates the first point of A.

(4.28) a. The party did not start until nine.

b. The party did not start before nine.

The presence of a 'factive' and a 'counterfactual' reading of *before* (Heinämäki [Hei72]) might be reduced to the fact that *before* identifies a point on the time axis without distinguishing between which of the branches stemming from that point will be or is the actual one, thinking in terms of possible worlds.

Then, *before* establishes a relative order, whereas it has been argued that *until* sets B as the endpoint of the scale. Thus, only the former can accommodate a conjunction of noncotemporal events in argument B, see the contrast in (4.29).<sup>10</sup>

(4.29) a.\*The party took place until Louise arrived and Joan phoned.

b. The party took place before Louise arrived and Joan phoned.

In approaches like (Karttunen [Kar74]), the alteration in the ordering in (4.23) is assumed to come from inference. Our proposal presents the advantage that nothing needs to be added to ensure that A will actually occur at the switching point, whenever such a point is identified, as shown by the unacceptability of (4.26). This example constitutes evidence against the assumption that the shift in perspective is produced by inference, because an appeal to presupposition, in the sense of non defeasible inference (Soames [Soa89]), would be required in order to account for the ungrammaticality of this case. However, such an appeal would cause one problems in the case of (4.30), where negation can only affect the truth conditions.

(4.30) a. The party didn't last until midnight.

b. The party didn't last until Daniel arrived.

<sup>10</sup>The reading where arrival and phoning are cotemporal can be trivially accommodated by both operators.

Further evidence against an explanation cast purely in terms of inference is provided by the observation that the interpretation of sentence (4.31a) is as paraphrased in (4.31b) and not as (4.31c). From all sentences in (4.31) it can be inferred that the eventuality in A occurs at B and not before. Inference alone does not explain the variation observed among them. Rather, sentence (4.31c) is the paraphrase of the less natural (4.31d).

- (4.31) a. Daniel did not sleep until midnight.  
 b. Not until midnight did Daniel sleep. \*  
 c. Until midnight Daniel did not sleep.  
 d. Daniel kept not sleeping until midnight.

One should note that the presence of the aspectual verb *keep* in (4.31d) is crucial for the reading where the not falling asleep extends until midnight. It is *keep* and not negation that provides the atelicity required by *until*. Brée [Bré85] notes that B often causes A to terminate or represents its goal. Brée's table 3.2, which summarises his study on the Brown University Corpus, does not contain a single occurrence of result/goal relation involving a negated main clause. This result is unexpected under the assumption that negative events are just one sort of states, and that their positive counterpart is inferred to hold at B. I have tested Brée's results against the pair in (4.32). According to the intended scenario, B is the goal/result of the negated predicate in A, i.e. the absence of reply should lead the blackmailer to abandon his evil plans. However, informers reported only the temporal order reading whereby *Kim* starts replying once the blackmailer has given up. When prompted with the above scenario, they said that the intended reading was simply not available.

- (4.32) a. Kim didn't reply until the blackmailer gave up his evil plans.  
 b. Kim didn't reply to the blackmailer until he gave up his evil plans.

Kamp and Reyle [KR93, p.491] also develop a treatment of *until* based on inferences. *Until* is a tense operators of their tense logic. They start from a definition of the semantics of operator *U* as shown in (4.33), slightly simplified.

$$(4.33) \quad pUq(t) \leftrightarrow \exists t'[t < t' \wedge q(t') \wedge \forall t''[t < t'' < t' \rightarrow p(t'')]]$$

They note that the logical properties of *U* do not match necessarily the use of *until* in English sentences. For instance, (4.33) is veridical with respect to its second argument.

This is not always certain, as shown by their example (4.34a), or by (4.34b), where the never-occurring event of revoking has been replaced with an expression whose idiomatic meaning identifies a moment that does not exist. In order to account for the fact that a future time at which  $q$  holds is not entailed in the natural language use of  $U$ , they propose to represent *until*-sentences as the disjunction  $pUq \vee (\neg Fq \wedge \neg F\neg p)$ . This makes it possible to keep separate the existence of a  $q$  from the constraints on its suitability as instantiation of the second argument of  $U$ .

- (4.34) a. This regulation will remain in force until revoked by the full assembly.  
 b. This regulation will remain in force until doomsday.

The treatment of *until* rests on the understanding that the end of  $p$  is temporally included in the location time of  $q$ . A first observation is that (4.33), as such, works fine if the eventuality in B is an achievement, which describes a point in time. States describe intervals with poorly-defined borders, but by virtue of the fact that atelic predicates have distributive reference, they can also be registered in a single moment. Thus, it can be argued that definition in (4.33) works for states too. Note that this is not to say that the inchoative reading of *sleep* in (4.35a) is accounted for, because nothing forces the selection of the initial subinterval. I come back to this point shortly. But the ordering relation needs to be redefined whenever one of the eventualities is an activity or an accomplishment, because in these cases the times  $t'$  and  $t''$  have to be intervals longer than a moment.

Second, (4.33) seems to make too weak predictions. There are unacceptable examples which are not directly ruled out, rather the statements made in them just result trivially false, and vice versa. Let us take affirmative sentences first, as in (4.35) and (4.36).

(4.35) She sang until the child slept.

(4.36) \*She woke up until the child slept.

The definition makes correct predictions for (4.35) and (4.36), but of different value, strictly speaking. The eventuality in A must occur in all subintervals of the interval enclosed between the reference point  $t$  and the earliest location time of the eventuality in B. Since the definition requires  $p$  to have distributive reference, it cannot be telic and the statement in (4.36) is trivially false. In negative sentences, if a negation in the main clause is interpreted as applying to the whole sentence, the condition becomes as in (4.37). According to it, in the interval enclosed between the reference point and



the earliest location time of the eventuality in B there must be a subinterval where the eventuality in A doesn't occur.

$$(4.37) \quad \neg(pUq(t)) \leftrightarrow \forall t'[t < t' \wedge q(t') \rightarrow \exists t''[t < t'' < t' \wedge \neg p(t'')]]$$

Correctly, this does not exclude that the person might have sung through part of the time in (4.38). But the statement in (4.39) results trivially true, whereas in fact it should be as bad as (4.36) whenever negation is applied to the whole sentence.

(4.38) She didn't sing until the child slept.

(4.39) She didn't wake up until the child slept.

If a negation in the main clause is interpreted as applying only to the main clause, the condition becomes as in (4.40).

$$(4.40) \quad (\neg p)Uq(t) \leftrightarrow \exists t'[t < t' \wedge q(t') \wedge \forall t''[t < t'' < t' \rightarrow \neg p(t'')]]$$

According to (4.40), there isn't any eventuality  $p$  obtaining anywhere within the interval between  $t$  and  $t'$ . However, this is not the entire explanation. First, the information that the eventuality in the main clause will obtain somewhere within the interval starting at  $t'$  must be recovered through inference. This inference is not cancellable in cases such as (4.39), but there is no way to state it in (4.40). Second, something needs to be added in order to ensure that an eventuality  $p$  starts obtaining exactly at the beginning of  $t'$ . This point is definitely part of the interpretation of *until*, but it is not represented in (4.40). In the DRT treatment, it is necessary to invoke a Gricean maxim, in my proposal it falls out of the analysis.

### 4.3.5 Other scoping relations

Negation can link directly to *until*. Indeed, it can interact with *until* in several ways. The direct association could be seen as a case of focus on the temporal functor. Negation can also interact more indirectly, by applying to the whole function, in what can be seen as a wide scoping, or by applying to either of its arguments. These cases are reviewed in turn.

A way of interacting, which is mainly induced by stress, is when negation applies to the whole function, as represented by the configuration in (4.41). It has propositional rather than sentential scope; it affects the truth value of the relation and not the ordering.

It is one case of what the literature calls metalinguistic negation<sup>11</sup>, see (4.42). Since the order is not reversed, and the terminating point of the instantiation of A is considered, as in positive cases, no inchoative reading possible for 'sleep' in (4.42a)

(4.41)  $\neg$  [ A UNTIL B ]

(4.42) a. He DIDN'T sleep until two.

b.\*He DIDN'T wake up until two.

Configuration (4.41) is particularly relevant in the discussion about whether the situation of A holding after B is the result of an inference. Example (4.26) suggested that such an inference should not be defeasible. However, postulating this would run one into troubles with respect to the pair in (4.30), repeated here as (4.43), where the inference is not possible, let alone not obligatory. Example (4.43) contains an instance of an atelic non distributive verb. Therefore, the eventuality of the party's lasting cannot be placed by referring to its left border, which makes it unsuitable for being the second element of the order. This rules out an interpretation of (4.43) according to configuration (4.17), but still allows one according to configuration (4.41).

(4.43) a. The party didn't last until midnight.

b. The party didn't last until Daniel arrived.

The functor *until* can also take 'wide scope' over the negation. This situation is realized as the configuration in (4.44).

(4.44) [  $\neg$  A ] UNTIL B

The configuration in (4.44) is the one generally assumed in the literature, required for the aspectual class conversion. In our treatment, this configuration is available as marked case. It acquires prominence or may become the only configuration available in cases where negation is 'captured' inside A, so to speak. In (4.45), the indefinite NP forces negation to apply within A, in order to ensure the non specific reading. Pragmatic reasons may also affect the interpretation, as in (4.46).

(4.45) a. He didn't say a single word until the end of the evening.

b. He didn't say another word until the end of the evening.

---

<sup>11</sup>This use of negation has been treated extensively in [Hor89].

(4.46) ?Daniel did not marry until he died.

Next, there is the case of inversion, see (4.47), which makes the interpretation of the sentence according to configuration (4.44) at least as plausible as (4.17). As argued above, preposing allows *until* to escape the effect of negation, which is left to affect argument A.

(4.47) He promised to support his claim with evidence, and until then Daniel won't believe him.

Finally, we come to the hole in the distribution of negation anticipated at the beginning of section 4.3.3. This is a subcase of configuration (4.48).

(4.48) A UNTIL [  $\neg$  B ]

A negation in B does not modify the ordering, because B provides a reference point and not an interval to be ordered. However, it affects the relation inasmuch as, negating the truth value of the predicate in B makes it impossible to identify a point for the mapping, see the ill-formed sentences in (4.49).

(4.49) a.\*He kept harassing her on the phone until she did not answer it.

b.\*We had a correspondence until she did not write to me.

The analysis proposed does not refer to 'negated' eventualities, but to eventualities standing in various relations. This position holds with respect to argument A as well as argument B. The presence of an egressive marker like *any more*, which forces negation to apply to the interval described by the eventuality in B, and alters the selection of the prominent point from the switch between negative and positive phase, to the switch between positive and negative phase, improves the status of the sentences. In (4.50a,b), the cessation of the eventuality in B is the point used by *until*, which is precisely what is made explicit by the presence of *any more*. (4.50c), the only example with a negation in B provided by Brée [Bré85] is an instance of the same kind.

(4.50) a. He kept harassing her on the phone until she did not answer it any more.

b. We had a correspondence until she did not write to me any more.

c. He gave the most extravagant parties and presents until he hadn't a penny left.

The treatment developed here does not require the stipulation of any operations or assumptions special for the case. The combination of the two operators is just a case of function application of negation to *until*. The semantics of the compound is a function of the semantics of its constituents and the way these constituents are combined. The scalar reverser negation is studied largely in connection with polarity phenomena, see [Fau75], [Lad79]. The analysis has ramifications for other languages which are discussed in section 4.5. A question that remains to be discussed is whether it can be extended to cases where *until* cooccurs with downward entailing operators other than overt negation, such as in (4.51) and (4.52).

(4.51) Nothing appeared on the screen until Louise pressed the green button.

(4.52) Tom ate no potatoes until he was sixteen.

In line with the analysis of the impact of N-words on events developed in chapter 6, I treat these examples as instances of configuration 4.44. In these cases the N-words block the instantiation of one role in the event, respectively the theme in (4.51) and the patient in (4.52), and the existence of the event expressed in the main clause results negated.

The cases in (4.53), from Jackendoff [Jac71] and Smith [Smi75], require a treatment more articulated, because of the complex structure of the first argument. In (4.53a), argument A is instantiated by the state of Ernie being too busy to do something, but it is only the event expressed by the completive clause that is inferred to hold at the time identified by B. Similarly, both in (4.53b) and (4.53c) the eventuality expressed by the main clause is asserted to hold during the interval terminating in B. The event of leaving expressed by the subordinate can take place, if ever, only once the condition preventing it ceases to obtain. Hence, pending a finer analysis that gives an independent role to subordinates nested in the clause instantiating A, the sentences in (4.53) are treated as instances of configuration (4.7).

(4.53) a. Ernie was too busy to leave until after the dam broke.

b. Ernie was afraid to leave until his lawyer came.

c. He forbade her to leave until the police arrived.

Two more cases have been discussed in the literature. In the first case the duration is sort of implied rather than directly expressed. In (4.54), from Horn [Hor70], the event expressed by the main clause does not constitute *per se* a suitable instantiation

for argument A. It is the resulting state that enters the relation expressed by *until*. I have no contribution to make on this case.

- (4.54) a. They closed the bridge until Saturday.  
 b. John left until midnight.

The second case, exemplified in (4.55), where the main clause contains a neg-raising verb, has been used alternately as evidence for making a point on *until* and on neg-raising.

- (4.55) a. He does not think she will leave until midnight.  
 b. That bomb isn't likely to explode until it is hit.

In [Tov96c], I have proposed that negation concomitantly with an element expressing an operation of evaluation on the content of the subordinate clause, may be interpreted as a case of negation as proof failure. The subordinate clause can be inferred to be negated under the default assumption of closed world. This makes negation available in the subordinate clause.

#### 4.3.6 Summary

This section analyses *until* as a binary operator which orders its arguments, called A and B respectively. This operator can be used to express the temporal structure paraphrasable as A STOPS AT B. It is sensitive to the properties of the instantiations of its arguments. The special requirements on the eventualities, in previous approaches expressed as selectional restrictions, are derived from the requirements of the mapping. The restrictions observed in the distribution of this item are derived from general conditions of compatibility between the roles imposed by *until* on its arguments and the characteristics of the eventualities instantiating them. The observation that the roles of arguments A and B are asymmetric enables us to account for the differences in the possible instantiators of each argument, as well as to explain the behaviour of the ordering with respect to negation.

It has been further shown that *until* is sensitive also to the polarity of the sentence inasmuch as it is able to interact directly with negation. This interaction produces a complex operator, obtained by function application of negation to *until*. As a result, the original ordering is reversed. The impression that the perspective moves, reported in the

literature, follows from B's identifying either the end or the beginning of A, depending on the direction of the order.

This unified account for the behaviour of *until*, allowing this operator to interact with negation, can be considered a way of putting together the two trends of analysis discussed in the literature, without taking in the burden of their special assumptions. I am sympathetic with the idea of negation interacting with *until*, proposed by approaches based on negative polarity. But I do not postulate a split into two lexical items; and instead of a 'passive' relation between negation and *until*, as in licensing, an 'active' relation is proposed, as in function application. I subscribe to the idea of a unique *until*, common in approaches more concerned with aspectual facts. But negation is left to interact with *until* rather than with the verb, so the problematic question of what are negative eventualities does not arise.

#### 4.4 "Insensitive" adverbials

I have analysed *until* either as a simple operator, or as a complex one obtained by composition of the simple one with negation. This section presents data showing that there are languages where the complex function *not...until* is realised as a lexical unit, and simple and complex functions are independent. In this case, the application of negation does not reverse the order. This unit may express the same meaning as *not...until* by following a different strategy. German and French are representative of two different strategies. The first strategy is identifying the beginning of the suitable interval using expressions like 'only since'. This is the strategy adopted by German. The item *bis* is used to indicate the terminating point, and *erst um* the starting one, see example (4.56). Strictly speaking, this expression could also be considered complex, because *erst* provides the 'only'-part of the meaning, and *um* the 'since'-part. *Erst* is the 'only' which applies to ordered sets, whereas *nur*, which also means 'only', applies to unordered sets.

- (4.56) a. Der Junge schlief bis 8 Uhr.  
           'The boy slept until 8.'
- b. Der Junge wachte erst um 8 Uhr auf.  
           'The boy did not awake until 8.'

Negation modifies the truth value of the relation imposed by these temporal operators. There is no direct interaction and the direction of the ordering is not reversed.

Negation does not form a complex function with the two temporal operators, see examples (4.57)<sup>12</sup> and (4.58).

(4.57) Die Prinzessin wachte nicht auf, bis ich sie um 9 Uhr weckte (\*bis 9 Uhr).  
‘The princess didn’t wake up until when I woke her up at 9 o’clock.’

(4.58) Ich will nicht erst um drei gehen.  
‘I do not want to go only at three.’ (i.e. I want to go before then)

Another strategy is to identify the end of the unsuitable interval, the preferred choice in French. French uses the expression *jusqu’à* to indicate the termination point, and the expression *ne...que* for the starting one, see (4.59). As a matter of fact, French can exploit the first strategy too, via the expression *seulement*.

(4.59) a. La jeune fille a dormi jusqu’à 8 heures.  
‘The girl slept until 8.’

b. Elle ne s’est réveillée qu’à 8 heures.  
‘She did not awake until 8.’

The reason for there being only *ne* without *pas* before *que* is that full negation sets to false the truth value of the relation, cf. (4.60a). In (4.60b), *ne* just controls the left border of the first eventuality, preventing it from sliding back beyond B. So, although, at first sight, the French strategy bears similarities to the one followed by English, their functionings do not match. The different effect of full negation in French with respect to English follows from the impossibility of reverting the direction of the ordering imposed by the operator in the former case.

(4.60) a. Le moteur n’a pas tourné qu’à trois heures, mais à midi aussi.  
‘The engine did not work only at three, but also at noon.’

b. Le moteur n’a tourné qu’à trois heures.  
‘The engine did not work until three.’

This position allows us to account also for the contrast in (4.61), due to the different ways in which French expresses the reference to the end of the preceding negative interval and the beginning of the subsequent negative interval. The element *plus* highlights the switch between a ‘positive’ and a ‘negative’ phases, whereas *pas* selects the negative phase, possibly terminated by a positive one.

<sup>12</sup>Example (4.57) comes from [Kar74, fn.8].

- (4.61) a. L'enfant a crié jusqu'à n'avoir plus de voix.  
 'The child screamed until s/he lost her/his voice.'
- b.\*L'enfant a crié jusqu'à n'avoir pas de voix.  
 'The child screamed until s/he had no voice.'

The contrast in (4.62) provides further evidence for the crucial role of the switch time in the assessment of the relation. The presence of *déjà* in (4.62b) forces the interpretation that the screaming of the child stopped at some time past the time when the light went out, thereby causing the unacceptability of the sentence.

- (4.62) a. L'enfant a crié jusqu'à ce qu'il n'y ait plus de lumière.  
 'The child screamed until all the lights were out.'
- b.\*L'enfant a crié jusqu'à ce qu'il n'y ait déjà plus de lumière.  
 'The child screamed until all the lights had already been out.'

#### 4.5 The case of *finché*

Italian possesses at least three ways to express the *not...until* relation. Two follow the same strategy noted for French, namely *non...che* and *solo* 'only', as in (4.63) and (4.64), with the difference that their degree of preference is inversed. They both express the feeling that the beginning has happened after the expected time, and can also convey the disappointment of the speaker for this delay.

- (4.63) Malgrado le sue promesse di essere puntuale, non è arrivato che alle tre.  
 despite the his promises of be punctual not is arrived that at-the three  
 'Despite his promises of being on time, he didn't arrive until three'
- (4.64) Malgrado le sue promesse di essere puntuale, è arrivato solo alle tre.  
 despite the his promises of be punctual is arrived only at-the three  
 'Despite his promises of being on time, he arrived only at three'

There is a third way, which is the most common and does not carry feelings of frustrated expectation. The expression in question is *fino/finché*, depending on the syntactic role that it has to perform, i.e. introducing respectively a prepositional phrase or a sentence. This expression translates in English as 'for as long as' or 'until', see example (4.65).



- (4.65) a. Mangio finché c'è pane.  
 eat-1s FINCHE there is bread  
 'I eat for as long as there is bread'
- b. Mangio finché non arriva Luisa.  
 eat-1s FINCHE not arrives Louise  
 'I eat until Louise arrives'

#### 4.5.1 Coinciding terminating points

The relation expressed by *finché* in positive contexts is also identity of terminating points between two eventualities. Since no constraints are imposed on the left borders, the relation can be identified as  $\text{Finishes}(t_1, t_2)$ , where  $t_1$  is the interval described by the eventuality expressed by the main clause, and  $t_2$  the interval described by the eventuality expressed by the subordinate clause..

The main difference between *until* and *finché* is that the Italian operator allows but does not require  $t_2$  to be a point. It is always the termination point of  $t_2$  that is relevant for the assessment of the relation in positive cases, and its beginning in negative cases. When the borders of  $t_2$  happen to coincide, e.g. B is described by an instantaneous event, *until* and *finché* work in the same way.

- (4.66) Leggo il libro finché stai al telefono.  
 read-1s the book FINCHE are-2s at-the telephone  
 'I read the book for as long as you are on the phone'

In (4.66), it is asserted that my reading the book carries on during your being on the phone, and that it stops at the end of your being on the phone. A graphic representation of the interpretation is given in Figure 4.11, where the timeline pointing rightwards has been left understood.



Figure 4.11: *Finché* in positive context

The ending of the instantiation of argument B introduces a stop for the instantiation of argument A. The possibility of introducing a stop seems more important than its actual identification. In fact, the eventualities instantiating arguments A and B do not

have to have well-defined terminating points. In example (4.67), the two arguments are instantiated by states, and in (4.68) by atelic events. The situation of both having poorly defined terminating points seem to make the vagueness in identifying the common ending less damaging. In these cases, the attention concentrates on the parallelism between the two eventualities. Because the ending does not need to be made explicit, *finché* may happen to be translated as *while*, although this is just an approximation of the original meaning.

(4.67) Sono tranquilla finché il mare è calmo.  
 am quiet FINCHE the sea is calm  
 ‘I’ll be quite happy for as long as the sea is calm’

(4.68) Corro finché nuoti.  
 run-1s FINCHE swim-2s  
 ‘I run for as long as you swim’

The plausibility of intentionally stopping the eventuality in A at the end of B seems to be required for the relation to be felicitous. This requirement would explain why (4.69)<sup>13</sup> is definitely worse than (4.67). As a matter of fact, it is rather implausible that the status of the sea might be determined by one’s whims.

(4.69) # Il mare è calmo finché sono tranquilla.  
 The sea is calm FINCHE am quiet  
 ‘The sea is calm for as long as I am not worried’

The relation expressed by *finché* seems to be more complex than just temporal sequentiality, as it appears from the oddity of example (4.69). We propose to call it a relation of *contingency*, by analogy with Moens and Steedman [MS88], in order to express the possibility of having other links beside temporal proximity, for instance links close to the notion of goal or cause. Pragmatic considerations may enhance facets of the relation.

As a consequence of the second argument of *finché* having to provide the termination point, the acceptability of the sentence degrades whenever the first argument is instantiated by an eventuality with coinciding beginning and terminating points, as in (4.70). In such a case, the terminating point is not independently identifiable.

<sup>13</sup>The hash sign in this chapter is used to mark sentences which are pragmatically odd, rather than the unavailability of polarity readings.

- (4.70) \* Arrivo finché stai dormendo.  
arrive-1s FINCHE are-2s sleeping

The source of the unacceptability of (4.70), as in the case of *until*, is to be found in the telicity of A. For analogous reasons, culminative processes are bad instantiations of A:

- (4.71) \* Mangi tutto un panino finché sta al telefono.  
eat-2s all a roll FINCHE is at-the telephone

Cotemporality of the two eventualities follows from the fact that the constraint of identity on terminating points may happen to apply to eventualities describing intervals with disjoint beginnings and ends, thereby forcing their parallel unfolding. Therefore, it is a by-product of the characteristics of the instantiators of A and B. Examples like (4.72) rule out its inclusion as a component of the semantics of the relation.

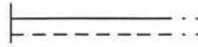
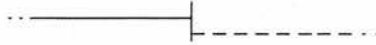
- (4.72) Dormo finché arrivi.  
sleep-1s FINCHE arrive-2s  
'I sleep until you arrive'

#### 4.5.2 Coinciding beginnings

In sentences where there is a negation in both the main and subordinate clauses, negation affects the choice of the borders used for the relation, and allows the selection of the beginnings instead of the termination points. The change in the relation is computed as the reversal of the ordering, which affects both intervals  $t_1$  and  $t_2$ . The relation is now  $\text{Starts}(t_1, t_2)$ .

- (4.73) a. Non è contento finché non lo sei anche tu.  
not is happy FINCHE not it-ACC are-2s also you  
'He won't be happy until you are happy too'
- b. Non vado a letto finché non sei di ritorno.  
not go-1s to bed FINCHE not are-2s back  
'I do not go to bed until you are back home'
- c. Non toccarlo finché non è freddo.  
not touch-2s it FINCHE not is cold  
'Do not touch it until it has become cold'

As in the case of positive arguments, *finché* imposes a constraint only on one border of the eventualities: the beginning. So,  $t_2$  need not have coincidental beginning and end, as for *until*. A graphic representation of the modified relation is given in Figure 4.12.

Figure 4.12: *Finché* with negated A and BFigure 4.13: *Finché* with negated B

### 4.5.3 Complementing only one interval

So far, we have seen the basic relation expressed by *finché*, and how it is modified by negation. We have also seen that *finché*, contrary to *until*, relates two intervals with (potentially) disjoint borders. The intervals are complemented by negation, and, as expected, a single occurrence of negation affects only one interval. In this section, and the following, we are going to discuss cases of negated B. The primary function of negation in argument B is to control the beginning of the interval described by the second eventuality. In this case, the relation is  $\text{Meets}(t_1, t_2)$ . A graphic representation of the situation is given in Figure 4.13.

- (4.74) Sono contenta *finché* non si alza il vento.  
 am happy FINCHE not rises the wind  
 ‘I am happy until the wind rises’

It is also possible to focus on the duration of A, i.e. on interval  $t_1$ . The result is something like saying that the eventuality in A is cotemporal with the not-happening of the eventuality in B. This reading is enhanced by the insertion of *tanto*, see (4.75).

- (4.75) Sono contenta *fin tanto che* non si alza il vento.  
 am happy FIN TANTO CHE not rises the wind  
 ‘I am happy for as long as the wind does not rise’

#### 4.5.4 Expletive negation

The analysis proposed accounts for all the cases seen so far.<sup>14</sup> Negation operates as the scale reverser found in the literature. However, examples like (4.76)—where the effect of negation is not easily perceivable—seem to constitute a counterexample for our analysis. The absence of overt contrast in (4.76) has been at the origin of the characterisation of this occurrence of *non* as expletive (Manzotti [Man82], Rigamonti [Rig91]).

- (4.76) a. Resto qui finché non arrivi.  
           stay-1s here FINCHE not arrive-2s  
           ‘I stay here until you arrive’
- b. Resto qui finché arrivi.  
           stay-1s here FINCHE arrive-2s  
           ‘I stay here until you arrive’

However, if *non* in the subordinate clause were semantically transparent and optional, there should be no contrast in (4.77) either, which is not the case. As a consequence, empirical coverage requires also an analysis of *non* as full negation.

- (4.77) a. Resto qui finché non parli.  
           stay-1s here FINCHE not talk-2s  
           ‘I stay here until you talk’
- b. Resto qui finché parli.  
           stay-1s here FINCHE talk-2s  
           ‘I stay here while you talk’

Manzotti [Man82] claims that sentences like (4.76a) and (4.76b) are both instances of the interpretation depicted in Figure 4.11. As mentioned, this leads him to introduce a double type of negation, a full negation and a dummy one, whose distribution is not entirely defined.

Instead of alternately invoking expletive and full negation, I treat example (4.77a) as an instance of the relation *Meets*( $t_1, t_2$ ), which contains an occurrence of full negation *non*, and (4.77b) of *Finishes*( $t_1, t_2$ ). In (4.77a) my staying terminates when your talking starts, which is consistent with speakers’ intuitions; in (4.77b) my staying terminates when your talking also terminates. The reason why there is no contrast in (4.76) is that the starting and terminating points coincide in an event of arriving, hence the switch

<sup>14</sup>This section draws from [Tov96b]. I thank the audience at the 25th Linguistic Symposium on Romance Languages (1995) for comments.

Figure 4.14: *Finché* with instantaneous B

between the two does not have an overt effect on the ordering. This lack of overt effect makes it possible to drop the negation in some registers with no appreciable variation in meaning. The effect is appreciable in (4.77) because the two points are disjoint. In sum, examples (4.76a) and (4.77a) are interpreted as represented in Figure 4.13. Examples (4.76b) and (4.77b) are interpreted as represented in Figure 4.11.

Strictly speaking, the question of the correct interpretations for (4.76a) and (4.76b) cannot be settled once and for all solely on the basis of the temporal relation. The effect of negation is appreciable when the special case of instantaneous events is evaluated in the light of the more general case of negated event predicates. The interpretations of (4.76a) and (4.76b) can be represented graphically as in Figure 4.14, which, *per se*, is a special case of both Figures 4.11 and 4.13. However, there are several reasons for choosing the representation in Figure 4.13 for example (4.76a). As stated above, a first reason is that this choice allows the possibility of formulating a homogeneous treatment of *finché*, and does not require postulating a double type of *non*.

Then, my proposal has the advantage of clarifying what causes the seemingly semantic transparency of certain occurrence of *non*, and has the capacity of predicting their distribution. In order to have an expletive negation, the eventuality occurring in B must hold over an interval whose beginning and end coincide. For instance, the predicate of the subordinate can be punctual like *arrivare* in (4.76a), or be a phase transition verb like *cominciare* in example (4.78), or *diventare* in (4.79), which has been taken from a cooking book.

- (4.78) Luisa è in vacanza finché non comincia l'anno scolastico.  
 Louise is in holiday FINCHE not starts the year scholastic  
 'Louise is on holidays until the school starts'
- (4.79) Mescolare il composto finché non diventa morbido.  
 mix the mixture FINCHE not becomes soft  
 'Stir the mixture until it becomes soft'

Next, as Manzotti [Man82, p.305] himself notes, the expletive negation is not entirely ineffective, rather it helps in disambiguating sentences. This effect can hardly be recon-

cited with the status of the element as semantically transparent, independently from the reasons that motivate the choice of a characterisation of negation as scalar reverser or as expletive.<sup>15</sup> Let us look at some examples. In general, durative predicates can also be interpreted as inchoative in Italian. This means that an example like (4.80) can be interpreted in two ways, either as durative in terms of a sleeping event predicate, or else as instantaneous, in terms of a falling asleep predicate.

- (4.80) Leggo finché dormi.  
 read-1s FINCHE sleep-2s  
 'I read for as long as you sleep'  
 'I read until you fall asleep'

Pragmatics disambiguates many sentences. For instance, example (4.81) is felicitous with the inchoative interpretation of the predicate *mangia da solo*, because the eventuality instantiating A is expected to stop at the moment when the eventuality in B starts holding. The reading where his eating by himself is cotemporal with her/his spoonfeeding him, ruled out as pragmatically odd in (4.81a), is just not available in (4.81b).

- (4.81) a. Lo imbecca finché mangia da solo.  
 him spoonfeeds FINCHE eats by himself  
 'S/he spoonfeeds him until he eats by himself'
- b. Lo imbecca finché non mangia da solo.  
 him spoonfeeds FINCHE not eats by himself  
 'S/he spoonfeeds him until he eats by himself'

*Mutatis mutandis*, the same disambiguation effect takes place in cases where the two eventualities are expected to hold in parallel, as in (4.82), and when the eventuality in A is expected to hold while that in B does not hold, as in (4.83). Whenever the ordering mismatches pragmatic considerations, the sentence is marginal.

<sup>15</sup>Rigamonti [Rig91] claims that *non* in subordinate clause is sometimes a full negation and sometimes an expletive one. She proposes [Rig91, p.292] that expletive negation is banned when the subordinate clause works as a phrasal adverbial, and obligatory in case it works as a sentential adverbial, provided that it is interpreted as cotemporal to the eventuality in A and its verb is in Indicative mood. However, on the one hand, cotemporal interpretation depends also on how negation is interpreted, and, on the other hand, the characterisation loses clarity when she introduces optionality in the frame, either via multiple analyses, or by referring to variations connected with different registers of language.

- (4.82) a. Lodalo finché lo merita.  
 praise-2s him FINCHE it-ACC deserves  
 'Praise him for as long as he deserves it'
- b# Lodalo finché non lo merita.  
 praise-2s him FINCHE not it-ACC deserves  
 'Praise him until he deserves it'
- (4.83) a.\* Mangia la minestra finché è fredda.  
 eats the soup FINCHE is cold  
 'S/he eats the soup until it is cold'
- b. Mangia la minestra finché non è fredda.  
 eats the soup FINCHE not is cold  
 'S/he eats the soup while it is not cold'

Finally, both the interpretations of cotemporality and postpositioning of B are pragmatically plausible in (4.84). The two readings are available for (4.84a), whereas (4.84b), where there is *non* has only the reading where her/his telephoning is postponed, and marks the end of my waiting.

- (4.84) a. Aspetto finché telefona.  
 wait-1s FINCHE telephones  
 'I wait while s/he is on the phone'  
 'I wait until s/he phones'
- b. Aspetto finché non telefona.  
 wait-1s FINCHE not telephones  
 'I wait until s/he phones'

Another case to discuss is that of sentences where the B argument contains the item *nessuno* (lit. nobody). Italian is a negative concord language. In short, a negative element like *nessuno* can stand alone as the subject of a sentence only if it occurs in preverbal position. When it occurs in post verbal position, it must be doubled by a negation on the verb.<sup>16</sup> According to the hypothesis that negation is expletive, one could say that example (4.85a) is ungrammatical because *non* cannot license *nessuno*, since it is semantically transparent. The interpretation as expletive could be further supported by data like (4.85b), where the negative element is replaced by an existential quantifier, and negation does not seem to perform any function.

<sup>16</sup>Cf. chapter 6 section 6.4 for a proposal on the functioning of negative concord in Italian.



(4.85) a\* Resto qui finché non arriva nessuno.  
 stay-1s here FINCHE not arrives nobody

b. Resto qui finché non arriva qualcuno.  
 stay-1s here FINCHE not arrives somebody  
 'I stay here until somebody arrives'

On the contrary, from the point of view adopted in this study, negation is consistently semantically characterised as having full strength. When it operates the temporal switch, it applies to the ordering relation and reverses it. In such a case it is no longer available for licensing *nessuno*. The contrast between (4.85a) and (4.85b) is expected, because the negation in both cases produces the reading represented in Figure 4.13, where my staying here stops at somebody's arrival.

Finally, we have noted that negation interacts directly with *finché* as the preferred mode of combination, but not as a strict condition. The negation *non* may license the occurrence of *nessuno* in B. This is the reading for sentence (4.86). The reversed order of the arguments moves the focus from the eventuality in A to the interval in which it is located, and flags a different function of the negation, more precisely its application to a different argument. Preposing '*finché* B' makes it clear that *non* operates inside B and does not affect the order. Negation as expletive does not account for the different status of (4.85a) and (4.86).<sup>17</sup>

(4.86) Finché non arriva nessuno io resto qui.  
 FINCHE not arrives nobody I stay here  
 'I stay here as long as nobody arrives'

Then, let us consider the contrast in (4.87).

(4.87) a# Difenderò le mie opinioni finché non avrò voce.  
 defend-1s the my beliefs FINCHE not have-1s voice  
 'I will defend my beliefs for as long as I will have no voice'

b. Difenderò le mie opinioni finché non avrò più voce.  
 defend-1s the my beliefs FINCHE not have-1s anymore voice  
 'I will defend my beliefs until I will have no voice left'

From the discussion on ordering reversal, it has emerged that the relation expressed by *finché* is established on the beginning of the location identified by the eventuality

<sup>17</sup>This case is further discussed in chapter 6 section 6.7.

in argument B. Still, sentence (4.87b) shows that it is possible to reverse an order and refer to the right border of the interval described by the eventuality in B. This sort of ‘double conversion’, which results in the interpretation depicted in Figure 4.11, may be required by pragmatic considerations. If negation applies to *finché*, sentence (4.87a) is interpreted as saying that the fighting for my beliefs goes on until the moment when I get some voice, cf. Figure 4.13, which is pragmatically implausible. The interpretation where negation applies inside B, and my fighting goes on for as long as I have no voice, cf. Figure 4.11, is also pragmatically implausible. The sentence can be rescued by adding *più* (lit. more) to B. The egressive marker *più* performs the switch between the borders used in the relation. Sentence (4.87b) is interpreted as saying that the loss of my voice brings to an end my fighting, cf. Figure 4.11, and is felicitous.

Finally, we note that expletive negation is absent from infinitival clauses. The argument developed in [Tov96b] refers to the complexity of the relation expressed by *finché*. The content of the sentence may happen to emphasize the relevance of the temporal ordering facet, although it is not certain that the other facets of the relation can be excluded completely. For instance, (4.88) has two readings. One where s/he works and sweats, another one is where s/he works and somebody else sweats. The readings cover both the case where the worker has strained her/himself, and the sweating is caused by the working, and where a sweating, her/his own or somebody else’s, has an independent unmentioned cause.

- (4.88) Ha lavorato fino a che ha sudato.  
 has worked FINO A CHE has sweated  
 ‘S/he worked until s/he sweated’

An infinitival clause in B is strongly preferred in cases where the two clauses share the same subject, and it is ungrammatical with disjoint subjects. Sentence (4.89a) allows only the interpretation where s/he works and sweats. It also covers only the case where the sweating is caused by the working.

- (4.89) a. Ha lavorato fino a sudare.  
 has worked FINO A sweat  
 ‘S/he worked until s/he sweated’  
 b.\* Ha lavorato fino a non sudare.  
 has worked FINO A not sweat

As expected infinitivals in B are not felicitous when the context makes it clear that the event in B has only a relation of temporal proximity with A. In (4.90), the reading

where the goal of our working is to hear the noon bell is rather implausible.

- (4.90) \* Lavoriamo fino a sentire la sirena di mezzogiorno.  
 work-1p FINO A hear the siren of noon

It has to be noted that the possibility of having a negation in infinitival clauses introduced by *fino a* cannot be ruled out on purely structural grounds. The acceptability of sentence (4.91) forces one to conclude that negated infinitivals are possible. However, as predicted by the analysis, (4.91) cannot be interpreted primarily in terms of temporal sequence. The relation expressed by *fino a* must be given a purposive content. In this case, negation applies inside B, and does not interfere with the relation expressed by *fino a*.

- (4.91) E' arrivato fino a non mangiare la minestra (pur di farle dispetto).  
 is gone FINO A not eat the soup (in order to displease her)  
 'He went so far as not eating his soup (in order to displease her)'

#### 4.5.5 Extending the analysis to Hungarian (*a*)*míg*

The Hungarian correlating expression *addig A (a)míg B* shows interesting similarities with *A finché B*.<sup>18,19</sup> The two operators interact with negation in analogous ways. (4.92)–(4.95) supports the parallelism.<sup>20</sup> Example (4.92) is a case of (*a*)*míg* in positive context.

- (4.92) a. Boldog voltam, amíg Mari a feleségem volt.  
 happy was-1s AMIG Mary the wife.my was  
 'I was happy while Mary was my wife'

Example (4.93) presents a negation in both arguments, and the eventualities have identical beginnings.

- (4.93) Nem beszélgettünk, amíg Mari fel nem hívott.  
 NEG talked-1p AMIG Mary PREV NEG called  
 'We didn't talk until Mary called us up'

<sup>18</sup>The 'a' of (*a*)*míg* is usually optional, with at least one case where it is banned, see below example (4.99b). This fact is interpreted by Piñón [Pn91] as supporting the existence of two distinct items.

<sup>19</sup>Hungarian also exploits the 'only' strategy in order to express the relation *not...until*. The expression used in this case is *csak* 'only', which applies to ordered and unordered sets.

<sup>20</sup>Examples (4.92)–(4.95) are from [Pn91]. For the sake of consistency with the rest of this section, Piñón's glosses have been slightly modified, on their formal aspect only. The translations have been kept the same, but I disagree with Piñón on the rendering by *while* of this instance of the relation, see subsection 4.5.1 and below. Still, I follow his terminological choice, and call 'preverb' (PREV) a separable element like *meg* in *megnéz* (lit. look at).

The sentences in (4.94) contain negation in B, and the eventuality in B is postponed to that in A.

- (4.94) a. (Addig) olvastam, amíg János le nem feküdt.  
 (ADDIG) read(PST)-1s AMIG John PREV NEG lay  
 'I read until John lay down to sleep'
- b. Beszélgettünk, amíg Mari fel nem hívott.  
 talked-1p AMIG Mary PREV NEG called  
 'We talked until Mary called us up'

The broken order in the subordinate clause introduced by *amíg*, i.e. the configuration where negation breaks the preverb–verb sequence by occurring right before the verb, has aspectual motivations. The placement of the preverb before the verb indicates perfectivity. The broken order comes about because negation goes in front of the verb. Imperfectivity is indicated by a positioning of the preverb after the verb. Thus example (4.95), as Piñón [Pn91, p.254] himself notes, has a different interpretation, compare it with (4.94a). According to our analysis, in this case negation applies inside B.

- (4.95) (Addig) olvastam, amíg János nem feküdt le.  
 (ADDIG) read(PST)-1s AMIG John NEG lay PREV  
 'I read while John was not lying down to sleep'

The main difference between the Italian and Hungarian connectives seems to be that *(a)míg* cannot take as second argument an instantaneous non-negated event. This difference may imply that the Hungarian operator requires cotemporality between the instantiations of A and B in positive contexts. The contrast between the Italian examples (4.96) and the Hungarian counterparts in (4.97) seems to confirm the existence of a difference. Sentence (4.96a) is rendered in Hungarian by (4.97a). Italian allows also (4.96b), which may seem a little wordy but is perfectly fine, whereas (4.97b) is marginal.

- (4.96) a. Lavoro fino alle 3.  
 work-1s FINO A-the 3  
 'I work until 3 o'clock'
- b. Lavoro fino a che non sono le 3.  
 work-1s FINO A CHE not are-3p the 3  
 'I work until 3 o'clock'

- (4.97) a. 3 àràig dolgozom.  
 3 hour-to work-1s  
 ‘I work until 3 o’clock’

Ĥ\* Addig dolgozom, (a)míg 3 nem lesz.  
 ADDIG work-1s AMIG 3 NEG be(FUT)-3s

The suffix *-ig* used in example (4.97a) has to be attached to a noun. In (4.98a) the temporal information is provided by the adjective *sötét* (‘dark’) and *(a)míg* is used instead. Otherwise, the corresponding noun has to be selected, see (4.98b). However, the grammaticality of (4.98a) is predicted, because the expression denotes an interval with disjoint borders.

- (4.98) a. Addig dolgozom, (a)míg sötét nem lesz.  
 ADDIG work-1s AMIG dark NEG be(FUT)-3s  
 ‘I work until dark’
- b. Sötétdèsig dolgozom.  
 darkness-to work-1s  
 ‘I work until darkness’

As discussed by Piñón in footnote 9, the variant *míg* is used in cases of non-negated B containing a punctual verb, contrast the absence of optionality in (4.99b) with respect to its possibility in (4.99a).<sup>21</sup>

- (4.99) a. Addig dolgozott, (a)míg meg nem izzadt.  
 ADDIG worked-3s AMIG PV NEG sweat(PST)-3s  
 ‘He worked until he sweat’
- b. Addig dolgozott, míg meg·izzadt.  
 ADDIG worked-3s AMIG PV-sweat(PST)-3s  
 ‘He worked until he sweat’

As far as the parallelism between *finché* and Hungarian *amíg* goes, I disagree with Piñón [Pn91, pp.253–254] about the equation of this type of connective with ‘while’, and the subsequent conviction that its use in negative contexts of the type exemplified in (4.74) and (4.94) constitutes just an approximation of the relation ‘until’. Piñón treats the English *until* as a more direct and parsimonious way of expressing *while not*. He claims that the latter expression is discarded in English as a Gricean manner violation

<sup>21</sup> Piñón [Pn91, fn.9] attributes these sentences to Rác.

because of the existence of the *until* option. The felicity of the *(a)míg* + negation combination in Hungarian is ascribed to the absence of such an option in this language. I take it that the presence of the constraint on the terminating points enables *finché* and *amíg* to express the relation ‘until’ fully. Their use is not just a stopgap solution.

The Hungarian data in (4.99) offer further support for the proposal that negation disequates the intervals. Sentence (4.99a) contains a negation in argument B. In this example, sweating is not a necessary consequence of working. In contrast, there is no negation in argument B in (4.99b), and sweating is a necessary consequence of working. The relation between eventualities expressed in (4.99b) is not purely temporal, but also causal. The analysis developed in this study accounts for this difference of interpretation without ascribing it to the lexical items, by splitting it into a temporal and a consequential items, as hinted at in Piñón’s paper.

As expected, in a context where B has only a relation of temporal proximity with A, the use of *míg* with no negation in B is infelicitous, whereas *(a)míg* with negation in B is felicitous.

- (4.100) a. Ma nagyon meleg van, addig dolgozom, (a)míg meg nem izzadok,  
 today very hot is ADDIG work-1s AMIG PV NEG sweat-1s  
 aztán bennt folytatom.  
 then inside continue-1s  
 ‘Today is a very hot day, I work until I sweat and then I carry on inside’
- b.\* Ma nagyon meleg van, addig dolgozom, míg meg-izzadok, aztán  
 today very hot is ADDIG work-1s AMIG PV-sweat-1s then  
 bennt folytatom.  
 inside continue-1s

#### 4.5.6 Summary

*Finché* is analysed as a binary operator, which takes eventualities as arguments. The relation is evaluated with respect to the intervals described by the eventualities. In positive contexts, this connective equates the terminating points. In case both arguments are negated, they have identical beginnings. In case only argument B is negated, the relation is temporal sequentiality. The effect of negation is computed on the bounded orderings constituted by the intervals, as the default strategy of interpretation.

I generalise over the connectives *until*, *finché*<sup>22</sup> and *amíg* by localizing the difference to the characterisation of argument B. Whenever argument B is instantiated by an expression denoting an interval with disjoint boundaries or an eventuality describing an interval, this interval  $t_3$  contains  $t_2$ . Interval  $t_3$  is not visible to the English operator. Thus, even in a case where the two eventualities can be said to unfold at least partially together, the reading ‘for as long as’ is unavailable, and cotemporality of the eventualities can only be inferred. On the contrary, the Italian and Hungarian operators are able to see the interval to which  $t_2$  belongs. Different instantiations of argument B are responsible for the within language reading variations ‘for as long as’ and ‘until’ of the operator in these languages.

Advantages of this analysis are that, without invoking expletive negation, it makes it possible to explain cases where negation in the subordinate clause introduced by *finché* shows little appreciable effect, or where negative concord seems not to take place. It offers also motivation for the disambiguating ability of negation in the subordinate clause, and for its absence from infinitival subordinates.

## 4.6 The case of *ancora*

### 4.6.1 Introduction

The review of sensitive time adverbials terminates with an analysis of the Italian adverb *ancora*.<sup>23</sup> This word, whose origin can be traced back to vulgar Latin expression *hanc horam* (‘at this hour’), is used in contexts where English uses *yet*, *still* and *again*, see

<sup>22</sup>Séguin [Ség73] provides data from Hindi that suggest for the correlative expression *jāb tāk B tāb tāk* A a behaviour similar to that of A *finché* B, see (i)–(iv).

- (i) *Jāb tāk vo bimar rāha, tāb tāk hān rāhe*  
 JAB TAC DEM was ill TAB TAK we remained  
 ‘We remained as long as he was ill’
- (ii) *Jāb tāk ap dhire nāhī gāēge tāb tāk ap āchi tārāh ga nāhī pāēge.*  
 JAB TAC you slowly NEG sing TAB TAK you well sing NEG be able  
 ‘You won’t sing well until you sing slowly’
- (iii) *Jāb tāk maṣṭar jī nāhī pāhūce tāb tāk lārke shor māchate rāhe.*  
 JAB TAK teacher NEG arrived TAB TAK boys noise making kept  
 ‘The students made noise until the teacher arrived’
- (iv) *Jāb tāk maṣṭar jī pāhūce tāb tāk lārke shor māchate rāhe.*  
 JAB TAK teacher arrived TAB TAK boys noise making kept  
 ‘The students made noise until the teacher arrived’

In (i)–(ii) we can see the meaning alternation between ‘for as long as’ and ‘until’ correlating the direct and reversed order of the temporal relation. These data support the analysis proposed for the Italian operator, since Hindi uses a different syntactic structure, namely a correlative construction instead of subordination. Then, examples (iii)–(iv) show that negation can be deleted when argument B is instantiated by an instantaneous event.

<sup>23</sup>Material presented in this section has been discussed in [Tov96a]. I thank the audience at the 3rd ConSole (1994) for comments.

examples (4.101) to (4.103). Its most frequent use is temporal, but spatial and scalar uses are also current, see (4.104) and (4.105).

- (4.101) Laura è ancora     arrabbiata.  
 Laura is ANCORA angry  
 'Laura is still angry'
- (4.102) Laura suona ancora     il    preludio.  
 Laura plays ANCORA the prelude  
 'Laura is playing the prelude again'
- (4.103) Daniele non è ancora     arrivato.  
 Daniel not is ANCORA arrived  
 'Daniel hasn't arrived yet'
- (4.104) Il    volano è ancora     nel    tuo campo.  
 the shuttle is ANCORA in-the your court  
 'The shuttle is still in your court'
- (4.105) Luisa è ancora     più bella     di    Laura.  
 Louise is ANCORA more beautiful than Laura  
 'Louise is even more beautiful than Laura'

As in all the other cases examined in this chapter, the first argument of the operator is eventuality denoting, and the second provides information on its mapping, but in this case it is covert, since the adverb is not a connective.

A comparison with the respective English translations 'still', 'again' and 'yet' might give the impression that *ancora* is lexically ambiguous. The resulting assumption of homography would require an explanation. On the other hand, most of the literature on negative polarity could be quoted in support of the classification of *still* and *yet* respectively as polarity positive and negative sensitive items, see for instance [Lin80a]. Were the same classification to be extended to Italian, certain occurrences of *ancora* should be labelled of negative polarity, others of positive polarity or neither, thereby splitting the item into a constellation of elements.

Although one may argue for the merits of this practice, its use in the case of *ancora* is problematic, because not two, but many different items should be postulated. This strategy is discounted also by considerations from comparative and historic linguistics. On the one hand, the existence of a similar variety of meanings in other Romance



languages, e.g. the French adverb *encore*<sup>24</sup> and the Brazilian *ainda*, casts doubts on a fragmentary analysis of *ancora*, and supports the idea that the cluster of meanings is not a coincidence, rather that there is a systematic relation among them. On the other, Old English shows a similar cluster of uses for *yet*, namely the 'still', 'again', 'already' and scalar readings, which have subsequently been lost in an increasing specialisation of use of the item.<sup>25</sup> This leads me to suggest that the presumed constraints on the distribution of the English correspondents of *ancora* may be linked, at least as far as the correspondence goes, to their specialisation. They lexicalise particular uses, i.e. portions of the range covered by *ancora*. Such a specialisation reduces the set of suitable instantiations for the argument positions.

I discount the hypothesis of lexical ambiguity on semantic grounds. The different uses of the adverb are derived from its sensitivity to the context, i.e. the various eventualities to which it applies, and to the presence of negation. This adverb is characterised as imposing a complex relation with two facets. The referential part is defined as mapping with respect to an identifier; the self-referential part as an effect of continuance on the eventuality. Continuance is a cover term for duration and iteration. It was chosen because it is neutral vis-à-vis of the aspectual properties of an eventuality, and also because it is not interpretively loaded by virtue of its use in other theories, as for 'persistence', which is used in situation semantics. The complexity of the relation explains the relevance of a range of aspectual facts, and the variety of readings to which *ancora* can contribute.

Parallelisms can be drawn between the behaviour of *ancora* and parts of that of English *still*, *yet* and *already*, (cf. Abraham [Abr80], Löbner [Löb89], Michaelis [Mic92], [Mic96], van der Auwera [vdA93], *inter alia*), and German *noch*, *noch nicht* and *schon*, (cf. König [Kön77], [Kön91], Löbner [Löb89], van der Auwera [vdA93], Hoepelman and Rohrer [HR81], *inter alia*). These analyses of the English and German items contain observations and insights which hold for *ancora* too. However, the use of one lexical item in Italian for various uses conveyed by different items in English and German results in that presuppositional aspects are not included in its meaning. They are produced, if any, by the interaction of the continuance effect with the partial ordering of *T*. This allows

<sup>24</sup>Borillo [Bor84] proposes a unified analysis of *encore* as an adverb expressing a function of *ajout de quantité* (quantity increase), which includes the temporal use. She argues that the operation of increase requires a preexisting basis to which it applies. In this way, the existence of a preceding phase where the event hold is expressed by the semantics of *encore*, and there is no need to invoke presupposition.

Victorri and Fuchs [VF92] present a review of the meanings of *encore* as a case of polysemy. They propose an analysis based on the construction of a semantic space which represents the polysemy.

<sup>25</sup>These uses are presented in the entry in the OED, and discussed in König and Closs Traugott [KCT82] and König [Kön91, p.153ff.].

*ancora* its flexibility and context sensitivity. The approach presented in this section focuses on the sensitivity to aspectual properties of the predicates and to negation.

#### 4.6.2 The basic schema

The basic use of *ancora* is represented by its occurrences as sentential operator. It is a binary operator that can be schematically represented as (4.106)<sup>26</sup>. Argument A is overt, and it is instantiated by an eventuality. Argument B is an eventuality identifier. It is covert and contains the reference time. This use is exemplified in (4.101), where Laura's being angry is the instantiation of argument A. Argument B is instantiated with the reference time introduced by the verbal form, i.e. in (4.101) the state holds at the present moment.<sup>27</sup> Similarly, in example (4.102), the event of Laura's playing the prelude instantiates argument A, and an identifier of the present interval instantiates argument B. Figure 4.15 contains the schema representing pictorially the semantic content of the operator.

(4.106) ANCORA (A,B)

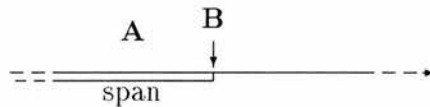


Figure 4.15: The basic schema

As Figure 4.15 shows, B marks the end of the interval within which the operator maps the entity in A. The information provided by argument B identifies a transition point which partitions the space into two parts. I will refer to the left interval as the 'span' onto which the operator focuses. Its left boundary is unspecified. The notion of span has been introduced to represent the effect of continuance expressed by *ancora*. For instance, sentence (5.7) does not assert only that Laura's being angry holds up to the moment identified by B, but also that it was holding at some prior interval. Similarly, in (5.8), Laura plays the prelude now and played it at some other time in the past

<sup>26</sup>The prefix form is used to make it clear that *ancora* is not a connective.

<sup>27</sup>The reference time could also be provided by an adverbial, as in (i), or an event description, as in (ii).

(i) Alle 9 stava ancora mangiando.

'S/he was still eating at nine'

(ii) Quando siamo arrivati stava ancora mangiando.

'S/he was still eating when we arrived'

too. These two facets of the meaning of *ancora*, that is mapping and continuance, are responsible for different effects. The terms of ‘transition point’ and ‘span’ have been selected with the aim of covering both the cases of temporal and spatial use of the operator, without biasing in either direction. The schema in Figure 4.15 allows us the possibility of representing the different uses of *ancora* without requiring its fragmentation into several items. König and Closs Traugott [KCT82, p.171] have characterised the divergence of *still* and *yet* by means of the different distribution of the two properties of ‘instantiation prior to some reference point’ and ‘imminent change’. My analysis makes it possible to identify these characteristics in the *ancora*-phrases, in parallel with the English cases, without attributing contrasting properties to the item *ancora*.

The facet of the meaning of *ancora* that gives rise to an effect of continuance corresponds to the property of ‘instantiation prior to some reference point’ [KCT82]. It is responsible for the sensitivity of *ancora* to the characteristics of the instantiators of A. Both the semantics of the verb and the verbal form have an impact on the semantics of the *ancora*-phrases. In case of an eventuality with a poorly defined termination point, continuance means extension of the same eventuality over time, because the transition between current and immediately preceding intervals is undistinguishable. Considering a state, *ancora* asserts that the eventuality  $e_i$  instantiating A holds at interval  $t_i$ , identified via B, and  $e_j$  holds at  $t_j$ , where  $t_j < t_i$ , and  $e_i$  and  $e_j$  are of the same type, i.e. same aspect and same participants, see the discussion of examples (4.115)–(4.117) in section 4.6.3. Strict identity between  $e_i$  and  $e_j$  follows from the reason that the duration of a state can be extended without affecting its homogeneous internal structure, or rather the state can be asserted to hold over a longer interval. The immediate precedence of the intervals follows from the impossibility of identifying the boundaries of the state. From the crucial role played by the right boundary it follows also that atelic events pair with states.

In case of an eventuality with a well defined termination point, continuance means its repetition over a previous interval. When A is instantiated by an event, a sentence containing *ancora* asserts that the eventuality  $e_i$  holds at interval  $t_i$ , identified via B, and  $e_j$  holds at  $t_j$ , where  $t_j < t_i$ , and  $e_i$  and  $e_j$  are of the same type. The presence of a well defined termination point is incompatible with a merge between  $e_i$  and a preceding  $e_j$ . Whether repetition is simple iteration of the same event, or there is also an alteration of a participant between the two occurrences, depends on the type of event, see the discussion of examples (4.123)–(4.125) in section 4.6.4. There are pragmatic constraints on the distance between the two intervals. The use of the span in Fig.4.15 represents a

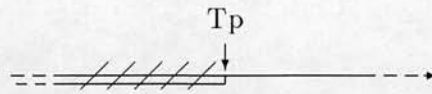


Figure 4.16: DIRECT MAPPING

long perspective towards preceding intervals, and captures the concept of continuance for any eventuality. Furthermore, it expresses that continuance holds in the interval moving backwards from the transition point, and not beyond it. The relevance of this remark is apparent when *ancora* occurs in negative context.

When *ancora* occurs in positive contexts, the eventuality instantiating argument A is mapped inside the span, a situation depicted in Figure 4.16. This situation is called direct mapping.

In negative contexts, negation can interact with *ancora* in various ways. Negation can take the whole sentence in its scope, and alter the truth value of the proposition, as expressed by the configuration (4.107).

$$(4.107) \quad \neg [ \text{ANCORA} (A,B) ]$$

In this case, the negation is interpreted as applying to the function, and the result is the negation of the function, i.e. the modification of the truth values of the proposition. This case is equivalent to the formula (4.108), i.e. the relation expressed by *ancora* does not hold for the instantiations of arguments A and B.

$$(4.108) \quad \neg \exists x, y \text{ ANCORA}(x, y)$$

Instances of this configuration are given in (4.109). The relevant reading requires a particular prosodic contour. The falsity of the relation may ensue from the eventuality in A not holding at the interval identified by B, see (4.109a), at a previous interval, see (4.109b), or at either intervals, see (4.109c).

- (4.109) a. Laura NON HA protestato ancora, ha solo fatto conoscere le sue  
 Laura not has protested ANCORA has just made known the her  
 ragioni.  
 reasons  
 ‘Laura has NOT protested again, she has just manifested her reasons’

- b. Laura NON HA rovesciato ancora il bicchiere, perché non era  
 Laura not has knocked over ANCORA the glass because not was  
 mai successo.  
 never happened  
 ‘Laura has NOT knocked over the glass again, because it had never happened  
 before’
- c. Laura NON HA mangiato ancora la carne, è una vegetariana convinta.  
 Laura not has eaten ANCORA the meat is a vegetarian convinced  
 ‘Laura has NOT eaten meat again, she is a true vegetarian’

A negative sentence containing *ancora* can also be interpreted as if negation applies to one of the arguments of *ancora*, and not to the whole relation. It may mean, for instance, that there is a certain *b* instantiating B and a relation ANCORA holding for it, but not for *b* in pair with an *a* instantiating A. In this case, the negation has scope only over argument A. This is a marked case. We will come back to it in section 4.6.6, where linguistic data like example (4.110) are discussed.

- (4.110) a. Daniele ancora non è stanco.  
 Daniel ANCORA not is tired  
 ‘Daniel still isn’t tired’
- b. Daniele ancora non è arrivato.  
 Daniel ANCORA not is arrived  
 ‘Daniel still has not arrived’

On the other hand, the presence of negation cannot mean that the relation ANCORA holds for *a* but not for the pairs *a* and *b*, because negation cannot have scope only over the covert element instantiating B, and also because their types are incompatible. In fact, if the identifier is negated, so is the sentence that expresses it. It cannot be set to false *per se*, but only for the use *ancora* makes of it, which is to say that the function is set to false.

There is another interpretation, approximated in the representation in (4.111), which turns out to be very common. In this case, negation applies only to the functor *ancora*, before the arguments are instantiated. The result produces the modification of meaning seen in the pair in (4.112).

- (4.111) [  $\neg$  ANCORA ] (A,B)

- (4.112) a. Luisa mangia ancora la minestra.  
 Louise eats ANCORÀ the soup  
 ‘Louise eats soup again’
- b. Luisa non mangia ancora la minestra.  
 Louise not eats ANCORÀ the soup  
 ‘Louise does not eat soup yet’

More precisely, the ordering information contained in *ancora* is modified. This is the facet of meaning compatible with the function of scale reverser, a traditional characterisation of negation. As a result, the entity is mapped in the complement of the span, i.e. beyond the transition point. This case is called indirect mapping precisely because the position where the entity instantiating A is mapped has to be computed via the evaluation of the interaction of the two operators, and is not defined directly by *ancora* itself. This situation is depicted in Figure 4.17.

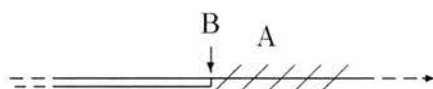


Figure 4.17: INDIRECT MAPPING

I believe that ‘imminent change’ is not a property of the item, characterising only *yet* [KCT82, p.171], but an epiphenomenon of the type of mapping due to the interaction between the item and negation. Hence, it may be said to characterise *ancora*-phrases, but not occurrences of *ancora* itself. A comparison between Figures 4.16 and 4.17 reveals immediately why only the latter use of *ancora* is associated with the expectation of a change. There is certitude that the situation will differ from the preceding one only when the eventuality is mapped in the interval subsequent to the transition point.

Finally, Figure 4.15 allows us the possibility of discussing another issue. Although there are strong expectations for Tom’s reading that book, a sentence like (4.113) cannot be considered as asserting that Tom will definitely read that book in a subsequent time. Both continuations presented in (4.114) are possible.

- (4.113) Daniele non aveva ancora letto il libro.  
 Daniel not had ANCORÀ read the book  
 ‘Daniel had not read the book yet’

- (4.114) a. Daniele non aveva ancora letto il libro, e mai lo lesse in  
Daniel not had ANCORA read the book and never it-ACC read afterwards  
seguito.

‘Daniel had not read the book yet and he never did’

- b. Daniele non aveva ancora letto il libro, ma lo fece poco dopo.  
Daniel not had ANCORA read the book but it-ACC did shortly afterwards

‘Daniel had not read the book yet, but he did so shortly afterwards’

There is no need to invoke cancellable inferences. The interpretation of (4.113) as a case of indirect mapping tells us that the event of Tom’s reading that book is to be mapped in the interval following the transition point. The variation presented in (4.114) can be accounted for by considering that the situation after the transition point may evolve in the future in different ways, and either of the branches of Figure 4.18 can become the ‘real’ one, but not both of them.

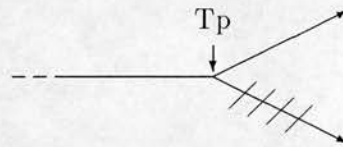


Figure 4.18: The interpretation of *ancora* in negated sentence

In other words, the contribution of *ancora* to the sentence consists in the mapping of the eventuality on an interval subsequent to the span individuated by argument B, but there are no guarantees on this interval belonging to the actual time axis, nor conditions about on which of its subintervals is the location of the eventuality. Then, the maxim of quality can explain the preference for an interpretation where the eventuality in A holds at some time past B.

### 4.6.3 The ‘still’ reading

States are eventualities which have no specific temporal boundaries (Smith [Smi91]). As a consequence of the absence of a well-defined termination point, the effect of continuance brought about by *ancora* translates into uninterrupted continuation of the state, and *ancora* has the reading ‘still’, see (4.115) and (4.116).

- (4.115) Sono ancora stanca.  
 am ANCORA tired  
 'I am still tired'
- (4.116) Daniele risiede ancora a Verona.  
 Daniel resides ANCORA at Verona  
 'Daniel still resides in Verona'

For this purpose, the differences between states and progressive are irrelevant, because the progressive removes the boundaries and makes an event like a state [Vla81], see (4.117). The existence of a secondary reading for (4.115)–(4.117), of the type 'again', is to be ascribed to the possibility of giving eventive readings to states.

- (4.117) Stiamo ancora vedendo il film.  
 are ANCORA watching the film  
 'We are still watching the film'

A few more words can be added with respect to (4.118).

- (4.118) Daniele può ancora vincere la gara.  
 Daniel can ANCORA to-win the race  
 'Daniel may still win the race'

Example (4.118) indicates that the possibility of Daniel's winning the race continues to exist. It should not be translated as 'Daniel may win the race yet' since, as argued by Ladusaw [Lad79, p.126], the use of *yet* in such affirmative contexts express the opening of a possibility. (4.118) does not convey the idea that lost hopes for Daniel's winning the race are suddenly rekindled. This reading has been termed 'perfective' (Löbner [Löb89, p.199]). (4.118) is not felicitous if Daniel is by far the best all along the race.

It is interesting to note how variation in positioning forces different readings of the modal *dovere*. In (4.119) there is a non-veridical epistemic *deve*. In (4.120) there is a deontic *deve*.<sup>28</sup>

- (4.119) Daniele deve ancora mangiare.  
 Daniel has ANCORA to-eat  
 'Daniel still has to eat'

<sup>28</sup>Just as a reminder: the term 'epistemic' standardly applies to the uses which convey a possibility, and 'deontic' to those which convey an obligation.



- (4.120) Daniele deve mangiare ancora.  
 Daniel has to-eat ANCORA  
 'Daniel must carry on eating'

Finally, *ancora* cannot be used with predicates denoting irreversible states like 'old' in (4.121). However, the exclusion of these predicates cannot be easily obtained by restricting the use of the adverbial to situations where there is a succession of positive and negative phases of one state, as proposed by Löbner [Löb89, p.181] for German *noch*. In fact, the possibility of an absence of change cannot be ruled out. For instance, (4.122) conveys the idea that the stains are indelible. Their persistence is emphasised.

- (4.121) # Luisa è ancora vecchia.  
 Louise is ANCORA old  
 'Louise is still old'

- (4.122) Nonostante la candeggina, le macchie si vedono ancora.  
 despite the bleach, the stains REFL see ANCORA  
 'Despite the bleaching, the stains are still visible'

#### 4.6.4 The reading 'again / one more / more'

Whenever both borders of the eventuality are described, as in the case of processes or achievements [Smi91], the continuance effect translates into repetition. The idea that *ancora* does not carry with itself selectional restrictions on its arguments, rather it interacts with the properties of the entities with which it combines, provides an easy explanation for the meaning variation presented in this section. Verkuyl [Ver71] showed that subject and complement NPs are relevant for aspectual matters. For instance, the presence of complements can add telicity to processes, and *ancora* is sensitive to this source of aspectual information.

For an event to be repeated, the existence of the possibility of repetition is crucial. Unique events [Kri87], e.g. 'eat the soup', cannot be iterated. Non-unique events, e.g. 'boil the soup', can be iterated. In the case of unique events, one has to consider whether any of the participants created or destroyed during the event can be replaced freely in the iteration. The different referential properties of definite and indefinite NPs complements represent constraints on such a possibility. Strictly speaking, the notion of uniqueness or non-uniqueness relevant for this study is composed by the semantics of the verb and that of its complements. The two factors, non-unique/unique event and non-specific/specific NPs, give rise to four basic combinations, exemplified in (4.123) and (4.124).

- (4.123) a. Lesse ancora una lettera.  
 read ANCORA a lettera  
 'S/he read one more letter'
- b. Lesse ancora la lettera.  
 read ANCORA the lettera  
 'S/he read the letter again'
- (4.124) a. Scrisse ancora una lettera.  
 wrote ANCORA a lettera  
 'S/he wrote one more letter'
- b. Scrisse ancora la lettera.  
 wrote ANCORA the lettera  
 'S/he wrote the letter again'

Continuance results in reduplication in the case where *ancora* applies to a non-unique event. When the non specificity of an NP allows the alteration of one participant, this possibility is highlighted by the reading 'one more' or 'another', see (4.123a). Whereas, continuance results in iteration in the case of a non-unique event with no change of participants, see the reading 'again' in (4.123b). The potential but not necessary alteration of the participant *una lettera*, due to the ambiguity between specific and non-specific readings of the indefinite, results in the availability of the reading 'again' too in (4.123a). In the case of a unique event, if it is possible to reinstantiate an argument position of the predicate, i.e. to replace one participant with another of the same type, the sentence is grammatical, see (4.124a). Whereas, if this is not possible, because the NP denotes a token, the status of the sentence deteriorates considerably, see (4.124b). Speakers who accept (4.124b) do so only with the same interpretation of the pair in (4.125), where the acceptability of the sentences is restored by overt indication of the repetition of the event. Such an overt indication is required also in a scenario that makes it plausible for the very same letter to be written again, say after having been torn up by a jealous partner. In other words, the letter cannot be just similar, or accidentally the same. The case that could make the use of (4.124b) plausible is that where the content of the letter is a well-defined text, for instance an epistle by a well-known person.

- (4.125) a. Riscrisse la lettera.  
 re-wrote the lettera  
 'S/he wrote the letter again'
- b. Scrisse ancora una volta/di nuovo la lettera.  
 wrote ANCORA one time/of new the lettera  
 'S/he wrote the letter one more time'

A few more cases are to be considered. We start from the cases when a definite NP is coerced into a 'type' reading. In this case, coercion causes the reading 'again', because there is no alteration of the type of participant, and disregarding the instances or tokens of the type transforms a unique into a non-unique event, see (4.126). *Zuppa* is interpreted as a type of food, thus, although it cannot be considered as count strictly speaking, in this case it behaves as one.

- (4.126) Mangiò ancora la zuppa (e non il riso).  
 ate ANCORA the soup (and not the rice)  
 'S/he ate soup again (and not rice)'

When the NP is a mass, either the noun is sorted, and the 'type' reading is produced, hence the interpretation as non-unique event, or it is interpreted as denoting a discrete entity, and there is change of participant, however with a trivially different reinstantiation, thence the reading 'more' and the impossibility of the reading 'another', see (4.127).

- (4.127) Ha mangiato ancora polenta.  
 has eaten ANCORA polenta  
 'S/he has eaten polenta again'  
 'S/he has eaten more polenta'

Given the relevance of NPs for aspectual matters, the cases where *ancora* focuses on NPs have been treated as instances of the aspectual operator. They are grouped together with the 'again' reading cases, available with intransitive verbs or unique events. This approach is compatible with the idea that all uses of German *noch* are essentially additive (cf. König [Kön91], van der Auwera [vdA93]). I would like to highlight the following point. By evaluating the adding function from the aspectual point of view, one brings out the impact of *ancora* on the level of the eventuality without having to assign it a single position on the syntactic representation. The issue of positioning is further explored in subsection 4.6.6.

Finally, with regards to the uses ‘again’ and ‘still’, Hoeksema has suggested to me the use of coordinate structures to test for ambiguity/vagueness. Sentence (4.128) is a case of ellipsis with forward deletion. The interpretation where Louise is still on the phone and Daniel is again on the phone is not available. However, the constraint of content-identity on ellipsis rules out the possibility of an ellipsis site whose content differ from that of the antecedent. Hence, it is not possible to set up the conditions for a different use of *ancora*.

- (4.128) Luisa è ancora al telefono così come Daniele.  
 Louise is ANCORA at-the telephone so as Daniel  
 ‘Louise is still on the phone, and so is Daniel’

#### 4.6.5 The reading ‘some other time(s) in the past’

In a subset of cases where the reading ‘again’/‘another’ is available, *ancora* can have also another reading, which may be paraphrased as ‘already in the past’ or ‘some other times in the past’<sup>29</sup>. The intended reading is that the event under discussion has already taken place at least once in the past. However, there is no specification about if and how many times it was repeated, and there are no indications of its having taken place too early or too late with respect to expectations. In the following, sometimes we render this reading by ‘already’ for the sake of brevity, but the reader should bear in mind the distinctions just made. With this particular reading, *ancora* also receives a stress, like in the ‘again’ case, but a different prosodic contour. Example (4.129) has this reading.

- (4.129) Ho visto ancora questa persona.  
 have-1s seen ANCORA this person  
 ‘I have already seen this person’  
 ‘I have seen this person again’

- (4.130) ? Vidi ancora questa persona.  
 saw-1s ANCORA this person  
 ‘I already saw this person’  
 ‘I saw this person again’

One peculiarity of the reading ‘already’, beside the fact that it is regionally restricted, and that it is ‘carved out’ from the ‘territory’ of ‘again’, is that it is limited to the co-occurrence of the past tense. Pace constraints on ‘again’ reading, the reading is available

<sup>29</sup>The use of *ancora* in affirmative declarative sentences with the meaning of *some time(s) in the past* is widespread in Italian spoken in Veneto, i.e. regional standard Italian and not Venetian dialect. On the contrary, the Brazilian corresponding item *ainda* has this reading in its standard use.

in co-occurrence of a *passato prossimo* rather than of a *passato remoto*, cf. the gradation in status between example (4.129a) and (4.130). The reading is simply not available in co-occurrence of present or future, see (4.131) and (4.132).

(4.131) \* Vedo ancora questa persona.  
see-1s ANCORA this person

(4.132) \* Vedrai ancora questa persona la settimana prossima.  
see-2s ANCORA this person the next week

We observe that *ancora* with the ‘already’ reading is subject to distributional constraints analogous to those for *ancora* with the ‘again’ reading, see section 4.6.6 below. The adverb occurs after the verbal form. As examples (4.133) and (4.134) show, this reading of *ancora* arises both in affirmative declaratives and in questions.

(4.133) Ho visto ancora questa procedura.  
have-1s seen ANCORA this procedure  
‘I have already seen this procedure.’

(4.134) Hai sentito ancora questa canzone?  
have-2s heard ANCORA this song  
‘Have you already heard this song?’

The pair presented in (4.135) shows that the expression of the repetition is compatible with the co-occurrence of *già* (lit. already), but it is incompatible with *ancora*, both in its reading ‘some other times in the past’ and ‘again’.

(4.135) a. Sono già venuta a Edimburgo diverse volte.  
am GIA come to Edinburgh several times  
‘I have already come to Edinburgh several times’

b.\* Sono venuta ancora a Edimburgo diverse volte.  
am come ANCORA to Edinburgh several times

Similarly, the constraint imposed by *ancora* disambiguates example (4.136).

(4.136) a. Daniela è già montata sul palco.  
Daniela is GIA gone up on-the stage  
‘Daniela is already on the stage’  
‘Daniela has already been on the stage’

b. Daniela è montata ancora sul palco.  
Daniela is gone up ANCORA on-the stage  
‘Daniela has already been on stage’(i.e.She is not a *débutante*)

As mentioned above, the distribution of the reading ‘already’ is carved out from the coverage of ‘again’. A possible explanation may come from the observation that both readings are cases of (possible) repetition in the past. The difference between the two may be a change in perspective. The ‘again’ reading is to be interpreted as saying that the event under consideration is a repetition of an analogous example that hold in the past. The ‘other time/s in the past’ reading is to be interpreted as saying that there was an event in the past that happens to be analogous to the current event.

To sum up, the identification of the effect of continuance introduced by *ancora* allowed us the possibility of accounting for the relevance of the type of eventuality in the variation of uses, and in the range of uses available. More precisely, the relevance of the degree of definition of the right boundary of eventualities has been explained.

#### 4.6.6 Constraints on positioning

The positioning of *ancora* in the sentence also gives an indication of the type of continuance in question. In this section, I review the different uses and I relate them to the positionings that make them available. The reading ‘still’ needs *ancora* to occur after the verbal form whenever this is simple, see (4.137), or between the auxiliary and the past participle with composite forms, see (4.138), in order to be available.

- (4.137) a. Ti amo ancora.  
           you-ACC love ANCORA  
           ‘I still love you’
- b. Risiedeva ancora in Veneto.  
           resided ANCORA in Veneto  
           ‘S/he was still settled in Veneto,
- (4.138) Sono ancora situate in Veneto.  
           are ANCORA located in Veneto  
           ‘They are still located in Veneto’

The hypothesis we formulate is that the preferred positioning close to the element that bears the aspectual information is due to the fact that in the ‘still’ reading *ancora* affects the eventuality from inside, i.e. it asserts the extension of its duration. In the ‘still’ reading, the participants are not modified, as predicted by the strict identity between  $e_i$  and  $e_j$ . This semantic relation would translate in syntactic terms by a connection between *ancora* and the aspect of INFL. This ‘internal’ modification should be contrasted with an ‘external’ one, like in the case of the ‘again’ reading, where the

whole eventuality is reduplicated. While the former modification involves only a relation with the aspect of the predicate, the latter involves a relation with its complements as well.

The requirement of proximity with the element carrying aspectual information is confirmed by the contrast between (4.138) and (4.139), where the former has temporal and spatial readings, and the latter has only the spatial one, or the contrast in (4.140), where no spatial reading is available and it is shown that *ancora* must occur before the predicative adjective for the sentence to be grammatical.

(4.139) Sono situate ancora in Veneto.  
           are located ANCORA in Veneto  
           ‘They are located still in Veneto’

(4.140) a. Sei ancora felice.  
           are ANCORA happy  
           ‘You are still happy’

      b.\* Sei felice ancora.  
           are happy ANCORA

However, interaction does not mean that *ancora* by itself can produce aspectual type coercion, of the type described by Moens and Steedman [MS88], see the marginality of example (4.141). A progressive auxiliary is required, see *stai* instead of *sei* in (4.142). Finally, the existence of a reading ‘again’ for (4.137a) is due to the Italian present indicative having habitual and progressive readings.

(4.141) \* Sei ancora arrivato.  
           are ANCORA arrived

(4.142) Stai ancora arrivando  
           are ANCORA arriving  
           ‘You are still in the process of arriving’

In example ((4.143), *ancora* has the ‘still’ reading while occurring after the whole verbal form.

- (4.143) a. Luisa ha scritto ancora romanzi.  
 Louise has written ANCORA novels  
 'Louise still wrote novels'
- b. Luisa ha letto ancora romanzi.  
 Louise has read ANCORA novels  
 'Louise still read novels'

The reason for this 'exceptional combination' of position and use is to be found in the fact that the poorly defined termination point of the complex eventuality is not due to the semantics of the verb, nor of the verbal form, but to the unbounded iteration of discrete entities brought about by the bare plural *romanzi* in direct object position. The result of the application of *ancora* is a continuation of the same complex eventuality. Therefore, it is difficult to check the constraint of immediate precedence on intervals  $t_i$  and  $t_j$ , because they contain sequences of discrete entities.

In general, the readings 'again' and 'one more' are associated with the positioning of *ancora* in post verbal position. After a simple verbal form, the choice between 'still' and 'again' depends on the aspect of the verb, whilst there is a strong preference for 'again' after a complex one. This use is interpreted as a case of 'external' modification of the event, whose duration is unchanged, but whose occurrence is repeated, see (4.144).

- (4.144) a. Ho visto ancora il tuo quadro.  
 has seen ANCORA the your painting  
 'I have seen your painting again'
- b. Mangia ancora un panino.  
 eats ANCORA a roll  
 'S/he eats one more roll'

The aspectual information expressed by the verbal morphology does not seem to be accessed, whereas the information expressed in the semantics of the verb remains relevant, contrast (4.142) with (4.145), that has only eventive reading. This analysis is compatible with the assumption of two syntactic aspectual projections. In this case, *ancora* would adjoin to the lower aspect projection, that carries information shared with the  $V^o$ .

- (4.145) Sta arrivando ancora.  
 is arriving ANCORA  
 'S/he is about to arrive again'



Generally, the presence of a complement induces the reading 'one more'. Complements offer further syntactic sites of attachment for *ancora*. Our hypothesis is that *ancora* adjoins to the argument whose denotation is a set of entities in case the predicate holds independently for each of them. In (4.146), *ancora* precedes the subject, the direct object and the indirect object in turn.

- (4.146) a. Ancora un cantante è salito sul palco.  
 ANCORA a singer is gone up on-the stage  
 'One more singer went on stage'
- b. Ha bevuto ancora una birra.  
 has drunk ANCORA a beer  
 'S/he drank one more beer'
- c. Parlo con ancora un cliente poi vengo.  
 speak with ANCORA a client then come  
 'I talk to another client, then I come'

Note that if example (4.146c) says unambiguously that I speak to two different clients, the double possible attachment of *ancora* in (4.147), high to the verb or low to the NP, is paralleled by semantic ambiguity. Indeed, I may speak twice to the same client in (4.147).

- (4.147) Parlo ancora con un cliente poi vengo.  
 speak ANCORA with a client then come  
 'I talk to another client and then I come'  
 'I talk to a client again and then I come'

Whenever *ancora* occurs in a negative context, and there is interaction between the operator and negation, its use corresponds to 'yet'. In this case, there is no reading variation connected with the various eventualities instantiating A, see (4.148).

- (4.148) a. Non sono ancora andata.  
 not am ANCORA gone  
 'I have not gone yet'
- b. Daniele non è ancora calvo.  
 Daniel not is ANCORA bald  
 'Daniel is not bald yet'

- c. Daniele non suona ancora il preludio.  
Daniel not plays ANCORA the prelude  
'Daniel does not play the prelude yet'
- d. Daniele non mangia ancora un panino.  
Daniel not eats ANCORA a roll  
'Daniel does not eat a roll yet'

This uniformity is explained by treating the eventuality as mapped beyond B, and the effect of continuance is expressed on the interval terminating in B. The position of *ancora* is after the auxiliary, as shown by the contrast between (4.148a) and (4.149).

- (4.149) \* Non sono andata ancora.  
not am gone ANCORA  
'I have not gone yet'

Finally, there is a position from which *ancora* seems to be banned, namely right before the verbal form, see (4.150). This position becomes available in co-occurrence of a negation on the verb, see (4.110) repeated here as (4.151).

- (4.150) a.\*Daniele ancora è bello.  
Daniel ANCORA is handsome
- b.\*Luisa ancora risiede a Verona.  
Louise ANCORA resides in Verona
- c.\*Daniele ancora è arrivato.  
Daniel ANCORA is arrived
- d.\*Daniele ancora ha mangiato un panino.  
Daniel ANCORA has eaten a roll
- (4.151) a. Daniele ancora non è stanco.  
Daniel ANCORA not is tired  
'Daniel still isn't tired'
- b. Daniele ancora non è arrivato.  
Daniel ANCORA not is arrived  
'Daniel still has not arrived'

The positioning found in (4.151) is hypothesised to aim at making explicit the scope relation holding between *ancora* and negation, i.e. *ancora* outscopes the negation, in a use

that can be paralleled to the *still not* sequence. This is the case of negated A introduced in section 4.6.2. The two readings ‘still not’ and ‘not yet’ are logically equivalent, but they carry different information too, usually expressed in terms of different expectations. Since *ancora* applies to a negated proposition, the effect of continuance is expressed by the continuation of the situation as before. There is no distinction between the current interval and a previous interval where the proposition was also negated. Hence, *ancora* in preverbal position is predicted to have always the use ‘still’, independently from the type of eventuality, and this is the case.

As pointed out by Jack Hoeksema during the viva, the examples in (4.151) and (4.150) suggest perhaps that *ancora+non* may form a constituent; hence the special preverbal order. Just invoking scope may explain (4.151), but does not rule out (4.150). Yet, evidence in favour of a treatment as a constituent is weaker than, say, for German *noch nicht*. Next, this does not rule out (4.149) either. Although, at this stage, it is not clear why the ‘yet’ use requires *ancora* to occur after the auxiliary, the contrast in (4.152) seems to support a treatment in terms of scoping effects. Whereas (4.152a) conveys the information that the eating of a roll has not taken place yet, (4.152b) conveys the information that the eating of a roll has not been repeated. The possibility of repeating the event is blocked by denying the reinstantiation of a participant, compare also (4.149) with (4.153).

(4.152) a. Daniele non ha ancora mangiato un panino.  
 Daniel not has ANCORA eaten a roll  
 ‘Daniel has not eaten a roll yet’

b. Daniele non ha mangiato ancora un panino.  
 Daniel not has eaten ANCORA a roll  
 ‘It is not true that Daniel ate one more roll’

(4.153) Non sono andata ancora a Parigi.  
 not am gone ANCORA to Paris  
 ‘It is not true that I went again to Paris’

#### 4.6.7 Summary

This section presented a unified analysis of *ancora* as a binary operator. Its basic meaning was identified and formalised as a mapping of the first argument by means of the information provided by the second one, and an effect of continuance. The mapping allows the possibility of drawing a distinction between the distribution of *ancora* in

positive and negative contexts. The semantic load was spread between *ancora* and its arguments, to obtain an analysis which captures how the wide variety of semantics of *ancora*-phrases stems from the variety of the semantics of its arguments. It was shown that the continuance effect produced by *ancora* gets realised in different ways according to the entities to which it applies. The extension of the analysis of temporal *ancora* to spatial and scalar uses is straightforward because of the formalisation in terms of partial order which underlies the whole approach.

*Ancora* is not a connective. Its positioning is not limited to the position between two clauses, between a clause and one expression of time or at the beginning of the sentence. The range of positions in which it can occur, however, corresponds to particular interpretations. I propose an analysis which ties together the interpretation of the *ancora*-phrases with their positioning by referring to the type of information that needs to be accessed in each case.

## 4.7 Concluding remarks

This chapter explored the hypothesis that polarity sensitivity is to be conceived primarily as an item's ability to interact directly with negation. The semantics of the item has proven to be essential for assessment and prediction of the manifestations of its sensitivity.

An important result with respect to the group of items expressing the relation paraphrased as A STOPS AT B is that broad empirical cross-linguistic coverage has been obtained while avoiding both a multiple definition of the lexical content of each connective and a multiple assumption for the semantic content of negation.

Argument A is required to be instantiated by an eventuality. The operators use a point in B, and time expressions may be suitable instantiators of this argument. This allows us the possibility of generalising over occurrences of operators as connectives and as prepositions. Different characterisations of the interval denoted by B result in cross-linguistic variations. Whether beginning and end must be coincidental, e.g. the English *until*, can be coincidental, e.g. the Italian *finché*, or cannot be coincidental, e.g. the Hungarian *amíg*, result primarily in postpositioning, possible and required concurrence respectively. Different instantiations of argument B are responsible for consistent within-language variations, namely the reading variations 'for as long as' and 'until' of the Italian, Hindi and Hungarian operators.

In particular, the presence of overt negation in the main or subordinate clauses can cause variations in well-formedness or temporal structure and break down/create cross-

linguistic equivalences among members of the group. I put forward an explanation of why negation can have this effect which hinges on localised differences in the basic definition of the adverbs and the mechanism whereby negation affects the functors rather than the functions, which characterises polarity sensitive temporal expressions. Negation is an order reverser operator, and the effect of its application to sensitive time adverbial is a modification of the ordering. The different characterisations of the intervals by the various connectives, and differences in instantiations show also in the effects of the interaction with negation. Besides, the analysis proposed allows us the possibility of explaining a presumed case of expletive negation in the second argument.

On the one hand, the extension to *finché* and *amíg* further supports the analysis by showing its applicability across languages. On the other hand, it confirms the accidental negative polarity labelling of the English item and the stipulative status of licensing requirements. In fact, the analysis shows that cases which are traditionally not at all covered by the label ‘polarity sensitive’ are expressions semantically closely enough related to fall into the same class. The phenomenon appears to be the same, but the Italian data, for instance, do not fit in the licensing/non-licensing partition defined on the English data.

I have presented semantic motivation for a unified analysis of *ancora*, whose variations in use were accounted for via composition of the meanings of the constituents of the compounds. Once more, it emerges that polarity licensing is a stipulation of little use for explaining this case of polarity sensitivity. This confirms the hypothesis that a programmatic approach to polarity sensitivity does not work. One has to be sensitive to various factors. In the case of temporal adverbials, aspectual factors are of primary importance, but others such as whether the participants to an eventuality are introduced by definite or indefinite NPs also have an impact. In the next chapter, the discussion of the determiner *any* will bring in its own set of pertinent factors, of indefiniteness and quantification.

## Chapter 5

# Negation, domain structure and evaluation procedures: a sensitive determiner

### 5.1 Introduction

In this chapter, I continue the examination of various types of polarity sensitive items with a discussion of a sensitive determiner: the English word *any*. I illustrate how several distributional facts can be derived from the impossibility of individuating the members in the domain of *any*, and make it clear what the ties with polarity sensitivity and scalar reversal are. Several open issues arising in these connections, such as the treatment of indefinites and the notions of specificity and generic statement, prevent me from putting forth a comprehensive account. However, the discussion singles out clear directions for research.

Section 5.2 opens with general considerations on quantification in natural language. I introduce some of the issues of direct relevance to *any*. Then, I present some existing proposals for characterising *any*. The main features of these are the unique versus double characterisation of *any* and its representation as a universal versus existential quantifier, together with its relative scoping with respect to negation. However, an analysis of these theories shows that an important criterion, not clearly identified, is the opposition between specific and nonspecific readings of indefinites.

Section 5.3 contains new data which are shown to be problematic for any account of polarity sensitivity which defines licensing conditions in terms of locality constraints. The cases presented are PS *any*-phrases in object position of adversative predicates,

clausemate of universal quantifiers, and modifiers of inherently negative nouns.

Then, in section 5.4, I propose linguistic generalisations that are revealed by the data. There are three. First, the presence of a mass or abstract noun as the head restrictor of *any* correlates with a preference for a polarity sensitive reading of the phrase. Second, the presence of a count noun correlates with a preference for a free-choice reading. And finally, the impact of the variation count/mass in the domain of quantification has been discussed in the literature with respect to other phenomena, for instance with respect to weak islands. Szabolcsi and Zwarts [SZ93] argue for the relevance of the semantics of the extracted elements, contra syntactic approaches, and focus on the structure of the domain of quantification of such elements. Their proposal is expressed in terms of scope relations, but it is made clear that the phenomenon can be interpreted as interpretative dependencies instead of syntactic movement. In a nutshell, they argue that the operations required for computing answers depend on the type of *wh*-element, but the possibility of performing them depends on the type of denotation domain in which they have to be executed as defined by the scope relation. I examine how the style of analysis proposed by Szabolcsi and Zwarts can be extended to *any*-phrases for the examples of domain variation under consideration. Because of the nature of NP of *any*-phrases, I assume that the context may have a bearing on the individuation of the members of the denotation domain of *any*. D-linking effects support this assumption.

Next, section 5.5 moves on to the impact of variations in the context of occurrence of *any*. I examine variations in acceptability for sentences containing PS *any*-phrases nested in *a N* indefinites subject of main clauses. Here, *any*-phrases are licensed in positions whose characterisation and structural scope relations with respect to a licenser are debatable. Whether their position is c-commanded by negation is an open issue. As in the data discussed in the previous section, in this case too licensing appears to operate selectively. These cases highlight the relevance of factors such as specificity and type of predicate. This leads to the issue of the characterisation of determiners. The question of *any* taking narrow scope with respect to a downward monotonic operator may be related to the strong/weak classification of determiners. However, it appears that this classification is not without problems on its own, and *any* does not fit in easily.

The different threads followed in the previous two sections can be brought together by a change in perspective in the spirit of the proposal made by Ladusaw [Lad94]. Section 5.6 introduces the distinction betweenthetic and categorical statements, and presents its relevance for the issue of referentiality and specificity. In section 5.7, I sum up the argument: *Any* can be used whenever it is possible to build a representation which does

not require the individuation of members in the domain. The analysis developed is a case for a single lexical item for *any* which crucially is underspecified in certain respects.

## 5.2 Some characterisations of *any*

### 5.2.1 General considerations

Quantifiers as variable binding operators were introduced for the first time by Gottlob Frege, who defined the language of first order predicate calculus. Linguists have adopted the same symbols as logicians, and use them in representations of the meaning of sentences. However, quantifiers in logic don't correspond to those in natural language in a straightforward way. When the correspondence breaks down, and why, is still an open issue. For instance, sentences with universal pronouns are made to correspond to formulas containing a universal quantifier. In 'every S is P', the reference of the subject is coincident with the denotation of the subject term, as in the logic formula  $\forall x (S(x) \rightarrow P(x))$ . Sentences with indefinites are made to correspond to logical formulas containing an existential quantifier. In 'some S is P', the reference of the subject is not coincident with the denotation of the subject term. The idea that *some* S conveys an indefinite reference to some S does not find clear expression in the formula  $\exists x (S(x) \wedge P(x))$ , and neither does the distinction between this and the reading *a particular* S. This idea of reference to a subset of Ss can be recast in generalised quantifier terms by saying that *some* is interpreted as a relation of intersection between the set denoted by the noun and the set denoted by the verb phrase. *Every* is interpreted as a relation of inclusion. Again, note that there is no constraint on the intersection being a proper subset of the set denoted by the noun. Usually, this case is ruled out by invoking the Gricean maxim of quantity. The property of *Conservativity* describes the major role played by the first argument in the evaluation of these determiners.<sup>1</sup> Since only the cardinality of the set matters, there is no way of identifying the members of the intersection.

<sup>1</sup>For the sake of clarity, we summarize here the characterising properties of generalized quantifiers. The property of *Conservativity* says that the first argument sets the stage. The portion of the second that does not intersect the first, as well as everything outside the first one, does not matter. It is defined as follows, where the set A is the extension of the common noun in subject position, and the set B is the extension of the verb phrase. 'E' is the universe of discourse.

#### Definition

A determiner D satisfies the condition of conservativity if and only if it holds that for all  $A, B \subseteq E$ , then  $D_E AB \leftrightarrow D_E A (A \cap B)$

This property has been discussed in Barwise and Cooper [BC81] under the name of *live-on* property.

A second condition, called *Extension*, characterizes the independence from the context. The interpretation of the determiner does not vary with a modification of the extension of the context. Its definition is given below in (5.1), where we discuss a way to take into consideration the impact of context when defining the semantics of a determiner and we look at *many*, an exception to this constraint.



There are several issues related to quantification that are going to be relevant in the discussion which follows. In this subsection we introduce a few, without any pretention of completeness. The thread is the impact of referential properties in all of them.

The notion of genericity is still a matter of ongoing research.<sup>2</sup> Several phenomena are commonly associated with genericity, e.g. references to a kind and reports of general properties. Among others, it has been proposed to formalise the notion of genericity by means of the theories of probability, cf. Vendler [Ven67, ch.3], or of measure, at least in some of its manifestations. In this approach, the key notions are that of qualified sampling and of negligible exceptions. One talks of qualified sampling when non-exhaustive testing is executed at random. A generic statement is compatible with the existence of negligible exceptions, where negligible can be defined via the notion of measure.<sup>3</sup> In general, the solution adopted in linguistics consists of using a generic operator. The semantics of this operator is a matter of open debate. For the purposes of our discussion, the interest of the phenomenon lies primarily in the characterisation of the sampling operation, broadly speaking in defining the reference of the entity about which the generic statement is made.

It has often been suggested that the difference in meaning between *each* and *all* involves individual versus group reference. Verkuyl [Ver93] has proposed distinguishing between *all* and *each* in terms of the elements via which the law of distributivity is entered, i.e. the bottom elements or the lump sum information. I think I do not misinterpret his proposal by saying that Verkuyl suggests that processing instructions

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A third condition, called *Quantity*, following here van Benthem's [vB86] terminology, allows one to draw a distinction between determiners which are expressions of quantity, e.g. *some*, *no*, *three*, and the others, e.g. *my*, *Chloe's*. It defines the topic-neutrality of the determiner. Determiners that form logical quantifiers satisfy this condition.

**Definition**

A determiner  $D$  satisfies the condition of quantity if and only if  $D_{EAB}$  depends only on the numbers of individuals in  $A$ ,  $A \cap B$ ,  $B$  and  $E$ .

<sup>2</sup>See Krifka et al. [KPC<sup>+</sup>95] for an up to date assessment of the research on the issue.

<sup>3</sup>This notion, which is a number, expresses the frequency of occurrence of the properties we are interested in, that is it expresses the statistical recurrence of certain properties. A measure is assigned to all the entities determined in the sampling. An element or set is negligible when its union with any other measurable element does not modify the measure of the element itself. Thus, a set is negligible if its measure is zero.

For instance, let us consider a two dimension space. The areas of all the squares, circles, etc., that can be drawn in that space can be viewed as subsets of the space. In this case, the entities with one dimension, i.e. lines and points, are the negligible subsets. In fact, the area of a square is not modified by adding a point or a segment to the square. For any subset considered, the probability is not altered when adding or subtracting a negligible set. When the measure is the surface, the measure of the negligible subset is zero, and the case is nice and clean. Now, suppose one counts instances that verify a property, i.e. the measure is the counting. This is a typical case of generic statement in natural language. Then, if there is an exception, the negligible subset is not empty. In this case, the measure is not null, but small. The difficulty is to define what can be considered small.

should be considered as possible components of the meaning of expressions.

To examine how one might include the impact of context on the meaning of a quantifier, one may look at Westerståhl's work ([Wes85b], [Wes85a]) on *many* as a possible solution. The property of extension, defined in (5.1), tells us that when an NP is evaluated, all the entities outside the denotation of the common noun and the VP can be disregarded. This means that generalised quantifiers are insensitive to contextual information like the size of the domain.

(5.1) **Definition**

If  $A, B \subseteq E \subseteq E'$  then  $D_E AB \leftrightarrow D_{E'} AB$

In natural language, however, there are quantifiers that show a certain degree of context dependence. Quantifiers which measure relative cardinalities, e.g. *many*, show dependence on the size of the domain. What counts as many depends on contextual parameters. Westerståhl has studied which properties of determiners are preserved under addition of which parameters. The determiner *many* in (5.2) is ambiguous. It can be characterised as *many*<sup>1</sup> in (5.3) with respect to the interpretation paraphrased in (5.4).

(5.2) Many Scandinavians have won the Nobel prize in literature.

(5.3)  $many_E^1 AB = many^1 A(A \cap B)$  where  $|(A \cap B)| < c \cdot |A|$

(5.4) Many winners of the Nobel prize in literature are Scandinavians.

Here  $c$  is the contextually fixed parameter for  $A$ 's members. This interpretation satisfies Conservativity, Extension and Quantity. The parameter must be given as input to the interpretation. When *many* is used to compare the set of  $B$ 's members, as in the interpretation paraphrased in (5.5), the definition would be as *many*<sup>2</sup> in (5.6). This interpretation satisfies Extension and Quantity but not Conservativity, because the cardinality of the  $B$  set is relevant to the interpretation.

(5.5) Many Scandinavians are Nobel prize winners in literature.

(5.6)  $many_E^2 AB = many^2 A(A \cap B)$  where  $|(A \cap B)| < c \cdot |B|$

Milsark [Mil74, p.199ff] has characterised *many* as having a weak and a strong reading, where only the latter involves a quantificational operator.<sup>4</sup> On the strong reading, which corresponds to Westerståhl's *many*<sup>1</sup>, it is true that an indefinite quantity of

<sup>4</sup>We come back to the weak and strong characterisation in subsection 5.5.3.

Scandinavians won the prize. On the weak one, which corresponds to Westerståhl's *many*<sup>2</sup>, it is said that of a large quantity, it is true that they won a prize. Thus, the former reading tells us what proportion of the class of people the proposition is valid for. *Won the Nobel prize* is predicated of any subset of *Scandinavians* which meets the proportional criterion laid down by the determiner. In the latter reading, the determiner expresses the cardinality of the set of Scandinavians who won the prize. He notes that the two readings are generally distinguished by prosodic pattern.

Subsequently, Enç [Enç91, p.17] referred to the strong reading as specific, and to the weak one as nonspecific. In her account, specificity boils down to presupposition of existence, since an NP is specific if the entity to which it refers is included in a set of previously established discourse referents. The difference in specificity is correlated with a difference in the domain of discourse in which the sentence is appropriate.

Thus, the two readings impose different constraints on the context of occurrence in order to arise. It is a matter of debate whether the restrictions should be expressed primarily on the determiner, as done by Wersterståhl, or on the context, as claimed by Enç. One should note that there isn't a clear opposition. In both cases, the characterisation has two facets, namely the sensitivity to an external factor, and the independence of the factor. If certain operations or properties are required to be available for a certain reading to arise, scope taking relations may be determined by the availability of the relevant operations. In both cases it follows that the two *many* readings are used to express different types of statement. As discussed below, there is a connection also between referential properties and types of statement.

### 5.2.2 Proposals from the literature

In this subsection I shall briefly discuss some proposals on the characterisation of *any*, primarily from the late seventies and early eighties, the period when a major effort in analysing the phenomenon was carried out. The existence of two *anys* is a widespread opinion. Restrictions are imposed on their distribution, but they are unevenly identified and studied. It is noted that the two PS and FC readings cannot be easily defined in terms of complementarity [Car81].

The general vision is that negative polarity *any* must be inside the scope of a certain operator. There is a tension between the claim that *any* is always in the scope of a negation, and the attempt to resolve the question of its representation in terms of scope relations. Most of the authors adhere to a representation of meaning inspired by First Order Logic. This is particularly damaging because everything is reduced to the three

symbols  $\forall$ ,  $\exists$  and  $\neg$ . Any variation in meaning (distribution) must be expressed in terms of different logic translations and of scope relations between different elements. Ladusaw [Lad79], Carlson [Car80] and Linebarger ([Lin80a], [Lin80b]), among others, adopt a characterisation in terms of the existential quantifier. Vendler [Ven67], Lasnik [Las72], and Kroch [Kro74], among others, consider it as universal quantifier, usually with the particular quality of always having widest scope. Much of the discussion revolves around the issue of how to scope *any* in order to get the attested readings. The difference between *any* and the other items represented by the same logical symbols is largely ignored. Ladusaw identifies in monotonicity a crucial factor for the phenomenon of negative polarity. He characterises NPIs as scalar endpoints. However, this characterisation is not exploited in the definition of *any*. It is not clear how an existential quantifier can be reconciled with the role of scalar endpoint.

Ladusaw [Lad79] and Carlson [Car80] believe that the scope of *any* with respect to negation is constant. They suggest marking this in the lexical entry in some way. Ladusaw's [Lad79, ch.4] initial position is that sentences (5.7a) and (5.7b) are both ambiguous. Sentences (5.7c) and (5.7d) are not ambiguous and not synonymous.

- (5.7) a. John didn't talk to three students.  
 b. John didn't talk to every student.  
 c. John didn't talk to some students.  
 d. John didn't talk to any students.

Their paraphrases are presented in (5.8) — (5.11) respectively.

- (5.8) a. The number of students that John talked to is less than three.  
 b. There were three students whom John didn't talk to.
- (5.9) a. It is not the case that John talked to every student.  
 b. Every student is such that John didn't talk to him.
- (5.10) There are some students whom John didn't talk to.
- (5.11) It is not the case that there are some students whom John talked to.

The normal rules of free outscoping needed in order to produce the readings of (5.7a) and (5.7b) would produce ambiguity also for (5.7c) and (5.7d), because they

refer to syntactic categories, and not to items. Having assumed that *some* and *any* are existentials, Ladusaw separates them by proposing conditions that state wide scope preference for *some* and narrow scope requirement for *any*. He argues that *any* shares narrow scope preference with *every* and *a*, but it is the only one to require triggering (licensing). Considering the meaning of *any* in sentence (5.12), Ladusaw says that the two translations presented in (5.13) are logically equivalent, but while translation (5.13a) allows a unified treatment of PS and FC *any* as universal quantifier, (5.13b) requires postulating two distinct items.<sup>5</sup>

(5.12) John won't dance with anyone.

(5.13) a. Everyone is such that John won't dance with him.

b. It is not the case that there is someone with whom John will dance.

Ladusaw's arguments for choosing in favour of (5.13b) are said to come from a compositional formulation of the meaning. The first type of argument is that 'in certain cases, *any* cannot have wide scope over some trigger operator because in general nothing in that position in that construction can have wide scope' [Lad79, p.95]. For instance, postcopular NPs in *there*-sentences do not have a wide scope over a negation on the copula. The second type of argument is that it is possible to show 'that the meaning of PS-*any* must be an existential in constructions in which the seemingly omnipresent negation that confounds the two positions plays no part in formulating part of the meaning' [Lad79, p.95-96]. For instance, *any* cannot outscope the negation in the adverb *rarely* and yet be within the scope of this quantifier over events. An important point not made is that (5.12) says that there will be no dancing event where John is one of the two participants, consistently with (5.13b). One cannot list all non-dancing events, and from this set of distinct non-dancing events conclude that John will not dance with anyone, contra Bolinger [Bol60, p.388] *inter alia*. (5.13a) does not allow us to exclude the existence of negative events where John is a fixed participant, and his partner ranges over all the other people present there. The presence of *any* blocks the downward shift from the collection of potential dancers to its individual members.

Carlson [Car80] explores the idea of making *any* a universal quantifier with the peculiarity of having to bind a variable inside the scope of a negation, expressed in principle (5.14 U). He contrasts it with principle (5.14 E), which he supports.

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<sup>5</sup>One should note that the issue of logical scope is relevant only for the relations of substitution.

(5.14) U: *Any* is a universal quantifier whose scope must include negation, yet bind a variable that is itself within the scope of negation.

E: *Any* is an existential quantifier which must appear within the scope of negation. [Car80, p.800]

His arguments are formulated mainly in terms of scoping relations, but turn out to be all related to the issues of identifying and referring to the entities in the domain of *any*. For instance, Carlson contrasts the ambiguity between *de dicto* and *de re* readings for (5.15a), with the absence of ambiguity for (5.15b), an observation attributed to Abbott.

- (5.15) a. Elsie decided not to marry *a man who has lots of money*.  
 b. Elsie decided not to marry *a man who has any money*.

The ambiguity is represented in terms of scope relations with respect to the verb *decide*, and hence to the negation. He argues that the principles in (5.14) differ inasmuch as the U principle predicts also a spurious reading, i.e. a *de re* reading where *any money* outscopes everything. However, if one considers the terms *de dicto* and *de re* in their literal meanings, it appears that the difference presented can be expressed in terms of referential properties. *Any* is felicitous only inside an indefinite NP which is not specific, i.e. which does not require the existence of the referred entity. This spares us the need of postulating the exceptional capacity of *any* of outscoping the head of the relative clause within which it occurs, as it would be required by the spurious reading.

The issue of the correct scoping of *any* is crucial in Linebarger's ([Lin80a], [Lin80b]) approach to licensing, as discussed in chapter 2 section 2.3. It is interesting to see how she exploits the characterisation of PS *any* as existential in order to deal with those cases of *any* in subject position that lead Ladusaw [Lad79] to introduce a linear order restriction in his treatment, discussed in chapter 3 section 3.2. She imposes restrictions on the level of representation LF, and introduces a mechanism for reordering the scopal elements in certain contexts. Relative scope in LF is constrained, but not entirely, by surface order. Restructuring is a sort of scrambling on the LF representation by which a representation with the intended scoping relations can be obtained disregarding the scoping possibilities derivable from the SS representation, i.e. it is a special way of mapping a surface structure into an LF. The restriction is that no readjustment of the scope can give a narrow scope with respect to negation to an existential quantifier which precedes *not* in surface structure. This constraint is taken from Kroch [Kro74].<sup>6</sup> For

<sup>6</sup>Actually, Linebarger's [Lin80a, ch.3] position is looser than Kroch's, because she claims that surface order of logical elements does not determine the interpreted order, except for the above mentioned case.

instance, a universal quantifier such as *everybody* in subject position can be interpreted within and outside the scope of the negation on the verb, see (5.16) and its readings in (5.17). An existential quantifier, such as *many* or *any* in Kroch's account, cannot be readjusted within the scope of negation, see sentences (5.18) and (5.20) and their respective readings in (5.19) and (5.21).<sup>7</sup>

(5.16) Everybody didn't answer question 5.

(5.17) a. NOT [ $\forall$  x: x is a person] (x answered question 5)

b. [ $\forall$  x: x is a person] NOT (x answered question 5)

(5.18) Many people didn't answer question 5.

(5.19) a.\*NOT [MANY x: x is a person] (x answered question 5)

b. [MANY x: x is a person] NOT (x answered question 5)

(5.20) \*Anybody didn't arrive early.

(5.21) a.\*[ $\exists$  x: x is a person] NOT (x arrived early)

b.\*NOT [ $\exists$  x: x is a person] (x arrived early)

The data in (5.18) and (5.20) contrast with the sentence in (5.22), where the indefinite NP *a N* has the two readings in (5.23).

(5.22) A doctor wasn't available.

(5.23) a. [ $\exists$  x: x is a doctor] NOT (x was available)

b. NOT [ $\exists$  x: x is a doctor] (x was available)

Thus, it appears that not all existential quantifiers behave in the same way. Linebarger gets around the stumbling block by invoking a difference between indefinites and 'indisputable quantifiers like *many* and *any*'. In particular, indefinite NPs can undergo readjustment in their nonspecific reading. This difference in behaviour affects the acceptability of NPIs in relative clauses headed by such NPs. In these cases NPIs are licensed. In Linebarger's account, this case is also treated by representing a nonspecific indefinite as a special existential quantifier with narrow scope with respect to negation. This case is discussed in subsection 5.5.1.

<sup>7</sup>In particular, (5.21b) cannot be produced, and (5.21a) is ruled out by the second tier of Linebarger's proposal.

Summing up, the general motivation for the choice of the representing PS *any* by an existential quantifier comes from the well-formedness of formulae. Scope restrictions are treated in different ways. Either unwanted scopings are eliminated by imposing restrictions on the item, cf. Ladusaw's and Carlson's PS *any* as narrow scope quantifier, and allowing general free scoping; or, cf. Linebarger's solution, special rescoping rules are defined, whose activation blocks the application of more general ones. Then, she uses differences in encoding in the lexicon to get around the special rules in certain cases.

The general vision is that negative polarity items must be inside the scope of a certain operator. In the case of FC *any*, the marginality of a sentence is less easily interpreted as a sign of restricted distribution. Linebarger [Lin80a], for instance, talks about modals as licensers for FC *any*, but there is no systematic attempt to provide a theory of FC licensing. Ladusaw [Lad79] notes that the homonymity between the two items cannot be accidental, but does not elaborate. He adds that assigning FC *any* the same translation as *every* is an unsatisfactory solution, because it misses out the free-choiceness which characterizes the item. Ladusaw says that the use of a sentence containing FC *any* commits the user to believe the truth of her statement with respect to all the possible instantiations of the variable in question, without being necessarily equivalent to a universal statement. By referring to the influence of modals, he says that what seems to be crucial for the acceptability of a sentence containing FC *any* is 'whether the sentence receives a kind of non-event or generic reading' [Lad79, p.105]. He concludes that FC *any* does not have inherent scope with respect to negation.

Free-choiceness is characterised as unselective binding of variables, which is also used for nonspecificity of indefinite determiners. However, this unselectivity is present also in PS cases, as in (5.24).

(5.24) Every student with any book from the library should contact the main desk.

Here any book is good for motivating the contact with the desk. No pair book-contact reading is required, i.e. there isn't necessarily multiplication of contacting events. The book is randomly selected, but it is representative for motivating a contact.

Ladusaw is the only one who remarks that a discussion on the single or double nature of *any* is independent from attributing it universal nature. It is noted, however, that the distribution of FC and PS *any* does not match exactly the universal or existential quantifiers interpretations, see for instance Carlson [Car81].

In his discussion of the nature of FC *any*, Carlson [Car81] assumes that a semantic characterization of the distribution of *any* is necessary, dismissing purely phonological or syntactic accounts. However, he leaves open the question of whether a pragmatic



contribution is dispensable. FC *any* is acknowledged to have a distribution that overlaps with PS *any*. Thus, the former cannot be identified simply as the restricted complement of the latter. He shows that both characterisations of FC *any* as universal and existential are problematic. Yet, in the end and contra his claim in [Car80], he opts in favour of the former and a split *any*.

Carlson proposes independent positive tests, inspired by Horn's [Hor72] and Milsark's [Mil74] works, for the presence of FC *any*. These tests have subsequently had a long life, and we find them for instance in Laka [LM90]. They are more or less the same as those he uses for PS *any*, e.g. cases of modifiability by *nearly* and *almost*, *there*-constructions or the combination of *any* with numerals. It is very important to note that the only cases of *any* he takes into consideration are those where it is followed by an unmodified singular countable noun. Otherwise, FC *any* is considered to have unlimited distribution, but no reason is given in support of this assumption. As it appears from the rest of this chapter, such a restriction affects the validity of the results for at least two reasons. First, as shown in section 5.4, there are interesting interpretive phenomena in cooccurrence with mass nouns. Furthermore, mass and countable nouns share interesting grammaticality contrasts, see (5.25) and (5.26).

(5.25) a. Daniel eats any apple.

b.\*Daniel is eating any apple.

(5.26) a. Daniel drinks any beer.

b.\*Daniel is drinking any beer.

Second, FC *any* is not the only case where the presence of a modifier has an impact on the availability of a certain reading. Thus, something should be said about what modifiers and plurality contribute that makes the FC reading (non-)available or steady, and the explication should be compatible with other manifestations of the crucial role of modifiers or plurality.

Two points of Carlson's argumentation deserve particular attention. In order to refine the characterisation of suitable contexts, Carlson suggests, but does not pursue, the following line of research.

A less precise, but intuitively more satisfying account of the sanctioning contexts [for FC *any*] is as follows: if a sentence entails the material existence of the referent of an NP, *any* is not allowed in that NP position. [Car81, p.11]

To a certain extent, this direction had already been adopted by Vendler [Ven67] and Davison [Dav80], and will be explored by Kempson [Kem85] for the 'whole' *any*. Davison supports a characterisation of *any* as an existential quantifier, more precisely she characterises it as indefinite and non-specific. She argues that the generic reading of FC *any* is conversationally implied. The resulting pragmatic implicature of universality is produced by the combination of the meaning of *any* and that of a class of environments which is not well defined, but which includes modals, expressions of wishes and *wh*-questions, and not solely by *any*. In support of her position, she mentions the existence of 'similar cases of conversational implicature dependent on the same environments within the sentence.' [Dav80, p.16] However, Carlson dismisses her proposal precisely because there isn't a complete parallelism between *any* and the other cases. He fails to notice that the parallelism breaks down in case there is a specific or actual referent, or one referent is required for the truth of a statement to be verifiable, which is what is expected according to Davison's characterisation.

The second point is about the link of *de re* reading with wide scope, and *de dicto* with narrow scope. Carlson cites (5.27) to support the claim that a characterization of *any* as a wide scope universal quantifier cannot be reconciled with a well-formed representation of all the existing readings. Since *any* in (5.27) has both *de re* and *de dicto* readings, it is not possible to have it restricted to always taking wide scope.

(5.27) John believes any congressman to be a Mafia member.

However, some comments are in order with respect to one interpretation of the representation with a universal quantifier. *Any congressman* in (5.27) cannot be referentially specific, as in a *de re* reading in the traditional sense. Thus, although the example shows that FC *any* cannot plainly equate a universal quantifier, the argument does not run the way Carlson claims. It is a congressman *qua* congressman that is believed to be a Mafia member in (5.27), and not *qua* Mr.X, Mr.Y, etc., as predicted in one interpretation of the wide scope universal. John does not have to know the identity of all the congressmen, he does not even need to be able to identify the members of the collection. However, if a congressman is presented to John, then he must think of him that he is a Mafia member. This same intuition has been captured by Labov [Lab72] in his claim that *any* imposes a sense of lawful generalisation upon the predicate. Presumably, this is also the intuition behind the functional description of attributive definites in Donnellan [Don66], as opposed to referential definites. Donnellan says that 'in the referential use as opposed to the attributive, there is a right thing to be picked out by the audience and its being the right thing is not simply a function of its fitting the description.' [Don66,

p.304] In (5.27), fitting the description is the only requirement, without any existential commitment. The difference can be appreciated also in terms of events. Sentence (5.27) conveys the idea of a unique belief about congressmen—the interpretation that Carlson says cannot be produced by the wide scope universal *any*—or of a multitude of events of believing or distributed belief.

The difference between (5.27) and (5.28), also from Carlson, is that it is more easily taken for granted that there are congressmen than prizes for Al. Thereby, it is easier to accommodate the presupposition required for universal quantification in (5.27) than in (5.28). There is one act of persuading, rather than a multitude. In my view, the discussion of these examples shows that an approach where *any* is identified with a traditional universal or existential quantifier does not work smoothly, rather than showing that a universal *any* cannot be scoped correctly.

(5.28) Bob persuaded Al to accept any prize.

An analysis of these theories has shown that an important criterion which has been used intuitively, but which is not overtly identified, is the opposition between specific and nonspecific readings. Interestingly, the proposal at odds with all the others, namely Davison's [Dav80], and which seems to have had the least immediate impact on the research on polarity sensitivity, is the one which has the highest degree of compatibility with approaches concerned more generally with determiners in natural language. Davison notes that contexts where *any* has 'existential understanding' include 'non-actual' environments and negated constructions; *any* has a 'generic' or 'universal' interpretation in contexts which include 'modals and tenses having more than one possible referent—if one can speak of tenses referring to events or states of affairs. [...and which] exclude modals and tenses, and constructions which refer to a single definite state of affairs, or implicate such a reference.' [Dav80, p.13].

### 5.3 Meaning alternations

This section introduces data from [Tov93] which are problematic for accounts of polarity sensitivity which define licensing conditions in terms of locality constraints holding between a licenser and an NPI. I parallel several cases of 'licensing failure' described in the literature with structurally similar cases where 'licensing' goes through. The cases presented contains instances of NPIs either in object position of adversative predicates, or clausemate of universal quantifiers, or as modifiers of inherently negative nouns. I review current propositions in the syntactic and semantic fields discussing shortcomings

these data point out in existing analyses. Then, in section 5.4, I discuss the generalisations revealed by the data.

### 5.3.1 The data

In general, semantic treatments of polarity sensitivity rest on the claim that NPIs are licensed in the scope of monotone decreasing operators. As discussed in chapter 3, they offer a fairly comprehensive treatment for the various manifestations of the phenomenon. However, they seem to have difficulties in explaining the contrast between examples (5.29) and (5.30), which might suggest that *deny* is unable to license in clausemate position, as already noted by Linebarger [Lin80a].

(5.29) a# The witness denied any insinuations.

b# The defendant denied any charge.

(5.30) a. Chloe denies that any book was stolen.

b. Chloe denied that any insinuations had been made.

The contrast between (5.29) and (5.30) has been used by syntactic approaches, put forward by Progovac [Pro88] and Laka [LM90], as evidence for the claim that a licenser like *deny*, which licenses NPIs in its restrictive clause, only does so across a clausal boundary. However, NPIs may occur in direct object position, see the selection of examples in (5.31).

(5.31) a. Chloe denies any malpractice.

b. Asīl Nadīr denied any attempt to corrupt the jury.

c. The judge claimed that the young victim of rape was not entirely an angel, but the girl's mother denied any sexual experience.

d. The Serbs denied any ethnic cleansing in Bosnia-Hercegovina.

e. The police revealed a new attempt to topple the premier; Margaret denied any knowledge of the plot, Norman any participation.

The contrast in (5.32), relative to *doubt*, and in (5.33), relative to *refuse*, confirms that the foregoing examples are not just idiosyncratic cases.

- (5.32) a# He doubted any words of his boss.  
 b. He doubted any divine participation in the creation of the universe.
- (5.33) a# He refused any present from his enemy.  
 b. He refused any sympathy.  
 c# He refused any offer of sympathy.

Furthermore, [Pro92a] suggests that overt negation is the only element that can directly license an NPI in its own clause. The only problematic exception acknowledged is the case of the preposition *without* — for which a clausal analysis is suggested, drawing an analogy between the preposition and the adverb. ‘Non-negative’ is the expression used to refer to all cases of licensing except when an overt negation is present. Non-negative licensing is considered a property of clauses, rather than phrases [Pro92a, p.282]. So, the putative impossibility of licensing in clausemate position for *every* is also asserted, on the basis of data similar to (5.34).<sup>8</sup>

- (5.34) a# Every dancer with any role in the ballet will meet the artistic director tomorrow.  
 b. Every dancer who performs in any scene of the ballet met the artistic director this week.

This prediction also is not correct, as shown by the lack of contrast between the (a) and (b) sentences in the set of examples (5.35)—(5.37).

- (5.35) a. Every dancer with any experience would know these steps.  
 b. Every dancer who has any experience would know these steps.
- (5.36) a. Every child with any sense would realize that.  
 b. Every child who has any sense would realize that.
- (5.37) a. Every tourist with any knowledge of the local traditions avoided that spot.  
 b. Every tourist who had any knowledge of the local traditions avoided that spot.

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<sup>8</sup>Some speaker reports a PS reading for (5.34a).

Finally, Laka [LM90, p.196] claims that NPIs in the scope of inherently negative nouns are licensed only when inside relative clauses, and provides data like (5.38)–(5.39).

(5.38) \*Her denial of any human rights shook the audience.

(5.39) a. Her denial that any human rights should be respected shook the audience.  
 b. Her denial that anybody left the room before the shooting surprised the jury.

This claim is contradicted by data like (5.40) and (5.41).

(5.40) a. Her denial of any interest surprised the committee.  
 b. Her denial of any involvement led to a stalemate.

(5.41) In the absence of any new aircraft in the skies above the Farnborough Air show last week, a wooden model of the “Future Large Aircraft” (FLA), a pan-European project for a military transporter, stole the limelight. (The Economist, 10-16/9/1994)

I will argue in the next two subsections that the new data are problematic for these syntactic approaches because they are predicted to be impossible via the mechanism itself. They are also problematic for semantic approaches, because these have also concentrated their attention on the properties of licensors.

### 5.3.2 Syntactic licensing

The data in (5.31), (5.35a), (5.36a), (5.37a) and (5.40) are problematic for the syntactic approaches to negative polarity mentioned above because they are predicted to be impossible. The proposals are formulated in such a way that the impossibility is an analytic consequence of the theory. Two types of licensors are identified, that is negative and non-negative licensors. Overt negation is the negative licensor, all the other cases are gathered under the umbrella of non-negative licensing. They involve non-negative licensors, which are defined as being able to license only in an indirect way, by selecting a surface-null polarity licensor. The proposals vary as to the exact location of this operator, but the effect is always the same, namely that the NPI cannot be clausemate with the lexical element that selects the licensor. The analysis in terms of a surface-null licensor makes it possible, on the one hand, to express generalisations on the phenomenon of negative polarity. In fact, it becomes possible to claim that all the cases involve a

clausemate licenser, were it overt or surface-null. On the other hand, it is possible to distinguish subcases, because surface-null licensers are selected by ‘indirect’ licensers.

In her dissertation, Progovac argues that adversative predicates are ‘indirect’ licensers. She claims that ‘the element responsible for NPI licensing with these verbs is the polarity operator in Spec of Comp of their complements, and not the verb itself.’ [Pro88, p.145] The choice of the position Spec of Comp for the surface null polarity operator is based presumably on analogies with *wh*-phenomena. However, the selection is controversial.<sup>9</sup>

In her dissertation, Laka [LM90, pp.180–181] also argues that adversative predicates do not license directly. They select complementizers that have the feature [+neg]. The licensing of the NPI inside the clausal complement takes place indirectly, via the feature on the head of the complementizer. The putative licensing failure is established on the basis of some criteria for telling apart licensed NPIs from ‘free’ items similar to Carlson’s. She concludes:

Given this evidence, we must conclude that there are fundamental differences between the NPI licensing properties of an overt negative morpheme and those of an inherent negative lexical element. Namely, whereas an overt negative marker does not discriminate between clausal and non-clausal complements in its ability to license NPIs, inherently negative lexical items do discriminate between these two types of arguments with regard to NPI licensing.

The analysis adopted consists of differentiating clausal complements subcategorised by adversative predicates from those embedded under ‘non-negative verbs’, as proposed also by Progovac [Pro88]. The two syntactic proposals differ in a few points. As said above, one point is the specification of what in the CP projection is responsible for the licensing and its positioning. Laka’s analysis rests on data like (5.42)–(5.44).

(5.42) \*The professor doubts any explanation.

(5.43) The witnesses denied [ that anybody left the room before dinner].

(5.44) [<sub>CP</sub> that<sub>N</sub> [<sub>IP</sub> anybody left the room before dinner]]<sub>i</sub> was denied t<sub>i</sub> by the witnesses

Example (5.44) deserves particular attention. In (5.44), the adversative verb does not c-command the NPI, therefore licensing based on c-command at surface structure

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<sup>9</sup>Progovac [Pro92b, p.342] herself suggests that the operator could be in the Head of Comp, in keeping with recent proposals that negation is a head element. Then, in [Pro92a, fn.2], she acknowledges that there are no clear reasons for choosing between the Spec or the Head positions, and goes back to her original characterisation.

cannot account for it. Laka's analysis predicts its acceptability because the NPI is c-commanded by the negative complementizer. As seen in chapter 3 section 3.2, Ladusaw [Lad79] covered this case by restricting the clause on ordering contained in his Inherent Scope Convention to cases where licenser and NPI are clausemate.

Another difference between Laka's and Progovac's treatments is in the level of representation at which licensing takes place. Progovac's treatment is a mix of SS and LF licensing, whereas in Laka's licensing takes place exclusively at SS.

Finally, Laka [LM90, ch.3] provides example (5.45) in order to illustrate that the licensing asymmetry between NP-complement and S-complement positions of adversative verbs is a fact about the structural relation between *deny* and its sister.

(5.45) I deny that the witnesses denied anything.

In (5.45), her analysis predicts that the matrix occurrence of *deny* licenses the object NPI of the lower clause *deny*. Thus, the latter can be replaced by *say*, as we have done in (5.46), with no relevant modification. Similarly, the required *n*-complementizer ought to be selected by the verb of the main clause in (5.47) too, and licensing is predicted to go through. On the contrary, (5.47a) is marginal<sup>10</sup>, whereas (5.47b,c) are correct. Unfortunately, Laka does not discuss further the issue of double negatives.

(5.46) I deny that the witnesses said anything.

(5.47) a.\*I don't deny that the witnesses said anything.

b. I deny that Mary denies that the witnesses said anything.

c. No one denies that the witnesses said anything.

Summing up, in order to cope with the acceptability of the examples presented in subsection 5.3.1, the core of these proposals must be altered. Changes cannot consist of relaxing some constraints and/or tightening others. Even supposing that changes are performed without altering the tenets of the analyses, it has to be ensured that, although all sentences in (5.48) and (5.50), for instance, contain *any* in the same licensed syntactic positions, the FC interpretation is preferred in (5.48a), (5.49a) and (5.50a), and the negative polarity one in (5.48b), (5.49b) and (5.50b).

(5.48) a#The premier denied any allegation<sup>11</sup> of mismanagement.

b. The premier denied any knowledge of government corruption.

<sup>10</sup>The sentence is acceptable with a metalinguistic negation.

<sup>11</sup>The use of plural instead of singular might have some role in facilitating a FC reading.



- (5.49) a# His denial of any accusations led to a stalemate.  
 b. His denial of any knowledge upset his boss.
- (5.50) a# Every person with any weapon should report to the police.  
 b. Every person with any interest in music went to that concert.

The recourse to the double characterisation of NPIs as pronouns and anaphors, i.e. the I-NPIs versus NI-NPIs distinction [Pro88], leads to the assumption of a further lexical ambiguity. According to this classification, the PS *any* in (5.48b) or (5.50b) is licensed by an overt clausemate licenser, hence it is a NI-NPI. The one in (5.30), (5.35b), (5.36b) or (5.37b) by a licenser higher up via a clausemate surface-null licenser, hence it is an I-NPI. The same applies for the sentences in (5.50).

The analyses based on the licensing via an operator or a feature in Comp make incorrect predictions also with respect to data such as (5.51) and (5.52), from Linebarger [Lin80a, ch.7].<sup>12</sup>

- (5.51) a. A doctor who knew anything about acupuncture was not available.  
 b.\*Many doctors who knew anything about acupuncture were not available.
- (5.52) \*A doctor who knew anything about acupuncture did not agree with the diagnosis: in fact, he called Dr. Smith a ‘despicable quack’.

Uribe [UE94] uses Linebarger’s examples, and those in (5.53) to show that analyses based on the licensing via an operator or a feature in Comp make incorrect predictions.

- (5.53) a. That anybody would leave the company wasn’t mentioned in the meeting.  
 b. That anybody had left the company wasn’t mentioned in the meeting.  
 c.\*That anybody will leave the company wasn’t mentioned in the meeting.

An aim of her work is to show that it is possible to account for the phenomenon of polarity sensitivity via constraints verified only at LF. One reason for this is that the SS level of representation has been dispensed with in the Minimalist Program.<sup>13,14</sup> These data are discussed in subsection 5.5.1.

<sup>12</sup>Horn [Hor72, p.144] had already pointed out that restrictive relative clauses on generic NPs can contain *any*, an observation he attributes to Pope.

<sup>13</sup>See Chomsky [Cho92] for discussion of the program and its principles.

<sup>14</sup>The analysis proposed by Uribe rests on the assumption that the tense in the embedded clause needs licensing. Morphological tense licensing conditions force the subordinate clause reconstruction

### 5.3.3 Semantic licensing

Examples (5.48b), (5.49b) and (5.50b) were not excluded in the semantic approach to negative polarity proposed by Ladusaw [Lad79], but the contrast in (5.48)—(5.50) was not noted. Zwarts [Zwa91] is aware of the criticism that adversative predicates and the universal quantifier were presumed not to license in clausemate position. When discussing the case of *dislike*, he suggests that ‘the distribution of NPI is not only determined by the position of the licensing expression, but to a large extent also by the nature of the intervening phrases’ [Zwa91, p.12]. This position is in line with his claim that polarity sensitivity is a lexical phenomenon, but it is not easy to see how this suggestion can be extended to other cases, in particular to the contrast under examination. *Every* and *deny* are downward monotone functors, that is to say licensers. Moreover, they are strong licensers, according to his hierarchy discussed in chapter 3 section 3.3, because they are anti-additive functors.

A different characterisation is proposed by Kas [Kas93] in his doctoral dissertation. Like in the syntactic approaches discussed above, the strategy followed by Kas consists of characterizing the NP direct object of adversative predicates as an upward monotone position, hence non-licensing. This stand is taken up by Zwarts in [Zwa92].

Kas adopts the distinction between extensional and intensional verbs proposed in Keenan and Faltz [KF85].<sup>15</sup> As examples of extensional verbs Kas gives *write*, *kiss*, *deny*, *dislike*... , intensional verbs are *look for*, *avoid*... Kas also adopts a distinction

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at LF. This reconstruction operation results in the embedded CP and NPI being inside the scope of the negation contained in the matrix clause. In this way, polarity licensing conditions are met. In the ungrammatical cases, morphological tense licensing conditions do not allow the subordinate clause reconstruct. It remains at LF in its SS position, which is outside the scope of negation. Hence, polarity licensing conditions cannot be met. The reconstruction operation is motivated by the need to satisfy such morphological tense licensing requirements. See the discussion in Uribe [UE94, ch.3] for the details of the requirements. It would be interesting to know whether ungrammatical cases are such because polarity licensing requirements cannot motivate reconstruction, or because in such cases contradicting requirements are put forwards by tense and polarity licensings. Since sentences like (i) and (ii) are considered by Uribe to be similar enough to share the same LF, one is led to believe that NPIs have only a passive impact, i.e. requiring licensing, and no active impact on LF, i.e. forcing some operations in order to satisfy the licensing requirements.

- (i) That anybody had left the company wasn't mentioned in the meeting.
- (ii) That Peter had left the company wasn't mentioned in the meeting.

With respect to polarity concerns, (i) is acceptable just because the NPI happens to occur in a clause that would reconstruct anyway. The reader is led to conclude that polarity licensing is not morphological, contrary to tense licensing. This is clearly a theory internal conclusion.

<sup>15</sup>The principle is given in (i).

- (i) Principle of Extensionality

In any situation where  $s = t$ , the following holds:  $[t/s] \Phi \Leftrightarrow \Phi$ . [Kas93, p.53]

This principle asserts that contexts where an expression  $s$  can be substituted for an expression  $t$  in an expression  $\Phi$ , *salva veritate*, are extensional. Intensional contexts are defined indirectly as the complement of extensional ones.

between positive and negative verbs, which is intuitively clear, but for which he cannot provide a decisive test. In the negative group he puts verbs like *deny*, *refuse*, *lack*... , in the positive group verbs like *confess*, *know*, *jump*... . He says that the distinction between positive and negative verbs cannot be expressed via semantically well-defined notions like upward and downward monotonicity. Kas examines separately NP and S complements of these verbs.

The upward monotonicity of negative extensional verbs with respect to their direct object NP is argued for on the basis of the patterns of inference in (5.54)–(5.57) [Kas93, ch.3,sec.7].

- (5.54) a. Haroun denied a horrible crime  $\rightarrow$  Haroun denied a crime  
 b. Haroun denied a crime  $\not\rightarrow$  Haroun denied a horrible crime
- (5.55) a. Haroun disliked a hairy friend  $\rightarrow$  Haroun disliked a friend  
 b. Haroun disliked a friend  $\not\rightarrow$  Haroun disliked a hairy friend
- (5.56) a. Haroun regretted his stupid act  $\rightarrow$  Haroun regretted his act  
 b. Haroun regretted his act  $\not\rightarrow$  Haroun regretted his stupid act
- (5.57) a. Haroun refused a good offer  $\rightarrow$  Haroun refused an offer  
 b. Haroun refused an offer  $\not\rightarrow$  Haroun refused a good offer

And his results are recorded in a theorem.

**THEOREM 3.2 (final)**

All extensional transitive verbs, either positive or negative, are additive, multiplicative, consistent and complete, in short: homomorphic, with respect to their direct object NP. [Kas93, p.74]

The discussion of negative intensional NP complemented verbs is based on examples such as (5.58) – (5.61), where *a scandal* and *a row* are intended to refer to different objects.

- (5.58) a. Mali avoided a scandal and a row  $\leftrightarrow$   
 b. Mali avoided a scandal and Mali avoided a row
- (5.59) a. Mali avoided a scandal but not a row  $\leftrightarrow$   
 b. Mali avoided a scandal but Mali did not avoid a row

- (5.60) a. Mali avoided a scandal or a row  $\nleftrightarrow$   
 b. Mali avoided a scandal or avoided a row
- (5.61) a. Mali avoided a scandal or a row  $\leftarrow$   
 b. Mali avoided a scandal or avoided a row

Example (5.60) presents the preferred non-boolean reading of *or*, i.e. exclusive *or*, where Mali avoided either a scandal or a row but not both of them. Example (5.61) presents the boolean interpretation of disjunction, i.e. set union, where Mali avoided a scandal or a row, or both of them. The difference between the two readings is treated with a group formation approach to non boolean coordination and disjunction. Similar data are presented for positive intensional NP complemented verbs, and the results are recorded in the following theorem.

THEOREM 3.3

- a. On the non-boolean reading of disjuncted NPs all intensional verbs (either positive or negative) are multiplicative with respect to their direct object NP.  
 b. On the boolean reading of disjuncted NPs all intensional verbs (either positive or negative) are multiplicative and additive with respect to their direct object NP. [Kas93, p.84]

Finally, the results with respect to verbs taking S complements are recorded in his theorems 3.3 and 3.5.

THEOREM 3.4

Positive S-complement taking verbs are always additive and multiplicative in their S-complement [Kas93, p.93]

THEOREM 3.5

Negative S-complement taking verbs are always both anti-additive and anti-multiplicative in their S-complement [Kas93, p.98]

However, I think that the results presented are not as solid as one may wish. Kas briefly discusses Hoeksema's [Hoe88] observation that in certain contexts the boolean account of conjunction runs into problems. Hoeksema concludes that expressions like *a gardener* must be treated on a par with proper nouns, distinct from quantified NPs. As Kas notes, this is not to be taken as in contrast with the philosophical tradition that treats *a gardener* as an existential quantifier. Rather, Hoeksema takes quantified NPs to denote generalised quantifiers, and referring expressions to denote individuals. The domain of individuals is considered with its group structure. Kas uses Hoeksema's findings to deal with conjunctions of arbitrary NPs in direct object position. However,

Hoeksema's conclusion can be read also as pointing at the non-homogeneous behaviour of weak determiners with respect to inferences. Since referring expressions give logical stability, indefinites like *a gardener* are compatible with a boolean account of conjunction in their referential reading, but not in their nonspecific one. Next, the impact of the ambiguity of weak determiners has to be tracked down also in inferences where subset relations are expressed by adjectival modification. Let us consider (5.62). There is a reading where (5.62b) can be inferred from (5.62a). The Chancellor of the Exchequer can utter a statement similar to that reported in (5.62a) with the intention of denying the possibility of a considerable increase *qua* increase. In this case, (5.62a) does imply (5.62b). This is the case considered by Kas. But there is also a reading where the inference does not go through.

- (5.62) a. The Chancellor of the Exchequer denied a considerable tax increase  
 b. The Chancellor of the Exchequer denied a tax increase

The Chancellor may intend to deny only the large size of the increase. If he is a 'skillful' politician, he may choose (5.62a), precisely because it is ambiguous, and it allows him to get away from a hard pressing question with a less committing statement. In this case, (5.62a) does not imply (5.62b).

It appears that, whenever the NP *a considerable tax increase* is interpreted as indefinite specific, the inference from (5.62a) to (5.62b) goes through. Whenever it is interpreted as indefinite nonspecific, the inference does not go through. However, there is no need to have a non referential reading for the inference not to be stable. The adjective *considerable* can be interpreted as introducing a partition in the denotation of *tax increases*. The intended reading is obtained by stressing the word *considerable*. Negation associates with the adjective, and the denotation of the subset *considerable tax increases* is concerned. But the contrast set is not affected, i.e. all the *tax increases* which are not *considerable* are not denied.<sup>16</sup> In this case the inference does not go through. If the adjective is interpreted as predicating something of all the members of the set considered, then it does not introduce a partition, and the expression *a considerable tax increase* does not refer to a proper subset of *a tax increase*. Thence, there is no difference in relevant information between (5.62a) and (5.62b), and no consequences for the inferences.<sup>17</sup> When the adjective is interpreted as introducing a partition, (5.62a)

<sup>16</sup>This can be characterised as an instance of attraction to focus (Jackendoff [Jac72]).

<sup>17</sup>Dahl [Dah88] connects the working of deduction rules and the use of indefinites. He discusses the rules of  $\exists$  introduction and  $\exists$  elimination. The elimination rule allows one to create new individual terms, and substitute them for existentially bound variables. 'The domain of such a rule would be exactly those

is more informative than (5.62b), but then the inference is not possible. This casts doubts on Kas's claim that the NP object of verbs such as *deny* definitely is an upward monotone position. No partitioning means also that the predication can apply to the level of the collection without lowering to the level of the individual members.

I am inclined to believe that the connection between the different NP readings and the inferential patterns is the point Keenan and Faltz [KF85, p.318-319] try to make when discussing example (5.63), objected by Kas.

- (5.63) a. John is looking for a skillful doctor →  
 b. John is looking for a doctor

In (5.63a), the expression *a skillful doctor* need not be specific as in (5.64). It may be nonspecific with respect to the set of skillful doctors, but it is specific with respect to the set of doctors inasmuch as it uniquely identifies a subset. The indefinite specific reading of *a skillful doctor* rules out the inference from (5.63a) to (5.63b).

- (5.64) John is looking for a skillful doctor whose name is Louise.

Therefore, the upward monotonicity of negative NP complemented verbs is not as solidly established as claimed by Kas on the basis of examples (5.54)–(5.57). Furthermore, it might not be possible to establish it once and for all, in a way which is independent from the properties of the NP complement. On the one hand, it is true that (5.65a) necessarily implies (5.65b). In fact, for an examination being failed, there must have been an examination in the first place. On the other hand, we have (5.66), which is similar to (5.62). (5.66a) does not necessarily imply (5.66b), because Daniel might still be involved in a scandal. For instance, supposing that Daniel is in the directing board of the bank Barings, his having avoided a political scandal did not spare him from a financial one. In order to avoid a scandal, a scandal need not but might have taken place. In other words, the inference in (5.66) is not stable, because it is possible to have avoided a form of scandal without having avoided scandals. Yet, (5.67a) does imply (5.67b), definitely there is a boy. Thus, it seems that the inferential properties should be connected with readings and contexts rather than exclusively with lexical items.

- (5.65) a. Daniel failed a difficult examination →  
 b. Daniel failed an examination

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variables that correspond to 'specific' indefinite noun phrases in the sense of 'specific' which corresponds to Geach's concept of 'namely-riders', i.e. those noun phrases which can be amplified by a tag of the form '...namely X'. [Dah88, p.4] Existential introduction is equivalent to coreference link erasure only in non-trivial cases, i.e. when there is loss of information.

(5.66) a. Daniel avoided a political scandal ( $\rightarrow$ )

b. Daniel avoided a scandal

(5.67) a. Daniel avoided a fat boy's eyes  $\rightarrow$

b. Daniel avoided a boy's eyes

Extensional verbs have only a reading where the NP complement points at individuals, whereas intensional verbs admit both readings pointing at individuals and at a class.<sup>18</sup> However, the existence of these readings does not depend exclusively on the properties of the verb, but also on the properties of the NP. Kas classifies *avoid* as intensional, but (5.68a) has only a reading where the NP complement refers to individual scandals, and it necessarily implies (5.68b). (5.66) and (5.68) minimally differ in the determiner occurring in the direct object.

(5.68) a. Daniel avoided three political scandals  $\rightarrow$

b. Daniel avoided three scandals

To summarize this section: Independently from the characterisation of the clausemate position of NP complement of adversative predicates in (5.31), and of PP adjoint to a noun quantified by a universal quantifier in (5.35a), either as non-licensing [Pro88], [LM90], [Kas93], or licensing [Zwa91], the meaning variation found in the data is not expected.

## 5.4 The nature of the domain of quantification

I have shown that existing proposals consider the NP direct object of an adversative predicate, and the NP restrictor of a universal quantifier as nonlicensing positions. Some counterexamples to the presumed absence of licensing power of adversative predicates

<sup>18</sup>I have replaced the terms *de re* and *de dicto* readings with individuals and classes because I want to get free from the existential import which characterises *de re* readings. However, this leads me straight into the thorny issue of defining the class. The notion which seems required for describing the linguistic data is one which includes in the definition its being unique, and whose existence is independent from the existence of the members. Kempson [Kem85] proposes using arbitrary objects from Fine's logic, of which she exploits primarily the relation of dependency.

In Fine's logic, every model comes with two domains, those of arbitrary objects and of individuals. An A-name is a constant, it takes as value an arbitrary object which is in its turn mapped onto individuals satisfying the restricting predicate. This means that an arbitrary object may be identified on the basis of the collection of individuals in the range. It is this type of extensional definition that I want to get free from in order to avoid individuation. However, it is important to note that the existence of arbitrary objects is independent from that of individuals.

in NP complement position have been circulating. Laka [LM90] mentions a few and dismisses them as not relevant. In subsection 5.3.1, I have presented evidence that does question a unique characterisation of these positions. (5.69) and (5.70) present cases of licensing PS *any*.

(5.69) Every student with any interest in the issue felt concerned.

(5.70) The politician denied any participation in the plot.

Furthermore, what is particularly new is the systematicity that my data reveal: all cases where there is PS reading, the head nouns providing the restrictions on the quantifier is a mass (or abstract). Whereas, the cases of FC reading involve countable nouns. This fact suggests that it is necessary to consider not only the scope of the downward entailing operator, but also the semantics of the polarity sensitive item, in this case the domain of the quantifier. For this reason, I favour a reading of the polarity phenomena in terms of conditions of interpretation rather than structural licensing conditions.

The domain denoted by a countable noun is made of individuals. The domain denoted by a mass noun does not present the same internal partition. It is possible to segment it into items or portions by prefixing it with the sequence *a kind of, a type of, an instance of, etc.* The structure produced with this change is similar to that of countable nouns; and the behaviour of *any* with respect to it is similar. The change introduces in the domain a partition into individual entities. Data like (5.71) and (5.72) confirm the relevance of the internal structure of the quantification domain for the reading alternation. In (5.71a), *any* has PS reading, and in (5.71b) the preferred reading is FC. The same applies to the pair in (5.72).

(5.71) a. She denied any misbehaviour.

b. She denied any accusation of misbehaviour.

(5.72) a. She denied any participation.

b. She denied any kind of participation.

The impact of the variation count/mass in the domain of quantification has been discussed in the literature with respect to other phenomena, for instance with respect to *wh* elements, cf. Szabolcsi [Sza92] and Szabolcsi and Zwarts [SZ93]. Bolinger [Bol60] mention the mass-count distinction conjointly with the presence/absence of stress on *some* and *any*. He posit that:



[sm] is the plural and mass equivalent of the indefinite article, and that [SAM] with a singular countable is the emphatic equivalent of the indefinite article. [...] *a-any* and *some-any* ignore these lines

He does not develop further the issue. In the following, I first take a closer look at Szabolcsi and Zwarts' proposal, and then I explore how it could be made relevant for the case under examination. The discussion is going to bring us back to the issue of specific/non-specific indefinites mentioned in subsections 5.2.1 and 5.3.3.

#### 5.4.1 Domains of quantification and scoping relations

Szabolcsi and Zwarts [SZ93] present an analysis of the weak island phenomenon in terms of scope taking possibilities. Scope interactions are discussed from an algebraic semantic perspective. Their approach pays special attention to monotonicity effects and the semantics of the extractees.

The phenomenon of weak islands is exemplified in (5.73) and (5.74).<sup>19</sup> Weak islands are environments that allow some but not all *wh*-phrases to extract.

- (5.73) a. Which man didn't you invite?  
       b.\*How didn't you behave?
- (5.74) a. Which man do you regret that I invited?  
       b.\*How do you regret that I behaved?

In (5.73), the weak island effect is caused by the presence of overt negation, in (5.74) by the verb *regret*. The same kind of selective scope taking effect is exhibited by other elements, such as negative quantifiers, *only*-phrases and adversative predicates. The thesis defended by Szabolcsi and Zwarts is resumed in (5.75) and (5.76).

- (5.75) Weak island violations come about when an extracted phrase should take scope over some intervener but is unable to. [SZ93, p.236]
- (5.76) Harmless interveners are harmless only in that they can give rise to at least one reading of the sentence that presents no scopal conflict of the above sort: they can "get out of the way". [SZ93, p.236]

Szabolcsi and Zwarts present an algebraic semantic perspective on scope interactions. A *scopal element* (SE) is understood as an item that can participate in scope ambiguities. They concentrate their attention on cases like (5.77), which is the structure assigned to (5.73) and (5.74), where the variable *x* may be of any logical type.

<sup>19</sup>The examples in this subsection are taken from [SZ93].

(5.77)  $WHx[ \dots SE(\alpha \dots x \dots )]$

They analyse the semantics of *wh*-phrases rather than that of SEs. (5.77) is considered to be meaningful only if SE is given an appropriate argument. Whether  $\alpha$  is appropriate largely depends on the semantics of the *wh*-phrase. The connection explored is as follows.

*Scope and Operations*

Each scopal element SE is associated with certain operations (e.g., *not* with [boolean] complements). For a *wh*-phrase to take scope over some SE means that the operations associated with SE need to be performed in the *wh*-phrase's denotation domain. If the *wh*-phrase denotes in a domain for which the requisite operation is not defined, it cannot scope over SE. [SZ93, p.236]

Their general assumption is that

the interpretation of questions, whatever it should precisely be, ensures that an exhaustive list is determined by the answer. We will be concerned with how such a list can be defined or verified.[...]

The moral is that for a *wh*-phrase to take wide scope over a SE means that the definition/verification of the answer involves specific *operations* associated with SE. [SZ93, p.252–253]

A consequence of the above is that a *wh*-phrase can take wide scope over a SE only if the operations needed for computing the answer can be performed in the domain the *wh*-phrase ranges over. For instance, in order to answer the questions in (5.78), the boolean interpretations of the scopal interveners in (5.78b-d), presented in sum in (5.79), have to be considered.

- (5.78) a. Who did Fido see?  
 b. Who didn't Fido see?  
 c. Who did every dog see?  
 d. Who did at least two dogs see?

- (5.79) a. *Negation* corresponds to taking *complements*.  
 b. *Universal* quantification corresponds to taking *intersections*.  
 c. *Existential* quantification corresponds to taking *unions*.  
 d. *Numerical* quantification corresponds to a combination of *intersections and unions*.

Hence, the answer to (5.78a) is obtained by listing the members of the set of people that Fido saw. For (5.78b), we take the complement of the previous set. For (5.78c), we consider the set of people that each dog saw, and we list the members of the intersection of all these sets. If (5.78d) had *at least one dog*, the union of the sets of individuals seen by a dog would have been the answer. With *at least two dogs*, we use intersections in order to determine whether one individual belongs to at least two sets of people seen by dog, and then we union the results and make a list. The crucial property of ranging over individuals is interpreted as follows.

*Individuality and Wide Scope Taking*

When a *wh*-phrase ranges over discrete individuals, these can be collected into unordered sets. When a *wh*-phrase does not range over discrete individuals, only a smaller set of operations (possibly none) are available in its denotation domain, hence answers cannot be defined in the general case. [SZ93, p.252]

The term individual is used to refer to inherently discrete entities like Daniel and Louise and also to higher order objects whose overlaps and complements are expressly ignored, like properties. The characterisation of good and bad extractees is done in denotational terms. Good extractees range over individual domains. Characteristic of bad extractees is their lack of individuality. The term non-individual is used to refer to mass terms, plurals as collectives, manners and amounts. Non-individuals are characterised by the fact that they exhibit a partial ordering which has to be taken into consideration, or they are strictly nonreferential, e.g. idiom chunks. [SZ93, p.256]

Different kinds of expressions are assigned different structures. The poorer the structure, the less operations are available. The denotation of numeral expressions on the number reading is characterised by a chain, a simple type of lattice. A proper lattice is a partially ordered set closed under unions and intersections. Szabolcsi and Zwarts give (5.80) as examples of number reading.

- (5.80) a. How many problems did every student solve?  
 b. (At least) how many laps has every swimmer covered by now?

In (5.80a), *how many problems* is not intended as ‘which of these problems’ or ‘which of the numbers we have listed’, i.e. it is not D-linked. It also does not mean ‘how many problems are there such that’. The question asks for a purely numerical value. Interesting aspects of (5.80) are that the narrow scope of the universal quantifier does not make the sentences unacceptable, and that maximal answers are required. If all the swimmers have covered at least 30 laps, but not all more than that, ‘20’ is not an

acceptable answer.<sup>20</sup> Szabolcsi and Zwarts argue that this is not due to the effect of a Gricean maxim, but to the semantic fact that the narrow scope universal requires that we take intersections, which gives the greatest lower bound.

The denotation of numeral expressions on the amount reading is characterised by a join semilattice. Amounts are constructed as abstract bits of stuff. The difference between the two readings is captured by 'the intuition that three cups of milk (or three men) is obtained by adding another cup of milk to two cups of milk (or another man to two men), rather than just moving higher on a scale.' [SZ93, p.267-268]

The denotation of masses, collectives and manners is characterised by a free join semilattice. A proper join semilattice is a partially ordered set closed under unions. The structure is free if, whenever two pairs of elements are distinct, their unions are distinct.

The adoption of these structures results in the possibility of predicting that different extractees are sensitive to different interveners. Collectives, manners and amounts are predicted to be sensitive to islands created by SE whose definition involves complements and intersections. Numbers are predicted to be sensitive to islands involving complements only. [SZ93, p.264]

Szabolcsi and Zwarts play down a previous characterisation of weak islands in terms of the monotonic properties of the elements intervening between the *wh*-phrase and its trace, cf. Szabolcsi [Sza92]. They adopt a more articulated position, which enables them to account for a gradient among interveners [SZ93, p.248]. If interveners can get out of the way of a *wh*-phrase by taking wide scope, the sentence always has at least one reading.

It is worth emphasizing a few analogies between the phenomena of weak islands and polarity sensitivity. First, most of the interveners that create weak island effects are elements which also qualify as polarity licensors, e.g. negation, negative quantifiers, adversative predicates, etc. Second, the distinction between individual and non-individual denotations partitions the group of good or poor extractees as well as the cases of PS and FC readings we are discussing. Good extractees pair with *any*-phrases that show preference for FC reading as regards to the nature of the domain of quantification. Bad extractees pair with PS *any*-phrases, and are interpreted inside the scope of negation. The link [Sza92] made between sums and ordered sets is relevant for the case of S-complements. The observation that propositions are ordered (by entailment) makes it possible to extend to S-complements the proposal made for mass NP-complements

<sup>20</sup>Presumably, this is the case unless one says explicitly 'At least 20'.

and to account for the absence of meaning alternation of *any* inside S-complements, see (5.81)–(5.82). Examples (5.81a) and (5.82a) contain count nouns, and (5.81b) and (5.82b) contain mass nouns, but all the sentences are interpreted as containing instances of PS *any*. If a sentence cannot outscope a licenser, then the *any* contained in it has to be interpreted in the scope of the licenser too. It follows that, in this case, the differences in the domain of quantification of *any* cannot influence the prominence of a reading.

- (5.81) a. The librarian denied that any book had been stolen.  
 b. The officer denied that any information had been leaked from his office.
- (5.82) a. Every student who has any book must report to the librarian.  
 b. Every student who has any information must report to the dean.

Third, contextualisation (Discourse-linking) is an important factor in the behaviour of certain expressions, e.g. *wh-the-hell* expressions. This point has not been reviewed above, but its importance will become clear shortly. Szabolcsi and Zwarts restrict the relevance of this factor.

In our view, contextualisation (Discourse-linking) comes into play in two main ways: a salient checklist or relevance criterion (i) may individuate a naturally ordered domain, and/or (ii) speed up the manipulation of an already individual domain by making ‘look-up’ available. [SZ93, p.256]

Sentence (5.83) is an example of (i), where contextualisation eliminates irrelevant items, as well as supercategories and subcategories of relevant ones, here bread and juice.

- (5.83) What don't we have good supplies of? — Just bread and juice.

Sentence (5.84) is an example of (ii), assuming a look-up procedure where each individual is a ‘peg’ from which all its properties are hanging. This look-up is faster than constructing all the required intersections.

- (5.84) Who did everybody support? — The candidate from Ohio.

Szabolcsi and Zwarts conclude as follows.

It appears that discourse context never makes a minimal difference for extractability. D-linking plays an important role when it forces, and facilitates, the individuation of a domain that is originally not individuated; but it is the ensuing semantic change, the creation of an unordered set, that matters for extractability. [SZ93, p.262].

As discussed below in subsection 5.4.3, contextualisation has an impact also on cases where the head noun restrictor of *any* is count. More precisely, lack of contextualisation prevents *any*-phrases with individual denotation from taking wide scope. D-linking favours FC *any*, but the structure of the domain of quantification remains the crucial factor.

#### 5.4.2 Extending the proposal to sensitive items

As discussed in section 5.2, the characterisation of the meaning of *any* has already been tackled in terms of scope relations in the existing literature. All these analyses are inadequate because they are defined solely in terms of the universal or existential quantifiers. In the following, I take a fresh look at the issue of scoping *any* by pursuing two lines of investigation. First, with respect to the interpretation variations of *any*, I explore how to extend Szabolcsi and Zwarts' proposal of relating scope taking possibilities with the availability of certain operations that need to be performed. Second, I formulate the hypothesis that scope takings may affect processing strategies in the case of sensitive items.

An aspect that makes Szabolcsi and Zwarts' [SZ93] analysis particularly attractive is that selective scope taking is evaluated with respect to semantic differences of the extracted elements. In particular, differences in the structure of the extracted element play a role at least as important as the positioning of the extraction site. The distinction between good and bad extractees is expressed in denotational terms. Good extractees range over individual domains, bad extractees over non-individual domains or domains whose elements exhibit a partial ordering.

This generalisation over *wh*-phrases constitutes the potential link between Szabolcsi and Zwarts' work on weak islands and my cases of interpretation variations of *any*-phrases. What comes out from their work is that a structural analysis is able to produce minimal conditions for the occurrence of items, but is insufficient for treating subtle meaning variations. Hence, it may turn out to be unable to provide a characterisation of the distribution of interpretations with respect to the distribution of lexical elements.

The cases we are discussing in this chapter are those of *any*-phrases in clausemate position inside the scope of a universal quantifier or an adversative predicate. In these cases, we have found variations in meaning in the same structural contexts. The standard approach associates variations in meaning with different *any* items and aims at producing conditions for the distribution of *any*, or at least of the PS one. In this case too, as seen above, the definition of minimal structural conditions for the occurrence of items

is insufficient for treating meaning variations.

Following a standard assumption, the possibility that *any* takes narrow scope with respect to a downward monotonic SE gives rise to the PS reading. This is what has been characterised as 'being licensed'. The FC reading requires *any* to outscope the downward operator, or not to be in the scope of an operator of such type. For *wh*-phrases, but not for *any*-phrases, ungrammaticality ensues from the presence of a downward monotonic SE which is not outscoped. The effect of the presence of a SE is to be exploited for *any*-phrases in a way different from that for *wh*-elements. The preference for a FC *any* with counts must originate elsewhere.

A tentative proposal of adapting the approach developed for weak islands to polarity sensitive NPs such as *any* comprises (5.85) as a counterpart of (5.75).

- (5.85) The presence of a downward monotone SE increases the number of potential readings for *any*-phrases.

It is said that *any*-phrases are not required to outscope downward monotone SEs, and that possibility results in the availability of an extra reading.<sup>21</sup>

Szabolcsi and Zwarts's point (5.76) links occurrences of the phenomenon of weak islands with the function performed by interveners. In the case of polarity sensitivity, this corresponds to interpreting the licensing relation. In (5.86), the scopal relations are linked with the nature of noun phrase of *any*-phrases. In particular, NPs are characterised by their referential properties. Scoping preferences, and available interpretations are necessarily compatible with the properties of *any* and of the context of occurrence.

- (5.86) Downward monotone SE are negative polarity licensers in that they provide a referentially opaque domain for *any*.

Point (5.86) is to be coupled with a characterisation of the referential properties of *any*-phrases. This makes it possible to also cover the distribution of *any* in contexts where there are no other operators. Ultimately, this indicates that a characterisation in terms of scope relations (and licensing) is to be abandoned.

- (5.87) *Any*-phrases do not allow the individuation of entities in their denotation. Generally, this translates in their intolerance to the presupposition that the denotation is not empty. However, when the possibility of performing a verification via exhaustive enumeration is excluded, i.e. it is guaranteed that it

<sup>21</sup>Presumably, Kempson [Kem85] makes a similar point when she says that *any* in negative polarity environments is ambiguous, whereas in a non-negative-polarity environment it is not.

is not possible to accede to the members, the denotation is not necessarily supposed to be empty.

(5.85) records the empirical data discussed in the first part of this chapter. (5.86) and (5.87) anticipate the observations presented in the remainder of this chapter. In the case of *wh*-elements, operations are performed in order to compute the answer. In the case of polarity items that are NPs, one can check the referential links. The structure of the domain may have to be interpreted with respect to the different possibilities of referring to sets or sums and to their members. There is a connection between the issue of the identification of the members of a set and the predication on the set or of its members to be explored. The second half of (5.87) is meant to capture the use of *any*-phrases in generic statements, imperatives and occurrences of the *type of* reading.

A question regarding (5.85) is whether any SE can be outscoped. The answer is a gradient of SEs. At the bottom there are SE over which *any* can take wide scope only with the support of a particular stress (cf. Linebarger [Lin80a], Kempson [Kem85]). The examples in (5.88)<sup>22</sup> and (5.89) show that particular stress allows *any* to outscope *not* and *without*.

(5.88) a. I didn't drink ANY water. (plain, fizzy ...)

b. I didn't take ANY book. (yours, mine ...)

(5.89) a. I was left without ANY help. (financial, moral ...)

b. He prepared taboulé without ANY pepper. (red, green ...)

In sentences (5.88) and (5.89) *any* without stress has only the PS reading. In (5.88a) and (5.89a) outscoping requires an individual domain. The mass term is 'coerced' into a count-like reading *type of*. Data like (5.90) and (5.91) show that FC *any* and mass readings are not well together even in non-licensing contexts. The absence of discrete entities in a mass domain seems to clash with the need for a choice-space of *any*.

(5.90) She likes any beer.

(5.91) Any wine is good for a garden party.

<sup>22</sup>These sentences have another reading, easier to obtain when *just* is inserted before *any*, where negation is not outscoped [Hor72, p.118ff] and applies only to the free-choiceness facet of meaning. Thus, the following clause usually singles out one particular instance of N, e.g. *only Zyyyy!*.



FC *any* cannot combine with nominal mass (ter Meulen [ter80]). FC *any* 'sorts' the predicative mass, like in a reversed application of the 'universal grinder' machine of Pelletier [Pel75], witness the loss of the property of Homogeneous Reference. As a result, the denotation of the *any*-phrases in (5.90) and (5.91) is modified into an individual domain. Interesting enough, the sorting effect can take place also with a countable noun. As a preference, sentence (5.92) is interpreted as referring to types of errors.

(5.92) This computer program detects any error.

(5.93) He accepts any compromise.

In an extensional context in simple declarative proposition, such as (5.92) and (5.93), the reading available with count nouns is the *type of* one. Marginality ensues when this *type of* reading is pragmatically odd, see (5.94).

(5.94) \*She wrote any letter.

Sentence (5.94) is bad if *letter* means an epistle, perhaps because it doesn't form a natural type very easily. The sentence improves if *letter* means a member of the alphabet. The sentence is bad with partitive expressions instead of the nouns.

(5.95) \*She wrote any of the letters.

(5.96) \*She writes any of the letters.

### 5.4.3 The relevance of contextualisation

The study of domains of quantification has provided an analysis for the distribution of a polarity sensitive *any* reading when the head noun restrictor is mass, or *any* is inside a clause, and free-choice reading with a count head noun restrictor. However, nothing in principle rules out PS *any* with count, albeit there may be preferences, which in turn call for an explanation. Example (5.97), relating the Peruvian presidential couple's marital difficulties, shows that PS reading is possible with countable noun in direct object position. In this instance, the FC reading, where Ms Higuchi would have been asserting the falsity of each member of a set of plans for divorce, is implausible.

(5.97) Ms Higuchi moved out of the presidential palace, but then moved back in. Her husband in turn left the official residence to move into the army intelligence headquarters. So far Ms Higuchi has denied any plans for divorce. (The Guardian, 14/9/1994)

- (5.98) Arthur tried to gauge the speed at which they were traveling, but the blackness outside was absolute and he was denied any reference points. (The Hitchhiker's Guide to the Galaxy, p.158)<sup>23</sup>

In these cases, D-linking is impossible. D-linking is a way to express a semantico-pragmatic constraint on discourse anaphora. Building on cross-linguistic data on *wh*-movement, Pesetsky [Pes87] adapts the familiarity condition defined by Heim [Hei82] in order to deal with the phenomenon of *wh*-elements *in situ*. Pesetsky aims at giving parallel representations to the output of syntactic movement and of certain scope assignments, and argues that 'certain aspects of semantic interpretation display *the characteristic properties of movement rules*' (emphasis in the original) [Pes87, p.104]. In (5.97) and (5.98), lack of contextualisation prevents *any*-phrases with individual denotation from taking wide scope. In fact, it is implausible to interpret these examples as conveying the information that a succession of events of denying different plans of divorce or of being denied different reference points took place. Rather, a unique case was considered.

Hoeksema's [Hoe94, p.2] examples (5.99), extracted from the Oxford English Dictionary on CD-ROM, are instances of the same case.

- (5.99) a. In order to avoid any possible ambiguity, it is the Institution's policy to encourage the use of the terms 'flammable' and 'non-flammable' rather than 'inflammable' and 'non-inflammable'.
- b. Count Wolf von Westarp, co-founder of the band of neo-Nazis, has indignantly denied any Red ties.

Another piece of evidence in support of our proposal is the greater facility of obtaining a PS reading if the existence of the set over which *any* quantifies depends on the will of the subject of the adversative verb. In (5.97), the reading where Ms Higuchi made a list of plans and then denied each of them is highly implausible. Rather, the reading where no plans were made is the most likely. Similarly, a FC reading in (5.100) requires the mismanagements to be made, mentioned or individuated by somebody other than the person who denies. If the person who denies is also the potential author of the presumed mismanagements, i.e. if the existence or nonexistence of the mismanagements does not depend on other entities or events, the PS reading gains relevance.

- (5.100) He denied any mismanagements.

<sup>23</sup>Douglas Adams, 1979, Pocket Books.

These data can be interpreted as manifestations of the tendency of specific NPs to escape the scope of negation, and of non-specific ones to take narrow scope. An example is precisely the PPI *some*. In (5.101), the indefinite NP *some students* is interpreted as specific, and this interpretation is usually represented by a scope relation, i.e. the NP outscopes the negation.

(5.101) He did not see some students.

Jackendoff [Jac72] has already noted that a quantifier in the scope of a negation must be non referential. As seen in chapter 3, Dowty [Dow93] discusses the connection between the establishment of discourse referents and monotonicity. He argues that 'a determiner that is upward-monotone for both its arguments must entail that this intersection is non-empty, but, significantly, a determiner that is downward monotone for one or both arguments cannot entail that this intersection is non-empty.' [Dow93, p.95–96] Subsequent discourse anaphora is licensed by the entailed existence of such a non-empty intersection.

Outside the polarity domain, we find the same behaviour in the case described by the syntactic notion of scrambling. In a language like German, one of the restrictions that can be imposed on scrambling is that a specific object must precede negation which, on its turn, must precede non-specific objects. For instance, (5.102a) can only be interpreted as *ein Buch* being specific. It cannot be interpreted as equivalent to (5.102c). Conversely, *ein Buch* cannot be specific in (5.102b).<sup>24</sup>

- (5.102) a. Er hat ein Buch nicht gelesen.  
           he has a book not read  
           'There is a book he did not read'
- b.? Er hat nicht ein Buch gelesen.  
           he has not a book read  
           'He read no books'  
           'It is not the case that he read books'
- c. Er hat kein Buch gelesen.  
           he has no book read  
           'He did not read any book'

The same applies to subordinate clauses. In (5.103), subject and object NPs are indefinite. The nonspecific ones always follow negation.

<sup>24</sup>Sentence (5.102b), as well as (5.103a), (5.103b) and (5.103d) improve once the nonspecificity is enhanced, for instance by adding *einzig* (single) after the indefinite.

- (5.103) a.? Er sagte, daß nicht ein Hund eine Katze aß.  
           he said that not a dog a cat ate  
           ‘He said no dog ate a cat’
- b.? Er sagte, daß ein Hund nicht eine Katze aß.  
           he said that a dog not a cat ate  
           ‘He said that a certain dog did not eat a cat’  
           ‘He said that it wasn’t a cat that a certain dog ate’
- c. Er sagte, daß ein Hund eine Katze nicht aß.  
           he said that a dog a cat not ate  
           ‘He said that a certain dog did not eat a certain cat’
- d.? Er sagte, daß eine Katze nicht ein Hund aß.  
           he said that a cat not a dog ate  
           ‘He said that it wasn’t a dog that ate a certain cat’

For the sake of completeness, we note that Kadmon and Landman [KL93, p.378] also discuss the contribution of D-linking. They use it to block widening, and derive the inability of *each* of licensing *any* in its restrictor from the potential conflicting requirements of the two effects. However, they do not know how to treat cases where there seems to be no conflict, such as when the head noun together with the relative select the domain, as in (5.104).

- (5.104) Each author whose contribution is written in any language other than English will provide a summary in English.

#### 5.4.4 Summary

A few important points result from the preceding discussion. The systematic connection between selective scope taking and the mass or countable nature of the domain of quantification is not a peculiarity of negative polarity, but is also to be found in weak islands. In both phenomena, an individual unordered domain allows a wide scope interpretation of the phrase.

An individual domain makes it possible to establish referential links to its individuals. A nonindividual domain, or one composed of trivially different entities such as units of measure in an amount, do not support referential links. The interpretation of *any*-phrases is sensitive to these differences.

The impact of D-linking on *any*-phrases interpretations further supports the hypothesis that their nature of NP is a crucial factor in explaining their distribution. It also

reveals that contextual requirements with respect to referential links matter as much as the properties of *any*-phrases for their interpretation. We pursue the research on this issue in the next section.

## 5.5 The relevance of specificity

The data discussed in section 5.4 can be approached differently. The association between, on the one hand, a wide scope representation and a *de re* reading, and on the other a narrow scope representation and a *de dicto* reading has been mentioned several times. In this section, I explore an approach where the referential properties are characterised in a way other than in terms of scope relations. Formulations of the notion of definiteness in terms of presupposition or of discourse referent provide ways of teasing apart interpretative variations which do not translate into structural ambiguities or different truth conditions.

### 5.5.1 *Any* within indefinite NPs

Several factors seem to affect the scoping of indefinites. Kroch [Kro74, p.128] observes that adding descriptive content to the indefinite NP of the form *a N* may interfere with its scope relations with universals or negation.<sup>25</sup> There is a tendency for indefinite NPs with more descriptive content to take wide scope. He provides examples (5.105) and (5.106), where the prominence of the specific reading of the subject or object NP is directly proportional to its degree of descriptive determination. The marking corresponds to the decreasing availability of the specific reading.

- (5.105) a. A diamond necklace worth \$ 10,000 wasn't in its usual place when John came into his store on Thursday.
- b.? A diamond necklace wasn't in its usual place when John came into his store on Thursday.
- c.?? A necklace wasn't in its usual place when John came into his store on Thursday.

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<sup>25</sup> Although cast in other terms, the issue of the effect of descriptive material in a referential expression has long been debated in philosophical circles, cf. Donnellan's [Don66] contribution.

- (5.106) a. John didn't obey a red light (and was killed as a result).  
 b. John didn't obey a red light (that was) about to change to green (and was killed as a result).  
 c.?? John didn't solve a problem.

Descriptive content may restrict the denotation of an NP. Thereby, it increases its level of specification. This had been expressed by using scope preferences. However, the referential possibilities of an indefinite NP cannot be defined just in terms of scope relations. For instance, variations are observed even in cases where there are no other scopal elements with which to 'exchange places'. Reference is affected also by the type of predicate contained in the sentence. Following Carlson's [Car77] terminology, individual-level predicates, such as in (5.107a), apply to individuals, which may be an object like *Daniel* or a natural kind like *cats*, and result in a specific reading of an indefinite NP. On the other hand, stage-level predicates, such as in (5.107b), are predicates of stages of individuals, which are spatiotemporal realisations of individuals. They can apply to the level of the token, and give rise to a specific reading, or of the type and give rise to a nonspecific reading.

- (5.107) a. A fireman is intelligent.  
 b. A fireman is available.

The interpretive variations of *a N* phrases are relevant in various respects. First, they reiterate several observations: Negation blocks specific reference in indefinites. Usually this effect is expressed by assigning narrow scope to the indefinite NP, i.e. by subordinating the instantiation of the indefinite to the effect of some other operator. Then, this type of scope is affected by the degree of specification of the NP. Again, the higher the specification, the more likely there is a wide scope. Next, the referential properties of the NP containing an *any*-phrase matter for the resulting reading of the NPI. Data were presented by Linebarger [Lin80a], on main clause indefinite subjects containing NPIs in sentences with negated predicates.

- (5.108) a. A doctor who knew anything about acupuncture was not available.  
 b.\*Many doctors who knew anything about acupuncture were not available.
- (5.109) a. I couldn't find many doctors there who knew anything about acupuncture.  
 b. I couldn't find a doctor there who knew anything about acupuncture.

(5.110) \*A doctor who knew anything about acupuncture was not available: in fact, he just left.

(5.111) \*A doctor who knew anything about acupuncture didn't know what to do.

The contrast in (5.108) shows that the NP *a doctor*, and the relative clause it heads, can be interpreted within the scope of negation on the main verb, but this does not hold for the NP *many doctors* and its clause. Linebarger provides the pair of sentences in (5.109) to show that, when c-commanded by negation in surface structure, both *a doctor* and *many doctors* can be interpreted within the scope of negation. She notes also that (5.108a) is acceptable only in the nonspecific reading of *a doctor*. The ungrammaticality of (5.110) and (5.111), where the contexts force specific readings of the NPs, supports her observation. She further notes that the relative clause containing *anything* may occur after the negation without this increasing the acceptability of the sentence, see the contrast in (5.112).

(5.112) a. A doctor wasn't available who knew anything about acupuncture.

b.\*Many doctors weren't available who knew anything about acupuncture.

In the case of a modification by a relative clause, the nature of the head of the relative remains a decisive factor in determining the interpretation of the sentence and its acceptability.

The structural relation of c-command constitutes the backbone of the notion of scope. Narrow scope should always be possible for items c-commanded by licensors. Hence the PS reading is the unmarked one in licensing contexts, in the general case. In section 5.3, we discussed cases where *any*-phrases are licensed in positions standardly considered not to be licensing ones. In those cases, *any*-phrases were inside the structural scope of a licensor and could be interpreted outside it. Here, we look at cases such as (5.108a), where *any*-phrases are licensed in positions whose characterisation and structural scope relations with respect to a licensor are debatable. These are cases of PS *any* inside a complex subject in preverbal position in sentences where the only overt licensor is the overt negation on the VP. Whether this position is c-commanded by negation is an open issue. However, in this case too licensing appears to operate selectively.

We have just seen that the *a N* phrase in subject position in a sentence with a negation on the verb can be interpreted within or outside the scope of the negation, with a certain degree of freedom. We have also seen that there is no such freedom when the subject is an *any*-phrase, see example (5.113).

(5.113) \*Any girls did not come.

In a case like (5.113), it is generally said that negation cannot outscope and license the subject. However, the matter is more complex than as just stated. It appears from (5.108a) that *any*-phrases can take advantage, so to speak, of the capacity of *a*-phrases to scope narrowly, and by this means they can be licensed. It has been noted by Linebarger [Lin80a, ch.7], and discussed extensively by Uribe [UE94], that narrow scope indefinite NPs in subject position can contain PS *any*-phrases. The narrow scope is evaluated with respect to a negation on the clausemate verb. As anticipated in subsection 5.2.2, Linebarger is concerned primarily with the problem of reconciling the contrast in (5.108) with the output of a restructuring rule which predicts ungrammaticality for both sentences. The different status is ascribed to the different properties of the two determiners *a* and *many*. Then, following an observation by Kroch [Kro74], she suggests that there is a link between the interpretation of the subject and the properties of the clausemate predicate, although this link is not clearly identified. The relevant data are presented in (5.114) and (5.115).<sup>26</sup>

(5.114) a.\*A doctor who knew anything about acupuncture wasn't intelligent.

b. A doctor who knew anything about acupuncture wasn't available.

(5.115) a.\*Tickets to any of the afternoon concerts were not green.

b. Tickets to any of the afternoon concerts were not available.

Uribe [UE94] uses Linebarger's data for arguing that it is not possible to maintain consistently that licensing proceeds through Comp, as claimed by Progovac [Pro88] and Laka [LM90]. In her account too, scope relations are crucial. She highlights connections with the stage-level and individual-level predicates distinction. In the grammatical cases, the main clause predicate is a stage-level one, see example (5.115b). In the ungrammatical cases, the matrix verb is an individual-level predicate, see example (5.115a). The difference is expressed in structural terms, i.e. the subject of a stage level predicate can reconstruct.<sup>27</sup> This operation of rearranging constituents creates an LF structural configuration which meets the c-command requirements needed for polarity licensing to

<sup>26</sup>Some speaker finds the contrast more subtle than what would be suggested by the star.

<sup>27</sup>Uribe adopts the structures proposed by Diesing [Die92] for capturing stage/individual level readings, who in turn builds on Kratzer [Kra88]. Kratzer argues that stage-level predicates have an event argument which is external. Thus, the subject has to be internal to the VP. According to Diesing, the subject of individual-level predicates is generated outside the VP, in spec/IP. The INFL associated with the predicate assigns a theta-role to spec/IP, i.e. to the subject. The subject of stage-level predicates is generated in spec/VP, and receives its theta-role from V. It is postulated that INFL does not assign a



take place. Reconstruction puts the NPI back inside the scope of negation. Next, Uribe argues that the stage/individual level predicate distinction is not sufficient to characterise the contexts of reconstruction. She provides cases where NPIs are not licensed despite the fact that the predicate is a stage-level one.<sup>28</sup>

(5.116) \*A fundamentalist yogi that had any interest in philosophy wasn't lying on the floor.

When reading variations are interpreted as different scope relations, the introduction of some sort of scrambling operation is a common approach to overcome the rigidity of the system. When the possibility of a mechanic rescoping is allowed, the question of how to stop it in unwanted cases immediately arise. Reconstruction is not available with subject *many*-NPs for instance. In the case of subject *any*-NPs, two options are discussed [UE94, p.54] in order to avoid the licensing of *any*, either *any* does not reconstruct for tense reasons, or it cannot form a complex predicate. Uribe refers to the notion of bleached verbs, introduced in (Szabolcsi [Sza86]).<sup>29</sup> She proposes constraints on the operation for forming of complex predicates. In all these cases of NPI licensing inside an

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theta-role to spec/IP in this case. Then, the subject raises to spec/IP, or stays put. In this way, the subject of stage-level predicates can be situated in two different positions, one of which is in common with the individual-level predicates. Stage-level predicates are raising predicates, whereas individual-level predicates are control predicates. The ambiguity of sentences containing stage-level predicates, and non-ambiguity of those containing individual-level predicated follow. Positioning the subject in spec/VP means to have it inside the scope of negation, whose phrasal projection is located between INFL and VP.

<sup>28</sup>However, this piece of evidence is not decisive, as can be shown by a quick discussion of examples (i)–(iii). In (i), the progressive forces a specific reading of the indefinite NP in subject position. Sentence (ii) shows that this specific reading does not go well together with a negative predicate. Example (iii) puts together a predicate that favours a specific reading, with negation and with an indefinite subject. The NPI inside the indefinite requires a non specific reading of the indefinite. The end result is a marginal sentence.

- (i) A fundamentalist yogi interested in philosophy was sitting in the first row.
- (ii) ?? A fundamentalist yogi interested in philosophy wasn't sitting in the first row.
- (iii) \* A fundamentalist yogi that had any interest in philosophy wasn't sitting in the first row.

Hoeksema reminded me that Horn [Hor86] argued that echoing old information helps to get a wide scope for negation over the indefinite subject. Thus, (5.116) is more acceptable in a context like: 'They told me there would be every sort of person with any interest in philosophy lying on the floor, but I was disappointed. A fundamentalist yogi ...'. Note that here the indefinite NP introduces a 'sort of person' and not an individual.

<sup>29</sup>Szabolcsi analyses a group of Hungarian verbs light in meaning that show Definiteness Effects when no aspectual prefix is attached to them. In case the NPs are definite, the sentences are ungrammatical, unless an aspectual prefix is added. Szabolcsi [Sza86] proposes that these verbs must be substantiated with some lexical content, and this is done by the NP, which is in a sisterhood relation with the V'. A Definiteness Effect results from this strict sisterhood relation. Szabolcsi further argues that this type of verb distinction together with Definiteness Effects is available in English in the *there*-constructions. Uribe interprets this operation of substantiating the bleached verb with the indefinite NP as a case of complex predicate formation. This operation is motivated by the need to comply with the principle of Full Interpretation of the minimalist program.

indefinite subject, the main predicate is considered to be light in meaning, expressing mainly an idea of existence or availability.

The main difference between Uribe's reconstruction operation and those proposed by Linebarger [Lin80a] or Kroch<sup>30</sup> [Kro74, ch.4] is that in reconstruction, an element is brought back to its basic position, from which it may entertain different scope relations. Whereas, Linebarger's and Kroch's operation reorders scopal elements among themselves. Therefore, Uribe can link the operation with certain properties of certain lexical items, e.g. *will* and *would*, and with more finely defined structural conditions, whereas, Kroch and Linebarger link it with a certain symbol, namely the existential quantifier. The properties of the given lexical items are stored in the lexicon and then used to provide the morphological motivation for the movement at LF required in the minimalist program. Hence, it is possible to trigger reconstruction on the basis of different requirements, such as tense licensing or the constitution of a complex predicate with a bleached verb.

### 5.5.2 Scoping ambiguities and Definiteness

In a 1982 paper, Fodor and Sag [FS82] argue that indefinite noun phrases are ambiguous 'over and above any scope ambiguities they may exhibit in appropriate contexts' [FS82, p.355]. They identify two interpretations, one termed referential, and one quantifier interpretation. The latter term covers a family of interpretations, because of the scope ambiguities proper of all quantifiers. Thus, sentence (5.117) has three interpretations, one where there is a woman for each of the men, a second where there is a single woman for all the men and we do not know who she is, which are both cases of quantifier interpretation of the indefinite. A third where there is a single woman and we know who she is, is the referential interpretation.

(5.117) Every man loves a woman.

This variation is considered a case of lexical ambiguity. Fodor and Sag draw an analogy between indefinites and demonstratives. They both require the specification of such contextual parameters as who is speaking, who the audience is, what the time and place of utterance are, and so forth. They differ inasmuch as the denotation of indefinites is argued to depend only on the context of utterance, whereas the sentential context in which the phrase appears is said to matter for demonstratives.

<sup>30</sup>It is interesting to note that Kroch's rules go together with particular prosodic requirements, as if linear order alteration had to be flagged.

Croft [Cro83] also strongly criticizes a treatment of the interpretation variations of indefinites in terms of quantifiers' scope ambiguities. He makes a claim more general than Fodor and Sag's when he says that the scope ambiguities belong to the syntax of the logical form of sentences such as (5.117), and not to the syntax of natural language. In his view, the representations of logical form in (5.118) fail to capture why the linguistic form is ambiguous.

- (5.118) a.  $(\forall: \text{man } x)(\exists: \text{woman } y) (\text{love } x \text{ } y)$   
 b.  $(\exists: \text{woman } y)(\forall: \text{man } x) (\text{love } x \text{ } y)$

In his terms, surface oriented accounts use various *ad hoc* devices such as rules of rescoping or restructuring, or a device like Cooper storage, in order to match form and interpretation of these sentences. If the meaning variations are connected with properties of the lexical elements, as Croft also suggests, rather than with their relative positioning with respect to other quantifiers or operators, it becomes possible to describe and account for variations occurring in contexts where these elements are the only scopal elements. Croft considers the ambiguity between a specific and a nonspecific reading in existential quantifiers such as *a* and *some* as a case of polysemy of the lexical items. He discusses examples where the generative capacity of various rescoping devices does not meet empirical data, or more precisely does not explain frequency effects. Definite descriptions affect the preference for wide scope reading of existential NPs, consistently with Kroch's [Kro74] observation. A clear preference for a specific reading is observed also when the indefinite precedes the universal quantifier. 'This could be expected: normally old information precedes new information in an utterance, and old information tends to be more definite by virtue of its being old information. In particular, subjects tend to be topics of the sentence and hence usually more definite' [Cro83, p.26].

The possibility of nonspecific reading for (5.117) depends also on the semantics of the predicate. Croft says that the ability of interpreting the subject as applied distributively to the predicate makes nonspecific reading possible. Had the predicate only a collective reading, the specific reading of the indefinite would be required. Contexts that allow or require a nonspecific reading of existential quantifiers are *modus irrealis* contexts, like wish or want contexts, or conditionals. *Modus realis* contexts, 'such as the past, nongeneric present, or the present progressive will require a specific reading since that reading requires a real, although not fully specified, object as a referent.' [Cro83, p.28-29].

Croft mentions a case where nonspecific *a* and *any* differ. The relevant examples are given in (5.119) and (5.120).<sup>31</sup>

(5.119) John wants to marry a Norwegian.

(5.120) John wants to marry any Norwegian.

He notes that the nonspecific reading of *a* allows John to meet a number of Norwegian women and not want to marry every one of them.

‘[I]n other words, an arbitrary pairing of John with a Norwegian woman will not imply that John wants to marry that woman. This is not the case in (5.120), where John is sufficiently enamored of Norwegian women that for an arbitrary individual extracted from the domain of Norwegian women, John wants to marry that individual.’[Cro83, p.30]

Croft extends the discussion to imperatives and affirmative propositions such as (5.117), and describes the meaning of *any* as a sort of generic meaning. He concludes by suggesting that ‘perhaps the correct analysis of *any* is as the ultimate indefinite existential quantifier: although the above sentences appear to be referring to a single unspecified entity, that entity is an arbitrary choice from the domain of NP.’[Cro83, *ibidem*] He suggests a difference between *a* and *any* in terms of indefinite reference and arbitrary potential referent.

### 5.5.3 Weak and strong determiners

Unlike the ambiguity in (5.117), the one in (5.121) does not correspond to a difference in truth conditions.

(5.121) Some winner didn’t collect her prize.

Sentence (5.121) can be uttered, for instance, when one checks the list of winners and sees that one has not collected her prize yet, or else one notes that there is a prize left and guesses that a winner must have not showed up yet.

An attempt to characterise the different readings of certain determiners in a way other than in terms of scope relations had been undertaken by Milsark ([Mil74], [Mil77]). As mentioned briefly in subsection 5.2.1, he distinguished between strong determiners,

<sup>31</sup>Bolinger [Bol60] had already discussed the contrast with respect to (i)-(ii).

(i) Do you see a man over there?

(ii) Do you see any MP around?

He claims that (i) suggests that the speaker thinks he may see one, whereas (ii) evinces concern over the presence of whatever such individual.

also described as definite, which possess quantificational sense, and weak determiners, also described as indefinite, which possess quantificational sense and cardinality word sense. A determiner is weak if it can appear as the determiner of a postcopular NP in existential *there*-sentences. Milsark gives the following explanation for the impossibility of having strong determiners in *there*-sentences.

If *there be* is to be interpreted as an expression of existential quantification on the following NP, no NP which itself contains a quantifier (i.e., a strong determiner) may appear in this position, since it would result in double quantification of the set denoted by the NP. It is further noted that only strong (quantified) NP may appear as the subjects of property-naming predicates. [Mil77, p.25].

The type of readings distinction allows the definition of three types of determiners: those that have both quantificational and cardinal readings, and those that have only one of the two. In [Mil74], Milsark distinguishes clearly the three groups, and attributes *few*, *some*, *many* (and bare plurals), among others, to the first group, *the*, *each*, *all*, *everyone*, *both*, etc. to the group with only quantificational reading, and *a* and possibly numerical expressions such as *three*, *ten*, etc. to the group with only cardinal reading. In [Mil77], Milsark discusses extensively the first and second groups, and just gives an example with a numeral for what could be considered an instance of the third group, but does not identify the group directly. It is interesting to record this shift of emphasis. On the one hand, as the data discussed in the previous sections have shown, sentences containing the determiner *a* can be ambiguous, hence the disappearance of *a* from the third group is expected and welcome. On the other hand, because of the uncertain classification of numerals, the third group acquires a conditional status. However, whether there is a hole in the pattern is something a theory should be able to predict in a clear way.

Milsark explores also the link between the identification of an entity and the type of predication. This topic is further developed in Carlson [Car77], who proposes the classification into individual-level and stage-level predicates for the property/state distinction pointed out by Milsark.<sup>32</sup> Roughly, Carlson's two tier classification of predicates, with one tier which is itself decomposed into two, reproduces the weak/strong partitioning of determiners, a fact which could be taken as evidence against the existence of the third group for determiners.

It may be useful to explore where *any* would fit in this classification. Milsark [Mil74, p.202ff.] refers to Horn's thesis [Hor72] for a discussion showing that the quantifier *any*

<sup>32</sup>Strictly speaking, Carlson distinguishes individuals into 'objects' and 'kinds'. Different operators apply to different entities or predicates to realise conversions. The distinction between stage and object can be interpreted as an attempt to capture the distinction between an inherent or permanent property or situation, and a transient one.

can be found in existential sentences only in the PS reading, not as universal. Example (5.122) is provided to support the statement that in its FC reading, *any* fails this test. Examples (5.123) show that the PS reading passes the test.

(5.122) \*There is anything John would do for you.

(5.123) a. There isn't anything here.

b. Is there anything John would do for you?

These data could be interpreted as saying that *any* is a weak determiner. PS *any* is the weak reading, and FC *any* is the strong reading. However, it is to be proven that adding the licensers does not interfere with the nature of the test in (5.123).<sup>33</sup> According to my proposal (5.86), negation has a non-negligible effect, because it blocks potential referential links. For a more conclusive test, one may try to look at Barwise and Cooper's [BC81] characterisation of weak and strong determiners. They propose a definition for weak and strong in the theory of generalised quantification.

A determiner  $D$  is *positive strong* (or *negative strong*, resp.) if for every model  $M = \langle E, \parallel \parallel \rangle$  and every  $A \subseteq E$ , if the quantifier  $\parallel D \parallel (A)$  is defined then  $A \in \parallel D \parallel (A)$ . (Or  $A \notin \parallel D \parallel (A)$ , resp.). If  $D$  is not (positive or negative) strong then  $D$  is *weak*. [BC81, p.182]

This definition is used to explain why NPs with strong determiners are odd in *there*-sentences.

A sentence of the form *there is/there are* NP can be interpreted as meaning that the set of individuals in the model (E) is a member of the quantifier denoted by the NP. [BC81, p.183]

In the case of positive or negative strong determiners, *there*-sentences correspond to a tautology or a contradiction respectively. In their view, this is the reason for their ungrammaticality, which is a rather unmotivated conclusion.<sup>34</sup> Furthermore, sentence (5.124) is also predicted to be bad because it contains a strong determiner, whereas it is not.

(5.124) There were all kinds of people at the party.[Hor72, p.111]

Barwise and Cooper devise a practical test for identifying strong determiners. A determiner *Det* is positive strong if *Det N is an N* is a tautology. *Every* passes the test, see (5.125). A determiner *Det* is negative strong if *Det N is an N* is a contradiction. *Neither* passes the test, see (5.126).

<sup>33</sup>The discussion of example (5.131) below shows that the test is not conclusive.

<sup>34</sup>In the same line of reasoning, (5.125) and (5.126) are also expected to be ungrammatical.

(5.125) Every book is a book.

(5.126) Neither book is a book.

A determiner is weak if it is not strong, that is if the truth value of *Det N is an N* is contingent. According to this test, FC *any* results to be a sort of positive strong, see the tautology in (5.127). However, indefinite *a* also comes out as positive strong, see (5.128).

(5.127) a. Any book is a book.

b. Any beer is a beer.

(5.128) a. A book is a book.

b. A beer is a beer.

Things are again not so clear when one tries to test PS *any*.

(5.129) a. It is not the case that any book is a book.

b.\*I doubt that any book is a book.

c. Is any book a book?

Barwise and Cooper make another distinction which seems to be relevant for the study of *any*. They note that NPs with weak determiners can be used naturally when they receive an improper interpretation, i.e. when the set denoted by the common noun is empty. NPs with weak determiners can also be used to refer specifically to the entities they denote, i.e. presuppose their existence. In contrast, strong determiners are regarded as undefined in their improper use. More generally, they are considered to presuppose the existence of such a set. Barwise and Cooper state that it is difficult to use NPs with strong determiners improperly. de Jong and Verkuyl [dJV85] discuss proper and improper uses of strong determiners, in particular their use in lawlike and contingent sentences. The proper use of *all* is the unmarked case. It presupposes a specific context and is found in contingent sentences, see their example (5.130a). In this example, a particular collection of seats is considered, and the whole lot is scanned in order to assess the truth of the proposition. In its marked use, *all* reads as a generic and not as a universal quantifier, see their example (5.130b). They point out that the fact that the set of ravens is a subset of the set of black entities is not based on observation, but induced or hypothesised. The result is a lawlike statement which holds as long as no counterexample is noted.

- (5.130) a. All seats are taken.  
 b. All ravens are black.  
 c. All men are ill.

de Jong and Verkuyl [dJV85, p.30] note that example (5.130b) does not change in meaning if *all* is deleted, whereas the same does not apply to (5.130a). Sentences such as (5.130b) have a 'meta-linguistic dimension being about one of the properties we assign to the noun *raven* in our lexicon'. In their words, sentences (5.130a) and (5.130c) are nonsensical if there are no men or seats in the context of use. They invoke the absence of inherent relation between seats and the property of being taken, or men and that of being ill. However, they argue that it is not just a consequence of certain predicates requiring strong NPs for a subject.

The class of predicates that varies with respect to the requirements it imposes on the subject NP, is the class of predicates that allow for any kind of subject. For example, the predicate 'to be ill' selects only strong NP for a subject, if the denotation of the occurring noun is not the empty set. But this is not a general characteristics of this predicate. Weak NPs can be selected as the subject of 'to be ill' as well. If it happens to be that an NP is selected, whose noun has the empty set as denotation, the resulting sentence is not senseless, but just false. [dJV85, fn.2]

In subsection 5.4.3, contextualisation has been shown to have an impact on the interpretation of *any*. The case of a contextually defined set cannot be equated with that of a presupposed set. Hence, it cannot be said that FC *any* must be properly used. However, because of the sensitivity to the presence of such a set which has been recorded above, it is also not possible to say just that it does not matter whether *any* is used in a proper or improper way. If it can receive an improper interpretation, then it is closer to Barwise and Cooper classification as weak determiner. As for PS *any*, it behaves as a sort of weak determiner inasmuch as it does not require the set denoted by its N' to be empty or non-empty. However, in subsection 5.5.2 it was said that a differentiation between real or arbitrary potential referents also seems to matter.<sup>35</sup>

A piece of data against a characterisation as a classical weak determiner is the impossibility for *any* to occur in *there*-constructions. However it can be used in interrogative *there* clauses.

<sup>35</sup>Croft [Cro83] does not define these terms. The distinction between real and arbitrary potential referent does not seem to correspond to the more traditional permanent and temporary discourse referent distinction. Rather, it is reminiscent of Ladusaw's [Lad79] *distinguo* with respect to possible instantiations and the strength of universal quantification mentioned in subsection 5.2.2.



- (5.131) a.\*Is there any student intelligent?  
 b. Is there any fireman available?

If a contextually relevant set can be identified or hypothesised, the behaviour of *any* is closer to the improper use of a strong determiner and we get a FC reading. A piece of data in favour of the identification of a sort of strong reading for *any* has been reviewed in section 5.2. Vendler [Ven67, ch.3] had already noted that *any* and *all* have the same sense in constructions lacking definite reference and existential import. They cannot be found true as a result of an enumerative induction.

Perhaps, *any* constitutes a different type: a weak determiner that cannot have a strong reading. *Any* could be a member of the third group of determiners, which appeared to have conditional status in Milsark's classification. It is an indefinite that can never be referential. The members in its domain cannot be individuated.

Again, there appears to be a connection between the use of *any* and types of predicate and specificity. Definite and indefinite determiners as well as the universal quantifier can be used to express generic statements. However, they can do so only if they are not specific. It may be profitable to take a closer look at points in common between sentences with generics and *any*-phrases.

#### 5.5.4 Specificity and generics

With respect to the relevance of non-referentiality for generic readings, it is interesting to have a look at the case of French generic *tout*.

In its flected use, the determiner *tout* is a strong determiner used to express universal quantification. Its masculine singular form also has a generic use, which requires a singular bare noun in order to arise. In this case, *tout* can be used improperly, i.e. it does not presuppose a non-empty denotation domain. This use is sensitive to a group of factors which makes it of particular interest with respect to the analysis of *any*. First, the common noun after generic *tout* cannot be interpreted as identifying a specific item, as in (5.132). Example (5.132c) shows that it is possible to establish an anaphoric link with a bound variable, but that a discourse referent cannot be identified. This behaviour is found also in the case of *any*. Lasnik [Las72, p.49] dismisses the hypothesis that *any* is non-referential on the basis of example (5.133). As a matter of fact, (5.133) shows that coindexing is possible, but this does not correspond to the semantic operation of binding a variable.

- (5.132) a. Tout enfant sera le bienvenu.  
 all child will-be the welcome  
 'Children will be welcome'
- b. Tout enfant est le bienvenu.  
 all child is the welcome  
 'Children are welcome'
- c. Tout enfant<sub>i</sub> est le bienvenu, on l<sub>i</sub>'appellera Daniel. Il<sub>\*i</sub> a oublié  
 all child is the welcome it him will be named Daniel he has forgotten  
 son manteau.  
 his coat  
 'Children<sub>i</sub> are welcome, they<sub>i</sub> will be called Daniel. They<sub>\*i</sub> forgot their coats'
- (5.133) If anyone<sub>i</sub> shows up, bring him<sub>i</sub> in.

Next, it has been noted that FC *any* may require some sort of explicit domain restriction in order for the sentence to be felicitous, a phenomenon which has been termed subtriggering. Example (5.134) presents a typical case. This situation has been contrasted with the capacity of other quantifiers, such as the universal *every*, to restrict the domain to contextually relevant sets even when no overt indication is given.

- (5.134) a.\* Any child received an icecream.  
 b. Any child who came into the room received an icecream.

The presence of a modal operator such as the future *will* seems to be enough to remove or satisfy the requirement of domain restriction, compare (5.134a) with (5.135).

- (5.135) Any child will receive an icecream.

The same pattern is repeated in case of generic *tout*. The sentences in (5.136) reproduce the contrast seen in (5.134). The improvement brought about by the future is confirmed in (5.137).

- (5.136) a.\* Tout enfant reçut une glace.  
 all child received an icecream
- b. Tout enfant avec les cheveux roux reçut un ballon.  
 all child with the hair red received a ball  
 'Any child with red hair got a ball'

- (5.137) Tout enfant recevra un ballon.  
 all child will receive a ball  
 'Any child will receive a ball'

Then, sentence (5.138a) is said to be ambiguous, with negation scoping over the predicate, or over the subject which contains the universal quantifier *tous*. Sentence (5.138b) is not ambiguous, and negation can scope only over the predicate. This sentence and the VP-negated interpretation of (5.138a) are felt to be awkward by some speakers. However, in all cases it is impossible for negation to scope over the generic subject.

- (5.138) a. Tous les enfants ne vont pas en discothèque.  
 all the children NE go PAS in disco  
 'Every child does not go to a disco'  
 'Not every child goes to a disco'
- b.? Tout enfant ne va pas en discothèque.  
 all child NE goes PAS in disco  
 'Not every child goes to a disco'

Sentence (5.139a) contains a FC *any*-phrase in subject position. Such a subject cannot be outscoped by a negation on the verb, see (5.139b).

- (5.139) a. Any child likes school.  
 b. Any child does not like school.

Kleiber and Martin [KM77] have compared different means by which generic statements can be produced in French. They note that what they call the class of reference of *tout*, i.e. the type individuated, must be neither empty nor a singleton set. This constraint is derived from the distributive property of the item. However, subclasses of such a class can be purely potential, and do not have to be actual. Kleiber and Martin point out that this constitutes a point in common with negative elements, modals and conditional.

Furthermore, they say that it must be possible for the subclasses to be empty, and from there they derive the difficulty of using generic *tout* in past sentences. According to them, sentence (5.140) is excluded because it is not possible for one to have accepted a solution without the solution having existed. This is the eventive reading of the sentence. In their account, it is essential to keep apart potential from actual referent, although the two are not incompatible *per se*.

- (5.140) \* J'ai accepté toute solution.  
I-have accepted all solution

Kleiber and Martin make also a distinction between generic *le* and *un* which seems relevant for generic *tout* as well as *any*. They discuss the different availability of generic readings for definite and indefinite determiners in case N is mass, see (5.141).

- (5.141) a. Un bon vin ne fait pas de mal.  
a good wine NEG do NEG of badness  
'A good wine does not hurt.'
- b.\* Un vin ne fait pas de mal.  
a wine NEG do NEG of badness
- c. Le vin ne fait pas de mal.  
the wine NEG do NEG of badness  
'Wine does not hurt.'
- d. Le bon vin ne fait pas de mal.  
the good wine NEG do NEG of badness  
'Good wine does not hurt.'

They argue that the indefinite *un* needs the presence of something indicating the idea of plurality for the generic to be acceptable. Here the adjective *bon* points out a differentiation among types of wine. They express the difference in terms of different classes of reference allowed by *un* and *le*. The same argument may apply for the contrast in (5.142).

- (5.142) a.\* Tout enfant, à savoir Marie, Jean ou Pierre, a droit à l'attention de  
all child, namely Marie Jean or Pierre has right to the-attention of  
l'instituteur.  
the-teacher
- b. Tout enfant, à savoir le doué ou le moins doué, a droit à l'attention  
all child, namely the gifted or the less gifted has right to the-attention  
de l'instituteur.  
of the-teacher  
'Any child, i.e. the gifted or the less gifted, has the right to receive attention  
from the teacher'

- c.\* Tout enfant, à savoir un doué ou un moins doué, a droit à l'attention  
 all child, namely a gifted or a less gifted has right to the-attention  
 de l'instituteur.  
 of the-teacher

(5.143) a.\* Any child, i.e. Daniel or Louise, has the right to speak.

b. Any child, i.e. the gifted or the less gifted, has the right to speak.

c.\* Any child, i.e. a gifted one or a less gifted one, has the right to speak.

The repetition in (5.143) of the contrast in (5.142) raises the question of whether there is incompatibility between the type of genericity expressed by *tout* and *un* for French, and possibly compatibility between generic *tout* and *le*. Similarly, there would be compatibility between *any* and generic *the*, and incompatibility between *any* and *a* in English. However, this would be too hasty a conclusion, as shown by (5.144) with the class predicate *se multiplier*.

(5.144) a. Le lapin se multiplie rapidement.

the rabbit REFL multiply fast  
 'Rabbits multiply fast'

b.\* Tout lapin se multiplie rapidement.

all rabbit REFL multiply fast

c.\* Un lapin se multiplie rapidement.

a rabbit REFL multiply fast

The issue of the kind of referent used in generic, nonspecific and attributive (Donnellan [Don66]) interpretations is explored also by Forsgren [For89]. He derives the generic use of *un* from contingent factors. He argues that *un* is used to extract an element from an initial set, which is an extension in context. In case the linguistic or situational context does not contain elements restricting the 'universe of utterance', then the initial set is the potential extension of the lexical item, and the referent is the species, as perceived through a 'member type'. With respect to *tout*, its genericity is derived from intrinsic factors. The class denoted by the N, in its maximal extent, is the referent. Forsgren considers this class abstract by definition, a *classe virtuelle* in his terms. From there, he derives the impossibility of using *tout* for establishing a *anaphore fidèle* (faithful anaphora) [For89, p.101], as in (5.145).

- (5.145) Il y avait dans la chambre trois femmes et trois hommes. \*Tout homme  
 there was in the room three women and three men all man  
 portait un chapeau.  
 was wearing a hat  
 'There were three women and three men in the room. Men were wearing hats'

In Forsgren's view, the unacceptability of (5.145) follows from the fact that any element extracted from the abstract extension of a noun is a type and not a token. *Tout* marks overtly its referent as being a type, whereas *un* identifies its referent through the context.

### 5.5.5 Summary

In this section, we have explored further the nature of indefinite determiner of *any*. A discussion of the indefinite determiner *a* has shown that specific and nonspecific readings are affected by factors such as the degree of descriptive determination of the NP or the type of entities a predicate may be predicated of.

The observation that specific and nonspecific readings alternation is reported also in contexts where there are no other scopal elements favours an analysis which is not cast exclusively in terms of scope relations.

The distinction between weak and strong determiners appears to be of limited help. On the one hand, this classification has been shown to have its own weaknesses, in the literature. On the other hand, licensors interfere with tests and make them unreliable. Furthermore, the difference between real and arbitrary potential referent seems to be a relevant one, but it cannot be captured by the weak and strong classification.

Finally, determiners used generically share interesting aspects with *any*-phrases. They occur in contexts which do not indicate reference to specific individuals or to actual states of affairs. Generic subjects cannot be interpreted in the scope of VP negation. This situation suggests that the unacceptability of *any*-phrases in subject position of main clauses containing a VP negation goes beyond a characterisation as polarity licensing failure.

## 5.6 Thetic and categorical statement

The specialised literature proposes an array of tests for defining the type of a determiner. *Any*-phrases appear to be sensitive to variations in specificity, and to the nature of

the predicate, see subsection 5.5.1. However, the traditional tests fail to give a clear or undisputable result in the case of *any*, see subsection 5.5.3. The resulting pattern partially stamps over the weak/strong distinction proposed by Milsark ([Mil74], [Mil77]) or Barwise and Cooper [BC81]. On the one hand, work by de Jong and Verkuyl [dJV85], among others, showed limits of the classification with respect to cases of strong determiners that do not fit in easily. The class of weak determiners is also not entirely homogeneous. For instance, *many* is classified as weak, but it does not pass all the traditional tests. On the other hand, Ladusaw [Lad94] has proposed that the distinction between weak and strong is epiphenomenal on an underlying distinction between types of statements. He supports a view which fractures Milsark's and Barwise and Cooper's partitioning. In this section we try to see whether the pattern exhibited by *any* fits the predictions of Ladusaw's approach. The way in which entities are apprehended, the way in which people talk about entities in general appears to be at the heart of the matter.

Ladusaw [Lad94] argues that the weak/strong and stage/individual oppositions can be connected to different types of statements, which he calls the *thetic* and the *categorical* statements, following up Kuroda's [Kur72] and Sasse's [Sas87] work.

The distinction between *thetic* and *categorical* statements was first proposed by the 19th century philosopher Brentano and his disciple Marty. They propose to keep the bipartite subject-predicate structure of the Aristotelian tradition for one type of statement, called *categorical*. 'Categorical sentences contain a predication base about which some state of affairs is predicated' [Sas87, p.511]. They express the binary nature of this statement by partitioning it into two steps, naming an entity and predicating about it. The statement can be an assertion as well as a denial. Following Sasse's terminology, the property ascribed to an entity is called the *predicate*. The entity to which the property is ascribed is called the *predication base*. The term *predication base* refers to the subject of the predication—which thereby must refer to an entity—but need not correspond to the grammatical subject of the sentence, as for instance with 'topicalized objects'. A typical example of this type of statement is the sentence *Louise is intelligent*, where it is named an entity *Louise* to which the property of *being intelligent* is ascribed.

On the other hand, the *thetic* judgment is logically unstructured. *Thetic* sentences are simple nonpredicative assertions or denials of states of affairs. They lack a predication base. Entities may be involved in the state of affair which is posited. However, they cannot be selected as predication base, hence they do not need to be expressed by referential elements. A typical example of *thetic* statement is a weather expression

such as *it is raining*. It appears that the crucial point for thethetic and categorical distinction is the definition of possible predication bases.

Sasse [Sas87] argues thatthetic expressions do not consist only of single entities or single events, but that they consist also of events with participants.

When an event, part of which is an entity, is stated, the problem arises that the entity is a possible candidate for a predication base, and the event is a possible candidate for a predicate. This problem is due to the fact that a linguistic expression denoting an event and a linguistic expression denoting an entity are combined in a sentence, the most normal reading is that the relation between the two is a predicative one. This seems to be a basic fact about all languages having categorical sentence types. [Sas87, p.560]

Sasse argues that word order modification, and the consequent alteration of the pragmatic implications it conveys, is a simple strategy for breaking a predicative relation. He also discusses the link between function and properties of a lexical item, namely in the case of Modern Greek indefinite *kanís*, which he glosses as 'somebody'.<sup>36</sup> This item is claimed to occur only inthetic expressions, and yet to fully qualify as grammatical subject. It is a grammatical subject that never appears as predication base.

- (5.146) a. Ine kanis      sto      spiti  
           is somebody in-ART house  
           'Is anybody at home?'  
       b.\* Kanis,      ine sto      spiti  
           somebody is in-ART house  
           'Somebody, is he at home?'

Sasse [Sas87, p.564] comments on the contrast in (5.146) by saying that 'one cannot make a statement about *kanís*'. The discrepancy between its ability of fulfilling the role of grammatical subject and its inability of fulfilling that of predication base is attributed to the fact that 'the subject in this language, and in other European languages, expresses not only the predication base, but also semantic relations between nouns and verbs'. It is not possible to draw a direct analogy between *kanís* and *any*, for instance because in isolation the former but not the latter expresses negative quantification. However, *mutatis mutandis*, the idea is that *any* is another item which cannot occur as predication base because of its referential properties, or rather lack thereof.

Ladusaw [Lad94] explores the connection between judgment types, referential properties and weak/strong distinction. Contra Sasse, he imports Brentano's two forms of

<sup>36</sup>This item has also been characterised as a negative polarity item or as a negative quantifier. Modern Greek is a negative concord marking language. I come back to this topic in chapter 6 section 6.3.



judgment into semantics. His main goal is to see whether Milsark's generalisation, that properties may only be predicated of strong NPs, can be derived from the assumptions that support the foundational ontology of thethetic and categorical distinction.

As seen, athetic statement has unary nature. Ladusaw models it by means of the notion of description of an object. 'A description is something which can be satisfied by an object.' [Lad94, p.223-224] Here objects range over individuals and eventualities, which corresponds to the distinction between entity-central and event-centralthetic statements discussed by Sasse. Thethetic judgment conveys a description which can be affirmed or denied. This mode of judgment represents the effects of unselective existential closure over the description. In this way, the case of events with overt participants is covered. Ladusaw considers also properties—which are taken as basic—which are distinct from descriptions. A categorical statement has binary nature. It has an object and a property as basic components, and it is an affirmation or denial of the latter to the former. The presuppositional nature of its subject is paralleled with the anomaly of weak determiner phrases subject of individual-level predicates. Properties can be abstracted fromthetic judgments, allowing descriptions to provide the predicate of a categorical judgment.

As just mentioned, Ladusaw tackles the issue of the status of entities which are participants in event-centralthetic statements. Their existence is asserted only indirectly by the assertion of the event. This difference is expressed by supposing a theory of argument saturation which works on two levels, 'either by restricting a parameter in an eventuality description with another description, or specifying an object as a value of the parameter.' [Lad94, p.224]. It may be possible to establish a connection between Ladusaw's distinction of two ways of saturating an argument and de Hoop's [dH92] use of weak and strong structural cases for telling apart weak and strong interpretations of indefinites. In her thesis, de Hoop claims that all predicates need an argument to be predicated of, but only NPs with strong readings qualify as arguments. NPs with weak readings are interpreted as part of the predicate. The assumption is that weak case is associated with weak readings, and that it can only be assigned to base generated positions. Ladusaw refers to Kratzer's [Kra88] proposal of characterising stage-level predicates with a Davidsonian argument, for events or spatiotemporal location. Individual-level predicates lack this argument.

A positive consequence of characterising *any* as indefinite which does not allow individuation of the members in its domain is that the notion ofthetic statement can be used to characterise contexts of occurrence. Sincethetic statements do not contain a predication base, and *any* does not support referential links, then, at least in prin-

ciple, the two should go together freely. Then, properties can be abstracted fromthetic statements, and provide the predicate of categorical statements. This is to say that *any* occurs also in predicates of categorical statements, but not in the predication base. The holes in the distribution of *any* can be derived directly by its function, and need not be postulated and presented as part of the idiosyncratic behaviour of the item. The fact that there are holes suggests that the weakness of *any* is an intrinsic feature.

Negation creates opaque domains, and *any* is acceptable in the scope of negation. The same applies to intensional contexts. Extensional contexts were considered not to be suitable in the literature. The data show that this position is too strong. *Any* is acceptable when interpretable by means of a type shift, i.e. the *type of reading*. In fact, its lexically marked weakness can never be overwritten by context. The type raising is a way to evade a contextually fixed domain, to cancel a presupposition, to stop an operation of domain selection. The predication is shifted from the level of the members of the collection to the collection itself. This makes individuation unnecessary for the interpretation of the sentence. An existential quantification over the eventuality is removed.

Another positive point concerns the predictions of the theory of determiners. The combination of weak and strong produces three cases, but for one of them, namely weak determiners without strong reading, there was uncertain evidence—numerals were the only potential instance. If the classification of *any* is correct, there is a filler for a hole which wasn't predicted on principled reasons.

There are some cases that seems to contradict the classification of *any* just proposed. As pointed out to me by Hoeksema, the English translation of (5.146) uses dislocation to render the postverbal positioning of *kanis*. However, in English, this kind of dislocation seems possible with *any*, but not with clearly nonreferential NPs such as *nobody*. Then, *every* does not fit in here, but *a* does, as shown in (5.147).

- (5.147) a. Any proposal like that, do you think it will fly?  
 b.\*No proposal like that, do you think it will fly?  
 c.\*Every proposal like that, do you think it will fly?  
 d. A proposal like that, do you think it will fly?

In my analysis, the contrast between (5.147a) and (5.147b) shows that the impossibility of individuating the entities in the domain of *any* need not imply that this domain is empty. The contrast between (5.147a) and (5.147c) shows that non-individuation is

incompatible with the indication that the property of being a proposal like that entails the property of flying just for a particular set. The denotation of *any* cannot be defined extensionally. Non-individuation has two facets, the indefinite and the indiscriminative ones. The former accounts for the pairing between (5.147a) and (5.147d); the latter accounts for the difference between (5.148) and (5.149). Only (5.148) has the reading according to which for no matter which share that was sold, it was sold for reasons other than the collapse of the stock market.

(5.148) He didn't sell any share because the stock market collapsed.

a. He didn't sell shares and this because the stock market collapsed.

b. He sold shares, none of these because of the stock market collapse.

(5.149) He didn't sell a share because the stock market collapsed.

a. He didn't sell shares and this because the stock market collapsed.

b.\*He sold shares, none of these because of the stock market collapse.

Similarly, indiscriminacy makes the use of *any* incompatible with the reference to a position in an order, even a nonspecific reference in a modal context, cf. the adverbial use in (5.150a). In (5.150b), the nonexistence of a set of events of running at speed<sub>*i*</sub> > *x*—where *x* is the default base of the comparative—which would cause the situation 'I could run at speed<sub>*i*</sub>' to hold warrants the possibility of an arbitrary reading.

(5.150) a.\*I could run any faster.

b. I couldn't run any faster.

Second, from Sasse's [Sas87] discussion of existential constructions, it results that *X exists* is a categorical statement, whereas *there is an X* is athetic statement. It was noted above that *any* is not easily used in *there*-constructions unless some trigger is added to the sentence, see the marginality of (5.151). The fact that these constructions are entity-central thetic statements, may matter for the distribution of *any*. The presence of a modifier does not improve the status of the sentences, see (5.152). Again, indiscriminacy requires each toy to be an arbitrary one, a situation which is not warranted in an extensional context.

(5.151) \*There is any toy.

(5.152) a.?There is any toy produced by the newest technology.

b.\*There appeared any toy one may dream of.

c.?There is any toy on the market.

Then, the literature on the topic classifies generic statements as categorical. With some restrictions, *any* can be used as grammatical subject of generic statements as in (5.153)<sup>37</sup>, in particular with individual-level predicates, see (5.153c).

(5.153) a. Any tiger has striped fur.

b.\*Any tiger is running.

c. Any lion is dangerous.

d. Any whale is dying.

At first sight, these data cannot be accommodated. On the one hand, individual level predicates are not descriptions, so they cannot constitute athetic statement [Lad94, p.226]. On the other hand, generic statements are characterised as categorical in nature. Kuroda [Kur72] treats universal statements as a subgroup of the generic ones, and likely to have a subject-predicate structure.<sup>38</sup>

Sasse discusses differences in intonation of subject-accented sentences in English, and describes them in terms of thethetic or categorical distinction. Simplifying the argument a little, examples where both the subject and the predicate receive high pitch are cases of categorical statements. Examples where only the subject receives high pitch are cases ofthetic statement. Sasse [Sas87, p.524] observes that there are few cases of the latter pattern in generic statements. He suggests that the requirement of the former pattern applies to 'sentences in which properties are predicated about generics, for as soon as their referents constitute parts of an event, generic subjects can (and must) occur inthetic statements.'<sup>39</sup> He provides the little dialogue in (5.154) as an example.

(5.154) Teacher: What happened in the Cretaceous period?

Pupil: The DInosaur became extinct.

<sup>37</sup>Sentences (5.153c) and (5.153d) are acceptable with a taxonomic reading 'type of'.

<sup>38</sup>Kuroda puts all existential statements in one class, thethetic one. With respect to the logical equivalence between an existential inside the scope of negation and a universal outside it, he says that negative existential judgments arethetic statements, and that the equivalence between these cases of universal and existential need not be assumed.

<sup>39</sup>Sasse argues that it is a general extralinguistic property of generics and universals that they are more likely candidates as entities to be talked about.

One should note that Sasse's description of subject-only high pitch pattern applies to the sentences in (5.153) too. However, a second observation may be more important. Generic statements seem possible with *any* when a *type of* reading is plausible. Sentence (5.153c) means that any type of lion, the African and the Asian is dangerous, and (5.153d) that any type of whale, for instance the white whale or any other, is dying out. Then, the impossibility of having a *type of* reading could be the reason for the marginality of example (5.155).

(5.155) \*Anyone is dying.

If the *type of* reading in (5.153c) and (5.153d) is interpreted as a way to prevent a predicative link between the predicate and the tokens composing the collection of entities which is the grammatical subject, the acceptability of these sentences is accommodated. In (5.153d), for instance, the generic statement is not about the entities in the denotation of the common noun, rather on collections of entities. In this respect, I share Givón's view, which is consistent with the French data discussed in subsection 5.5.4.

By discussing the genus or its properties one may, though, commit oneself to the existence/referentiality of the genus itself within the universe of discourse. In most ordinary cases this may lead to the tacit commitment to the existence of individual members of that genus. However, the speaker using a generic expression is still not committed to 'mean' any particular individual. [Giv78, fn3]

Finally, there is the case of imperatives such as (5.156).<sup>40</sup> Imperatives have been classified as intensional contexts. However, it is easy to imagine the situation where a person is holding out a set of cards, and the hearer is asked to take one of them.

(5.156) Pick any card.

In this case, it cannot be claimed that the set of cards does not exist, or that it is contextually vague (Dayal [Day95]), as it could still be done in a case such as (5.157).

(5.157) Punish any misdemeanour.

Still, (5.156) is acceptable. On the other hand, for every card it is not possible to warrant that it will be a patient in an event of picking. There will be one event of picking a card, and the token taking part in it cannot be identified. This makes the difference with respect to the command in (5.158), adapted from [Hor72].

(5.158) \*You must pick any flower.

<sup>40</sup>Thanks to Jacques Jayez for bringing this case to my attention.

In (5.156), one event of picking exhausts the offer. In (5.158), for each individual member it is ensured that it will be a participant in an event of picking, because one event does not exhaust the obligation. The result is a collection of distinct events of picking a flower, provided the set of flowers is not empty.

The conclusion I draw from all this is that indeterminacy, rather than non-existence, is the crucial notion for the distribution of *any*. The absence of existential import ensures that no referential links can be established. However, the reverse is not necessarily true. For instance, generic statements hold independently from the existence of tokens of the type generalised over, or of particular events in the case of habituals. Indeed, they are incompatible with the identification of particular tokens or events. In these cases, the use of *any* is felicitous. The distinction betweenthetic and categorical statements provides useful information for the classification of suitable contexts of occurrence. However, it does not cover the case where the impossibility of establishing referential links holds without a condition of non-existence.

## 5.7 Comments

In this chapter, several lines of research have been explored. They all show that the distribution of *any* is subject to constraints on individuation. Data on interpretation variations cooccurring systematically with variations in the structure of the domain of quantification of *any* have triggered a comparison with a similar correlation emphasized in Szabolcsi and Zwarts' [SZ93] analysis of the weak island phenomenon. The nature of the *wh*-phenomenon supports an analysis in terms of interpretive dependencies. The potential overgeneration of free scoping, i.e. the ungrammatical cases, is controlled via the semantics of the *wh*-elements. An attempt to benefit from Szabolcsi and Zwarts' insight and yet to respect the different nature of the phenomenon of polarity sensitivity has been pursued. On the one hand, I have retained the direct focus on *any*-phrases, rather than on the geometry of structural licensing constraints. On the other, I have explored whether distributional/interpretative restrictions could be predicted on the basis of features connected with *any*-phrases being NPs, rather than of special features due to their labelling as negative polarity. In particular, I have concentrated on manifestations of definiteness. The choice of this approach has grown out of the examination of a considerable amount of linguistic data which consistently expose the fact that comparable contextual conditions produce comparable interpretive effects for NPs other than *any*-phrases.

We have looked at 'scoping effects' of other indefinite NPs, such as the indefinite

phrase *a N*. The reading where the phrase *a N* refers to a particular yet indefinite element has been characterised in the literature as a case of wide scope of an existential quantifier with respect to any other scopal element. The reading where no particular indefinite element is referred to had been characterised as a case of narrow scope of the existential. We have seen that potential free scoping of the existential appears to be restrained by scoping preferences connected with the degree of specification of the indefinite NPs. We have also seen that the phrase *a N* shows reading ambiguities also in sentences where no other scopal elements occur, and that the readings need not correspond to different truth conditions. An approach to the specific and nonspecific reading variation, aiming at finding its connection with types of predicates, led to the classification of determiners into the two groups called weak and strong. This line of research produced also the distinction stage-level and individual-level predicates, which distinguishes among predicates on the basis of the characteristics of the entities they can be ascribed to. Other lines of research have characterised specific and nonspecific readings in terms of presuppositions or of discourse referents. In his study on generics, Carlson [Car77] has identified objects and kinds as potential referents, but also stages, which are objects sliced down along the spatio-temporal dimension.

*Any*-phrases appear to be sensitive to variations in specificity, and to the nature of the predicate, see subsection 5.5.1. However, the traditional tests fail to give a clear or undisputable result in the case of *any*, see subsection 5.5.3. On the one hand, work by de Jong and Verkuyl [dJV85], among others, showed limits of the classification with respect to cases of strong determiners that do not fit in easily. Ladusaw [Lad94] has proposed that the distinction between weak and strong is epiphenomenal on an underlying distinction between types of statements. Athetic statement conveys a description. A categorical statement has binary nature: it contains a predication base, and a predicate which is ascribed to it. Ladusaw draws a parallel between the presuppositional nature of the predication base and the anomaly of weak determiner phrases as subject of individual-level predicates. This distinction has proved useful for characterising a large part of the distribution of *any*-phrases. They are excluded whenever existential import is required. The remaining cases, e.g. the subject position of generic statements, imperatives, and the case of subtriggering via modification (Davison [Dav80], Carlson [Car81]), have shown that non-individuation is enough of a condition. A shift from the tokens to the type, where the type is assumed but its members cannot be individually accessed, makes a sentence with an *any*-phrase acceptable.

For *any* to be licensed, it must be possible to build at least one interpretation which

is individuation-independent. This is the case whenever the sentence refers to individual events inclusive of property-entailment reading. Thus, we can recall point (5.86) and better appreciate the analogy with weak islands. Downward monotone SE are licensers in that they grant the possibility of an individuation-independent reading.

Generally, in the case of weak determiners, their two or more readings are considered to belong to the same item, even when they correspond to different truth conditions. In the case of *any*, proponents of a lexical split outnumber proponents of a unified treatment. We have argued against this split by showing that it is possible to account for the whole distribution in a unified way. Neither in its PS nor in its FC readings does *any* occur in contexts where a referent is required for the truth of the statement to be verifiable. Quantifiers have their own monotonicity, upward, downward or none, that is part of their meaning. I assume that this piece of information is unspecified in *any*. However, for a sentence containing an *any*-phrase to be interpreted, this phrase must be evaluated in some way. There is a direct connection between the denotation of a lexical expression and monotonicity. If one knows which function constitutes the denotation of an expression, then one knows whether that function is upward, downward or not monotone (Dowty [Dow93]). The hypothesis that *any* is not marked for monotonicity, but that it must get one from the context, has consequences for the definition of its denotation.

Definites and, in general, universals denote filters: they have a unique, not necessarily empty minimal element. Their unique witness set is the whole of the set denoted by the  $N'$ . For instance, in the case of [[the men]] and [[every man]], the witness set is the set of men. The indefinite determiner *no* is an exception. It has only one witness set, the empty set. Indefinites have as a rule more than one minimal element. For instance, the minimal element of [[two men]] are all two-member subsets of the set of men. The indefinite determiner maps from the nominal expression, expressed by the  $N'$ , to the set of sets denoted by the NP. This is the set of sets whose intersection with the nominal is of the size indicated by the determiner. The nominal set may intersect at different places with different sets. Since there may be many different intersections of the required size, there may be many possible witness sets. The denotation of the definite *the doctor* is the unique ultrafilter.<sup>41</sup> The denotation of the indefinite *a doctor* is the union of the

<sup>41</sup>Proper names are examples of ultrafilters. Zwarts [Zwa93b, p.29] provides the following definition of ultrafilter:

Let  $B$  be a boolean algebra. A quantifier  $Q$  on  $B$  is said to be an ultrafilter iff for each two elements  $X$  and  $Y$  of the algebra  $B$ :

1.  $X \cap Y \in Q$  iff  $X \in Q$  and  $Y \in Q$
2.  $X \in Q$  iff  $\neg X \notin Q$



ultrafilters. Downward monotonic quantifiers are closed under intersections, and the empty set is the subset of any set. The minimal element of these quantifiers is empty.

The denotation of *any* cannot be defined extensionally, otherwise the monotonicity would also be set. It might not be possible to capture the meaning variation of *any* in a static characterisation. Rather, it looks like the dynamic output of an evaluative process. *Any* does not operate any selection on the denotation of the  $N'$ . This lack of 'filtering' comes from the free-choiceness of the determiner and the absence of information on cardinality. This is the static basis. To this it is added information on the direction in which inferences run, provided by the context, and a dynamic part represented by the evaluation procedures adopted in assessing specific cases. The intensional definition of *any*-phrases as scalar endpoint is a way to summarise the result of the evaluation by providing indication of the maximally informative position.

Summing up, the notion of licensing is not sufficient to account for the data. The argumentation developed in this chapter brings us to the conclusion that the phenomenon of negative polarity cannot be turned into licensing stipulations also in the case of *any*, the most celebrated representative of the class of PS items.

We favour a notion of sensitivity which is an interaction effect broader than polarity restrictions. The specificity of the context, the type of predicate and pragmatic plausibility have a bear on the acceptability of sentences containing *any*-phrases.

As polarity sensitive determiner, *any* is sensitive to the variations in its domain of quantification, cf. subsection 5.3.1, to the referential properties of its environment and the referential links allowed by the environment, cf. section 5.5.

The distribution of *any*-phrases has been derived from its nonreferentiality. The distribution in intensional contexts, which are referentially opaque, follows directly. In extensional contexts, the operation of type shift, gives a maximally denoting expression, whose subparts are not perceived as individuals, i.e. they are not referentially reachable. In this way, the holes in the distribution are derived from the function performed by the expression, and not postulated as a definitional component of the item.

A characterisation in terms of traditional weak determiner is problematic. Despite the fact that *any* has only a nonreferential reading, it shows properties of both an indefinite and a quantifier. The thesis of lexical ambiguity should not be taken in the sense of postulating two *anys* which are homographs, but in the sense of having an item which is underspecified for certain features with respect to non-sensitive members of the same class. With respect to the class of quantifiers, *any* is underspecified in its evaluation procedure. Monotonicity is relevant for the reading variations traditionally

referred to as PS and FC *any*.

Finally, a characterisation of *any* as non-referential appears to encompass one according to which it is incompatible with existential import, and to provide broader empirical coverage. The large number of 'licensors' is due to the reason that *any*-phrases cannot be referential, and many contexts can ensure referential opacity.

## Chapter 6

# Polarity sensitivity and negative concord marking

### 6.1 Introduction

As we saw in chapter 3, there are both similarities and differences between the phenomena of polarity sensitivity (PS) and negative concord (NC). This is not surprising if one considers their connection with negation and if one adopts the view that lexical items can perform clusters of functions which are not constant across languages, in the vein of Haspelmath [Has93]. In this chapter, I will argue for keeping PS and NC phenomena distinct, and explore an analysis for NC which does not resort to a mechanism of negation absorption (Zanuttini [Zan91]).

Section 6.2 provides a short introduction to the phenomenon of NC. The identification of PS and NC as two distinct phenomena seems to owe something to the fact that the initial phases of research were concerned with English. Simplifying a little, the contrast in (6.1), prompted the idea that *any* has a restricted distribution, and that negation licenses its presence. The contrast between standard English (SE) and black English (BE) in (6.2) could not be approached in the same way. On the one hand the acceptability of (6.2a) made it awkward to appeal to restricted distribution. On the other hand, the attested use of (6.2b) with its single negation interpretation called for explanation. Thus, although (6.2b) and (6.2c) pattern like (6.1), the contrast between (6.1b) and (6.2a) was decisive in keeping the two cases apart.

- (6.1) a. He didn't eat any buns.  
b.\*He ate any buns.

- (6.2) a. SE He saw no cats.  
 b. BE He didn't see no cats.  
 c.\*BE He saw no cats.

As soon as other languages are taken into consideration, the distinction loses sharpness. As a matter of fact, the Italian data in (6.3) have been classified sometimes as NC and sometimes as PS. The unacceptability of (6.3b) could prompt the idea that N-words<sup>1</sup> are items with a restricted distribution, as proposed for NPIs.

- (6.3) a. Non ha visto nessun gatto.  
       not has seen no cat  
       'S/he didn't see any cat'  
 b.\* Ha visto nessun gatto.  
       has seen no cat

From a general point of view, a first important observation is the following. N-words alternate between two interpretations: negative and indefinite readings. These same interpretations are to be found inside PS *any*, although the distinction is usually ignored. Within negative concord, the two readings are dubbed negative and PS. The definition of conditions on the availability of each of them is a crucial part of studies on the phenomenon. The alternation is not free also with respect to *any*, but depends on the type of licenser. The reading 'at least one' is licensed by *every*, for instance, and the negative one by *not*. The third reading, i.e. FC *any*, is usually attributed to a different item. In the preceding chapter, it has been argued that this reading belongs to the full spectrum of interpretations of the item in context. N-words crucially lack this positive portion of the spectrum.

Classifying the items is an arduous task. Certain items have been classified under the header of NPI, but there may be reasons to reconsider the position. The presence of an autonomously negative reading constitutes a reasonable, but controversial criterion of classification. Section 6.3 introduces two cases open to debate.

Then, we look at cases where the Italian N-words *nessuno* (nobody) and *niente* (nothing) have constituent negation interpretation. Zwarts [Zwa93a] has discussed the logical connections between sentence and predicate negation. In a language such as Italian, we have a case of NC when negation on an internal argument in postverbal position is explicitly marked as equivalent to predicate negation. From the structural

<sup>1</sup>Cf. mid section 6.2 for the standard definition of this term.

point of view, the peculiarity of the cases discussed in section 6.4 is that the N-word is the only overt negative element of each sentence and more importantly that it occurs in postverbal position. From the interpretive point of view, their particularity is that they do not have connections with predicate negation. The case of constituent negation is set in the frame of a new hypothesis for NC in Italian outlined in section 6.5. I introduce a treatment of negation at two levels. The multiple manifestations of negation in a NC clause concern the levels of the event and of the entities involved in it. This account rests crucially on the distinction betweenthetic and categorical statements, already introduced in chapter 5. Support for the hypothesis comes from the impossibility of fronting negative constituents, and from the interpretation of N-words in questions. Questions are a type of environment where *any* can have FC or PS readings. *Nessuno* also exhibits interpretive variations, but the variations are tied with particular word order choices.

Then, in section 6.6, two similarities between N-words and NPIs are presented, namely the impact on interpretation of the structure of the domain of quantification and of an increase in descriptive content in NPs headed by an N-word.

Next, in section 6.7, cases of interference between polarity sensitive items and negative concord are discussed. We look at sentences containing *finché* where there is a clear preference for one or another NC marking, all other things being equal.

Finally, in section 6.8, I suggest abandoning the criterion based exclusively on the existence of a negative reading. NC and PS may be better distinguished on the basis of the absence of a ‘positive’ reading such as FC. In other words, it is the cluster of readings connected with the scale reversal phenomenon that characterise NPIs, and not the description of a behaviour that applies only to a fragment of their distribution.

Negative elements are always concerned with a downward monotonic scale (Dowty [Dow93]). More precisely, they point at the bottom of downward monotonic scales, or, in algebraic terms, they refer either to the bottom element of a meet semilattice or to its atoms. Polarity sensitive elements are endpoints of arbitrary scales, they can refer either to the bottom or the top of the lattice.

## 6.2 Negative concord

As in the case of polarity sensitivity, the literature does not offer a clear definition of the phenomenon of negative concord (NC). In other words, there isn’t a precise definition of NC, but there is an understood convergence towards an intuitive description of the phenomenon. NC is the term generally used to refer to the cases where multiple

occurrences of morphologically negative constituents express a single semantic negation (Labov [Lab72]). For instance, example (6.4), from Italian, contains an expression of negation on the auxiliary and one on the direct object, still the sentence is not interpreted as containing logical double negation. Labov's definition is just intuitive because nothing is said about what counts as morphologically negative constituent.

- (6.4) Luisa non ha cantato nessuna canzone.  
 Louise not has sung no song  
 'Louise did not sing any song'

Jespersen [Jes17] discusses the phenomenon of 'double attraction' as a case where two different 'tendencies' in the positioning of negation apply at the same time. The first tendency consists of placing 'the negative with the verb as nexal negative' [Jes17, p.64]. In this case, negation applies to the 'nexus', i.e. the relation, and corresponds to instances of predicate or sentential negation. The second tendency is 'to amalgamate a negative element with some word capable of receiving a negative prefix' [Jes17, p.64]. Broadly speaking, this case corresponds to uses of 'special' negation in Jespersen's terminology, i.e. instances of negation with scope smaller than the predicate. Both tendencies are instances of 'negative attraction'. Their cumulative application is perceived as a redundancy which is stylistically superfluous but otherwise unobjectionable. Its availability is interpreted as due to the 'influence of a strong feeling' [Jes17, p.71].

Labov [Lab72] adopts Jespersen's term of negative attraction, and follows his line of analysis whereby negatives such as *nobody* are elements which have attracted a negation that 'really belongs to the nexus and should therefore be placed with the verb' [Jes17, p.56]. His conviction that a sentence like (6.5a) is derived from an original sentence (6.5b) is recorded in a NEGATIVE ATTRACTION rule, which is an elaborated form of Klima's [Kli64] neg-incorporation rule. This is a transformation rule which says that, in standard English, 'the negative is attracted to the first indeterminate, obligatorily if it is a subject' [Lab72, p.777].

- (6.5) a. Nobody goes.  
 b.\* Anybody doesn't go.

According to this rule, *nobody* in (6.5a) represents an underlying indefinite *any* combined with a negative which has been attracted to it from elsewhere in the sentence. The attraction of the negative to object indefinites is optional.<sup>2</sup> Next, Labov extends

<sup>2</sup>It is ruled by NEGATIVE POSTPOSING.

negative attraction in order to account for negative concord in non-standard dialects of English. NEGATIVE CONCORD is also a transformation rule. 'Instead of saying that the negative is attracted to the first indeterminate, we might say for these dialects that the negative is attracted to indefinites generally.' [Lab72, p.784]. Labov considers cases such as (6.6), which corresponds to the Italian (6.4) in the relevant points, and (6.7).

(6.6) That ain't nothin' new.

(6.7) It ain't no cat can't get in no coop.  
'There isn't a cat that can get in a coop'

In subsequent work, talking about negative doubling in West-Germanic languages, den Besten [dB86] has introduced a double characterisation of negative concord.<sup>3</sup> The distinction is the following.

1. The feature of negative expressions such as Du[tch] *niets* 'nothing' and Du[tch] *nooit* 'never' may be distributed over any number of indefinite expressions following the negative constituent.
2. If no such indefinite expression is present, *niet-2* (in German *nicht-2*) may be inserted. The former phenomenon I will call Negative Spread, the latter Negative Doubling proper. [dB86, p.205]

In short, in the first case the negative feature is lexicalised in the form of a member of a certain collection, and from there it is spread over any number of indefinite expressions, i.e. there is a main negative element and one or more 'secondary' elements. In the second one, a particular negative element is present in all sentences which contain a negative expression of the collection just mentioned but no indefinite negatively marked. Here, there is one precise element which doubles a negation expressed somewhere else. The distinction appears in den Besten's work discussing whether Afrikaans is a Creole language, and it is intended to set apart examples (6.8) from (6.9) and (6.10)<sup>4</sup>, for the

<sup>3</sup>When talking about Afrikaans, den Besten uses the term 'double negation'. A definition of the term may be reconstructed by his description of the rule for negative sentences. The rule is given in (i).  
(i)  $\bar{S} \rightarrow \text{COMP } S \dots ([+\text{NEG}])$

The rule is interpreted as follows: 'The sentence-final position [+NEG], which lexicalizes as *nie* 'not', appears only if the 'middlefield' (the stretch of material between COMP and V) contains a negative constituent, thereby creating 'double negation'.' [dB86, p.201] This 'double negation' does not correspond to logical double negation, but to negative concord. The underlying structure for negative concord in Afrikaans is given in (ii).

(ii) Afr. COMP[<sub>S</sub> ... NEG ... V] ... *nie-2*

The term used for West-Germanic languages is 'negative doubling'. Its definition can be deduced by the underlying structure given in (iii), and the two following remarks. They are: 'negative doubling is triggered by special (or:universal) negation. This is indicated by the leftmost NEG<sub>sp</sub>. Furthermore, West-Germanic negative concord is a phenomenon of the 'middlefield'.' [dB86, p.204]

(iii) WG COMP[<sub>S</sub> ... NEG<sub>sp</sub> ... { NEG<sub>sp</sub> \*  
niet - 2 } ... V] ...

<sup>4</sup>den Besten provides glosses but no translations for these examples.

purpose of showing that because of its particular negative doubling, Afrikaans is not the outgrowth of dialectal Dutch.

- (6.8) Ik win nooit niks (Drechterland, Netherland)  
I gain never nothing
- (6.9) Ik heb ter nooit nait west (Groningen, Netherland)  
I have there never not been
- (6.10) Hulle het nooit gesing nie (Afrikaans)  
they have never sung not

den Besten's distinction is relevant to our study for at least two reasons. First, because Negative Spread is close in spirit to Labov's negative concord rule. Second, because van der Wouden and Zwarts [vdWZ93] apply this distinction to Romance languages, and claim that (6.11) is an instance of negative spread and that (6.12) is an instance of negative doubling.

- (6.11) Personne a rien dit (Spoken French)  
nobody has nothing said  
'Nobody said anything'
- (6.12) Je n'ai vu personne (Standard French)  
I not-have seen nobody  
'I haven't seen anybody'

The sentences in (6.13) provide Italian correspondents to the French examples.

- (6.13) a. Nessuno ha detto niente.  
nobody has said nothing  
'Nobody said anything'
- b. Non ho visto nessuno.  
not have seen nobody  
'I haven't seen anybody'

It is worth noting that van der Wouden and Zwarts' parallelism reveals the real import of den Besten's distinction. In fact, he refers to negative and indefinite expressions without defining them. Thus, the distinction between the two cases of NC rests upon the presence versus absence of an element like *niet* in Dutch, which seems to express nexal negation, or like *ne* in French.



This first selection of proposals for NC is enough to make one aware of where the stumbling blocks are. A first point raised by this intuitive characterisation of NC is that no device is provided for the identification of a morphologically negative constituent, the one from which negation spreads, which is doubled or which ‘has been spread over’. Example (6.14), from Italian, might provide evidence for the negativity of *non* and *nessuno*.

- (6.14) a. Luisa non ha cantato la canzone.  
 Louise not has sung the song  
 ‘Louise did not sing the song’
- b. Nessuno ha cantato.  
 noone has sung  
 ‘Noone sang’
- c. Chi ha cantato? Nessuno.  
 who has sung? nobody  
 ‘Who did sing? Nobody’

But then, one is left to ponder which is the element which spreads its negativity over the other in (6.4), for example. The assumption that the main negative constituent is *non* would accommodate both the acceptability of (6.4) and (6.15a), as well as the unacceptability of (6.15b), but would leave us with no answer for the acceptability of (6.14b), (6.14c) and (6.15c).

- (6.15) a. Non ha cantato niente a nessuno.  
 not has sung nothing to noone  
 ‘S/he didn’t sing anything to anybody’
- b.\* Ha cantato nessuna canzone.  
 has sung no song
- c. Nessuno ha cantato niente.  
 noone has sung nothing  
 ‘Noone sang anything’

The common Latin origins of Romance languages make it easy to spot many potential negative constituents. Often they begin by *n-*, like in the Latin *nemo* (nobody) and *nihil* (nothing). This led to the creation of the term N-word, used to identify a collection of items which exhibit some properties that are typical of inherently negative elements and

some properties of polarity items, without having to take a stand on whether they are negative quantifiers. However, on the one hand we should not be misguided by folk etymology, as in the notorious case of Spanish *nada* (nothing) which comes from the Latin expression *res nata* (thing born). On the other one, many equally good potential negatives do not share this feature, e.g. French *personne* (nobody), or Catalan *cap* (nobody) and *res* (nothing), and come from positive ancestors.

A second point is that, were we to agree on a certain collection of items, the issue of whether putting together negative and not-negative uses should be tackled. It has to be decided whether all these different uses are occurrences of the same items, and if so which is the basic and which are the derived uses. In case N-words are considered negatives, it is necessary to work out a device for combining occurrences of negation, and hence getting rid of the negations too much, as in (6.13b). Conversely, if they are considered as non-negatives, a device for getting the negation too short in cases such as (6.14b) has to be developed.

Bosque [Bos80] and Rizzi [Riz82] opt for a double classification. In this approach, it is not enough to say that N-words are ambiguous between a negative and an existential reading, because (6.14b) does not have two readings. But by saying that they are NPIs rather than existentials, the unwanted reading is eliminated as ungrammatical. Bosque simply refers to word order, and claims that N-words occurring after the verb are NPIs [Bos80, p.21]. Rizzi proposes a process of negative incorporation along the lines of Klima's [Kli64].

Laka [LM90] and Zanuttini [Zan91] opt, at least nominally, for a single classification. The former claims that N-words are NPIs and the latter that they are negatives. In the approach adopted by Laka [LM90], the cases where N-words occur as preverbal subject or where they occur in isolation are problematic. In fact, since the element is not negative itself, one has to explain where the negation comes from. Therefore, Laka has to say something special in order to account for their negative interpretation, contra the case of other NPIs such as *any*. Her solution is to say that N-words, but not the other NPIs, have the option of occurring in spec/ $\Sigma$ P. This projection, which is higher than IP, can be interpreted as some sort of syntactic locus for utterance information. It hosts truth-value operators. There, the N-word can get negative meaning via spec-head agreement with an abstract negative morpheme which heads  $\Sigma$ P.

Conversely, in the approach taken by Zanuttini [Zan91], multiple occurrences of N-words as in (6.15a) and N-words in questions constitute problematic cases. Moreover, because of the mechanism she proposes, based on the presence of structural projections

for negation, constituent negation is also a problematic case. Zanuttini criticises Laka's double treatment of preverbal subjects as a case of split in disguise, but her analysis does not fare better when she assumes different negative projections, categorial statuses and ways of checking negative features. Zanuttini argues that postverbal N-words take sentential scope by undergoing raising to spec/NegP-1 at LF. Neg selects TP and, when lexically realized, i.e. when *non* is there, it is able to L(exically)-mark TP. This marking makes raising of N-words possible. Just to mention a few problems, it is not clear why TP should be a barrier for negative quantifiers raising but not for other types of quantifiers. Second, in case the N-word is in preverbal position, it can be said that it is not necessary to mark TP because there isn't raising at LF. However, Zanuttini does not explain why it is forbidden in the NC case, nor why the marking causes a DN reading. Finally, it is not clear how the case of constituent negation can be made to fit in the device.

Another option has been explored by Ladusaw ([Lad91], [Lad92]). Ladusaw hypothesises that none of the 'negative phrases', i.e. N-words and *non*, should be regarded as expressing the negation. They are all NPIs, with the negative meaning expressed constructionally. There is an abstract operator in logical form that is triggered by syntactic rules, not by any one morpheme.

Finally, as noted by Labov [Lab72], NC languages allow one to express emphatic or double negation, as non-NC languages do. But they may resort to different devices in order to do so.

In conclusion, two main ideas are explored. Either negation comes from somewhere else and just spreads over N-words, or N-words are lexicalisations of negation. Thus, a natural starting point is to look at free-standing N-words.

### 6.3 Identification

A defining feature of negative expressions is that they can autonomously convey a negative sense. The most typical case is when they occur in isolation, e.g. as the answer to constituent questions.<sup>5</sup> This section presents two cases where the classification is particularly delicate. In the first case, an analysis as NPI has been proposed, in the second one, a lexical split with double analysis as negative and as NPI.

The first case is the Serbo-Croatian element *niko* (nobody/anybody), which is clas-

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<sup>5</sup>Isolation constitutes a test for negativity for Bernini and Ramat [BR92, p.115]. The question whether this is a case of VP ellipsis is not relevant here. The contrast with *any* remains, which is never negative in isolation.

sified as polarity NI-item in Progovac [Pro88]. One major difference between Serbo-Croatian and English *any* which is not discussed in Progovac, is the fact that *niko* in isolation has only negative meaning, see examples (6.16) and (6.17).

(6.16) Da li me je neko zvao? Niko.  
 INT me has somebody asked NIKO-NOM  
 'Has anybody asked for me? Nobody'

(6.17) Jesi li video nekoga? Nikoga.  
 INT-you-have seen somebody NIKO-ACC  
 'Have you seen anybody around? Nobody'

This fact prompts the idea that the phenomenon at hand might be negative concord rather than polarity sensitivity.<sup>6</sup> This position can be supported with the observation that, apart from the cases of free-standing items interpreted as negatives seen just above and the case of (6.20) below, the cooccurrence of the overt negative particle *ne* is always required for *niko* to be acceptable. It is known that not all licensors that trigger occurrences of PS items can contribute to negative concord marking. Dowty [Dow93, p.121] observes that negative concord seems to be characteristically limited to downward monotone contexts introduced by N-words, and does not appear in the full range of downward monotone contexts.

Furthermore, *niko* can occur as preverbal subject with negative reading, as in (6.18). As reviewed in chapter 2 section 2.4, Progovac is forced to postulate different structural positions for negation in different languages, in order to account for the acceptability of (6.18) and the unacceptability of (6.19).

(6.18) Niko ne poznaje Mariju  
 NIKO NEG knows Mary-ACC  
 'Nobody knows Mary'

(6.19) \*Anybody doesn't know Mary.

From the discussion in chapter 5 subsection 5.5.1, it came out that *any*-phrases may be allowed in subject position with a negated auxiliary. Still, the case exemplified in (6.18) does not show the restrictions observed for English.

Finally, *niko* can occur as the only overt negative element in examples of disjunction such as (6.20). This case is discussed more extensively in the next section.

<sup>6</sup> van der Wouden and Zwarts [vdWZ92] mention *niko* as an element participating in negative spread.

- (6.20) Oženiću ili Marie ili nikoga.  
 marry-I or Marie or NIKO-ACC  
 'I will marry either Marie or nobody'

The second example comes from Modern Greek. In isolation, *kanís* (nobody/anybody), *kanénas* (nobody/anybody) and *típota* (nothing/anything) also convey negative meanings, contra the standard behaviour of NPIs, as in (6.21). This fact makes their inclusion among NPIs a little *sui generis*.

- (6.21) a. Tí tis ípes? Típota.  
 what her told-you TIPOTA  
 'What did you tell her? Nothing'
- b. Pjon ídes? Kanénan.  
 who saw-you KANENA  
 'Who did you see? Noone'

However, their inclusion within the 'negative concord space' is also not so straightforward, because of their distribution. In fact, in contrast to N-words in Romance languages, these elements have a broader distribution. They are licensed by the subjunctive<sup>7</sup>, for instance. Giannakidou [Gia93] argues that two distinct lexemes should be considered for *kanís* and the other Modern Greek elements just cited. One, which has negative meaning, is a negative quantifier and bears strong emphasis. Another, which has negative polarity meaning, is an NPI, and does not bear emphasis. The two are told apart on the basis of their interaction, or lack thereof, with modality and downward monotonicity. However, as said above, 'negative polarity meaning' covers the two readings 'at least one X' and 'no X'. In negative sentences, the interpretation of the non-emphatic items cannot be distinguished from that of the emphatic ones, see (6.22).

- (6.22) a. Dhen ton erotéftike kanís/KANIS.  
 not him-ACC fell in love KANIS  
 'Nobody fell in love with him'
- b. Elpízo na min tu arési típota/TIPOTA.  
 hope-I SUBJ not him-GEN pleases TIPOTA  
 'I hope he will not like anything'

Next, Giannakidou is led to conclude that the item is strongly accented when in isolation, in order to account for the negative interpretation of (6.21). Since the stress

<sup>7</sup>Cf. the extensive discussion in Giannakidou [Gia94], [Gia95].

effect is contrastive, this claim cannot be easily tested. At the same time, it is interesting to note that when stressed all these elements display only the negative interpretation. This contrasts with the observation that stress brings out the 'positive' FC interpretation in the case of *any*. Stress can be considered as processing information. There are two alternative views. In relational terms, it signals that the stressed element has to be interpreted as outscoping any other scopal element<sup>8</sup>. Or, in absolute terms, it signals that the element has to be interpreted as *se stante*. This means that stress operates on the semantic derivation. This approach to stress can accommodate the convergence towards a negative interpretation exhibited both by data on stressed items and data on isolated items.

Finally, these items can provide instances of constituent negation, as in (6.23). This case is discussed in the next section.

- (6.23) Thelo na pandrefto i to Jani i kanénan  
 want-I SUBJ marry-I or the John or noone  
 'I want to marry either John or noone'

So, to conclude, an intensional definition of polarity sensitive items is still wanting, and the collection of items concerned is obtained from the description of a behaviour that applies to only a portion of the distribution of such items. This causes uncertainties in the classification of items. The broadening of the spectrum of languages considered might have resulted in mixing together negative concord and polarity sensitivity in an attempt to extend the application of definitions originally set up for English. In fact, the identification of morphologically negative constituents is also not uniquely established. At the same time, if one opts for the theoretical position of keeping PS and NC distinct, clear criteria for the identification of the members of each group must be provided, together with an explanation of the apparent overlap. In this section, we looked primarily at occurrences of items in isolation. It has been noted that their negative interpretation cannot be accommodated straightforwardly within a polarity sensitivity analysis, but requires some tweaking.

As extensively documented in Haspelmath's [Has93] doctoral dissertation, indefinites can take on various combinations of functions in different languages. This suggests that it may not be possible to uniquely identify certain elements, and goes against an analysis of linguistic categories based on Boolean set-membership. Human categorisation seems to form internally coherent classes, but the complements of these classes have no natural coherence or shared features. Besides, if a phenomenon is defined via the behaviour of

<sup>8</sup>For Labov [Lab72], stress lifts a word outside the scope of other negative elements.

certain elements of a language, its direct application to other languages may turn out to be impossible. If the phenomenon is defined with respect to a subset of the distribution of certain elements, then it is necessary to make clear what counts as suitable subset, i.e. the issue of the intensional definition of NPIs pops up again.

In this view, the test for free-standing interpretation is relevant inasmuch as it provides the starting point for computing the meaning of complex expressions up to the sentence level. The free-standing meaning can be viewed as the core meaning of an item. The differences highlighted in this section are a potential criterion of discrimination between NPIs and N-words. Another case which may help in discriminating is that of constituent negation, discussed in the next section.

## 6.4 Constituent negation

'Constituent' negation is the term often used to refer to a negation which has clause-internal scope. This negation may be lexically incorporated, as with *unhappy* in (6.24). Example (6.24) fails Klima's [Kli64] test for sentential negation, as shown by the unacceptability of the completion by *either*.

(6.24) Louise is unhappy, and Daniel is unhappy too/\* either.

Complex adverbial expressions can also express constituent negation, as in (6.25) from Klima too.

(6.25) Not far away it was raining very hard.

A negative quantifier inside a preposition phrase may provide another instance of constituent negation, see (6.26).

(6.26) Louise came for nothing.

Negation on the auxiliary can have sentence scope, but not necessarily so. Jackendoff [Jac69] noted that the presence of a quantifier in subject position affects the scope of a negation on the auxiliary. Attal [Att71] cross-examined Klima's and Jackendoff's positions as regards to the identification of the scope of negation, and noted that not all quantifiers in subject position block the semantic raising of negation from VP to S proposed in [Jac69]. More recently, Zwarts [Zwa93a] has picked up again the issue of the role of the subject in allowing or preventing negation on the auxiliary from having sentence scope. He gives a description of the logical connections between sentence and

predicate negation by reference to the semantics of the subject noun phrase. Negation on the auxiliary has sentential scope if predicate negation is equivalent to sentential negation. More precisely, the use of sentence negation implies predicate negation just in case the subject of the sentence is complete. The use of predicate negation implies sentence negation just in case the subject of the sentence is consistent.<sup>9</sup> At first sight, predicate or sentence negation are not easily told apart, because they both involve a negation next to the verb. Note that the predicate scope reading of (6.27) is true in a model where there may be more than three girls who remained silent, but definitely not less than three, contra the requirement for a sentential reading. Hence, *non* cannot be equated to sentence negation straightforwardly.

- (6.27) Almeno tre ragazze non hanno parlato.  
 At least three girls not have talked  
 'At least three girls didn't talk'

Structural similarity holds when one opts for not projecting surface null functional nodes, and when one does consider them. In fact, in the latter case, NegP is projected disregarding the predicate or sentential nature of negation. The clause *it is not the case that* is usually interpreted as the natural language overt expression of sentential negation. However, structurally, this is little but expressing negation on the predicate a clause higher up. In other words, this gives the negation scope over the whole nested sentence and over the clausemate predicate. The latter is then computed as logically equivalent to sentential negation because of the expletive pronoun.

In (6.28), we have three types of sentences which are logically equivalent. The fact that no book has been read by me entails that no reading of a book can be predicated of me, and *vice versa*. The English (6.28a) marks the negation on the predicate, more precisely on the auxiliary. The English (6.28b) and the German (6.28c) mark it on the internal argument. In the case of a negative concord language like Italian, negation in an internal argument in postverbal position is made explicitly equivalent to predicate negation by double-marking it on the verb, or on the auxiliary in case there is a complex verbal form, as in (6.28d).

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<sup>9</sup>Cf. chapter 3 fn.7 for the definitions of consistency and completeness.



- (6.28) a. I didn't read any book.  
 b. I read no book.  
 c. Ich las kein Buch.  
    I read no book  
    'I didn't read any book'  
 d. Non ho letto nessun libro.  
    not have-I read no book  
    'I didn't read any book'

A crucial observation is that all the sentences in (6.28) deny the existence of an event of the type described by the predicate. This is relevant for the question of how to put together several manifestations of negation occurring in (6.28d). My answer is that the result has not to be a 'unique' negation as meant by [Lab72].

In Italian, the type of equivalence exemplified in (6.28d) is the general negative concord marking strategy. The cases that do not conform to it are rather unfrequent and are perceived as exceptions to a rule. They are cases of constituent negation. The N-word occurs below the VP projection, and it is not doubled by a negation on the verb. In chapter 3 section 3.4, we have already seen example (3.59), an Italian case analogous to (6.26), repeated here as (6.29) for convenience.

- (6.29) Sei venuto per niente.  
       are come for nothing  
       'You came in vain'

Besides it, examples were given just above from Serbo-Croatian in (6.20) and from Modern Greek in (6.23). More cases from Italian are provided in (6.30)–(6.32). All these cases contain N-words which are self-standing negative elements. They are nested inside PPs, and are not doubled by a negation somewhere on the VP. The predicate isn't negated in any of them.

- (6.30) Si arrabbia per niente.  
       REFL gets angry for nothing  
       'S/he gets angry for nothing'
- (6.31) Questa borsa è molto delicata: si rovina con niente.  
       this bag is very delicate REFL gets spoiled with nothing  
       'This bag is very delicate: the smallest thing spoils it'

- (6.32) E' una cosa da niente.  
 is a thing for nothing  
 'It is a trifle'

In sum, constituent negation is generally interpreted as negation of a node other than the VP<sup>10</sup> or the S ones. The impossibility for *any*-phrases to express constituent negation a crucial factor for determining the difference between NPIs and N-words. For this reason, I outline an analysis of NC manifestations in Italian without giving up, at least not entirely, the idea that N-words are negatives and without resorting to a mechanism of negation absorption. My starting point is the idea that negative concord marking may be interpreted as a way to emphasize on the level of the event equivalences among different types or scopes of negation. In a nutshell, the hypothesis explored consists of three points. First, Italian marks all missing participants in an eventuality as negative. Second, if the presence of a participant in an eventuality is denied, it can be inferred that the eventuality is also denied. The reverse does not hold. Third, a language can choose whether to mark as negative the missing participant(s), the predicate or both. Italian exploits the type of the statement and word order facts for determining the strongest steady negative scope which can be computed from the fact that the presence of a participant is denied, and marks it overtly.

## 6.5 Negative concord marking

Let us begin with the crucial role of the subject. An N-word in preverbal subject position may constitute the only overt expression of negation in a sentence which possess sentential negation interpretation. Sentence (6.33) is logically equivalent to (6.34), and (6.35) is not acceptable.

- (6.33) Nessuno ha parlato.  
 nobody has spoken  
 'Nobody spoke'
- (6.34) Non ha parlato nessuno.  
 not has spoken nobody  
 'Nobody spoke'

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<sup>10</sup>I talk about VP rather than IP node in order to make it clear that the subject, or more generally the predication base, is outside the intended scope. This spares us from having to take a stand with respect to the issue of movement.

- (6.35) \* Ha parlato nessuno.  
has spoken nobody

Before examining the cases in detail, we can get an intuitive understanding of their slight difference by looking at (6.36). Here, the two options exemplified in (6.33) and (6.34) appear in distinct discourse contexts which show their different uses.

- (6.36) a. Li ho interrogati di persona e nessuno mi ha risposto.  
          them have questioned personally and nobody to-me has answered  
          'I questioned them myself and nobody answered me'
- b. Ho provato a telefonare e non mi ha risposto nessuno.  
          have tried to telephone and not to-me has answered nobody  
          'I tried to phone and nobody answered me'

It's easier to understand the case of a negative preverbal subject if one considers the partitioning into predication base and predicate proper of categorical clauses. Although (6.33) and (6.34) are logically equivalent, they cannot freely replace one another in context. Sentence (6.33) is a categorical statement. Its paraphrase is something like 'for no  $x$  it can be predicated that  $x$  spoke', or 'no  $x$  has taken part in an event of speaking'. The starting point is the empty collection in subject position. The fact that the predicate is ascribed to a negative basis results in that there isn't an event of speaking. The negation in the subject appears to produce an output equivalent to a sentential scope negation.

The predication base is on the foreground. As argued by Ladusaw [Lad94], the predication base can be matched with the restriction in the tripartite structure of quantificational operator representations. On the one hand, we know that the predication base is presupposed, in the sense that it is first identified, and then a predicate is ascribed or denied of it. On the other hand, the restriction of quantificational operators is also presuppositional. The need or will to express such a presupposition is a criterion for choosing between (6.33) and (6.34). This comes out clearly from the discussion of some quotations from the press. Sentence (6.37) presupposes the existence of particular collective subjects, namely those usually involved in running the country. It expresses a criticism against their being prevented from participating. Were the relevant portion to be replaced by (6.38), the sentence would be unacceptable. As a matter of fact, (6.38) is acceptable in itself, but it doesn't support any presupposition of existence. (6.38) ascribes to the desert the property of being a place where potential collective subjects cannot have their voices heard.

- (6.37) L'ipotesi del governissimo suscita allarme per la democrazia,  
 the hypothesis of-the super-government raises alarm for the democracy,  
 ridotta a deserto dove nessun soggetto collettivo può farsi sentire. (Il manifesto 4/1/1996)  
 reduced to desert where no subject collective can make-REFL heard  
 'The hypothesis of a special government raises the alarm for democracy, re-  
 duced to a desert where no collective subject can have its voice heard'
- (6.38) # ... un deserto dove non può farsi sentire nessun soggetto collettivo.  
 a desert where not can make-REFL heard no subject collective  
 '... a desert where no collective subject can have its voice heard'

Similarly, after the French nuclear testing was resumed in the Pacific, a report of the response to rumours of contamination was formulated as a categorical statement (6.39a), and not as athetic one (6.39b).

- (6.39) a. Funzionari francesi hanno affermato che nessuna traccia di radioattività  
 state servants French have claimed that no trace of radioactivity  
 è stata registrata alla superficie del mare. (TELEVIDEO 6/9/1995)  
 is been recorded at-the surface of-the sea  
 'French state servants claimed that no trace of radioactivity was recorded  
 on the surface of the sea'
- b# ... non è stata registrata nessuna traccia di radioattività alla superficie  
 not is been recorded no trace of radioactivity at-the surface  
 del mare.  
 of-the sea  
 'no trace of radioactivity was recorded on the surface of the sea'

Sentence (6.34) is athetic statement. Its paraphrase reads as 'there was no speaking event and no speaker'. The starting point is also the empty collection. But in this type of statement it is the event that is on the foreground. A missing participant to the event has as a result that there isn't an event of speaking. This result is marked overtly by the negation on the auxiliary. In some sort, negation is expressed at the different levels: one is the level of the event, and one is the level of the participants in the event. *Non* negates the event, and *nessuno* marks the absence of a certain participant. The two expressions of negation do not cancel each other in the representation, because negation *non* could be made to apply to a Davidsonian argument. This event argument has a different status in cases of constituent negation, discussed below.

In athetic statement, any participant to the event is treated in the same way. Therefore, (6.40), where the missing participant is realised as direct object, is analysed in the same way as (6.34), where the missing participant is realised as subject.

- (6.40) Non ha detto niente.  
 not has told nothing  
 ‘S/he didn’t say anything’

Moreover, there can be as many empty collections as slots for participants. They all contribute equally to the non existence of the event. Example (6.41) says that there has been no event of saying because there was no recipient and no thing said.

- (6.41) Non ha detto niente a nessuno.  
 not has told nothing to nobody  
 ‘S/he didn’t say anything to anybody’

At the beginning of section 6.2, it was pointed out that the standard definition of NC as a case of multiple overt expression of a single semantic negation is not precise, because it is not coupled with a definition of morphologically negative constituent. From an analysis of (6.41) it becomes clear that this characterisation is not so accurate as an intuitive rendering either. It is true that (6.41) denies an event of saying, but it is also true that it denies the existence of two participants in an event of that type. Therefore, there is a single negation if one consider the plan of the event, but there are two more negations if the perspective of the participants is adopted. The definition of NC underlying my proposal is presented in (6.42), and that of negative constituent in (6.43).

(6.42) **Definition**

The term of negative concord refers to the case of multiple occurrences of negative constituents resulting in the event being negated.

(6.43) **Definition**

Negative constituents are elements which can express negation on the plan of the entities or of the events. Either they block the possibility of instantiating a role in an event or they negate directly the existence of the event.

Examples of the former type of negative constituent are N-words such as *nessuno* and *mai*, whereas *non* is an example of the latter.

As shown in chapter 5 section 5.6, the predication base can correspond to the subject or to a complement. The data in (6.44) support this generalisation by showing an analogous behaviour of subject and complements with respect to the preverbal position. In (6.44a), there is a categorical statement with an indirect complement as negative predication base. Whereas, (6.44b) is athetic statement.

- (6.44) a. A nessuno ha raccontato la sua storia.  
           to nobody has told       the her/his story  
           ‘S/he told her/his story to nobody’
- b. Non ha raccontato la sua storia a nessuno.  
           not has told       the her/his story to nobody  
           ‘S/he didn’t tell her/his story to anybody’

The predicate of categorical statements can be negative. The same treatment devised for (6.40) applies also to (6.45).

- (6.45) Luisa non ha detto niente.  
           Louise not has told nothing  
           ‘Louise didn’t say anything’

It is also possible to treat logical double negation. The presence of both a negative predication base and a negation on the predicate results in an instance of double negation, as in (6.46).

- (6.46) a. Mi aspettavo che i protestatari non venissero e invece nessuno  
           REFL waited that the protestors not come and instead nobody  
           non è venuto.  
           not is come  
           ‘I expected protestors not to come, whereas nobody didn’t come’
- b. Nessun tifoso non guarda la partita la domenica.  
           no fan not watch the match the Sunday  
           ‘No football fan doesn’t watch the match on Sunday’

In the hypothesis explored in this section, (6.47) seems the trickiest case. It has an N-word in the predication base and one inside the predicate, and the latter not overtly marked as negative. The presence of a negative predication base means that negation has sentential scope, and sentential scope means that the predicate is interpreted within it. Predicate negation can be obtained also by logical equivalence in the same way as

it is obtained in (6.33). Its being negated is compatible with the explicit mention that the theme argument, i.e. the thing said, is empty. The negation is not marked overtly on the auxiliary because it is already assigned a broader scope, i.e. the sentential scope. Marking also the narrower predicate scope would mean that the negativity of the predicate is independent from that of the predication base. A negative predicate would be ascribed to a negative base, and DN reading would ensue. On the contrary, marking as empty also other participants beside the 'speaker' does not alter the fact that there has been no event of the given type.

- (6.47) Nessuno ha detto niente.  
 nobody has said nothing  
 'Nobody said anything'

This analysis of NC as an explicit marking on the predicate of the impact a missing participant has on the event is compatible with Jespersen's hypothesis [Jes17] that negation is expressed as soon as possible. The examples in (6.28) exemplify different possible strategies. A language like German marks negation on the participant which is missing, and spots the logical equivalence between constituent and predicate negation while processing the sentence. Therefore, if the types of predicate and argument allow the equivalence with respect to the status of the event, this must be computed.

A language like English prefers to mark the negation at the level of the eventuality, i.e. the predicate scope. As seen, the sentential scope cannot be defined independently from the characteristics of the subject. The choice to mark directly the argument, also available, is usually exploited for emphatic purposes.

A language like Italian in general marks both the argument whose denotation is empty, via an N-word, and the event whose existence is denied, via a negation on the verb. Thus, it is possible to indicate that there is more than one argument whose denotation is empty, i.e. to exclude more than one participant to an event. The result is that the event does not take place because of several missing participants. In case there is a negative predication base, the sentence is necessarily negated, hence the preverbal negative element itself marks the widest negative scope. Predicate negation is also possible when all the participants are identified and only the relation is negated, as in (6.48). As usual, the possibility of having sentential scope negation depends on the nature of the subject.

- (6.48) Luisa non ha letto il libro ai bambini.  
 Louise not has read the book to-the children  
 'Louise didn't read the book to the children'

Ladusaw [Lad91] left open the question why only an infl-term can head a negative chain. His condition follows from the reason that it characterises cases where the event is negated. As shown in the discussion on constituent negation, it is not the case that it is impossible to express negation inside the VP (Ladusaw [Lad92]). No negative chain is formed when the event is asserted. The event is asserted if none of its participants is marked as missing.

### 6.5.1 Participants

The notion of participant in an event is crucial. All subcategorised complements are participants. However, at first sight there seems to be no real distinction between negative elements occurring as arguments and adjuncts. Temporals and locatives pair with subcategorized complements, as shown in (6.49) and (6.50). This fact is not surprising, if one thinks that spatio-temporal information is crucial for the identification of an eventuality.

- (6.49) a. Non è disponibile in nessun negozio.  
 not is available in no shop  
 'It isn't available in any shop'
- b. Non l'ho trovato da nessuna parte.  
 not it-have-I found at no place  
 'I found it nowhere'
- (6.50) a. Non hai mai cantato.  
 not have never sung  
 'You never sang'
- b. Non ha accettato in nessuna occasione.  
 not has accepted in no occasion  
 'S/he didn't accept in any occasion'

Complements which are halfway between being subcategorised or adjunct, as in the case of the addressee in (6.51), pair with properly subcategorised ones. Their presence changes the type of event.



- (6.51) Il giudice non ha parlato con nessun imputato.  
 the judge not has talked to no defendant  
 'The judge did not talk to any defendant'

Instrumentals and manners have a more articulated behaviour. First, the sentence can exhibit NC, but the presence of *nessuno* in the instrumental PP requires particular support. Let us suppose that a knife was found in the kitchen, and another in the pantry. Sentence (6.52) can be used to dismiss the hypothesis that one of these knives was the weapon used in the crime. In the absence of such a set of putative weapons, the use of (6.52) is less felicitous. In other words, (6.52) conveys the idea that, although it is true that poor *Luisa* was killed, the killing was not a stabbing event.

- (6.52) Non è vero, l'assassino non ha ucciso Luisa con nessun coltello.  
 not is true the murderer not has killed Louise with no knife  
 'It is not true, the murderer didn't kill Louise with any knife'

Hence, and this is the second point, it seems that a 'characterisation' of the event is denied, rather than an event. Third, a more natural way to introduce instrumentals is by using *senza* (without), as in (6.53).

- (6.53) Abbiamo pelato l'arancia senza coltello.  
 have-we peeled the-orange without knife  
 'We peeled the orange without using a knife'

These three pieces of data relate to the fact that instrumentals are not basic constituents of an event. They are dispensable, so to speak, and this is what makes them adjuncts. Whenever they give an essential contribution to the identification of the event, one has the feeling that their presence is expected, hence the idea that particular items are considered, cf. the putative weapons assumed in (6.52). In other words, they must be D-linked for NC to be acceptable.

*Senza* provides the possibility of mentioning what could be a participant in a way such that its 'absence' does not entail the non-existence of the event. In (6.53), no particular *coltello* needs or can be identified for the sentence to be felicitous. The event of peeling the orange is asserted, and the only two participants considered are the agent, which is understood, and the patient. The complement is usually not D-linked<sup>11</sup>. The effect of *senza* is to exclude explicitly *coltello* from the participants considered. The Davidsonian argument is not affected. Here negation applies to the relation, but not on

<sup>11</sup>Example (6.59b) may be a counterexample, but see fn.14.

its truth conditions, rather on its arity. It prevents the predicate from being saturated by the NP.

What said for instrumentals applies to manners too, see (6.54).

- (6.54) a. No, non ho risposto con nessun astio.  
           no not have-I answered with no bitter hatred  
           ‘No, I didn’t answer belligerently at all’
- b. L’allievo ha risolto il problema senza nessuno sforzo.  
           the pupil has solved the problem without no effort  
           ‘The pupil solved the problem with no effort’

Negating the manner in which an action has been performed does not necessarily imply that the action itself is denied. This is true unless the expression of manner conveys an intrinsic feature of the action. Thereby, the PP has to be D-linked, and (6.54a) is acceptable as a way of contradicting a previous statement. This is consistent with the fact that the use of *senza* is clearly the unmarked option for excluding an instrumental or a manner. Thus, although instrumentals and manners can pair with subcategorised complements, their nature of dispensible constituents of an event supports an alternative way of expressing negation. So much so, that the interpretation as manner may disappear altogether. In (6.55), the PP *in nessun modo* can be interpreted only as a strengthener of the negation on the predicate.

- (6.55) Il quadro della nonna non si tocca in nessun modo.  
           the painting by grandmother not REFL touch in no manner  
           ‘It is out of question to touch grandmother’s painting’

Goals seem to be the exception to the general pattern. However, one should consider that goals are connected with the result of an event. They are naturally excluded from the set of participants. In (6.56), the absence of effect of the event of telephoning, expressed by *per niente*, does not result in the event being negated. Therefore, (6.56) does not contain a negation on the auxiliary, and the Davidsonian argument is not negated. The predicate is ascribed to the basis, i.e. to *Daniele*. The N-word is not a participant in the event, nor is it relevant in fixing a spatio-temporal parameter.

- (6.56) Daniele ha telefonato per niente.  
           Daniel has phoned for nothing  
           ‘Daniel phoned for nothing’

There may be cases where the distinction is not straightforward. Sentence (6.57a) might be expected to be acceptable with an interpretation of *per nessuno* as a goal, and yet it is odd. In the same reading, (6.57b) is predicted to be odd, and yet it's almost fine.

- (6.57) a.\* Daniele ha scritto il libro per nessuno.  
           Daniel has written the book for nobody
- b.? Daniele non ha scritto il libro per nessuno.  
               Daniel not has written the book for nobody  
               'Daniel didn't write the book for anybody'

However, the reading where *per nessuno* is the beneficiary of the action cannot be ruled out from (6.57). More interestingly, (6.57b) becomes fully acceptable if *nessuno* is modified by *in particolare* (in particular), as in (6.58). The only reading available in (6.58) is that where the writing for a beneficiary is negated.

- (6.58) Daniele non ha scritto il libro per nessuno in particolare.  
           Daniel not has written the book for nobody in particular  
           'Daniel wrote the book for nobody in particular'

These data on negated participants suggest that *senza* is a nexal negation and that negative elements are partitioned in the following way. On the one hand, there are *non* and *senza*, which apply to relations.<sup>12</sup> On the other hand, there are the other N-words. Three pieces of evidence in support of this partitioning comes from the fact that *non* and *senza* are the two negative elements that do not exhibit so-called PS readings. They always produce DN readings when paired.<sup>13</sup> They are the strongest licensers.

According to our hypothesis, N-words are able to express negation individually. Hence, it may be better to replace the intuitive notion of negative chain mentioned towards the end of chapter 3 with that of space of equivalences with respect to the status of the event. In this perspective, *senza* is interpreted as the marker of the widest steady scope of negation. In (6.59a), negation has predicate scope, and *senza* cannot be

<sup>12</sup>This may be taken as evidence for an analysis of *senza*-phrase in (6.59b) as a small clause. However, I would hesitate in considering it conclusive.

<sup>13</sup>It could be objected that expletive negation is a case where the use of *non* does not result in DN. However, it should be noted that so-called expletive negation does not result in PS reading either. Furthermore, in chapter 4 section 4.5.4, I have discussed a putative case of expletive negation and I have accounted for it without invoking a semantically transparent negation. Hence, it cannot be excluded that a more thorough analysis of expletive negation will result in abandoning the idea of a semantically transparent negation altogether.

used, otherwise DN would follow. In (6.59b)<sup>14</sup>, the predicate is asserted, and the use of *senza* makes it clear that negation does not exceed the scope of the complement. As usual, whether predicate negation is equivalent to sentential negation depends on the nature of the subject.

- (6.59) a. Luisa non sta bene con nessun gioiello.  
 Louise not is well with no jewel  
 'With no piece of jewelry is Louise beautiful'
- b. Luisa sta bene senza nessun gioiello.  
 Louise is well without no jewel  
 'With no piece of jewelry Louise is beautiful'

### 6.5.2 Back to constituent negation

Data on constituent negation are fully compatible with the hypotheses of evaluating negation at the level of the event, and that, at least to a certain degree negation is expressed locally by the N-word. The constituent negation example (6.60) should be compared with (6.61). The unacceptability of (6.61) can be derived from the contrast between an interpretation of the predicate as negated, because of the presence of a negative subject, and one where it is asserted, since it is from the writing event that the 'void resulting effect' expressed by *per niente* comes.

- (6.60) Daniele ha scritto per niente.  
 Daniel has written for nothing  
 'Daniel wrote in vain'
- (6.61) \* Nessuno ha scritto per niente.  
 nobody has written for nothing

Example (6.60), where the PP *per niente* is the only negative expression, asserts a writing event. On the other hand, (6.62) is a case of logical double negation, with its negative predication base and negated predicate. The negative concord marking I have devised requires *per niente* to be connected with a negated predicate, because of the presence of negation on the auxiliary. This prediction is borne out, since in (6.62) the PP can be interpreted only as a strengthener of the negated predicate, and doesn't have a resultative interpretation.

<sup>14</sup> Sentence (6.59b) conveys the idea that the use of jewelry has been considered, though not of particular pieces, and is here rejected. In case no idea of rejection is intended, the bare plural *gioielli* (jewels) is more natural.

- (6.62) Nessuno non ha scritto per niente.  
 nobody not has written for nothing  
 'Nobody didn't write at all'

The sentences presented in this section exemplify two different cases of constituent negation. The first case is that of PPs discussed in section 6.4. It turns out that there are three ways of scoping a negation in a PP. One case is exemplified in (6.29), (6.30), (6.31) and (6.32). Here negation scopes over the N-word only. A second case is exemplified in (6.59b), where negation scopes over the whole PP. The third case is the general one, exemplified in (6.59a), where negation in a complement is equivalent to predicate negation, and here it has clausal scope too because the subject is consistent and complete. As seen, these three scopings are not available for whichever PP. The possibilities are connected with the issue of what is a participant to an eventuality. In short, N-words can occur in postverbal position without being double-marked on the VP, and be interpreted as constituent negation, only if the resulting interpretation does not correspond to predicate negation, on the plan of the event. The interpretation as predicate negation follows necessarily from N-words marking missing participants.

The second case is coordination. I am inclined to consider it an 'improper' case of constituent negation, structurally motivated and justified. In the Modern Greek example in (6.23) and the Italian example in (6.63), the context forces the structure of constituent negation.

- (6.63) Dopo la marcia indietro del governo, finisce con due sconfitti e  
 after the march backwards of-the government ends with two defeated and  
 nessun vincitore la vicenda degli aumenti delle tariffe telefoniche. (Il manifesto 9/1/199  
 no winner the events of-the increases of-the tariffs telephonic  
 'After the government backtracked, the story of the increases in the telephone  
 rates ends with two losers and no winner'

On the plan of the event, the negation contained in the second branch is equivalent to one with a broader scope. In the Modern Greek example (6.23), the predicate is not marked as negated. With respect to the first branch of the coordination, it is interpreted as asserted, i.e. there is a potential future event of marrying John. However, with respect to the second branch, it is interpreted as negated, i.e. there is no potential future event of getting married. In short, the 'same predicate' is asserted for the first and negated for the second branch of the disjunction. Similarly, the preposition *con* (with) in (6.63) is interpreted as negated only with respect to the second branch of the coordination. In

a non-coordinate clause, *con* would be 'marked' as negative, i.e. *senza* would be used instead, see the contrast in (6.64).

- (6.64) a.\* *La vicenda finisce con nessun vincitore.*  
           the events end with no winner
- b. *La vicenda finisce senza nessun vincitore.*  
           the events end without no winner  
           'The story ends with no winner'

The second conjoint gathers in itself all the information that in a non-coordinate structure would be more widely spread, in order to leave open the possibility of a positive interpretation of the first conjoint, compare (6.63) with (6.65) where both conjoints are necessarily interpreted as negated.<sup>15</sup>

- (6.65) *Un dibattito a senso unico, senza grandi idee e nessun interlocutore*  
       a debate in direction unique without big ideas and no interlocutor  
       reale.(Il manifesto 30/1/1996)  
       real  
       'The debate is one way only, without major ideas or any real interlocutor'

There is another piece of data in support of the hypothesis that NC is a way to mark logical equivalences, and that in Italian the marking is done by taking into consideration the type of the statements. Preposing the negative PP is fine in cases the predicate is also logically negated. For instance, (6.66) conveys the information that there is no eventuality of someone liking beer.

- (6.66) *A nessuno piace la birra.*  
       to noone appeals the beer  
       'Noone likes beer'

On the contrary, in all the cases of constituent negation, as in (6.67)–(6.69), *niente* can be preposed only if it receives strong stress and a pause is made after the PP, and still the sentences are marginal.<sup>16</sup> The marginality is due to the contrast between there being a negative basis and its inability to take scope over the predicate. This is due to its not being a participant in the event.

<sup>15</sup>These data seem to go against a straightforward interpretation of coordination as an ellipsis structure in the second branch, and to support an asymmetric characterisation.

<sup>16</sup>Speakers' judgements range from marginal to almost unacceptable.

- (6.67) ? Per NIENTE sei venuto.  
           for nothing are come  
           ‘You came really in vain’
- (6.68) ? Per NIENTE si       arrabbia.  
           for nothing REFL angry  
           ‘Indeed s/he gets angry for nothing’
- (6.69) ? Con NIENTE si       rovina.  
           with nothing REFL spoiled  
           ‘Indeed the smallest thing can spoil it’

I suggest that the use of the stress in (6.67)–(6.69) be interpreted as an attempt to make explicit that the predicate is not negated. It is worth noting that phonetic stress on the negative elements is used to signal their disjoint interpretation also in cases of DN reading. These readings are always coupled with special prosodic patterns, even in cases where no other interpretation is available, as in the Italian (6.70) and English (6.71). As noted in Labov [Lab72], this device is used by speakers of standard and non-standard dialects of English.

- (6.70) NESSUNO non è venuto.  
           nobody not is come  
           ‘Nobody didn’t come’
- (6.71) NOBODY didn’t come.

Finally, the case of (6.72), from a posting on Internet, also fits in this analysis. Here the N-word is nested inside a complex NP. The acceptability and the interpretation of the sentence follow from *nessuno* being a self-sufficient negative which is not directly a participant in the eventuality.

- (6.72) Se sei un figlio di nessuno non solo non hai la cattedra, ma nemmeno la  
           if are a son of nobody, not only not have the desk but not-even the  
           sedia su cui sederti.  
           chair on which sit  
           ‘If you are not someone’s favourite, you don’t get the chair of professor, and  
           not even the chair on which to sit’

In conclusion, it comes out that, at least for Italian, the distinction between negation spread and negation doubling as different NC strategies has little interest, because it

overshadows the coherent functioning of NC marking. The literature has proposed a distinction between nexal and constituent negation. This is not to be interpreted as the identification of different types of negation. The distinction between relations and entities is well established. Thus, when negation applies to different arguments, it can be expected to produce different effects. I have tried to express the difference among the arguments by applying negation to the type level of the eventuality, or to the token level of the elements contributing to an instance of the given type.

### 6.5.3 N-words in questions

In this subsection, some data on N-words in questions are presented. Pending a complete analysis, I note here that they are compatible with the hypothesis of a crucial interaction between negative concord marking and the type of statement in Italian.

The consensus seems to be that questions are environments for which monotonic properties cannot be asserted. The prediction of ambiguity is matched by linguistic data. *Any*-phrases can get both FC and PS readings. The PS reading available is the one which can be paraphrased as ‘at least one’.

Interrogative contexts have repercussions also on negative concord marking. Questions are the only context where *nessuno* can have negative and indefinite readings. However, these readings are not freely available, as it appears from the sentences in (6.73).

- (6.73) a. Nessuno è venuto?  
           nobody is come  
           ‘Did nobody come?’
- b. E’ venuto nessuno?  
           is come nobody  
           ‘Did anybody come?’
- c. Non è venuto nessuno?  
           not is come nobody  
           ‘Didn’t anybody come?’
- d. Nessuno non è venuto?  
           nobody not is come  
           ‘Nobody didn’t come?’

It is possible to describe the differences by referring to thethetic and categorical distinction. Sentence (6.73a) contains a negative predication base, and asks for confirm-



ation of the absence of ‘comers’. In (6.73c), the predicate is negated, and the question asks for confirmation of the non-existence of the coming event. In the case of (6.73d), the presence of a negative predication base and a negated predicate result in a case of DN. As usual, this case requires a particular prosodic pattern and particular support from the context in order to be felicitous. The case of (6.73b) is the one containing the so-called PS reading of *nessuno*. As just noted, this seemingly existential reading is also the only PS reading available for *any*. Neither *nessuno* nor *any* can be specific in this context.

The absence of negation on the auxiliary in (6.73b) is expected because the question aims at determining whether there exists the event expressible by the sentence. This value must be left unspecified. This restriction, together with the contrasting fact that marking a participant as missing necessarily means that the event is negated, results in that the denotation of the N-word cannot be computed as empty, although there is no commitment on its having cardinality  $\geq 1$ . Ladusaw [Lad92], suggested that negation is expressed configurationally in an NC sentence. It appears that (6.73b) might be best described as a case where the configuration prevents negation from being expressed. This effect is fragile. The presence of an overt restrictor is enough to diminish the acceptability of the sentence. (6.74), which minimally differs from (6.73b), provides an explicit type for the variable which could fill the role of agent.

(6.74) ?? E' venuto nessun rappresentante?  
           is come no salesman  
           ‘Did salesmen come?’

Sentence (6.73b) should be contrasted with (6.75), which contains an example of constituent negation.

(6.75) E' venuto per niente?  
           is come for nothing  
           ‘Did he come in vain?’

In (6.75), the N-word is in postverbal position, and there is no negation on the auxiliary. Yet, *niente* has negative interpretation. The question asks for confirmation of the lack of effect from the coming event.

## 6.6 Similarities between NPIs and N-words

When discussing fresh data on *any*, in chapter 5 section 5.4, it was shown that the structure of the domain of quantification has an impact on the reading of *any*-phrases. A

similar effect is recorded in the case of N-words. From the data discussed in section 6.4, it appears that only *niente* gives rise to fully acceptable instances of constituent negation. The cases with *nessuno* are all coordinated structures. This difference in behaviour patterns with a difference in the structure of the domain of quantification. *Nessuno* has only an individual domain. *Niente* has a non-individual domain.

Another point which brings NC and PS close is related to the issue of the descriptive content of an NP. In chapter 5 subsection 5.5.1, we have seen that indefinite NPs with more descriptive content tend to take wide scope over negation or universals. A variation in descriptive content appears to have an effect also on N-words. In this case, modifiers seem to prevent NC reading, hence the acceptability of the sentence. The Italian sentences in (6.76) offer a clear example of the phenomenon. The topic of the sentences has been chosen so that the interpretations should be driven as least as possible by expectations.

- (6.76) a. *Nessuno legge niente.*  
 nobody reads nothing  
 ‘Nobody reads anything’

℞\* *Nessun uomo con i jeans neri legge nessun romanzo storico.*  
 no man with the jeans black reads no novel historic  
 ‘No man with black jeans reads historic novels’

∅? *Nessuno legge nessun romanzo storico.*  
 nobody reads no novel historic  
 ‘Nobody reads historic novels’

∅? *Nessun uomo con i jeans neri legge niente.*  
 no man with the jeans black reads nothing  
 ‘No man with black jeans reads anything’

Sentence (6.76a) contains two pronominals and is fully acceptable. The use of *nessuno* as determiner is problematic. Adding descriptive material makes the nonspecific indefinite reading more difficult to get, see (6.76b). Speakers are consistent in reporting the marginal status of (6.76b). Some of them reports a DN reading. This could be explained by saying that because of all the descriptive material, *nessuno* in object position tends to escape the scope of *nessuno* in subject position. Once it has escaped, because of its own negativity, it causes the DN reading. The marginality is due to the fact that evading the scope of subject *nessuno* does not make the *nessuno* in object position ‘less nonspecific’. Sentences (6.76c) and (6.76d), with a pronominal respectively in subject

and object position, fare better than (6.76b), but are still not as good as (6.76a). Alternatively, syntactic complexity could be invoked. It is not easy to tell the two apart, because adding descriptive material is an operation that requires the use of modifiers.

Sentence (6.77), where *nessuno* is replaced by the indefinite *alcuno*, which is not a negative constituent, is an improved version of (6.76b). This change has been suggested spontaneously by speakers. The presence of *alcuno* in object position, rules out the possibility of having a double negation reading. In this way, a potential source of ambiguity is eliminated.

- (6.77) Nessun uomo con i jeans neri legge alcun romanzo storico.  
 no man with the jeans black reads any novel historic  
 'No man with black jeans reads any historic novels'

## 6.7 Polarity sensitive items and N-words

In this section, we discuss the issue of *finché* cooccurring with N-words. In chapter 4 subsection 4.5.4, we discussed the different acceptability of examples (4.85a) and (4.86), repeated here as (6.78) and (6.79).

- (6.78) ?\* Resto qui finché non arriva nessuno.  
 stay-1s here FINCHE not arrives nobody  
 'I stay here for as long as nobody arrives'
- (6.79) Finché non arriva nessuno io resto qui.  
 FINCHE not arrives nobody I stay here  
 'I stay here for as long as nobody arrives'

Sentence (6.78) is marginal and has only the reading where A and B are cotemporal. Sentence (6.79), where *finché* B is preposed, is fully acceptable. It was noted that preposing facilitates the reading where A and B are coextensive. It was also argued that the marginality of (6.78) could be attributed to the preference for *non* to combine with *finché*, and the ensuing impossibility of having an N-word. The acceptability of (6.79) disqualified an appeal to the semantic transparency of expletive negation (Manzotti [Man82], Rigamonti [Rig91]).

In the light of the hypothesis on NC in Italian explored in this chapter, we can integrate in the analysis the effect of differences in statements. This modification finds support in the unacceptability of (6.80).

- (6.80) \* Resto qui finché nessuno arriva.  
 stay-1s here FINCHE nobody arrives  
 'I stay here while nobody arrives'

As far as standard negative concord requirements are concerned, sentence (6.80) should be as good as (6.78), yet it is worse. In this context, noone's arrival can hardly be interpreted as referring to a particular event, i.e. describing hence identifying a particular interval. This can be rephrased by saying that in (6.80) argument B is instantiated by a categorical statement. The predicate arrive is ascribed to a predication base which cannot be instantiated, and from there it can be inferred that there is no event of arriving at all. The identification of an interval is needed for (6.80) to be assigned the interpretation depicted in Figure 4.14. Therefore, the relation *finché* cannot be established. At the same time, the interpretation where A and B are cotemporal, depicted in Figure 4.11, is also hard to obtain, because B would have to be interpreted as containing a stative.

In the case of (6.78), there is athetic statement in B. The existence of the event is negated directly. I am not entirely clear on how to exploit the difference. What is clear is that there is no room for an analysis of negation as stativiser. In fact, one should note the improved status of sentence (6.81) with respect to (6.78).

- (6.81) ? Resto qui finché non c'è nessuno.  
 stay-1s here FINCHE not there is nobody  
 'I stay here for as long as there isn't anybody'

Sentences (6.78) and (6.81) differ in the aspect of the verb of the subordinate clause. There is a stative in argument B in (6.81).

As far as the acceptability of (6.79) goes, I would suggest that the interval  $t_2$  required by the relation is identified indirectly via the negated existence of an event of arriving at any of the subintervals of  $t_1$ , identified by my staying. This is not to say that there is a negative event.

Finally, in case there is a negation also in A, as in (6.82), the reading where A and B are cotemporal and terminate together is still not available, and the sentence is unacceptable.

- (6.82) \* Non esco finché non arriva nessuno.  
 not go out FINCHE not arrives nobody

## 6.8 On the nature of NC and PS items

Two potentially contradicting points come out quite clearly. It is natural to start defining the meaning of lexical items from the examination of their interpretation in isolation. The data on free-standing items give us the FC interpretation for *any*, whereas N-words are interpreted as negatives. When broadening the context, we consistently see that N-words can express constituent negation, but *any* does not have this option. On the other hand, there are wide overlaps. Both *any* and N-words have negative interpretations in similar contexts. They are indefinites and share cases of alternation between negative and existential readings.

Haspelmath [Has93] has shown that indefinites have a cluster of functions, not necessarily the same in all languages. The differences are to be connected with the functions which are not shared. This means that the particular functions of an item cannot be ignored while asserting its behaviour with respect to negation. This further supports the contention that the behaviour and distribution of PS items cannot be described in purely structural terms, disregarding the contribution of the individual items.

In section 6.5, I have built an analysis for NC in Italian within which the negativity of N-words can find a place. In chapters 4 and 5, I have argued that the classification of PS items should rest on the definition of a spectrum of meanings which identifies exhaustively their distribution. In the light of the arguments proposed, and of Haspelmath's findings, I suggest abandoning the criterion based exclusively on the existence of a shared negative reading in order to decide whether N-words are NPIs. NC and PS phenomena may be better distinguished on the basis of the presence versus absence of a 'positive' reading, e.g. FC for *any*. In other words, it is the cluster of readings connected with the scale reversal phenomenon that characterise polarity sensitive items, and not the description of a behaviour that applies only to a fragment of their distribution. Negative elements are always concerned with a downward monotonic scale. Dowty [Dow93] characterises them as elements which constantly signify downward entailing positions.

I conclude that the following two points are crucial for defining polarity sensitive items: The notion of scalarity proposed in the literature, and the idea that sensitivity means that the meaning of an item as free-standing is not necessarily to be found as such in the meaning of a complex expression containing this item, defended in this study. Therefore, the meaning of an *any*-phrase in licensing contexts cannot be ascribed exclusively to the item *any* itself. This gives us the following definition of PS item.

(6.83) **Definition**

An expression is polarity sensitive if it refers to the endpoint of an upward entailing scale in the default (positive) context, and the endpoint of a downward entailing scale in a downward monotone (negative) context.

Hence, for a phrase, in order to qualify as polarity sensitive, it becomes crucial to possess the full spectrum, to 'start' from the positive pole as default and to 'reach' the negative pole via the contribution of a monotonicity reverser. Finally, it can be ambiguous in contexts for which monotonicity cannot be uniquely defined (which is not to say in non-monotone contexts). This leaves open the possibility of identifying as 'negative'—and not just as sensitive—polarity items those elements such as *yet*, or Dutch *hoeven*, which do not exhibit a full spectrum and occur only in negative environments.

In algebraic terms, to say that PS phrases are endpoints of arbitrary scales, means that we consider lattices. In case of downward monotonic scales, we consider meet semilattices. We can now see why the phenomena of PS and NC are connected, and we can define the areas of overlap. N-words too are to be defined intensionally as scalar endpoints. However, the scales are not arbitrary ones, but only downward entailing inferences run on them, independently from the context of occurrence.

## 6.9 Comments

In this chapter, we have discussed mainly data on NC. It was noted that the phenomenon crucially refers to a notion of morphologically negative element which is often not defined. The situation is similar to that of PS, where an independent way to identify polarity items is often missing. This uncertainty in the identification of the object of study might have two consequences, from the methodological point of view. On the one hand, it might result in a blending of two distinct phenomena. On the other hand, it might be the case that a distinction is artificially preserved.

Data on N-words in isolation and on constituent negation have been used to build an argument for keeping PS and NC phenomena distinct. I have outlined an NC analysis for Italian which accommodates the negative interpretation assigned to N-words. The treatment is still in the early stages, but it accounts for a sizeable set of data. Chapter 3 section 3.4 presented an extensive discussion of Dowty's ([Dow93], [Dow94b]) style of computation of negative chains with respect to Italian N-words. We agree with Dowty in identifying monotonicity as the crucial common point between PS and NC. Where we part is in the appreciation of the effect of negation in relation to the different arguments it applies to. We have introduced a treatment of negation at two levels, which matches

the basic ontology composed of truth values and entities. The multiple ‘manifestations’ of negation in an NC clause are interpreted as concerning either the level of the event, or that of the entities involved in it.

Finally, the proposal is sensitive to the large overlap between NC and PS. In chapter 5 section 5.7, I suggested that *any* is lexically not marked for monotonicity. This can be made to fit into a more general treatment of negative manifestations. PS *any* and Italian N-word *nessuno* are characterised as meet semilattices. However, *any* has also a ‘positive’ reading, which is obtained by taking joins, and which is not available for N-words in general. This is to say that *any* is characterised by a lattice, and *nessuno* only by a meet semilattice. In the case of *any*, the choice of taking meets or joins depends on the context. In the case of N-words, only meets can be taken, independently from the context. This boils down to saying that N-words are downward entailment introducers/endorsers, whereas *any* can only endorse the monotonicity established by other operators or by default.

## Chapter 7

# Concluding remarks

### 7.1 Achievements

The purpose of this study was to investigate the linguistic phenomenon of polarity sensitivity. It was motivated by the belief that the complexity of the phenomenon requires a more articulated analysis than the standard one based on licensing conditions. Licensing provides only a partial characterisation of the distribution of polarity sensitive phrases, and an inadequate account for the reading variations they exhibit. However, the long tradition of polarity sensitivity being approached in these terms is a sizeable obstacle on the way towards a comprehensive analysis. Moreover, licensing has the ‘advantage’ that it fits into a typology of anaphoric relations established for other domains.

Since the identification of semantic features common to the contexts of occurrence, the conviction has consolidated that the element bearing those features license occurrences of NPIs. The effort of generalisation over the class of licensors has not been matched by an equal study of NPIs. These have remained an eterogeneous collection in the view of many. As a consequence, the constraint of cooccurrence which links NPIs to licensors has been ascribed to idiosyncratic properties of NPIs, and ‘restricted distribution’ has also been raised to the rank of ‘property’. The analysis of polarity sensitivity put forward in this dissertation focuses on sensitive items and the phrases they form. The main points can be summarised as follows.

- Sensitivity is the central notion, polarity is one of its facets. The set of factors towards which there is sensitivity is defined in relation to the whole semantics of the items.
- Sensitive items are not encapsulated units, undistinguishable one from another with respect to polarity licensing. Their distribution follows from constraints due to their



properties, e.g. aspect is crucial for temporal operators, referential links and existential import for an indefinite. The putative wide spread lexical split of NPIs, usually matched with an equally unmotivated absence in PPIs, is discarded because it does not find correspondence in the consistent properties of the different 'pieces' of an item.

- Members of the class of sensitive items are identified by virtue of their capacity of taking into consideration the characteristics of the context and of interacting with operators of compatible type. The variation between non-PS readings and PS readings is due to the contribution of negation to the meaning of the complex expression. Hence, sensitive items form phrases with a spectrum of readings from the positive to the negative poles.
- Having defined what counts as sensitive item, it becomes possible to distinguish them from N-words. The latter possess only the negative portion of the spectrum. The shared portion is responsible for the common properties of their behaviours.

The proliferation of connections between the issue of negative polarity and other issues like verb aspect, mass/count distinctions, focus, prosodic contour, etc., supports the view that it is a constellation of factors that are relevant for polarity items. It seems more adequate to talk about PS items as being sensitive to some or a combination of these factors than as being licensed by one particular factor.

Points in common with works on the topic have been mentioned throughout the discussion. Here I note that my theoretical position against hierarchical constraints is not entirely at odds with the rest of linguistic research. Similarity might be found with Pustejovsky's [Pus93] idea of making verbs sensitive to the properties of their arguments. Pustejovsky considers verbs as unspecified for certain features provided by the arguments. I consider sensitive items specified for their task, but potentially unspecified for certain features required for performing the task.

Partee's [Par84] paper on compositionality and contextual-dependence also comes to mind. The relevant difference between her treatment and my proposal is that she postulates a disjunctive meaning function for single elements. Whereas I say that the basic elements involved are units, and that the compound's meaning varies. The meaning of the whole cannot be cut down into pieces and redistributed to the parts, were it only by means of a disjunction. This position may seem to strain the notion of compositionality, but only if one considers it in a static way.

## 7.2 Further work

In all the directions in which this dissertation has made positive contributions to the literature, there is scope for further development. The revised approach to polarity sensitivity has been motivated via the discussion of certain cases. Chapter 4 made the point with respect to temporal adverbials, and contrasted sensitive and non-sensitive items. Chapter 5 analysed *any*, and chapter 6, in part, contrasted it with N-words. Further analysis on a broader typology of items will constitute a fruitful testing on whether the discussion on sensitivity could be rephrased in terms of conditions on interpretability.

Next, the argument against a lexical split rests upon items that exhibit a spectrum of readings. On the one hand, the directions for research on the reading variations of *any* pointed out in chapter 5 section 5.3 and 5.7 should be pursued. On the other hand, there is the case of items which have lost a portion of the spectrum. An investigation of the plausibility of the idea of *yet* lexicalising a portion of the spectrum, mentioned in chapter 4 section 4.6, could unearth interesting information on the relation between PS and NC too.

Finally, the hypothesis on the functioning of NC in Italian is to be further investigated in at least two directions. I focussed on manifestations of the phenomenon within a clause, but in chapter 3 section 3.4 I presented also examples of NC across clausal boundaries. The analysis should be extended to cover these cases. The second direction is the cross-linguistic one.

There are other issues not directly discussed here, but which I consider worthy of being pursued in subsequent research. Among them I will mention the motivation for the presence of PS items and NC in natural language. Two points of view are of particular interest to me. There is the cognitive one, and a possibility is to study how compatible my analysis of polarity sensitivity is with Dowty's [Dow93] proposal. Then, the issue can be approached also from the point of view of the economy of a language. The issues of ambiguity and polyfunctionality of elements cropped up several times. Natural language is an efficient tool. A few expressions seem to do a lot of work, and there is no clear evidence that a one-to-one correspondence is upheld.

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# Glossary

**EQUAL( $t_1, t_2$ )**  $t_1$  and  $t_2$  are the same interval [All84, p.129], 79, 80

**FINISHES( $t_1, t_2$ )** Time interval  $t_1$  shares the same end as  $t_2$ , but begins after  $t_2$  begins [All84, p.129], 79, 80

**Finishes( $t_1, t_2$ )** The time intervals  $t_1$  and  $t_2$  have coinciding termination points. The relation between their beginnings is left unspecified.  $t_1$  cannot have coinciding beginning and end, 80, 81, 88, 106, 110

**MEETS( $t_1, t_2$ )** Interval  $t_1$  is before interval  $t_2$ , but there is no interval between them, i.e.  $t_1$  ends where  $t_2$  starts [All84, p.129], 80, 81

**Meets( $t_1, t_2$ )** The termination point of the time interval  $t_1$  coincides with the beginning of  $t_2$ . The locations of the beginning of  $t_1$  and end of  $t_2$  is left unspecified, 80, 81, 88, 109, 110

**N-word** This term applies to items which exhibit some properties that are typical of inherently negative elements and some properties of polarity items, 218

**Negative Concord (NC)** This term refers to the case of multiple occurrences of negative constituents resulting in the event being negated, 230

**Negative Constituent** This term applies to elements which can express negation on the plan of the entities or of the events. Either they block the possibility of instantiating a role in an event, or they negate directly the existence of the event, 230

**OVERLAP( $t_1, t_2$ )** Interval  $t_1$  starts before interval  $t_2$ , and they overlap [All84, p.129], 80, 81

**Polarity Sensitive Item (PS item)** This term applies to expression which refers to the endpoint of an upward entailing scale in the default (positive) context, and the endpoint of a downward entailing scale in a downward monotone (negative) context, 73, 247

**STARTS( $t_1, t_2$ )** Interval  $t_1$  shares the same beginning as  $t_2$  but ends before  $t_2$  ends [All84, p.129], 79, 80

**Starts( $t_1, t_2$ )** The time intervals  $t_1$  and  $t_2$  have coinciding beginning points. The relation between their ends is left unspecified, 80, 81, 90, 108

## Riassunto

Questa tesi esamina il fenomeno linguistico della sensibilità alla polarità. Essa si origina nella convinzione che la complessità del fenomeno richieda un'analisi più articolata di quella standard basata su condizioni di legittimazione. Tradizionalmente, il termine di *sensibilità alla polarità* viene usato per identificare elementi che si ritiene abbiano una distribuzione influenzata dalla positività o negatività del contesto in cui figurano. La nozione di contesto negativo oltrepassa quella di ambiente contenente una negazione esplicita o un quantificatore negativo. Gli elementi che inducono tale contesto sono potenzialmente dei legittimatori per le espressioni di polarità negativa. Nella letteratura, il fenomeno della sensibilità alla polarità è stato affrontato da diversi punti di vista. I dati ad esso associati sollevano importanti questioni semantiche e sintattiche. C'è scarsa concordanza sulla definizione di negatività pertinente. Gli elementi sensibili presentano variazioni di significato a seconda che siano considerati isolatamente o in contesto. La distribuzione complementare implicata dalle analisi attuali non corrisponde ai dati. Tale caratterizzazione presuppone l'idea che la distribuzione sia limitata, invece di derivarla da una particolare funzione linguistica delle espressioni di polarità. L'argomentazione in favore di un nuovo modo di percepire il fenomeno si basa in parte sull'osservazione che le analisi attuali sono tuttora parzialmente insufficienti, e in parte sul desiderio di mettere in chiaro connessioni con altri fenomeni del linguaggio naturale. Solidi argomenti portano a rivedere l'attuale nozione di sensitività, e ad abbandonare gli assunti di idiosincrasia e frammentarietà lessicale su cui si basa.

Dopo una breve rassegna degli studi precedenti, si procede all'esame di una nozione di sensibilità più vasta, in cui la polarità è una delle diverse faccette. La discussione si sviluppa in due parti. La prima verte sulla distribuzione di avverbi di tempo appartenenti a diverse lingue e sulle loro interpretazioni rispetto a fattori quali variazioni aspettuali e contesto positivo o negativo. Si studia come la presenza della negazione in varie parti della frase possa portare a strutture temporali più o meno ben formate, e creare o distruggere equivalenze linguistiche tra i membri del gruppo. Inoltre, dai risultati di questo studio su più lingue traspare chiaramente che la catalogazione dell'avverbio inglese come elemento di polarità negativa è un fatto fortuito, e che le condizioni di legittimazione sono di natura stipulativa. Si mostra come espressioni cui tradizionalmente non si applica l'etichetta di 'sensibili alla polarità' sono sufficientemente simili dal punto di vista semantico da essere messe nella stessa classe, o come un'espressione possa venir spezzettata in parti appartenenti a diverse classi a causa del suo funzionamento articolato. Per esempio, malgrado le somiglianze, i dati italiani non sono riconducibili alla bipartizione tra legittimazione/non-legittimazione definita sui dati inglesi.

Nella seconda parte si analizza l'espressione inglese *any*. Anche in questo caso viene messa in luce una rete di interazioni, questa volta connesse con la funzione di quantificatore e di indefinito di questo determinante, e con i contesti positivi e negativi in cui figura. Si studia come calcolare in modo compositivo variazioni di lettura indotte dai legittimatori. Tali variazioni sono inoltre connesse con il tipo di dominio su cui *any* quantifica, un fenomeno in comune con gli indefiniti in generale, con questioni di specificità e con il tipo di *statement* in cui si trova. Nella parte finale della tesi, si indicano analogie tra la sensibilità alla polarità e altri fenomeni connessi con la negazione, quale la concordanza negativa.