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NEGATIVE POLARITY QUESTIONS AND ITALIAN NEGATIVE CONCORD

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Contents

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1. Introduction

Although Negative Concord (NC), a phenomenon consisting in multiple expressors of negation representing jointly a single negation meaning, has been extensively dealt with in the literature, many problems still remain unsolved or unnoticed. This paper is concerned with one such neglected phenomenon: the behaviour of Italian *n*-words[1] in polarity questions.

The organization of this paper is as follows: §2 presents the crucial data, explains briefly why they are problematic for the existing accounts, and

[1] This is Laka's (1990) term. *N*-words are words having meanings such as 'nobody', 'nowhere', 'nothing', 'never', etc. when used in isolation. NC, involving *n*-words, should be carefully distinguished from a similar phenomenon, NPI-licensing, in which the licensed elements (e.g., *anybody* in English, *alcunché* in Italian, etc.) do not have the negative meaning when used in isolation. See Vallduví (1994b), Giannakidou (1997) and Przepiórkowski and Kupść (1999) for some comparisons.

summarizes the solution proposed in this paper. §3 deals with the syntax and semantics of preverbal *n*-words and proposes that, contrary to many analyses, they always express sentential negation. §4, the pivotal section of this paper, examines in some detail questions expressed by negated interrogatives,[2] and suggests that they are ambiguous cross-linguistically; it shows how this ambiguity explains the problematic data, and it further proposes that this ambiguity reflects a more general ambiguity of sentential negation. The results of §3–§4 are formalized in Head-driven Phrase Structure Grammar (HPSG; Pollard and Sag 1987, 1994), with the semantic part of the analysis formulated within Situation Semantics (Barwise and Perry 1983; Devlin 1991). Finally, §5 points out some consequences of the current analysis for HPSG and for Situation Semantics.

A note on how this paper can be read. The ideal reader will read the whole paper. The reader not familiar with the Principles and Parameters framework may skim §2 for the data and for the summary of the analysis in the last paragraph, and skip §3.1 completely. The reader with aversion to the gory technical HPSG detail may consider skipping sections presenting the HPSG formalization of the analysis, i.e., §3.3 and §4.4; the main points of the analysis should be clear from the surrounding discussion. Finally, the reader who doesn't really feel like reading this paper at all, may browse through §2 and §5, and decide whether it is worth his or her effort.

2. The Problem (and a Sketch of its Solution)

In this section, I will present the problem which will be our initial concern. Consider the Italian examples (2.1)–(2.2).[3]

(2.1) **Non** pretendo che **nessuno** ti arresti.
NM I require that nobody you arrest
'I don't require that nobody arrest you.'

(2.2) **Non** pretendo che tu arresti **nessuno**.
NM I require that you arrest nobody
'I don't require that you arrest anybody.'

[2] I follow much of the literature in telling apart *questions*, essentially semantic objects, from *interrogatives*, characterized by their syntactic, morphological and prosodic properties. As is well known, the correspondence between interrogatives and questions is not complete.

[3] 'NM' stands for 'negative marker'. Negative elements are marked with **bold** font.

Since Rizzi (1982) (which builds on Kayne (1981)), it is assumed that the double negation reading of (2.1) is the result of the LF-level application of the Empty Category Principle (ECP): the n-word *nessuno* cannot raise to the matrix clause at LF because in order to do so it would have to leave an ungoverned trace behind. Hence, *nessuno* must be interpreted within the embedded clause, giving rise to its negative interpretation, and to the double negation interpretation of (2.1). On the other hand, the head-governed n-word in (2.2) may raise to the matrix NegP (via Quantifier Raising in Rizzi (1982), or for the feature checking purposes in Acquaviva (1997)) and be interpreted, jointly with the matrix negation, as an existential quantifier (Rizzi 1982) or as an indefinite (Acquaviva 1997) in the scope of negation; the meaning of (2.2) is that of a single negation.

The contrast between (2.1) and (2.2) is supposed to provide strong support for the ECP in Italian. However, we'll see that an analysis along these lines cannot account for the full range of data, and that the contrast results from other, independently motivated principles of grammar.

As is well known, postverbal n-words in Italian are licensed both in sentential complements of adversative predicates (e.g., *dubito* 'doubt') and in questions (also embedded), just as they are in the negative (2.2):[4]

(2.3) Voleva sapere se ha telefonato **nessuno**.
(s)he wanted know if aux phoned nobody
'(S)he wanted to know whether anybody phoned.'

(2.4) Dubito che venga **nessuno**.
I doubt that will come nobody
'I doubt anybody will come.'

To the best of my knowledge, it hasn't been noticed, though, that these environments differ crucially in licensing embedded preverbal n-words — they are licensed in questions, but not in complements of adversative predicates:

(2.5) Voleva sapere se **nessuno** ha telefonato.
(s)he wanted know if nobody aux phoned
'(S)he wanted to know whether anybody phoned.'
'(S)he wanted to know whether nobody phoned.'

[4]In (2.3) and similar examples below, some speakers prefer the auxiliary *aveva*.

(2.6) Dubito che **nessuno** venga.
I doubt that nobody will come
*'I doubt anybody will come.'
'I doubt nobody will come.'

(2.5) above is ambiguous between the reading in which, apparently, *nessuno* is licensed by *se*, and hence doesn't exhibit its negative force, and the one in which it is not licensed, and hence the embedded sentence is negative.[5] (2.6), on the other hand, just as (2.1), can be interpreted only as involving embedded negation; licensing by the adversative predicate is apparently not available here.[6]

The ECP cannot easily explain the contrast in (2.5)–(2.6): it is uncontroversial that in both cases the licensing elements are placed in the embedded Comp (*se* and *che*; cf. Laka (1990, ch.3)), so subject raising to the [Spec,CP] (or other) position should be either allowed in both cases, or uniformly prohibited by the ECP.

Below, I provide a syntactico-semantic analysis of the facts above, formalized in HPSG (Pollard and Sag 1994). The main points of the analysis are: (i) a preverbal *n*-word always expresses sentential negation in Italian, just as the preverbal *non* does; (ii) Italian *n*-words are indefinites in the sense of Kamp (1981) and Heim (1982) ('Heimian indefinites') which must be licensed by an appropriate (semantic) context; (iii) cross-linguistically, sentential negation is ambiguous between (what I call) propositional and eventuality negations; (iv) cross-linguistically, propositional negation is neutralized in questions. I will assume (ii) together with much of the literature (cf. §3.1 below), and I will argue for (i), (iii) and (iv) independently of the data in (2.1)–(2.6).

Once (i)–(iv) are established, the account of the puzzling contrast between (2.5) on the one hand, and (2.1) and (2.6) on the other, will be straightforward: although in all these sentences, the preverbal *n*-word *nessuno* expresses (embedded) sentential negation, which is ambiguous between propositional and eventuality readings, only in the embedded question (2.5) is the propositional negation neutralized, which results in two clearly distinct meanings. In the declarative embedded clause of (2.1) and (2.6), on the other hand, the two meanings of sentential negation are

[5] Some stress on *nessuno* and/or adding *veramente* in the embedded clause may facilitate the 'nobody'-reading.

[6] Although Zanuttini (1991) considers the 'anybody'-reading available, all my informants decidedly reject it.

propositionally near-synonymous, so no visible ambiguity arises and the embedded clauses are interpreted as negative.

3. Preverbal Negative Constituents

In Italian, sentential negation can be expressed in two ways: either by the preverbal negative marker (NM) *non*, (3.1)–(3.2), or by a preverbal *n*-word, (3.3)–(3.4):

(3.1) **Non** ha telefonato Mario.
NM aux phoned Mario
'Mario hasn't phoned.'

(3.2) Mario **non** ha telefonato.
Mario NM aux phoned
'Mario hasn't phoned.'

(3.3) **Nessuno** ha visto Mario.
nobody aux seen Mario
'Nobody has seen Mario.'

(3.4) A **nessuno** ho parlato.
to nobody aux talked
'I haven't talked to anybody.'

On the other hand, postverbal *n*-words do not express sentential negation alone; in fact, they are illicit, (3.5), unless licensed by, among other environments, sentential negation, (3.6)–(3.7):

(3.5) * Mario ha contattato **nessuno**.
Mario aux contacted nobody
'Mario has contacted anybody/nobody.' (putative)

(3.6) **Non** ha telefonato **nessuno**.
NM aux phoned nobody
'Nobody has phoned.'

(3.7) **Nessuno** ha detto **niente**.
nobody aux said nothing
'Nobody has said anything.'

Apart from sentential negation, Italian *n*-words are known to be licensed in questions, both matrix and embedded, in both preverbal and postverbal positions:[7]

(3.8) Ha telefonato **nessuno**?
aux phoned nobody
'Has anybody phoned?'

(3.9) Mi chiedo se **nessuno** abbia poi contattato Gianni.
I wonder if nobody aux eventually contacted Gianni
'I wonder whether anybody has eventually contacted Gianni.'

What is it that makes preverbal *n*-words, but not postverbal ones, express sentential negation? I will review some prominent approaches in §3.1, present my proposal in §3.2, and formalize it in §3.3.

3.1. **Previous Approaches.** Rizzi (1982) analyzes Italian *n*-words as existential quantifiers "with peculiar 'polarity' requirements." As quantifiers, they undergo the Quantifier Rule at LF, and as polarity items, they must end up "in the local context of a negative or interrogative marker." This handles the postverbal *n*-words, but not the preverbal ones; in order to account for them, Rizzi (1982) postulates the rule of 'negative incorporation':

(3.10) *nessuno* $\longrightarrow$ [+ neg] when c-commanded by VP (optional)

Since a preverbal *n*-word can optionally get the [+ neg] feature, it may express sentential negation and license postverbal *n*-words. The optionality, however, is understood in a rather peculiar way: (3.10) *must* apply in declarative sentences, and it *mustn't* apply in questions. However, Rizzi (1982) doesn't say how to ensure application of (3.10) only in the right contexts.

Another interesting approach, rather similar in spirit (but not in letter) to Rizzi (1982), is that of Laka (1990).[8] It treats *n*-words as Negative Polarity Items (NPIs). In order to account for preverbal *n*-words, Laka posits a phonologically empty negative head with the following properties: 1) it heads the ΣP (a projection between IP and CP), 2) it licenses NPIs in [Spec, ΣP] via the head-specifier agreement, 3) it must be licensed itself

[7] I will defer discussion of such cases to §4 below.

[8] She illustrates her analysis with Spanish, Basque and English data. I consider it here because of the similarities in the relevant respects between Spanish and Italian.

by an overt element in [Spec, ΣP]. So, for an n-word to be licensed in the preverbal position, it must move to [Spec, ΣP].

Unfortunately, Laka's (1990) approach poses more questions than it answers: why cannot an overtly realized head of ΣP (i.e., the negative marker) license the preverbal n-word?, what exactly licenses postverbal n-words in sentences involving preverbal ones (the empty head, or the n-word in [Spec, ΣP])?, etc.[9]

The proposal of Zanuttini (1991) differs from the two above in that it builds the negative meaning into n-words: they are considered to be 'negative quantifiers' and have the following logical form: '$\forall x \neg$'. This, under certain assumptions, leads to the correct interpretation of sentences involving only a preverbal n-word, but forces Zanuttini (1991) to provide additional account of sentences involving postverbal n-words, as well as of non-negative uses of n-words, e.g., in interrogative contexts. To this end, Zanuttini (1991) claims that 1) the NM *non* heads the functional projection NegP, 2) postverbal n-words raise at LF to [Spec, NegP], and the whole projection NegP is interpreted as involving a single sentential negation, 3) multiple occurrences of n-words must undergo the rule of negative concord, in essence May's (1989) resumptive quantification,[10] 4) non-negative contexts allowing n-words, including interrogatives and adversative predicates, involve a negative operator in Comp; in such cases n-words raise to [Spec, CP].[11]

Like the proposal by Laka (1990), Zanuttini's (1991) account leaves many important questions open. What's most important for us is that it does not offer any account of sentences involving both a preverbal and a postverbal n-word.

An approach to Negative Concord (NC) similar to that by Laka (1990) is sketched in Ladusaw (1992, 1995). The important difference, though, is that—instead of treating n-words as polarity-sensitive existential quantifiers—Ladusaw (1992, 1995) considers them to be Heimian indefinites, which need to be licensed in appropriate syntactic and semantic configuration, the latter being (minimally) sentential negation. However, the relationship between n-words and sentential negation is bi-directional: not only does sentential negation license n-words, but it must also be itself

[9] See Zanuttini (1991, sec.4.2.4) for other criticisms.

[10] Zanuttini (1991) invokes Higginbotham and May's (1981) quantifier absorption and adds to it 'negative factorization'; the combined effect is that of May's (1989) resumptive quantification. A similar account is proposed by Longobardi (1991).

[11] Zanuttini (1991) does not specify the sense in which this operator is negative.

licensed by some visible (i.e., morphosyntactic) element(s), e.g., n-words. For example, in Italian, preverbal n-words may be taken as expressors of sentential negation, but at the same time they are indefinites which must be licensed by sentential negation; thus, in a sense, they indirectly license themselves. This is the approach from which mine inherits most.

Finally,[12] the approach of Acquaviva (1997) can be viewed as an instantiation and further formalization of Ladusaw's sketch: it treats n-words as Heimian indefinites bound by a negated existential operator in [Spec NegP] (at LF) via the mechanism of the closure of the event variable.

Below, I will follow the last two approaches in assuming without further argument that n-words are (Heimian) indefinites which must be licensed by appropriate context,[13] and that, in Italian, appropriate contexts include sentential negation, questions and adversative predicates. An important feature of this analysis is that it avoids positing a lexical ambiguity of n-words: they are simply Heimian indefinites with certain peculiar properties. In this respect the analysis presented here agrees with the analyses of Laka (1990) and Zanuttini (1991), which, building on rather different sets of assumptions argue against lexical ambiguity of n-words, but sharply differs from the account presented in Giannakidou 1998a,b. On that account, Italian n-words would have to be analysed as three-way ambiguous: they are universal quantifiers when licensed by the NM *non* (*strict NC*); existential quantifiers when licensed in questions, complements of adversative predicates, etc.; and (parts of) negative branching quantifiers when licensed by preverbal n-words (i.e., in *negative spread* constructions).

3.2. **Negation on Preverbal Indefinites.** None of the works mentioned above provides a comprehensive answer to the question with which we will deal in this section: how does a preverbal n-word license postverbal ones? The answer I'd like to suggest here is deceptively simple: preverbal n-words are, rather idiosyncratically, expressors of (abstract) sentential negation, just as the preverbal *non* is. I will not try to derive this from more basic principles of grammar: it is well known that languages employ a variety of ways of expressing negation, and I take the presence of a preverbal n-word to be one of them.[14] This, in essence, reflects the idea

[12]Another approach, namely that of Tovena (1996a), will be considered in §3.2.

[13]This idea seems to be getting cross-linguistic acclaim, cf. e.g. Giannakidou (1997) on Greek, and Błaszczak (1998a,b,c) and Richter and Sailer (1999b) on Polish.

[14]Note that it satisfies Jespersen's (1917) generalization that languages tend to express negation early in the sentence.

due to Ladusaw (1992, 1995) that *n*-words are sensitive items which are licensed by (among other things) sentential negation, but which may also act as expressors of their licenser.

The remainder of this section examines the status of preverbal constituents, and the next section provides an HPSG formalization. It should be mentioned right at the outset, however, that many decisions made below will be of a rather preliminary nature; more careful account presupposes a comprehensive analysis of word order and information structure in Italian and, thus, is well beyond the scope of this paper. The formalization below is intended to show how *in principle* one may link the licensing impact of Italian preverbal *n*-words to their position in a clause.

3.2.1. *Thetic/Categorical vs. Information Packaging.* I will present my account in comparison with that of Tovena (1996a,b), so let us first look at that analysis.[15]

Tovena (1996a,b) argues that sentences involving preverbal constituents (cf. (3.2)–(3.4) and (3.7) above) are categorical, while those without preverbal constituents (cf. (3.1) and (3.6) above) are thetic, a distinction that dates back to Brentano and Marty (cf., e.g., Kuroda (1972), Ladusaw (1994) and references therein).[16] According to this view, thetic statements are logically unstructured, they are judgements about events, while categorical statements are instances of predication and, hence, can be divided into the predication base (the preverbal constituent) and the predicate (the remainder of the clause). Tovena (1996a,b) illustrates this distinction with the following pair:

(3.11) Ho provato a telefonare e [**non** mi ha risposto **nessuno**].
aux tried to telephone and NM to me aux answered nobody
'I tried to phone and nobody answered me.'

(3.12) Li ho interrogati di persona e [[**nessuno**] [mi ha risposto]].
them aux questioned personally and nobody to me aux answered
'I questioned them myself and nobody answered me.'

She notes that "[a]lthough [the *risposto*-clauses above] are logically equivalent, they cannot freely replace one another in context … [P]redication

[15]Since both the analysis and many important notions are formulated only at the intuitive level, it is difficult to fully evaluate Tovena's account.

[16]See Giannakidou (1997, 1998) for a similar position.

base is presupposed, in the sense that it is first identified and then a predicate is ascribed or denied of it" (Tovena 1996a, pp.69–70).

An immediate problem that this approach must face is the existence of sentences with multiple preposed constituents: which of them counts as the predication base?[17]

(3.13) A **nessuno** studente Gianni ha parlato.
to no student Gianni aux talked
'Gianni did not talk to any student.'

(3.14) A questo studente **nessuno** ha parlato.
to this student nobody aux talked
'No one has talked to this student.'

(3.15) Di vestiti, a me, Gianni, in quel negozio, non mi ce ...
clothes to me Gianni in that shop NM to-me there ...
... ne ha mai comprati.
... of them aux never bought

On Tovena's approach, multiple predicate bases would have to be posited, rather against both the spirit and the letter of the thetic/categorical distinction.

An obvious way out is to treat the thetic/categorical distinction as just one aspect of information packaging: this is indeed the position of Vallduví (1990, 1992, 1994a). Vallduví distinguishes three information structure components of natural language utterances. First, the information conveyed by a sentence is divided into *focus*, which represents new information, and *ground*, corresponding to given (already established) information. Second, *ground* is further subdivided into *link* (what the sentence is about, sometimes called *topic*) and *tail*. Under the assumption that every utterance contains new information, this leads to a four-way classification of utterances: *all-focus* (no ground), *link-focus* (no tail), *focus-tail* (no link) and *link-focus-tail*. Vallduví's claim is that thetic sentences are simply *all-focus*, while categorical sentences are *link-focus* (cf., e.g., Vallduví 1990, pp.62–64). This assumption not only solves the problem of multiple preverbal constituents (there is nothing wrong in there being many *link*s), but also seems to be justified by Tovena's own discussion of the examples (3.11)–(3.12) above.

[17] (3.13)–(3.14) are from Haegeman (1995, p.267), (3.15) is from Cinque (1990, p.58) (who doesn't provide glosses).

Another argument in favour of the hypothesis that preverbal *n*-words in Italian are *link*s is provided by examples such as (3.16)–(3.17) from Giannakidou (1998a,b), who argues for the topic-status of *n*-words in Greek and Italian:[18]

(3.16) **Nessuno** di loro l' ho visto parlare con Maria.
nobody of you him aux seen talk with Maria
'None of you did I see talking to Mary.'

(3.17) **Nessuno** in questo dipartimento l' ho visto parlare con Maria.
nobody in this department him aux seen talk with Maria
'I saw nobody in this department talking to Mary.'

What these examples show is that preverbal phrases involving *n*-words are (or, at least, *may* be) an instance of the so-called clitic left dislocation (CLLD), as evidenced by the presence of the clitic *l'*, co-indexed with the preverbal *n*-phrase.[19] This, in turn, suggests that these preverbal phrases are *link*s: "A necessary condition for [clitic] left dislocating an NP in Italian is that it be old information" (Cinque 1977).[20]

In summary, I tentatively conclude that preverbal *n*-words in Italian are *link*s.[21]

3.2.2. *Preverbal* N-*words.* Now, given the analysis of preverbal *n*-words as *link*s, we can express the first version of the

(3.18) **Morphosemantic Negation Principle (Italian)** (1st v.):
In Italian, sentential negation may be expressed either by the negative marker *non*, or by a *link* *n*-word.

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[18]Judgements attributed to Maria Aloni and Carlo Cecchetto, p.c.

[19]Note that the absence of the clitic on the verb in examples such as (i), also from Giannakidou (1998a,b), does not constitute counter-evidence against this claim:

(i)* **Nessuno** l' ho visto.
nobody him aux seen

As observed in Cinque (1990, p.74) (an observation attributed to Paola Benincà), clitic left dislocation of bare non-referential expressions does not leave a clitic on the verb.

[20]See also Vallduví (1990, 1992, 1994a), which analyses left-peripheral position in Catalan, another Romance language, as normally representing *link*.

[21]It should be noted, though, that the opposite claim, i.e., that preverbal *n*-words are focus-preposed ('topicalized'; see Cinque (1990, p.180, n.11) for the claim that 'topicalization' is a misnomer in Italian grammar) is not without its merits: since, in general, only one preverbal constituent can be focus-preposed in Italian (Zanuttini 1991, p.124, fn.10), this would explain why only one preverbal *n*-word is allowed. On the position adopted here, this fact must be stipulated, rather than derived.

One thing to note is that this principle refers to *link* n-words rather than to preverbal n-words. Is there a difference in prediction between these two possibilities? Following Vallduví (see §3.3 below), I assume that *link*s must be preverbal, so a *link* n-word is always preverbal. However, the converse is not necessarily true: not all preverbal elements are *link*s. In §4.5.2, we will see that (3.18), based on the notion of *link* n-words, makes better empirical predictions than the corresponding version based on the notion of preverbal n-words.

Perhaps more importantly, (3.18) claims that preverbal n-words express the same sentential negation that *non* does. This approach should be contrasted with that of Tovena (1996a,b). On her view, a preverbal n-word in categorical sentences patterns with the NM *non* in thetic sentences in expressing sentential negation, but, crucially, not with the NM in categorical sentences, which expresses predicate negation. One argument for this stance is that categorical sentences with *both* a preverbal n-word and the NM *non* express double negation (Tovena 1996a, p.71):

(3.19) **Nessuno** tifoso **non** guarda la partita la domenica.
no fan NM watch the match the Sunday
'No football fan doesn't watch the match on Sunday.

Note, however, that this is a pretty weak argument: English *Nobody loves nobody* also expresses double negation (on its 'loving world' interpretation), and yet it would be controversial to say that this is because there are two *different kinds* of negation involved; rather, what's happening is iteration of the same type of negation.

Moreover, it is not clear in what ways predicate negation differs from sentential negation. The original motivation, i.e., that the preverbal element 'escapes' the 'predicate negation', may be accounted for on the view that preverbal n-words are *link*s, i.e., they express entities that the sentence is *about*. In other words, the existence of *link*s is, in a sense, presupposed, and it cannot be denied. Thus, the difference lies not in two negations, but rather in information packaging.

Further, the two negations behave alike in licensing n-words; compare (3.6)–(3.7) above, expressing sentential negation, with (3.20) below, allegedly expressing 'predicate negation'.

(3.20) Mario **non** ha detto **niente**.
Mario NM aux said nothing
'Mario hasn't said anything.'

Finally, 'predicate negation' shows the same ambiguity in questions that sentential negation does (cf. (2.5) and fn.5 above):

(3.21) Voleva sapere se Mario **non** ha telefonato.
(s)he wanted know if Mario NM aux phoned
'(S)he wanted to know whether Mario had phoned.'
'(S)he wanted to know whether Mario hadn't phoned.'

Thus, in the absence of convincing evidence to the contrary, it seems safe to conclude that both a *link* *n*-word and the NM *non* express the same kind of negation, namely, sentential negation.

3.3. **HPSG Formalization.** In this section, I will formalize our considerations above. In doing so, I will build on Engdahl and Vallduví's approach to information structure (Engdahl and Vallduví 1994, 1996, Engdahl 1998) and Kathol's approach to word order (Kathol 1995).[22,23]

First of all, I adopt the basics of Kathol's (1995) analysis of word order (Kathol himself builds on an earlier approach by Reape (1992)) and assume the following architecture for *sign* ...

(3.22) $$\begin{bmatrix} \text{PHON} & \textit{phonology} \\ \text{DOM} & \textit{list(dom-obj)} \\ \text{SYNSEM} & \textit{synsem} \end{bmatrix}_{\textit{sign}}$$

... and the following appropriateness conditions on *dom-obj*:[24]

(3.23) $$\begin{bmatrix} \text{PHON} & \textit{phonology} \\ \text{SYNSEM} & \textit{synsem} \\ \text{TOPO} & \textit{topology} \end{bmatrix}_{\textit{dom-obj}}$$

Second, I assume that at least three topological fields should be distinguished in Italian, *preverbal*, *verbal*, and *postverbal*, with the sort hierarchy (3.24)[25] and with a simple LP rule (3.25):[26]

[22]For lack of space, I cannot present these approaches here; this section presupposes some knowledge of HPSG on the part of the reader.

[23]This analysis follows suggestions of Engdahl and Vallduví (1994, 1996) that their approach should be coupled with a theory of linearization. See Manandhar (1994) for a preliminary attempt at combining it with Reape-style linearization (Reape 1992).

[24]See Penn (1999) for a much more restrictive view on domain objects.

[25]This sort hierarchy may be enriched in various ways, cf. e.g. fn.30.

[26]A possible extension (which I'll ignore, though) to this hierarchy would be a field in unembedded clauses for what Cinque (1977) calls *hanging topics* (and Cinque (1990, p.58)—*left dislocation*).

(3.24)

topology

preverbal *verbal* *postverbal*

(3.25) $\left[\text{TOPO } \textit{preverbal}\right] \prec \left[\text{TOPO } \textit{verbal}\right] \prec \left[\text{TOPO } \textit{postverbal}\right]$

The topological LP rule (3.25) says that, on any DOM list, all *preverbal* objects precede all *verbal* objects, which, in turn, precede all *postverbal* objects. I also assume that *verbal* is the field of finite verbs:

(3.26) $_{\textit{dom-obj}}\left[\text{SS} \mid \text{LOC} \mid \text{CAT} \mid \text{HEAD } \textit{fin}\right] \leftrightarrow {}_{\textit{dom-obj}}\left[\text{TOPO } \textit{verbal}\right]$

Third, I slightly reformulate Engdahl and Vallduví's account in order to make it compatible with the logic for HPSG presupposed here (essentially, King (1989, 1994) with extensions in Richter (1997), Richter, Sailer, and Penn (1999) and Richter (1999)). I assume that one of the contextual attributes is INFO-STRUC, with the following appropriateness conditions:[27]

(3.27)
$$_{\textit{context}}\left[\text{INFO-STRUC} \begin{bmatrix} \text{FOCUS} & \textit{set(content)} \\ \text{GROUND} & \begin{bmatrix} \text{LINK} & \textit{set(content)} \\ \text{TAIL} & \textit{set(content)} \end{bmatrix} \end{bmatrix}\right]$$

I further assume that *domain objects* are either pure *link*s, or pure *foci*, or pure *tail*s, (3.28); from now on I will abbreviate the respective disjuncts in (3.28) to link, focus and tail.

(3.28)
$$_{\textit{sign}}\left[\text{DOM } \langle \ldots, \boxed{0}, \ldots \rangle\right] \rightarrow$$
$$\boxed{0} = \left[\text{SS} \mid \text{LOC} \begin{bmatrix} \text{CONT } \boxed{1} \\ \text{CTXT} \mid \text{INF-STR} \begin{bmatrix} \text{FOCUS} & \{\} \\ \text{GROUND} & \begin{bmatrix} \text{LINK} & \left\{\boxed{1}\right\} \\ \text{TAIL} & \{\} \end{bmatrix} \end{bmatrix} \end{bmatrix}\right] \vee$$

[27] In the original formulation (Engdahl and Vallduví 1994, 1996), the values of FOCUS, LINK and TAIL were (sets of) *signs*. Here, I follow Engdahl (1999) in assuming that they are (sets of) *content* objects.

$$\boxed{0} = \left[\text{SS} \mid \text{LOC} \begin{bmatrix} \text{CONT} & \boxed{1} \\ \text{CTXT} \mid \text{INF-STR} & \begin{bmatrix} \text{FOCUS} & \left\{\boxed{1}\right\} \\ \text{GROUND} & \begin{bmatrix} \text{LINK} & \{\} \\ \text{TAIL} & \{\} \end{bmatrix} \end{bmatrix} \end{bmatrix}\right] \vee$$

$$\boxed{0} = \left[\text{SS} \mid \text{LOC} \begin{bmatrix} \text{CONT} & \boxed{1} \\ \text{CTXT} \mid \text{INF-STR} & \begin{bmatrix} \text{FOCUS} & \{\} \\ \text{GROUND} & \begin{bmatrix} \text{LINK} & \{\} \\ \text{TAIL} & \left\{\boxed{1}\right\} \end{bmatrix} \end{bmatrix} \end{bmatrix}\right]$$

Of course, the values of INFO-STRUC are not set in the lexicon, because they depend on a particular use (on the context) of the word, in particular, they depend on its linear position in the clause. Following Vallduví (1990, 1992) and our considerations above, I assume (as a first approximation) two information structures of an Italian clause: **either** all preverbal constituents, if any, are clitic left dislocated, i.e., they are links, and the rest of the clause is split between the (non-empty) set of foci and the (possibly empty) set of tails, **or** there is exactly one preverbal focus element, possibly preceded by links, and followed by tails. This is ensured by the LP rule (3.29) and the principles (3.30)–(3.32).[28]

(3.29) link $\prec$ focus $\prec$ tail

(3.30) utterance $\rightarrow$ [DOM $\langle$ ... , focus, ... $\rangle$]

(3.31) $\boxed{1} = [\text{TOPO } \textit{verbal}] \rightarrow \neg(\boxed{1} = \text{link})$

(3.32) If there is a *preverbal* focus on a DOM list, then all following elements on this list must be tails.

(3.29) says (together with (3.28)) that each DOM list is partitioned into *link*, *focus* and *tail*, in that order. (3.30) ensures that utterances are informative (contain *focus*).[29] (3.31) ensures that *verbal* element(s) cannot be link(s), i.e., they must be either foci or tail(s). So, it follows from (3.28)–(3.31) that only *preverbal* elements can be links. Moreover, (3.32) says that if anything follows a *preverbal* focus, it must be a tail. This means, in particular, that, if there is a *preverbal* focus on a DOM list, it is the only focus element on this DOM. Thus, this principle, in interaction

[28]The principle (3.32), as well as LP rules, can easily be stated in RSRL (Richter 1997; Richter, Sailer, and Penn 1999). I don't do that here in the interest of brevity.

[29]This principle is schematic; the 'utterance' part depends on a particular analysis of unembedded *signs*.

with the previous ones, ensures that **either** there is one *preverbal* focus preceded by links (if any) and followed by tails, **or** there is no *preverbal* focus, in which case all *preverbal* elements (if any) are links, and the rest of the DOM list is partitioned between foci and tails (in that order, the latter possibly empty).

Finally, I follow Engdahl and Vallduví in assuming that, to the first approximation, verbal phrases simply collect INFO-STRUC values of their daughters. I won't formalize this assumption, but I will illustrate it with example (3.3), repeated below.

(3.3) **Nessuno** ha visto Mario.
nobody aux seen Mario
'Nobody has seen Mario.'

First, there is one finite verb here, *ha*, and it must occupy the *verbal* field according to (3.26). In the absence of further constraints, all other domain objects, i.e., *nessuno*, *visto* and *Mario* are free to occur either in the *preverbal*, or in the *postverbal* fields. Second, once we analyse *n*-words as sensitive elements which must be licensed by appropriate semantic contexts, *nessuno* must, in fact, be a link in order to express sentential negation (via the Morphosemantic Negation Principle (3.18)). Since *nessuno* is a *link*, *ha* must be *focus*. This is because, due to (3.31), it cannot be a *link*, i.e., it must be either *tail* or *focus*. If it were *tail*, than—since it immediately follows a *link* (*nessuno*)—the *focus* part would have to be empty, due to (3.29) and in violation of (3.30). So, *ha* must be *focus*. Now, there are three possible assignments of information categories to *visto* and *Mario*: either they are both *foci*, or *visto* is a *focus* and *Mario* is a *tail*, or they are both *tail*s. For the sake of concreteness, let's assume the middle possibility.

Now, the way INFO-STRUC values are collected depends on a particular analysis of tectogrammatical structure of Italian; assuming the flat structure of the VP, there are two verbal projections, *ha visto Mario* and *Nessuno ha visto Mario*, with the following INFO-STRUC values (where '**ha**′' stands for the CONTENT of *ha*, etc.):

$$(3.33)\quad \begin{bmatrix} \text{FOCUS} & \left\{\mathbf{ha}', \mathbf{visto}'\right\} \\ \text{GROUND} & \begin{bmatrix} \text{LINK} & \{\} \\ \text{TAIL} & \left\{\mathbf{Mario}'\right\} \end{bmatrix} \end{bmatrix}$$

$$(3.34)\quad \begin{bmatrix} \text{FOCUS} & \left\{\mathbf{ha}', \mathbf{visto}'\right\} \\ \text{GROUND} & \begin{bmatrix} \text{LINK} & \left\{\mathbf{nessuno}'\right\} \\ \text{TAIL} & \left\{\mathbf{Mario}'\right\} \end{bmatrix} \end{bmatrix}$$

We are now in a position to state a schematic second version of the constraint relating sentential negation and its morphosyntactic expressors:

(3.35) **Morphosemantic Negation Principle (Italian)** (2nd v.):

$$_{sign}\begin{bmatrix} \text{DOM} \ \langle \ldots, \begin{bmatrix} \text{INFO-STRUC} & \mathsf{link} \\ \text{N-WORD} & + \end{bmatrix} \vee \begin{bmatrix} \text{TOPO} & \textit{verbal} \\ \text{NEG} & + \end{bmatrix}, \ldots \rangle \end{bmatrix} \rightarrow$$
$$\rightarrow \text{sentential negation}$$

In the principle above, '[NEG +]', '[N-WORD +]' and 'sentential negation' are placeholders; the last one will be made precise below.

One thing to note about the above analysis is that it is compatible with a number of accounts of morphosyntactic status of Italian *non* (e.g., as a lexical clitic on the verb, as domain-compacted with the verb, etc.), perhaps surprisingly including also the analysis given in Kim (1996). On that analysis, *non* is essentially an auxiliary (with some clitic properties), which subcategorizes for a verb and takes over its HEAD value. This means that, when the verb is finite, also *non* has categorial features of a finite verb, which results in two finite verbs in a single clause. This possibility is accounted for by the analysis above: nothing limits the cardinality of the *verbal* field, although the principle (3.26) says that it must contain all finite verbs in the DOM list, and nothing else.[30]

Before finishing this section, let me emphasise again that it hasn't been my aim to give a comprehensive account of word order or information packaging in Italian; without doubt, any such account will require modifications of the analysis above. The aim of this analysis is solely to provide some (hopefully plausible) background for the treatment of negation below.[31]

[30] A separate LP rule is needed to ensure that *non* precedes the verb. Note, however, that an LP rule to the effect that, on *verbal–postverbal* fields a head must precede its arguments is needed independently for the sake of verb clusters. Such a rule may be stated parsimoniously once we add a supertype of *verbal* and *postverbal*.

[31] In particular, the analysis above inherits certain problems and open questions from Engdahl and Vallduví's treatment of information packaging, especially, concerning the mechanism of collection of INFO-STRUC values.

4. Sentential Negation

Before moving to the analysis of sentential negation, let us take stock of the analysis so far. We followed much of the current literature in assuming that Italian *n*-words are Heimian indefinites which must be licensed in appropriate contexts such as sentential negation, questions or adversative predicates (among other things). I won't have anything to say about the nature of this licensing, but I will tacitly assume that it involves a non-local mechanism, i.e., that it is essentially an unbounded dependency: such an analysis is proposed for Polish (with reference to Italian) in Przepiórkowski and Kupść (1999). This accounts for the data (2.2)–(2.4) above. Moreover, under the assumption, defended above, that preverbal *n*-words express sentential negation just as *non* does, also (2.1), (2.6) and the 'nobody'-reading of (2.5) are explained: in all of these cases, the *n*-word indirectly expresses sentential negation (via the Morphosemantic Negation Principle), which, in turn, licenses it.

What is surprising under this analysis, though, is the 'anybody'-reading of (2.5), repeated below: if preverbal *n*-words always express sentential negation, then how is it possible that there is no sentential negation meaning in (one reading of) (2.5)?

(2.5) Voleva sapere se **nessuno** ha telefonato.
(s)he wanted know if nobody aux phoned
'(S)he wanted to know whether anybody phoned.'
(one of two readings)

It is this issue that we turn to in this section.

4.1. **Ambiguity of Negated *Yes/No* Interrogatives.** Most prominent theories of *yes/no* questions hold that a positive interrogative and its negated counterpart express the same question.[32] This stance, which can be traced back to Hamblin (1958), is defended within such prominent theories as Karttunen (1977) and Groenendijk and Stokhof (1984), and it has been reiterated recently (cf. e.g. Higginbotham (1993) and Groenendijk

[32]Hoepelman (1983), which presents a 4-valued propositional logic designed specifically to model differences between positive and negative interrogatives, is a notable exception. (It is exceptional also in getting the diacritic in 'Łukasiewicz' right.)

and Stokhof (1997)).[33] Examples like (4.1)–(4.2) below are sometimes used to justify this claim:

(4.1) A: Is John at home?
B: Yes, he is. / *Yes, he isn't.
B: No, he isn't. / *No, he is.

(4.2) A: Isn't John at home?
B: Yes, he IS. / *Yes, he isn't.
B: No, he isn't. / *No, he is.

Groenendijk and Stokhof (1997, pp.1088–9), and many authors before them, claim that the difference between (4.1A)–(4.2A) is purely pragmatic, and, somewhat tentatively, that "it is precisely the fact that from a logical semantic point of view $?\phi$ and $?\neg\phi$ express the same question, that creates the possibility for this process of pragmatic recycling of the element of negation."

The fact that negated polarity interrogatives *may* have the same meaning as their positive counterparts is attested cross-linguistically, cf. e.g. Cattell (1973) and Hudson (1975) on English, Borillo (1979) on French, Meibauer (1990) on German, Dušková (1981) on Czech, Brown and Franks (1995) on Russian and Przepiórkowski and Kupść (1999) on Polish. It seems, thus, uncontroversial that languages should allow for the neutralisation of negation in polarity questions. What is less uncontroversial, although occasionally noted in the literature, is that negative polarity interrogatives are actually ambiguous between a neutralised reading and a negative reading.

An insightful (although short) discussion of this ambiguity in English can be found in Cattell (1973). Cattell notes that interrogatives such as (4.3) have (at least) three interpretations, given in (4.4).

(4.3) Didn't Aunt Eliza get married?

(4.4) a. (4.3) may ask for verification of (4.5); falling intonation contour.
b. (4.3) may seek confirmation of (4.5), but with less confidence about the answer; rising intonation contour.
c. (4.3) It may seek confirmation of (4.6); rising intonation contour.

[33] Also in Ginzburg (1992, 1995), although positive and negative interrogatives are assigned different semantic objects, they are indiscernible with respect to the various semantic characteristics he considers. See §4.3.4 below for discussion.

(4.5) Aunt Eliza didn't get married.

(4.6) Aunt Eliza got married.

It seems to me, though, that (4.4a) should be sharply distinguished from (4.4b–c).[34] First of all, they clearly differ prosodically: (4.4a) has falling contour, while (4.4b–c) have rising contour. Second, it seems that negative interrogatives with interpretation (4.4a) may, under certain circumstances, trigger an answer different from that required by the corresponding positive interrogatives (contrary to the frequent claims in the literature; cf. (4.2) above):[35]

(4.7) A: I wonder whether Aunt Eliza really didn't get married ...
B: Yes, (that's right,) she didn't.

(4.8) A: I suppose that Mary DIDN'T go to the store?
B: Yes, (that's right,) she didn't.

Moreover, as noted by Cattell (1973), adding a negative polarity item such as *much* or *until* disambiguates the question $?\neg\phi$ to, essentially, "Is it correct that $\neg\phi$?", i.e., to the (4.4a) reading. So, in summary, it seems that the kind of data considered by Cattell (1973) leads to the conclusion that English negated interrogatives like (4.3) are two-way semantically ambiguous, i.e., between the negative (4.4a), and the polarity-neutral (4.4b–c), the latter further *pragmatically* ambiguous (reflecting expectations of the speaker, etc.; cf. Hudson (1975)).[36]

Another argument for the position that English negated *yes/no* interrogatives do not have to neutralise the impact of negation, an argument that I owe to Jonathan Ginzburg (p.c.), comes from intonation questions such as (4.9) below:

(4.9) A: Bill didn't in the end leave yesterday?
B: Right, he's still here.

[34]Cattell (1973) actually groups (4.4a) with (4.4b), saying that they are both 'based on negative statements'.

[35]I am grateful to Mike Calcagno, and also Paul King and Gerald Penn, for their help with the English data. Note that for (4.8A) to be acceptable, there should be H* accent on *didn't* and L-H% on the tail of the sentence.

[36]Note that this further *pragmatic* ambiguity is to some extent independent from the presence of overt negation. For example, the interrogative "Do you consider this funny?!" also presupposes the negative answer (when uttered by the victim of a practical joke).

Such a question can be felicitously reported with (4.10), but not with (4.11).

(4.10) A checked if Bill had not in the end left.

(4.11) A checked if Bill had in the end left.

This should be contrasted with ways of reporting the positive counterpart of (4.9):

(4.12) A: Bill did in the end leave yesterday?
B: Right, he finally left.

In contrast with (4.9), (4.12) can be felicitously reported via (4.11).

Similar, and perhaps clearer ambiguity of *yes/no* interrogatives in German is discussed (in pragmatic terms) by Meibauer (1990).[37]

(4.13) Ich frage mich, ob Fritz nicht kommt.
I ask myself if Fritz NM comes
'I wonder whether F. is coming.'
'I wonder whether F. is (really) NOT coming.'

Although (4.13) is in principle ambiguous, it is the first, neutralized meaning that is normally associated with it. Nevertheless, the second meaning is made prominent by stressing *nicht* or by adding *wirklich* 'really' between *Fritz* and *nicht*.[38]

Further, also Slavic languages show this ambiguity, cf. e.g. Polish (4.14)–(4.15) from Przepiórkowski and Kupść (1999):[39]

(4.14) **Nie** widziałeś może Marii?
NM $\text{saw}_{2nd,sg,msc}$ perhaps Mary_{gen}
'Haven't you perhaps seen Mary?'

(4.15) ?* **Nie** widziałeś może **nikogo**?
NM $\text{saw}_{2nd,sg,msc}$ perhaps nobody_{gen}

[37]See also Borillo (1979) on French.

[38]Also word order disambiguates negative interrogatives in German. I am grateful to Manfred Sailer for his help with German data.

[39]See also similar Serbo-Croatian and Russian data in Progovac (1994) and Brown and Franks (1995).

Why is it that (4.14) is acceptable while (4.15), involving the *n*-word *nikogo* is not? A plausible answer (pursued in Przepiórkowski and Kupść (1999)) is that *może* 'perhaps' disambiguates the question to the polarity-neutral meaning, while Polish *n*-words require negative environments. This hypothesis is confirmed by the acceptability of *n*-words in questions about the truth of a negative statement, in which negation is not neutralized:

(4.16) Co?! **Nikogo nie** widziałeś?
what nobody NM saw$_{2nd,sg,msc}$
'What?! You saw nobody?'

Polish (and Slavic in general) is a telling case because Negative Concord in this language is very restricted (to eventuality negation, see below) and is commonly assumed to be a syntactico-semantic phenomenon without any known pragmatic properties (cf. Przepiórkowski and Kupść (1999) and references therein). It would be, thus, controversial to claim that it is a pragmatic phenomenon, or that it is sensitive to pragmatic factors. On the other hand, Slavic NC is clearly sensitive to the ambiguity at hand. Thus, Slavic supports the claim above that the ambiguity of negated interrogatives, attested cross-linguistically, is of a semantic, rather than pragmatic nature.

Finally, recall the Italian example (3.21), repeated below:

(3.21) Voleva sapere se Mario **non** ha telefonato.
(s)he wanted know if Mario NM aux phoned
'(S)he wanted to know whether Mario had phoned.'
'(S)he wanted to know whether Mario hadn't phoned.'

(3.21), involving negation expressed by *non*, shows the same ambiguity as (2.5), involving a preverbal (*link*) *n*-word. This comparison makes it clear that the ambiguity of negated interrogatives is not triggered by *n*-words; it shows up whenever a question-denoting clause in negated, regardless of what exactly expresses sentential negation.

4.2. **Italian (2.5) Revisited.** We've seen above that negative *yes/no* questions are ambiguous cross-linguistically: one reading is negative; in the other, negation is neutralized. Before looking closer at the nature of this ambiguity in the following section, let's get back to the problematic reading of (2.5) (repeated below).

(2.5) Voleva sapere se **nessuno** ha telefonato.
(s)he wanted know if nobody aux phoned
'(S)he wanted to know whether anybody phoned.'
'(S)he wanted to know whether nobody phoned.'

It should be clear now that there is no need to postulate two different *nessuno* or different syntactic structures to account for the ambiguity of (2.5). Perhaps a little surprisingly, this ambiguity directly follows from our analysis (§3.2–§3.3) of preverbal *n*-words as expressors of sentential negation in Italian: since the embedded clause is a negative interrogative clause, it displays exactly the same ambiguity as other negative interrogative clauses, both in Italian (cf. (3.21)) and in other languages.

It is perhaps not yet clear, though, what exactly licenses *nessuno* in (2.5) on the 'anybody'-reading. (I take it as uncontroversial that it is the embedded sentential negation on the 'nobody'-reading.) There are two options: either the neutralized negation retains its power to license *n*-words, or it is the questionhood that licenses *nessuno*. There are two arguments, one cross-linguistic, and one from Italian, that the latter is the case.

First, the neutralized negation cannot license *n*-words in Polish:[40] This is clear from the unacceptability of (4.15) above.[41]

Second, as noted by Zanuttini (1991), *n*-words can be modified by *quasi* 'almost' when licensed by negation, but not when licensed by questions.[42] This test shows that, on the 'anybody'-reading, the *n*-word in (2.5) is licensed by questionhood:[43]

(4.17) Voleva sapere se quasi **nessuno** ha telefonato.
(s)he wanted know if almost nobody aux phoned
*'(S)he wanted to know whether almost anybody phoned.'
?'(S)he wanted to know whether almost nobody phoned.'

[40]The data in Progovac (1994) and Brown and Franks (1995) lead to the same conclusion about Serbo-Croatian and Russian.

[41]Recall that in Polish, questions don't license *n*-words, so there is no fall-back strategy available in Italian.

[42]For Zanuttini (1991), this counted as evidence that Italian *n*-words are ambiguous between negative universal quantifiers and NPIs, but the validity of this argument has been subsequently criticized in the literature, cf. e.g. Laka (1990, p.111) and Déprez (1997, pp.119–20).

[43]The question mark before the 'nobody'-reading means that, although some speakers find it fully acceptable (and, hence, the contrast clear), others think of it as not fully acceptable, but clearly better than the 'anybody'-reading, and some find neither reading acceptable.

In summary, I conclude that (what I call below) propositional negation cannot license n-words, but they are licensed by (what I call below) eventuality negation and questions, among other things. I won't have more to say about the exact mechanism responsible for licensing n-words: see Przepiórkowski and Kupść (1999) for an account compatible with the present analysis.

4.3. **Ambiguity of Negation?** We established above that negative interrogatives are—in principle—ambiguous cross-linguistically. Why should it be so?

A little surprisingly, the answer seems to follow from the more or less standard assumptions of Situation Semantics. Within this theory, sentential negation is assumed to be ambiguous between propositional negation (sometimes called denial), and infonic negation, which I will call eventuality negation (cf., especially, Barwise and Etchemendy (1987) and Cooper (1997)):[44,45]

(4.18) John didn't see Mary.

(4.19) $\neg(s \models \ll \mathrm{see}, J, M; + \gg)$ (propositional negation)

(4.20) $s \models \ll \mathrm{see}, J, M; - \gg$ (eventuality negation)

(4.19)–(4.20) can be read as "Situation s does not support the information (infon, state of affairs) that John saw Mary" and "Situation s supports the (negative) information (infon, state of affairs) that John didn't see Mary," respectively.[46] Below, I will follow Devlin (1991, pp.260–267) and represent these two readings as in (4.21)–(4.22).

(4.21) $\ll \models, s, \ll \mathrm{see}, J, M; + \gg; - \gg$ (propositional negation)

(4.22) $\ll \models, s, \ll \mathrm{see}, J, M; - \gg; + \gg$ (eventuality negation)

Given this ambiguity of negation in indicative sentences, I will assume similar ambiguity in interrogatives:

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[44] I use the term *eventuality negation* instead of *infonic negation* in accordance with the claim in Przepiórkowski (1999) that this kind of negation expresses negative eventualities.

[45] See Amsili and Le Draoulec (1997) for dissent.

[46] Situation Semantics assumes the Austinian approach to propositions (Austin 1961), wherein propositions contain a situation parameter. See Barwise and Etchemendy (1987) for detailed discussion.

(4.23) Didn't John see Mary?

(4.24) $\ll ?, s, \ll \text{see}, J, M; + \gg; - \gg$ (propositional negation)
"Does situation s not support $\ll \text{see}, J, M; + \gg$?"

(4.25) $\ll ?, s, \ll \text{see}, J, M; - \gg; + \gg$ (eventuality negation)
"Does situation s support $\ll \text{see}, J, M; - \gg$?"

Now, it is clear that we should hold this ambiguity of representations responsible for the ambiguity of negated *yes/no* interrogatives. However, in order to do so, we should answer two immediate questions: 1) why is the ambiguity of sentential negation much more visible in interrogatives than in indicatives?, and 2) why exactly is one of the two kinds of negation neutralized in polarity questions? I will give two different answers to 2) in §4.3.2 and §4.3.4, and I will deal with 1) presently.

4.3.1. *(No) Ambiguity of Negation in Statements.* Recall that in Situation Semantics (4.26) is valid, while (4.27) is not.

(4.26) $\forall s \forall \sigma \quad (s \models \sigma \ \lor \ \neg(s \models \sigma))$ (valid)

(4.27) $\forall s \forall \sigma \quad (s \models \sigma \ \lor \ s \models \neg\sigma)$ (not valid)

The reason for which (4.27) is not valid is that situations are *partial*: it may be the case that a certain issue is simply undecided within a situation, i.e., that the situation is not rich enough to support the positive or the negative information resolving the issue.

Nevertheless, as emphasised by Devlin (1991, pp.265–267, 289–290), cooperative use of utterances "places on the speaker an obligation that the described situation as understood by the listener ... is sufficiently rich to *decide* the relevant issue ... " In other words, although (4.27) is not valid, it is in general made true by the way we talk about situations; *described* situations are normally complete relative to the infons used to describe them (Devlin 1991, p.267).[47]

On the basis of these considerations, we can see why the ambiguity of negation is not visible in statements:

(4.18) John didn't see Mary.

(4.21) $\ll \models, s, \ll \text{see}, J, M; + \gg; - \gg$ (propositional negation)

[47]A strong argument against the validity of (4.27) comes from considerations of the Liar paradox (Barwise and Etchemendy 1987).

(4.22) $\ll \models, s, \ll \text{see}, J, M; - \gg; + \gg$ (eventuality negation)

The meaning (4.22) of (4.18) follows from (4.21) via convention (4.27), while (4.21) follows from (4.22) via coherence of actual situations:

(4.28) $\forall s \forall \sigma \quad \neg(s \models \sigma \ \wedge \ s \models \neg\sigma)$ (coherence; valid)

Hence, the two meaning of the negated indicative (4.18) are equivalent.

4.3.2. *Neutralized Negation: Answer-Theoretic Approach.* The question remains, why does sentential negation get neutralized (on one reading)? In this section, I will give an answer-theoretic account, while in §4.3.4, I will briefly consider an approach more compatible with the situation theoretic account of questions in Ginzburg (1995).

Recall that, according to answer-theoretic accounts of interrogatives, the meaning of a question is defined by the set of propositions rendering possible (or true) answers to this question. When applied to a polarity question $?p$, this results in the set $\{p, \neg p\}$.

Given this approach, possible answers to (4.24), repeated below, are given in (4.29), while possible answers to (4.25) are those in (4.30).

(4.23) Didn't John see Mary?

(4.24) $\ll ?, s, \ll \text{see}, J, M; + \gg; - \gg$ (propositional negation)

(4.25) $\ll ?, s, \ll \text{see}, J, M; - \gg; + \gg$ (eventuality negation)

(4.29) Answers to (4.24):
$\ll \models, s, \ll \text{see}, J, M; + \gg; - \gg$
$\ll \models, s, \ll \text{see}, J, M; + \gg; + \gg$

(4.30) Answers to (4.25):
$\ll \models, s, \ll \text{see}, J, M; - \gg; + \gg$
$\ll \models, s, \ll \text{see}, J, M; - \gg; - \gg$

Note that these are two different sets of answers.

On the other hand, the possible answers to the positive counterpart of (4.23), given in (4.31) are those in (4.32):

(4.31) Did John see Mary?
$\ll ?, s, \ll \text{see}, J, M; + \gg; + \gg$

(4.32) Answers to (4.31):
$\ll\models, s, \ll \text{see}, J, M; + \gg; + \gg$
$\ll\models, s, \ll \text{see}, J, M; + \gg; - \gg$

Note that these are exactly the answers to the negative interrogative (4.23) on its propositional negation interpretation (4.24) (cf. (4.29)).

Hence, the answer-theoretic meaning of negated *yes/no* interrogatives on the propositional negation interpretation is the same as the meaning of their positive counterparts. In other words, propositional negation in polarity questions in neutralized.

4.3.3. *Ambiguity of Negation in Questions.* We saw in §4.3.1 above that the ambiguity of sentential negation in indicative clauses is normally not visible because of the completeness of described situations, and then, in §4.3.2, we saw why one of the readings of sentential negation is neutralized in *yes/no* interrogatives (but see below for a possible alternative). The question that immediately arises is, why cannot we invoke the completeness of situations and claim synonymity of the two readings of negation also in polarity questions? The answer I would like to suggest is that we *can* do that.

Negated *yes/no* interrogatives are baffling because they are understood as ambiguous in such a way that, although this ambiguity is arguably of semantic nature (cf. §4.1), there are no clear truth-conditional differences between the two readings.[48] For example, in (2.5) (p.376), what (s)he wanted to know is, on either reading, whether somebody phoned or not. Thus, it seems that the two readings are synonymous in the same sense that the two meanings of negated indicative clauses are normally equivalent: this follows from the completeness of situations relative to infons used to describe them. If so, then why do native speakers *perceive* the ambiguity in interrogatives but not in indicatives?

The answer follows from the considerations of the previous section: on one of the readings of a negated interrogative (propositional negation), negation is logically *neutralized* (logically redundant) and the interrogative clause is felt as *positive.* On the other reading (eventuality negation), negation is not neutralized: it may be *normally* redundant due to the usual completness of situations, but—since completeness of situations

[48]This sentence would be a contradiction under the view that semantics deals solely with truth-conditional meaning. Situation Semantics explicitly eschews this view.

is not a rigid rule, but only a convention (Devlin 1991, pp.289–290)—negation is not *logically* redundant and the clause is felt as negative. This leads to the interesting case of a clear non-truth-conditional semantic ambiguity. On the other hand, this ambiguity is not perceived in indicative clauses because neither of the two readings of negation is neutralized; both readings are felt as negative.

Before moving to the representation of the above considerations in HPSG in §4.4, I will briefly examine an alternative to the above account.

4.3.4. *Neutralized Negation: Ginzburg (1995).* The most comprehensive approach to questions within Situation Semantics, Ginzburg (1992, 1995), eschews the answer-theoretic account. Instead of reducing the meaning of questions to that of statements (propositions), questions are analysed as independent semantic objects with a separate set of semantic notions to characterize them. On Ginzburg's approach, the meaning of the negated interrogative (4.23), repeated below, would be represented by (4.33), and the meaning of the positive (4.31) would be (4.34).

(4.23) Didn't John see Mary?

(4.33) $(s? \ll \mathrm{see}, J, M; - \gg)$

(4.31) Did John see Mary?

(4.34) $(s? \ll \mathrm{see}, J, M; + \gg)$

Although (4.33) and (4.34) represent different semantic objects, they have the same semantic characteristics (identical decidedness, resolvedness, aboutness, etc. conditions; cf. Ginzburg (1995) for details). This can account for the neutralization of negation in negative *yes/no* questions. But what about the other meaning of negated interrogatives, i.e., the negative one? There does not seem to be any space left in representations such as (4.33) for the ambiguity of negation.

One way to proceed would be to claim that all utterances are in principle systematically ambiguous between a 'direct' use and a 'meta' use.[49] In case of statements (e.g., "John saw Mary"), this ambiguity would amount

[49]In the ideal world, the ambiguity posited here should be compared to the one postulated in the literature on presuppositions, cf. esp. Horn (1989) and citations therein, and to the literature on so-called echoic utterances, cf. Carston (1996, 1998) and references therein. In the ideal world there are no page limits.

to the ambiguity between a statement about the world (A: "What happened?" B: "John saw Mary") and an assertion about the truth of a proposition (A: "I don't believe he saw Mary." B: "John *really* saw Mary," "It *is* the case that John saw Mary"). These meanings could be represented as in (4.35)–(4.36):

(4.35) $s_0 \models \ll \text{see}, J, M; + \gg$

(4.36) $s_0 \models \ll \models, s_1, \ll \text{see}, J, M; + \gg; + \gg$

On this view, negated indicative sentences would actually be three-way ambiguous: they could express a statement about about the world (A: "What happened?" B: "All I know is that John didn't see Mary"; cf. (4.37)), an affirmation of a negative statement (A: "So you say he didn't see Mary?" B: "John *really* didn't see Mary"; cf. (4.38)) and denial (B: "It is not the case that John saw Mary"; cf. (4.39)).[50]

(4.37) $s_0 \models \ll \text{see}, J, M; - \gg$

(4.38) $s_0 \models \ll \models, s_1, \ll \text{see}, J, M; - \gg; + \gg$

(4.39) $s_0 \models \ll \models, s_1, \ll \text{see}, J, M; + \gg; - \gg$

Now, we could expect the same ambiguity in negative *yes/no* questions:

(4.40) $s_0 ? \ll \text{see}, J, M; - \gg$
"Didn't John see Mary?"

(4.41) $s_0 ? \ll \models, s_1, \ll \text{see}, J, M; - \gg; + \gg$
"Is it really the case that John didn't see Mary?"

(4.42) $s_0 ? \ll \models, s_1, \ll \text{see}, J, M; + \gg; - \gg$
"Isn't it the case that John saw Mary?"

Although I view this approach as worth pursuing, there is an immediate difficulty it must face when confronted with the issue of Italian Negative Concord. As we saw at the end of §4.2, Italian n-words are licensed by negation within interrogative clauses only when this negation is not neutralized. Since, on the approach sketched here, negation is neutralized in (4.40) and in (4.42),[51] n-words are predicted to occur only on the (4.41)

[50] For the purposes of this discussion, I assume that the main '$\models$' cannot be negated.

[51] It is neutralized in the sense given above, i.e., that decidedness, aboutness, resolvedness, etc. do not distinguish between these questions and their positive counterparts.

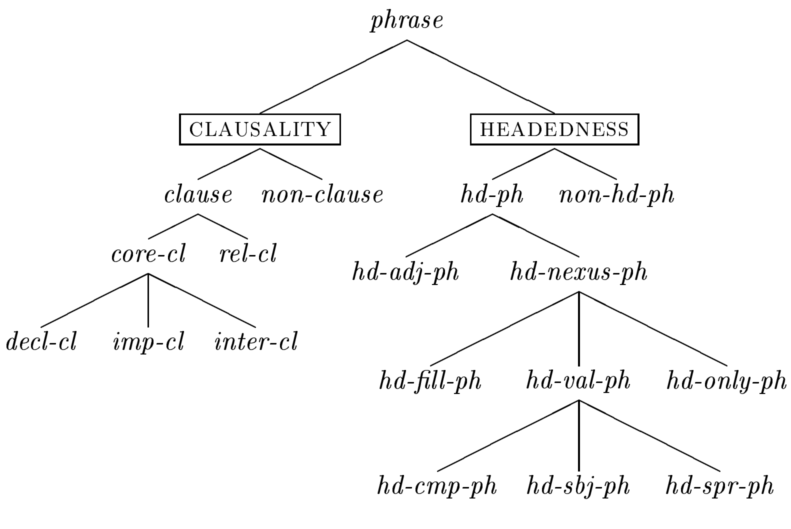
reading. So far, so good: we have seen that in many languages the negative reading of a negated *yes/no* interrogative is facilitated by adding 'really' (cf., e.g., fn.5 and examples (4.13) and (4.16) above) and quite clearly has the 'meta' ring to it. However, we would expect the same to be true of statements, i.e., we would expect *n*-words to be licensed by negation in indicative clauses only on the (4.38) reading. This does not seem to be the case; indicative sentences with *n*-words can be (and commonly are) used with non-'meta' meanings.

For lack of space, I will leave this alternative approach here and I will assume below the account presented in previous sections.

4.4. **HPSG Formalization.**

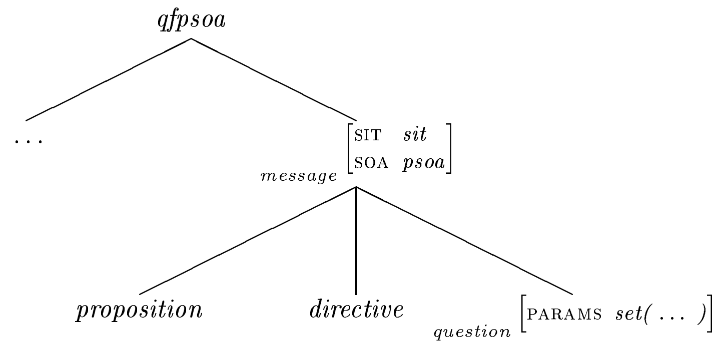
4.4.1. *Some Assumptions.* In formalizing the ambiguity of sentential negation I follow the constructional strand of work within HPSG (Sag 1997; Kathol 1995; Ginzburg and Sag 1998), and assume a two-dimensional sort hierarchy for *phrases*, whose upper part is shown in (4.43). The presence of two boxed sorts ('dimensions') $\boxed{\text{CLAUSALITY}}$ and $\boxed{\text{HEADEDNESS}}$ as immediate subsorts of *phrase* means that each maximally specific subsort of *phrase* must be a subsort of *both* of them.

(4.43)



Words and non-clausal *phrases* will have CONTENT values as in Pollard and Sag (1994) (modulo the attribute POLARITY; see §4.4.2 below); these CONTENT values will represent the eventuality-level meaning. However, I follow Ginzburg and Sag (1998) in positing that *clauses* add another semantic layer over the CONTENT of their head-daughters, representing the propositional-level meaning.[52] In order to make this idea compatible with the considerations above, its implementation presented here differs a little from that in Ginzburg and Sag (1998), though. I assume that one of the subsorts of *qfpsoa* (see Pollard and Sag (1994)) is *message* (introduced by Ginzburg and Sag (1998)), which has at least the following subsorts: *proposition*, *directive* and *question*.[53] The sort *message* is specified for two attributes: SOA, with values of sort *psoa*, and SIT(UATION), with values of (a newly introduced) sort *sit*. *Questions* are additionally specified for the attribute PARAMETERS, whose value is a set of elements corresponding to *wh*-phrases.

(4.44)



Now, CONTENT values of *clauses* will simply be *psoas* whose NUCL is of sort *message* and whose NUCL|SOA is structure shared with their head-daughter's CONTENTs (but cf. fn.53). More specifically, there is a correspondence between various clause types and CONTENT types:

(4.45) $$\textit{clause} \rightarrow \begin{bmatrix} \textsc{ss} \mid \textsc{loc} \mid \textsc{cont} \mid \textsc{nucl} & {}_{\textit{message}}\begin{bmatrix} \textsc{soa} & \boxed{1} \end{bmatrix} \\ \textsc{hd-dtr} \mid \textsc{ss} \mid \textsc{loc} \mid \textsc{cont} & \boxed{1} \end{bmatrix}$$

[52]See also Cooper (1990) and Verspoor (1997) for similar proposals for two-layered semantics. (On both these proposals, however, both layers are present already on *words*.)

[53]In rendering Ginzburg and Sag's (1998) analysis, I oversimplify at various places for expository and space reasons.

(4.46) $\textit{decl-cl} \rightarrow \left[\text{SS}\,|\,\text{LOC}\,|\,\text{CONT}\,|\,\text{NUCL}\ \ \textit{proposition}\right]$

(4.47) $\textit{imp-cl} \rightarrow \left[\text{SS}\,|\,\text{LOC}\,|\,\text{CONT}\,|\,\text{NUCL}\ \ \textit{directive}\right]$

(4.48) $\textit{inter-cl} \rightarrow \left[\text{SS}\,|\,\text{LOC}\,|\,\text{CONT}\,|\,\text{NUCL}\ \ \textit{question}\right]$

The most important aspect of this analysis is that in, e.g., '*You did sleep.*', '*Did you sleep?*' and '*Sleep!*', the CONTENT values of the *word* '*sleep*' will be the same (cf. (4.49)), while the CONTENT values of the three *clauses* will differ (cf. (4.50a–c), respectively).[54]

(4.49) $_{psoa}\left[\text{NUCL}\ \ {}_{sleep}\left[\text{SLEEPER}\ \boxed{1}\right]\right]$ (= $\boxed{0}$ in (4.50))

(4.50)

a. $_{psoa}\left[\text{NUCL}\ \ {}_{proposition}\left[\text{SOA}\ \boxed{0}\right]\right]$

b. $_{psoa}\left[\text{NUCL}\ \ {}_{question}\left[\text{SOA}\ \boxed{0}\right]\right]$

c. $_{psoa}\left[\text{NUCL}\ \ {}_{directive}\left[\text{SOA}\ \boxed{0}\right]\right]$

4.4.2. *Sentential Negation in HPSG.* With these assumptions in hand, all we have to do in order to carry over our Situation Semantics-inspired account of sentential negation to HPSG, is to reintroduce the boolean-valued feature POLARITY, dropped for 'notational convenience' in Pollard and Sag (1987, p.95), and briefly resurrected in Cooper (1990, p.139); I assume that it is appropriate for the sort *psoa*:

(4.51) $_{psoa}\left[\begin{array}{ll} \text{POLARITY} & \textit{bool} \\ \text{QUANTS} & \textit{list(quant)} \\ \text{NUCL} & \textit{qfpsoa} \end{array}\right]$

Now, the ambiguity of (4.18) can be represented by the following CONTENT values:[55]

[54] I ignore the issues of tense throughout this paper.
[55] I ignore QUANTS here.

(4.52) eventuality negation:

$${}_{psoa}\begin{bmatrix}\textsc{polarity} & + \\ \textsc{nucl} & {}_{prop}\begin{bmatrix}\textsc{sit} & \boxed{1} \\ \textsc{soa} & {}_{psoa}\begin{bmatrix}\textsc{polarity} & - \\ \textsc{nucl} & {}_{see}\begin{bmatrix}\textsc{seer} & \boxed{2}\ \mathit{John} \\ \textsc{seen} & \boxed{3}\ \mathit{Mary}\end{bmatrix}\end{bmatrix}\end{bmatrix}\end{bmatrix}$$

(4.53) propositional negation:

$${}_{psoa}\begin{bmatrix}\textsc{polarity} & - \\ \textsc{nucl} & {}_{prop}\begin{bmatrix}\textsc{sit} & \boxed{1} \\ \textsc{soa} & {}_{psoa}\begin{bmatrix}\textsc{polarity} & + \\ \textsc{nucl} & {}_{see}\begin{bmatrix}\textsc{seer} & \boxed{2}\ \mathit{John} \\ \textsc{seen} & \boxed{3}\ \mathit{Mary}\end{bmatrix}\end{bmatrix}\end{bmatrix}\end{bmatrix}$$

The last missing element of the analysis is a principle relating morphosyntactic expressors of sentential negation to the semantic representation of negation. I assume that, although this principle will differ cross-linguistically (due to idiosyncrasies in morphosyntactic realization of sentential negation), it will always be an instantiation of the following schema:

(4.54) **Morphosemantic Negation Principle (Universal)**:

$$\mathit{clause} \rightarrow$$
$$(\text{sentential negation expressed} \leftrightarrow$$
$$(\begin{bmatrix}\textsc{ss}\,|\,\textsc{loc}\,|\,\textsc{cont}\,|\,\textsc{polarity} & -\end{bmatrix} \vee \begin{bmatrix}\textsc{ss}\,|\,\textsc{loc}\,|\,\textsc{cont}\,|\,\textsc{nucl}\,|\,\textsc{soa}\,|\,\textsc{polarity} & -\end{bmatrix}))$$

What this schematic principle says is that for each clausal sign, there is a morphosyntactic expressor of negation (that's the schematic part) if and only if semantic (propositional or eventuality) negation is represented. Note that the general schema of (4.54) differs a little from that of the last Italian version in (3.35): the constraint between morphosyntactic negation and semantic negation is bi-directional, as it should be, considering the fact that sentences cannot be understood as negative in absence of an overt expressor of negation.

4.5. **Negation in Italian: Loose Ends.** Let's combine our considerations about expressors of sentential negation in Italian (§3.2–§3.3), with our conclusions about the cross-linguistic ambiguity of sentential negation above:

(4.55) **Morphosemantic Negation Principle (Italian)** (3rd v.):

$$clause \rightarrow \\ \left(\begin{bmatrix} \text{DOM} \ \langle \ \ldots, \begin{bmatrix} \text{INFO-STRUC} & \mathsf{link} \\ \text{N-WORD} & + \end{bmatrix} \vee \begin{bmatrix} \text{TOPO} & \textit{verbal} \\ \text{NEG} & + \end{bmatrix}, \ldots \ \rangle \end{bmatrix} \leftrightarrow \right. \\ \left(\left[\text{SS} \,|\, \text{LOC} \,|\, \text{CONT} \,|\, \text{POLARITY} \ - \right] \vee \left[\text{SS} \,|\, \text{LOC} \,|\, \text{CONT} \,|\, \text{NUCL} \,|\, \text{SOA} \,|\, \text{POLARITY} \ - \right] \right) \Big)$$

What this principle says is that, in Italian clauses, a *link* n-word or a *verbal* negative marker (marked as [NEG +]) may occur if and only if propositional or eventuality negation is present.[56]

An important thing to note about the Morphosemantic Negation Principle is that it violates strict compositionality understood as the requirement for the meaning of a constituent to be derived from the meanings of its immediate constituents via functional application and/or set formation. According to (4.55), whether the clause is negative depends on whether there are negative elements (n-words or *non*) on the DOM list; neither do these elements have to be immediate constituents of the clause, nor is its meaning the result of functional application.

I consider this to be a welcome aspect of the analysis. As discussed in Halvorsen (1995), compositionality should be replaced in constraint-based grammars by *systematicity*, i.e., "the interpretation of the utterance should be mechanically derivable from the information available given the rules of the interpretation scheme" (p.295). In fact, Halvorsen (1995) says that strict compositionality follows from systematicity as long as the only mechanism for composition of information is provided by function application and set formation, and argues that "[d]etermination of interpretations calls for integration of information from various kinds of sources (e.g., linguistic and non-linguistic context) for which the structured semantic objects of situation semantics and the ... constraint-satisfaction techniques ... are well-suited."

Another thing to note is how (4.55) avoids the issue of the negative/positive status of n-words. Theories assuming that Romance n-words are inherently (lexically) positive, such as the one adopted here, often find it difficult to account for the negative impact of preverbal n-words (cf. §3.1); they often assume empty negative heads which express sentential negation and at the same time license the preverbal n-word, but

[56] This is a simplification: a preverbal (*link*) n-word may be embedded in a preverbal phrase, subject to some locality constraints (cf. Longobardi (1991)). I do not go into issues concerning locality here; see Przepiórkowski and Kupść (1999) for an analysis of NC as an unbounded dependency. According to that analysis, [N-WORD +] on link should be replaced by [NONLOC|NC *nonempty-set(content)*].

they are at loss explaining why the over negative head *non* cannot fulfill this role. On the account above, there is no need for empty elements: sentential negation is expressed constructionally, via the Morphosemantic Negation Principle.

Below, I will discuss ways in which principle (4.55) might need to be modified.

4.5.1. *Double Negation.* Nothing in the analysis above accounts for cases of double negation (DN) like (3.19) above (p.365), or the one below, from Longobardi (1991, p.187, n.10):

(4.56) La moglie di **nessuno non** e stata invitata.
the wife of nobody NM was invited
'The wife of no one was not invited.'

I haven't dealt with cases like these because much more field work is needed to reach pre-theoretical generalizations about acceptability of such sentences: some sources simply state that sentences involving a preverbal *n*-word and the NM *non* are unacceptable (e.g., Hall Jr. (1948, §5.111), Ladusaw (1995, p.216)), other seem to allow the DN meaning with some reservations (e.g., "If acceptable at all, [(4.56)] may only have a meaning [of DN]," Longobardi (1991, pp.187-8)), and still other consider such examples to be fully grammatical (e.g., Tovena (1996a); cf. also (4.59) below).[57]

Nevertheless, one way of accounting for such cases is to add to the MNP (4.55) a condition saying that two expressors of negation can occur (subject to further constraints and/or speaker/dialectal variation) if and only if both eventuality and propositional semantic negation are present. If this is on the right track, this would predict that, for principled reasons, clauses can express at most double negation: once both eventuality and propositional negations are expressed, there is no representation available for the third (and fourth ...) negation.[58] It is difficult to test this prediction in Italian, but it is strikingly confirmed in French.

In French, as discussed (in slightly different terms) in Corblin (1994, 1995), *n*-words such as *personne* 'nobody', *rien* 'nothing' and *jamais*

[57] See also Haegeman (1995, p.307, n.21).

[58] A caveat: each state of affairs (infon, *psoa*) has its own POLARITY, which can be set to '$-$'. Thus, whenever an element other than the main verb introduces its own *psoa*, it may be negated, giving rise to another, *non-sentential*, representation of negation. In this sense, sentences may involve more than two negations.

'never' are optional expressors of negation in the sense that, when one of them is present in a clause, the single sentential negation (SN) meaning results, but when two are present, the SN/DN ambiguity arises (Corblin 1995, pp.451-3):

(4.57) **Personne n**'aime **personne**.
nobody NM-loves nobody
'Nobody loves anybody.' (unloving world)
'Nobody doesn't love anybody.' (loving world)

So much has been observed also for English, cf. May (1989). However, Corblin notes additionally that occurrences of three or more *n*-words still lead to only a two-way ambiguity:

(4.58) **Personne ne** dit **rien** à **personne**.
nobody NM says nothing to nobody
'Nobody says anything to anybody.' (dumb world)
'Nobody doesn't say anything to anybody.' (speaking world)

This is somewhat surprising if French *n*-words are treated as ambiguous: even assuming that the first *n*-word always expresses sentential negation, (4.58) should be three-way ambiguous (between the SN, DN, and triple negation readings), instead of two-way. There is nothing surprising on the account above, though: French *n*-words may be analysed just as Italian *n*-words, i.e., as indefinites sensitive to eventuality negation, which—unlike Italian *n*-words—*optionally* express sentential negation in *any* linear position.

Given these assumptions, the facts follow: a single occurrence of an *n*-word must express sentential negation, disambiguated to eventuality negation, because otherwise nothing would license it. Similarly with two *n*-words: at least one must express sentential negation for licensing purposes; when the other one also expresses sentential negation, it must be disambiguated to propositional negation. In case of more *n*-words, however, there are no more positions in the semantic representation of a clause for the sentential negation to be expressed. Thus, French seems to confirm in interesting ways our analysis of sentential negation as in principle ambiguous between eventuality negation and propositional negation.

4.5.2. *Single Negation Instead of Double Negation.* Zanuttini (1991, pp.129–133) notes that, apart from the DN reading, (4.59) also marginally allows for the SN interpretation.

(4.59) Proprio **niente** **non** ho detto.
absolutely nothing NM aux said
'I haven't said NOTHING.'
? 'I haven't said anything.'

These two interpretations have different intonation patterns: the DN reading involves emphatic stress on *niente*, absent in the SN reading. Ambiguity of such sentences is subject to some variation (Haegeman 1995, p.307, n.21).

In §3, I argued that preverbal *n*-words *may* be *link*s and tacitly assumed that they *must* be *link*s. What examples such as (4.59) seem to suggest is that, at least for some speakers, there is another option available, namely, treating *n*-words as focus-preposed ('topicalized'; cf. fn.21).[59] Note, however, that—according to our Morphosemantic Negation Principle for Italian above—only *link* *n*-words express sentential negation, not just any preverbal *n*-words. This means that focus-preposed *n*-words will behave as postverbal *n*-words: they cannot express negation so they need an *independently expressed* licensor in order to be legitimate. In (4.59), the marginal focus reading of *niente* is licensed by the negation expressed by *non*; hence, the single negation reading.

This analysis predicts that the ambiguity of (4.59) disappears as soon as the there is no *non* to express sentential negation: in such a case, there is nothing to license the preverbal *n*-word *qua* focus. This is indeed what Zanuttini (1991, p.129) reports:

(4.60) Proprio **niente** ho detto.
absolutely nothing aux said
'I said absolutely nothing.'

5. Conclusion

In this paper, I presented an HPSG / Situation Semantics analysis of the Italian facts cited in §2, problematic for current analyses within the GB / Minimalism framework. I argued that, in Italian, preverbal *link* (topic) *n*-words always express sentential negation, the same negation that is expressed by the negative marker *non*. I also showed that, cross-linguistically, sentential negation is ambiguous between propositional and eventuality negations, and that it is the latter that licenses *n*-words (qua

[59]See §3.3, p.368 on preverbal *foci*.

Heimian indefinites). Moreover, I suggested that, for principled semantic reasons, propositional negation, but not eventuality negation, is neutralized in polarity questions. This set of independently derived conclusions sufficed to account for the surprising Italian data.

In the remainder of this paper, I'll sketch some consequences of this analysis for HPSG and for Situation Semantics.

5.1. **Consequences for HPSG.** Although HPSG takes its semantic resources from Situation Semantics, this heritage has never, with the exception of Fenstad, Halvorsen, Langholm, and van Benthem (1987) and Cooper (1990), been taken seriously. In fact, semantics has never been in the foreground of HPSG theorizing, although work on lexical semantics (Wechsler 1995; Davis 1997; Verspoor 1997) generally assumed Situation Semantics-like structures.

Recent years have witnessed a number of proposals aimed at dethroning Situation Semantics as the provider of semantic resources for HPSG. This trend started with Nerbonne (1992), in which a version of predicate logic with generalized quantifiers was used to illustrate a general point (the necessity of two level interpretation to account for the ambiguity/vagueness difference), continued with Frank and Reyle (1995, 1996) (Reyle's (1993) Underspecified DRT as semantics for HPSG) and Copestake, Flickinger, and Sag (1997) (Minimal Recursion Semantics; a UDRT-like formalism), and found its culmination in Richter and Sailer (1999c), which (building on Bos (1995)) shows how, for any object logical language, a semantic underspecified version of this language can be defined as the semantic representation for HPSG.[60]

What this paper hopes to show is that the dirge for Situation Semantics may have been premature. The account presented here relies rather crucially on the proposition-level / eventuality-level ambiguity of sentential negation. Although, in principle, this ambiguity may be mimicked in other semantic theories, it's only at a certain cost: the intuition that Negative Concord is an eventuality-level phenomenon (Tovena 1996a,b) would be lost, two-way ambiguity of sentential negation would have to be stipulated, rather than derived, and a special story for why one kind of negation, but not the other, is neutralized in polarity questions would have to be given.

[60]See also Richter and Sailer (1996) for Montague's Intensional Logic as semantic representation for HPSG, and Richter and Sailer (1998a,c) for Gallin's Ty2. Unlike the above proposals, these are not concerned with underspecification.

This paper reflects my belief that HPSG has been rather too considerate when exploiting resources offered by Situation Semantics, and that there is still much to take. Moreover, it seems that, in view of the results in Richter and Sailer (1999c), we can have the best of both worlds, i.e., both Situation Semantics and underspecification: if almost any object logical language can serve as the basis for an underspecified semantic representation in HPSG, why not take a suitably formalized version of Situation Semantics as such an object language? I hope this issue becomes somebody's research topic one day.

5.2. **Consequences for Situation Semantics.** Finally, a brief note on consequences of the above analysis for Situation Semantics.

As noted in §4.3, Situation Semantics assumes that natural language negation is ambiguous between propositional negation (also called denial) and infonic negation (which I call eventuality negation). However, it is not clear what uses these different kinds of negation have. According to Barwise and Etchemendy (1987, pp.16–17, 164–170), eventuality negation is the unmarked case, while propositional negation is used in denial contexts, i.e., when rejecting some claim that has already been raised. On the other hand, Cooper (1997) seems to assume that it is eventuality negation that is marked: a situation supports a negative infon $\neg\sigma$ only when it at the same time supports positive infons ϕ, ψ such that ϕ implies $\neg\sigma$ and ψ '(defeasibly) leads one to expect' $\neg\sigma$:

(5.1) $s \models \neg\sigma \rightarrow \exists\phi[(s \models \phi) \wedge (\phi \Rightarrow \neg\sigma)]$

(5.2) $s \models \neg\sigma \rightarrow \exists\psi[(s \models \psi) \wedge (\psi > \sigma)]$

If the analysis of Negative Concord and negated interrogatives in§4.2–§4.3 is on the right track, i.e., if it is eventuality negation that licenses n-words in Italian,[61] then eventuality negation should be considered an unmarked case: there is nothing marked about indicative sentences involving n-words. In this respect, my analysis sides with Barwise and Etchemendy (1987).

This, however, leaves unanswered the question, why do examples such as (5.3), standardly assumed to involve eventuality negation, sound strange and why are sentences such as (5.4) (attributed to Engdahl, p.c.) acceptable.

[61] See also Przepiórkowski and Kupść (1999) for the claim that it is eventuality negation that licenses Polish n-words.

(5.3) John sees Mary not leave.

(5.4) Bill saw John not stop at the traffic light.

Cooper (1997) (following earlier unpublished work by Higginbotham) notes that perception verbs such as *see* can felicitously take a negative naked infinitive complement only when two conditions are met: there is something positive which is perceived and which implies the negative complement, and there is 'expectation that the positive version of the complement should hold'. Both conditions are immediately met in (5.4), while it is hard to construct contexts meeting these conditions in case of (5.3). Cooper (1997) posits the axioms (5.1)–(5.2) above to formalize these observations.

Note, however, that these axioms are much stronger than the original observations: they are formulated as conditions on situations supporting negative infons in general, and not on *perception of* such situations. It seems that axioms such as (5.5)–(5.6) reflect Cooper's (1997) observations much better.

(5.5) $[(s_0 \models \text{see}(a, s, t)) \wedge (s \models \neg\sigma)] \rightarrow \exists\phi[(s \models \phi) \wedge (\phi \Rightarrow \neg\sigma)]$

(5.6) $[(s_0 \models \text{see}(a, s, t)) \wedge (s \models \neg\sigma)] \rightarrow \exists\psi[(s \models \psi) \wedge (\psi > \sigma)]$

Note that these axioms do not characterize eventuality negation as something special (as (5.1)–(5.2) did); what is special is the way situations supporting negative infons are perceived.

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