

$\neg(A \& B)$. Gapping, Negation and Speech Act Operators*

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Abstract The paper shows that in gapping sentences where a negative marker in the first conjunct takes wide scope over the whole coordination, the negation obligatorily operates on the level of the speech act rather than on the level of the proposition. In assertions, this is denial negation, and in questions, outer negation. The negation operating on the level of the speech act is argued to be an instantiation of the degrees of strength that are associated with the sincerity conditions of a speech act, which is a feature that it shares with VERUM focus and certain epistemic adverbs. Syntactically, this negation is situated higher than propositional negation, viz. in the CP of the clause. This suggests that gapping with wide scope negation is fundamentally different from 'ordinary' gapping which always involves propositional negation.

Keywords denial; ellipsis; epistemic modality; gapping; inner, outer negation

1 Introduction

It has been observed that a negation in the first conjunct of a gapping sentence can scope over the whole coordination if the negative marker is left out along with the finite verb in the second conjunct (Johnson, 1996; Oehrle, 1987; Siegel, 1984, 1987; Winkler, 2003). Thus, for the whole coordination to be true it is sufficient if one of the two conjuncts is false:

(1) $\neg(A \& B)$

Kim DIDN't play bingo and Sandy sit at home all night. (I am sure Sandy went to a club herself. That's what she always does when Kim plays bingo.)

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The intonation contour typical for this reading is a single intonation phrase for the whole coordination (Oehrle, 1987) and an accent on the negative marker (plus auxiliary) (Winkler, 2003). I shall refer to cases like (1) as *wide scope readings*.

Wide scope readings are different from what I shall call here *distributed scope readings*, where both conjuncts are interpreted as negative. These readings require a different intonation contour from the wide scope readings: the two conjuncts are uttered as two individual intonation phrases and the negative marker and auxiliary must not be stressed. Stress only falls on the contrastive remnants and correlates. This is the default intonation contour of gapping, see (2):

- (2) ($\neg A \ \& \ \neg B$)
 JOHN didn't buy the BOOK and MARY the magazine.

I shall discuss more details of the intonation of gapping below.

The existence of the wide scope readings has given rise to an analysis of gapping and related ellipsis types (e.g. left peripheral deletion, pseudogapping) where the conjuncts are assumed to be smaller than a clause, e.g. ν Ps or TPs rather than CPs (see Johnson, 1996; López and Winkler, 2003; Winkler, 2003 for gapping). The idea is that the negation is situated outside the coordination and thus can take scope over both conjuncts, see (3) for a simplified example from Johnson (1996: 36):

- (3) [_{TP} Kim₁ [_{TP} didn't
 [_{ν P} [_{ν P} t₁ [_{ν P} play bingo]] [_{andP} and [_{ν P} Sandy [_{ν P} sit at home]]]]]]

According to Johnson (1996), the gapping construction can be derived by assuming that material which is identical in both conjuncts moves across-the-board (not shown in (3)) and that the subject of the first conjunct (in violation of the Coordinate Structure Constraint (Ross, 1967)) also moves outside the coordination.¹ The scope facts are derived as follows. Each conjunct contains a negation, which together with other material (more specifically the predicate) moves across-the-board outside the coordination. In the wide scope reading, the position outside the coordination is interpreted, and in the distributed scope reading, the reconstructed positions in the individual conjuncts are interpreted.

This analysis is not without problems, the most serious one being that the interpretation of the negation in gapping is more varied than is predicted: we also find cases where the negation takes narrow scope over the first conjunct only, so that the second conjunct is positive, cf.:

- (4) ($\neg A \ \& B$)
 a. To Pete, John didn't say anything at all, and to Mary, only that he was hungry.
 b. John wasn't called by his dad but Pete by his mum.

¹For an alternative view avoiding the violation of the Coordinate Structure Constraint, see Winkler (2003).

These narrow scope readings arise because of semantic-pragmatic reasons (see Repp 2005). Importantly, they cannot be accommodated in a Johnson-type analysis.

There are some more difficulties. It seems, for instance, that we must allow the coordination of CPs in the distributed readings:

- (5) a. Why did John go by train and why Mary by car?
- b. After lunch, there was a concert for the kids and in the evening, for the grown-ups.

Why as in (5)a has been suggested to be base-generated in Spec,CP (e.g. Hegarty, 1992; Rizzi, 1990). Topicalisation as in (5)b usually is assumed to be movement to Spec,CP. Admittedly, this does not force the coordination of CPs. López and Winkler (2003) suggest that *wh*-phrases and topics may move to the edge of νP , where they can be spelled-out given particular circumstances. This could even include *why*, which may also occur in-situ, cf.:

- (6) Who came why by train?

Still, there are more problems. German gapping, for instance, is usually thought to disallow distributed scope readings of the negation altogether. Therefore, German gapping has been assumed to be the coordination of polarity phrases each of which must be headed by a polarity element like the negation (Winkler, 2003). Yet, upon closer scrutiny it turns out that German does actually allow distributed scope readings under specific conditions: if a negative polarity item like *nicht ausstehen können* ('cannot stand') is elided as in (7), gapping of the negation becomes acceptable:

- (7) Max kann französische Filme nicht ausstehen und Maria spanische.
'Max can't stand French films and Mary (can't stand) Spanish films.'

This is unexpected in a theory that assumes German to be the coordination of polarity phrases.

In this paper, I shall argue that an analysis of *all* gapping coordinations as small conjunct coordinations is inappropriate: gapping sentences where the negation takes wide scope over the whole coordination truly differ from gapping sentences where the negation takes distributed or narrow scope: the negation in these constructions is different from ordinary sentence negation, which occurs in the latter structures. The negation in the wide scope readings scopes over the entire utterance and not just the proposition, i.e. it operates on the level of the speech act. Syntactically, this is reflected in a higher position than is usually assumed for ordinary sentence negation, which calls for a differentiated analysis of wide scope vs. distributed or narrow scope readings in gapping.

The paper is structured as follows. In section 2, I shall examine the characteristics of the wide scope readings both in declaratives and in interrogatives. For reasons of space, imperatives will only be touched upon briefly. The investigation will show that declarative wide scope gapping sentences always are denials whereas interrogative wide scope gapping sentences always contain so-

called outer negation. In section 3, I shall propose that the negation in the examined structures is an epistemic speech operator that, along with other epistemic speech act operators, signals the degree of strength of the sincerity conditions of the relevant illocutionary force (Searle and Vanderveken, 1985; Vanderveken, 1990). In section 4, I shall investigate the consequences of the analysis for the syntax of this kind of negation in general and for the wide scope gapping structures in particular. Section 5 summarises and discusses the fact that wide scope readings can only occur in the ellipsis but not in equivalent full clause coordinations.

2 The Characteristics of Wide Scope Readings

2.1 Declaratives

2.1.1 Context, Intonation, Polarity Sensitivity

Investigations of wide scope gapping sentences in the literature so far have focused on declaratives and it has been noted that these seem to require a rather specific context. Winkler (2003) says that 'often the wide scope reading of negation over the conjuncts is rather difficult to obtain without contextual manipulation' (p. 237). In a production study, she elicited wide scope readings with contexts like the following:

- (8) *Context: Everybody knows that chameleons can move their eyes independently, as picture (1) shows: [picture of chameleon]. But the situation is different for humans, as picture (2) shows [picture of boy trying to imitate a chameleon].*

The left eye can't go up and the other down! (Winkler 2003: 239f.)

The sentence in (8) denies the implicit assumption that humans might be able to do the same things with their eyes as chameleons. Siegel (1984, 1987) also gives examples of wide scope readings, which she always augments with exclamative expressions and exclamation marks, e.g. (9). This indicates that they cannot be uttered out of the blue. Indeed, for most English speakers sentences like (9) only become grammatical if they have been offered the option of interpreting them as a rejection of a previous utterance.

- (9) Oh, no, John hasn't flown the coop and his wife simply enjoyed it! (Siegel 1987: 56)

A speech act that rejects a previous utterance is a denial. According to van der Sandt (1991), it removes (part of) previously introduced material from the common ground and performs a correction operation on contextual information. The removal of material from the common ground typically involves a negation but does not have to do so. A means to express a 'positive' denial is for instance VERUM focus, which can be realised by an accent on the finite verb and which highlights the positive polarity of the sentence (Höhle 1988, 1992), more on this

below, section 3.

With Stenius (1967), the relation between a speech act and a proposition can be schematised as one between mood (in modern parlance, an illocutionary operator) and a sentence radical (the proposition). So, for a negative sentence, we get two possible readings:

- (10) Max isn't tall.
- a. ASSERT (\neg Max is tall)
 - b. DENIAL (Max is tall)

Thus, in a denial in contrast to an assertion, the negation is not part of the proposition but comes with the illocutionary operator.²

Denials display particular features by which we can identify them and which will be shown to be characteristic of the wide scope readings in gapping as well. Apart from the fact that denials cannot occur in out-of-the-blue contexts, there is the tendency to place an accent on the negative marker, at least in some environments, see (11). Furthermore, negative denials can contain positive polarity items (PPIs), which is also illustrated in (11).³

- (11) John does NOT still live in Paris he did live there but now he's moved to his girlfriend's in Lyon. (van der Sandt and Maier 2003, ex. 19)

Horn (1989) suggests that the accent is more or less obligatory because of the flouting of the polarity sensitivity of some of the items involved. Examples like the above cannot be read as an instance of ordinary assertive negation. Therefore, the option to read them as a denial must be indicated early on. Relating the intonation to focus, we may say that that part of the clause which makes explicit the rejection is focused (so as to exclude the alternatives), and that part which is given, is deaccented (or carries only secondary accents). It is the echoic character of denials that is behind the behaviour of the PPIs here, see e.g. Jacobs (1982, 1991) and van der Sandt (1991). By the same token, negative polarity items (NPIs) are usually infelicitous in these environments.⁴

²Therefore, the negation in a denial can target not only the proposition but also all sorts of non-propositional aspects of a previous utterance. It can target presuppositions, implicatures or formal aspects such as pronunciation. The negation of these non-propositional parts of an utterance has also been called metalinguistic negation (Horn, 1985, 1989 and others).

³See Horn, 1989 for this feature in metalinguistic denials; and Szabolcsi, 2004 for the special role of the denial interpretation for the licensing of PPIs. She suggests that denials involve extra-clausal negation.

⁴An anonymous reviewer points out that there are exceptions to this, e.g. if the denial rejects an utterance that contained a NPI, see (i)a. Similarly, polarity focus in a positive denial in some cases can accommodate a NPI, see (i)b. These cases are interesting and need closer scrutiny (as the reviewer suggests, they might be analysed in the framework of Szabolcsi 2004). Note, however, that these cases are indeed exceptions to the general case, cf. (i)c:

- (i) a. I doubt that I saw anyone - You DON'T doubt that you saw anyone.
b. I don't give a big shit about Mary, but I DO give a big shit about Ann.
c. *Max kann französische Filme nicht ausstehen, aber niederländische KANN er ausstehen.
'Max can't stand French films but he CAN stand Dutch films.'

How do the wide scope gapping sentences fare with respect to intonation and polarity sensitivity? As for intonation, we already mentioned above that it differs from the 'normal' gapping intonation, a fact originally observed by Oehrle (1987). The data in (12) below were elicited by Winkler (2003) in her production experiment and confirm Oehrle's observation. Wide scope readings typically have the intonation pattern given in (12)a: speakers form only one intonational phrase for the whole coordination, the auxiliary+negation is heavily accented and receives the highest pitch in the whole utterance. The other pitch accents, partly given in brackets, are less pronounced (if they are realised at all). (12)b illustrates the intonation pattern of the distributed scope readings: they never occur with an accent on the finite verb, the contrastive phrases occur with clear pitch accents (also see Hartmann 2000):

- (12) a. Leon CAN'T eat Caviar and Anna BEANS. (Winkler 2003: 237)
 $(H^*) H^*+L \quad H^*+LH \quad (H^*) H^*+LH\%$
 b. LEOn can't eat CAVIAR and ANna BEANS (ibid. 236).
 $L^*+H \quad H^*L-L\% \quad L+*H \quad H^*L-L\%$

We see that there is a clear difference between the readings. Importantly, the main accent on the auxiliary in the denial readings and the deaccenting of the rest of the coordination matches the findings for denials described above.

As for the occurrence of PPIs in denials, we find that the wide scope gapping declaratives do indeed allow them, see (13)a with the PPI *still*. NPIs like *ever*, on the other hand, are bad, see (13)b. They force a distributed reading of the negation (which only is possible with the appropriate intonation, see (13)c).

- (13) a. No, you're wrong. John DOESn't still live in Paris and Mary in London. They've moved to L.A.
 b. *Oh, come on, John DIDn't ever touch snails and Mary slugs. (*wide scope intended*)
 c. JOHN didn't ever touch SNAILS and MARY SLUGS. (*distributed scope*)

Thus, wide scope gapping sentences behave like all denials w.r.t. polarity items.

2.1.2 Position of the negative marker

Another feature of the wide scope readings that deserves close attention is the position the negative marker takes in these structures in German because in that language, the negative marker can occur in different positions in the clause. The following example shows that in the wide scope readings, the negation cannot take the position of ordinary clausal negation:

- (14) *Picture description: the first speaker says something like: 'In this picture, Max is reading a book, and Mary is reading a magazine.' What the picture really shows, though, is that while Mary is indeed reading a*
-

magazine, Max is playing with his pen instead of concentrating on his book. The second speaker answers:

- a. *Max liest das Buch NICHT und Maria die Zeitschrift.
- b. Max liest NICHT das Buch und Maria die Zeitschrift.
'Max ISN'T reading the book and Mary the magazine'

In (14)a, the negative marker takes its normal position for clausal negation, above νP : the definite DP has scrambled out of the νP and *nicht* occurs after it. This position, however, produces an ungrammatical sentence even though the negative marker is accented, which in a simple clause would be enough to produce a denial reading. A wide scope gapping sentence requires the negative marker to take the position illustrated in (14)b, before the definite object DP.

To find out why the negative marker needs to occur in that position, let us look at corrective coordinations with the conjunction *but* (for an analysis of these structures, see e.g. Drubig, 1994; Jacobs, 1982; McCawley, 1991). Corrective coordinations function more or less like ordinary denials except that the second conjunct immediately provides a correction for the denied part, which can be smaller than a whole clause as in the following example:

- (15) John isn't moving to [Munich]_{denied part}, but to [BERLIN]_{correction}.

Denied part and correction are focus alternatives. Importantly, the focus usually must be in the c-command domain of the negative marker:

- (16) a. *Max liest [das BUCH] nicht, sondern [die ZEITSCHRIFT].
b. Max liest nicht [das BUCH], sondern [die ZEITSCHRIFT].
'Max isn't reading the book but the journal.'

If the whole clause is denied and corrected, all elements of the clause need to be c-commanded by the negation (except for the verb in C and the element in Spec, CP (and some further exceptions I cannot go into here)). This is illustrated in (17)a. (17)b shows an equivalent wide scope gapping sentence. We see that the negation takes the same position there. (17)c gives the normal position of the negative marker in an equivalent simple sentence, which is not allowed in the other two structures:

- (17) a. Max hat nicht am Montag angerufen, sondern Maria hat die Tage verwechselt.
'Max DIDn't call on Monday: Mary got the days wrong.'
b. Max hat NICHT am Montag angerufen und Maria am Dienstag.
'It is not the case: Max called on Monday and Mary on Tuesday.'
c. Max hat am Montag nicht angerufen.
'Max didn't call on monday.'

As we would expect, corrective-*but*-coordinations also accommodate wide scope readings in gapping.⁵

⁵There are a few differences between correction structures and 'simple' denials in wide scope gapping (accentuation, and clause-initial position of the negative marker), which have to do

- (18) Peter liest nicht das BUCH und MARIA die ZEITSCHRIFT, sondern während SIE konzentriert LIEST, spielt ER mit seinen STIFten.
 'Peter isn't reading the book and Mary the journal: while she is concentrating reading he is playing with his pencils.'

The difference between simple denials and denials in correction structures with *but* is that the former do not necessarily interact with focus: they are wide focus constructions by default. The wide scope gapping sentences, I would like to argue, do interact with focus: they are multiple focus structures. Multiple focus is a phenomenon that is familiar from so-called secondary occurrence expressions, sentences with several focus particles (Krifka 1997). Such sentences - similarly to denials - are best in the context of an antecedent that already contained one of the foci, cf.:

- (19) a. John only introduced BILL_{Foc} to Sue.
 b. John also₂ only₁ introduced BILL_{Foc1} to MARY_{Foc2}

In the multiple focus structure in (19)b, one focus (*Bill*) is associated with the focus particle *only*, which is 'inherited' from the antecedent sentence. The other focus (*Mary*) is associated with *also*. Note that the 'inherited' focus typically is marked with a somewhat less prominent accent than the first occurrence focus (Krifka 1997).

Wide scope gapping sentences function the same way. The antecedent sentence - even if it is only implied and not actually present in the context - contains narrow foci on the remnants and their correlates, which is simply due to the contrastive relations in gapping structures (e.g. Hartmann 2000). This focus structure is inherited in the wide scope gapping sentence and must be indicated by the special position of the negative marker. The actual denial is marked by a pitch accent on the negative marker, which signals the wide focus of the denial over the entire proposition. This picture is further supported by the following piece of data. We said above that simple denials do not require the accented negative marker to take a 'special' position. This does not mean, however, that it would not be possible for the accented marker to take the same position as in the correction structures:

- (20) Max liest NICHT das Buch.
 'Max isn't reading the book.'

Importantly, (20) usually would be uttered in a context where reading the book and not an alternative to the book was at issue. The sentence carries the implicature that Max might be reading something else, i.e. again we are dealing with a multiple focus structure: the narrow focus on *book* is indicated by the position of the negative marker, the wide focus of the denial is indicated by the accent on it.

The position of the negative marker that is required in the wide scope readings is disallowed in the other readings, see the following for the distributed

with the information-structural make-up of these structures, see Repp (2005) for discussion.

readings:

- (21) a. *Peter hat nicht Luise bewundert und KLAUS Anna. (*distributed scope intended*)
b. *JOHN put not GIN in the punch and MARY Vodka. (*distributed scope intended*)

To sum up, our discussion has shown that declarative gapping sentences with a wide scope reading are denials: they need a context appropriate for denials, they have the intonation of denials, polarity-sensitive items behave like in denials, the negative marker is different from the marker of ordinary clausal negation and resembles to a very high degree the marker of negation used in denial-plus-correction structures. None of these features is shared by gapping sentences with a distributed or a narrow scope reading: they have a different intonation, they occur with ordinary clausal negation, which licenses polarity-sensitive items in the ordinary way.

2.1.3 Gapping of Modals and Negation

The last aspect I would like to explore w.r.t. wide scope declaratives is their interaction with modal verbs. In a footnote, Siegel (1987: 72, fn. 6) suggests that in wide scope readings with a gapped modal, this modal always gets an epistemic reading. Moltmann (1992: 142f., fn. 6) suggests that wide scope readings allow both epistemic and deontic modal readings. Dynamic modals, according to her, cannot take wide scope.⁶ In the following, I shall investigate this matter a bit more closely and show that the picture that emerges is rather fine-grained.

Let us first look at epistemic modals. A modal's epistemic reading can be more or less forced if the complement of the modal is a perfective infinitive, cf. Erb (2001)⁷. Therefore, I shall use examples with a perfective infinitive in the following discussion. In (22)a, the epistemic modal scopes over the negation (with a neutral intonation contour, nuclear accent on *gesehen*). If we use this sentence as the first conjunct in gapping the result is marginal, see (22)b. The modal itself can take wide scope over both conjuncts but the negation does not do so. The sentence is marginal because German does not allow distributed readings in the general case (see section 1).

- (22) a. Max muss das rote Schild nicht gesehen haben.
Nec > Not (Max has seen the red sign.)
b. ??MAX muss das ROTE Schild nicht gesehen haben und MARIA das
GRÜNE.
Nec (Not (has seen the red sign) and Not (Mary has seen the green
one)).

⁶On a deontic interpretation, modals express permission, obligation, recommendation etc. perceived to originate from outside the speaker. On a dynamic interpretation, modals express internal conditions or dispositions of the subject of the clause.

⁷Unless a future reading is intended.

Again, however, what saves this sentence is placing the negative marker in the appropriate c-command position and stressing it, see (23). Note that adding the accent results in a scope reversal so that the negation scopes over the epistemic modal. As a consequence, the negation can also take widest scope over the whole coordination, together with the epistemic operator:

- (23) Max muss NICHT das rote Schild gesehen haben und Maria das grüne.
Not>Nec (Max has seen the red sign and Mary has seen the green one.)

Once more, this sentence can only be understood as a denial.

The scope relations between modal verbs and negation are complicated and depend on several factors such as the type of modality involved, the expression of necessity vs. obligation, the presence of certain discourse particles etc. I cannot discuss these aspects here and shall only consider the intonation as this is directly pertinent to the present problem. Recall that in denials the negative marker typically carries an accent. We just saw an example -(23)- where stressing the negative marker resulted in a scope reversal so that the negation scopes over the modal. The following examples show that an accent on the negative marker quite independently of its position can produce a reading where the modal scopes over the negation, see (24). An accent on the modal or the main verb, on the other hand, results in the negation taking wide scope, see (25):⁸

- (24) a. Max kann das Haus doch NICHT gekauft haben.
b. Max kann doch NICHT das Haus gekauft haben.
Poss > Not (Max bought the house.)
- (25) a. Max KANN das Haus doch nicht gekauft haben.
b. Max kann das Haus doch nicht GEKAUFT haben.
Not > Poss (Hans bought the house.)

Now, in a gapping sentence building on the above examples, the negative marker must not be stressed:

- (26) Max kann doch nicht/*NICHT das Haus gekauft haben und Maria die Wohnung!
a. Unstressed: Not > Poss (Max has bought the house and Mary the flat).
b. Stressed: Poss > Not (Max has bought the house and Mary the flat.)

Thus, the negation must scope over the modal if a wide scope reading is intended. If a pitch accent on the marker produces the opposite scope the resulting sentence cannot have a wide scope reading.

The discussion so far has shown that the negation in wide scope gapping needs to take a position above epistemic modality. Syntactically, epistemic modals often are assumed to have a high position in the clause such as in the

⁸Without the discourse particle *doch* the data are slightly different but still confirm the generalisations

CP, or at least above TP (e.g. Brennan, 1997; Butler, 2003; Cinque, 1999; Erb, 2001; McDowell, 1987). It seems, then, that the negation in the wide scope readings must be very high. We shall come back to this in section 4.⁹

Let us now turn to deontic and dynamic modals. These modals can occur in wide scope negation gapping sentences provided the negative marker takes the position of the negation in corrections with wide focus and is stressed. This invariably produces a straightforward denial reading. (27) below can receive a deontic interpretation or a dynamic interpretation but not an epistemic one since the modal's complement is a directional PP, which is excluded for epistemic modals (Erb 2001). In this example, the negation scopes over the whole coordination as denial negation. The modals, in contrast, take distributed scope:

- (27) Susie kann NICHT ins Schwimmbad und Max in die Sporthalle! (*deontic*)
Not ((Susie may go to the pool) and (Max may go to the gymnasium.))

Note that stressing the negation here does not (necessarily) have the effect of a scope reversal. Indeed, even if the negation is unaccented it scopes over the modals. The fact that the accent on the negative marker is obligatory indicates that the negation takes the position of ordinary sentence negation if it is not stressed but the position of denial negation if it is stressed. This makes sense if we assume that root modals take a lower position than epistemic modals, more specifically under clausal negation, for instance in V (see Butler, 2003; Erb, 2001 for recent discussion). To take wide scope over both conjuncts it is not enough for clausal negation to scope over the modal: it must be a high negation. For the epistemic modals we considered above, this simply results from the high position of the modal itself.

To summarise, we found that all modals can occur in a wide scope gapping sentence provided some conditions are met. The negation needs to take wide scope over the modal(s). In some cases, such a scope relation can only be obtained through intonational means, for instance by placing an accent on the negative marker. If, however, placing an accent on the negative marker results in the negation taking narrow scope with respect to the modal, wide scope in gapping is not possible. For gapping with root modals, we found that it is not

⁹In the present context, note that wide scope of the negation over an epistemic modal precludes the occurrence of NPis:

- (i)
 - a. ??Max kann doch nicht jemals solche Pillen geschluckt haben. (*jemals* 'ever' = NPI)
Not \succ Poss (Max ever ate such pills.)
 - b. ??Max kann keiner Menschenseele Bescheid gesagt haben. (*keiner Menschenseele* 'not a single soul' = NPI)
Not \succ Poss (Max told a single soul.)

These data remind us of certain interveners for PPIs/NPIs (Kroch 1979; Linebarger, 1987; Szabolcsi, 2004):

- (ii) John didn't *always* call someone/*anyone

It seems that epistemic modals also are interveners.

enough if the modal scopes under ordinary sentence negation. Rather it must be the high negation of denials that takes scope over the modal, which in the case of epistemic modals comes for free because of their high syntactic position in comparison to the position of root modals.

The behaviour of modal verbs in wide scope gapping sentences has confirmed our findings from the previous two sections: the negation in these structures is denial negation which takes a very high position in the clause. This negation does not occur in distributed or narrow scope readings. Wide scope readings therefore are truly different from the other readings. This assumption will be further corroborated by the data investigated in the next section, which looks at interrogatives.

2.2 Interrogatives

Interrogatives are obviously no denials. Nevertheless, if the negation is to have wide scope over a gapping coordination of interrogatives that negation must also be a 'high' negation, viz. Ladd's (1981) *outer* negation. In this section, we shall see that outer negation shares many features with the high negation of denials in general and in gapping in particular.

Consider the following interrogative gapping sentences with a wide scope reading. (28) shows polarity questions and (29) constituent questions. Note that even though in most cases, it is not necessary to place an accent on the negative marker, the intonation of these interrogatives is similar to their wide scope declarative counterparts in that the whole coordination is uttered in one intonational phrase.

- (28) a. Can't John eat caviar and Mary eat beans? (Siegel 1987: 73, fn. 16)
- b. Hat Hans nicht Fisch gegessen und Maria Wein getrunken?
'Is it not the case that Hans ate fish and Mary drank wine?'
- (29) a. Why didn't John eat fish and (*why) Mary tofu?
- b. Wer hat denn NICHT was von Marias Eis gegessen und (*wer) was von Pauls Kuchen?
'Who DIDNN't eat some of Mary's ice cream and some of Paul's cake?'

The examples seem to indicate that there are differences between polarity questions and constituent questions: whereas polarity questions generally seem fine, constituent questions only are felicitous if the *wh*-phrase occurs in the first conjunct only. If the *wh*-phrase also occurs in the second conjunct a distributed reading is attempted. However, this difference between polarity questions and *wh*-questions is only apparent. In polarity questions, the question-marking element, which here is the clause-initial finite verb, is absent in the second conjunct, too. This is simply due to the fact that we are dealing with gapping so it does not strike us as unusual. In the following, I shall first look at polarity questions (section 2.2.1) and then turn to *wh*-questions (2.2.2)

2.2.1 Polarity Questions

Polarity questions come in two varieties: they can be positive or negative. It is obviously the latter kind which interests us here. Perhaps despite first appearances, negative polarity questions differ from their positive counterparts in crucial aspects. Traditionally, the meaning of a question has been assumed to be the set of its complete answers (e.g. Hamblin, 1973; Groenendijk and Stokhof, 1984). For a polarity question, then, the set of answers contains two elements, viz. a positive answer and a negative answer. On such an account, the meaning of positive and negative polar questions is the same (Büring and Gunlogson, 2000):

- (30) $\llbracket \text{Has John drunk beer?} \rrbracket(w_0) / \llbracket \text{Has John not drunk beer?} \rrbracket(w_0)$
 $= \{w_0 \mid \text{John has drunk wine in } w_0; w_0 \mid \text{John has not drunk wine in } w_0\}$

This analysis, however, does not reflect some peculiar characteristics of negative polar questions, which have been shown to be able give rise to implicatures that positive polar questions do not have (Ladusaw, 1980; and esp. Ladd, 1981 and subsequent literature).

In English negative polar questions, the negative marker can take two positions. It either can move along with the auxiliary to the beginning of the clause (= preposed negation) or it can stay in situ (= non-preposed negation). These two varieties give rise to different interpretations. Preposed negation in a negative polar question carries the epistemic implicature that the speaker believed or expected the positive answer to be correct. Non-preposed negation does not necessarily have this effect (e.g. Romero and Han, 2004):

- (31) *Scenario: The speaker is organising a party and she is in charge of supplying all the non-alcoholic beverages for teetotalers. The speaker is going through a list of people that are invited. She has no previous belief or expectation about their drinking habits.* (Romero and Han, 2004: 610)
A: Jane and Mary do not drink.
S: OK. What about John? Does he not drink (either)?
#S': OK. What about John? Doesn't he drink (either)?

Answer S' is inappropriate in this unbiased context because it carries the implicature that the speaker believed that John does actually drink.

Negative polar questions with preposed negation can be further distinguished as to whether they express what Ladd (1981) called inner or outer negation. Consider the following examples from Ladd:

- (32) A: I'd like to take you guys out to dinner while I'm here we'd have time to go somewhere around here before the evening session tonight, don't you think?
B: I guess but there's not really any place to go to in Hyde Park
A: Oh really, isn't there a vegetarian restaurant around here?

- (33) A: You guys must be starving. You want to get something to eat?
 B: Yeah, isn't there a vegetarian restaurant around here Moosewood, or something like that?

Ladd says that in (32) speaker A originally had assumed that there would be a vegetarian restaurant nearby. From B's answer, however, A concluded that this is false. With the question, A checks that the original assumption indeed is false. Thus, what is being questioned is the inference $\neg p$ (Ladd, 1981: 165). This is what Ladd calls inner negation. In (33), in contrast, B checks that the proposition he or she believes to be true actually is true. What is being questioned is the speaker's belief p . This is Ladd's outer negation. Thus, outer negation like the negation in a negative denial 'embeds' a positive proposition whereas inner negation is part of a negative inference.

I said above that outer negation shares a number of important characteristics with the negation in denials. At the beginning of this section, we saw that this holds for some aspects of the intonation and just now we heard that outer negation is somehow 'outside' a positive proposition. The other features we identified as typical of denials, viz. contextual restrictions, polarity sensitivity and syntactic restrictions on the position of the negative marker, also are shared by outer negation. We shall look at these features first in simple questions and then in wide scope gapping.

Interrogatives with outer negation can only occur in contexts which provide neutral evidence or negative evidence for a positive proposition, see (34) (Büring and Gunlogson, 2000). The evidence makes the speaker check the positive proposition. Indeed, checking a positive proposition if that proposition was just confirmed in the context makes as little sense as rejecting a negative proposition if one believes that the proposition should indeed be negative.

- (34) *A and S want to go out for dinner. S has been to Moosewood a couple of years back.*
- a. S: Where do you want to go out for dinner? (*neutral*)
 - b. #S: I bet we can find any type of restaurant you can think of in this city. Make your choice! (*positive contextual evidence*)
 - c. S: Since you guys are vegetarians, we can't go out in this town, where it's all meat and potatoes. (*negative contextual evidence*)
- A: Isn't there some vegetarian restaurant around here?

Outer negation can occur with PPIs (*too* in (36) below). This does not hold for inner negation, which licenses NPIs (e.g. *either* below)¹⁰:

¹⁰In German, the difference between (35) and (36) has a syntactic reflex in the relative position of the additive particle *auch* ('too') and the negative marker:

- (i) a. Kommt Jane nicht auch? (*outer negation*)
 b. Kommt Jane auch nicht? (*inner negation*)

Otherwise, we find the same effects with PPIs

- (35) A: Ok, now that Stephan has come, we are all here. Let's go!
 S: Isn't Jane coming too? (*outer negation*) (Romero and Han, 2004: 610)
- (36) *Scenario: Pat and Jane are two phonologists who are supposed to be speaking in our workshop on optimality and acquisition.*
 A: Pat is not coming. So we don't have any phonologists in the program.
 S: Isn't Jane coming either? (*inner negation*) (ibid.)

As for the position of the negative marker in simple interrogatives the picture is not so clear-cut. Romero and Han (2004) suggest that in many languages, preposing the negation typically produces an epistemic implicature (which is the prerequisite for outer negation). Leaving the negation in its ordinary position does not necessarily do this. For German, they give the following example:

- (37) a. Hat Hans Maria nicht gesehen? (*no implicature*)
 b. Hat nicht Hans Maria gesehen? (*outer negation*)
 'Hasn't Hans seen Mary?'

In these simple interrogatives, it is indeed the case that preposing the negative marker to a position as far left as possible is not actually necessary to produce an outer negation reading:

- (38) Hat Hans nicht Maria gesehen? (*outer negation*)

The difference between (37)a and (38) is one of focus. In (37)a, either only *Hans* or both *Hans* and *Mary* can be focussed: the speaker believed either that it was Hans that saw Mary rather than e.g. Paul who saw Mary; or that it was Hans that saw Mary rather than e.g. Paul that saw Ann. In (38), only *Mary* can be in focus. Thus, the negative marker is positioned before the element that elicits an alternative, which parallels the behaviour of the negation in correction structures, where c-command is the relevant relation.¹¹

Let us turn to wide scope gapping with interrogatives and investigate the position of the negative marker and the behaviour of polarity-sensitive items in these structures. (39)a shows that in German a wide scope reading arises if the negative marker is placed after the subject and before the object DP. This is a good position both for denial negation and for negative polar questions with implicatures, if we have two foci, as is the case in gapping. We have not encountered this position so far but it can be shown that pronouns and proper names like *Max* below can actually escape the c-command domain of the negation they associate with (Jacobs, 1982; Repp, 2005). (39)b shows that a negation in the position for ordinary sentence negation produces a distributed reading. As we know, these sentences are marginal in German.

¹¹This also means that when (38) is read with a focus accent on the main verb participle *gesehen* ('seen') this can also elicit an outer negation reading in the sense that the speaker has been confronted with the idea that Hans maybe spoke to Mary over the phone rather than saw her in person.

- (39) a. Hat Max nicht den Club organisiert und Maria die Bar?
 'Is it not the case that Max organised the club and Mary the bar?'
 b. ??Hat Max den Club nicht organisiert und Maria die Bar?
 'Didn't Max organise the club and didn't Mary organise the bar?'

The behaviour of polarity-sensitive items is shown in the next set of examples. (40)a contains a PPI (*schon* 'already') and receives a wide scope reading. (40)b, which contains a NPI (*keine müde Mark* 'not a penny') and can only be read with a distributed scope of the negation.

- (40) a. Hat Kurtz nicht schon bei uns publiziert und Schmidt bei Springer?
 'Is it not the case that Kurtz has already published with us and that Schmidt has already published with Springer?'
 b. Hat Max dem Kellner keine müde Mark Trinkgeld gegeben und Maria dem Barkeeper?
 'Is it the case that Max didn't give the waiter any tip and is it the case that Mary didn't give the bar man any tip?'

The data in English are essentially parallel. Let us look at a slightly different example. In (41)a, we see that PPIs are compatible with a wide scope reading. (41)b shows that a coordination with NPIs only has a distributed reading. Curiously, the PPI can be left out in the second conjunct whereas the NPI cannot:

- (41) a. Didn't John eat some caviar and Pete (some) salmon?
 b. Did John not eat any caviar, and Pete *(any) salmon?

I suggest that we can make sense of this in the following way. In (41)a, we have outer negation scoping over two positive conjuncts. The presence or absence of the PPI does not interact with that. In (41)b, on the other hand, it seems that inner negation itself actually requires the presence of the NPI: leaving it out results in an outer negation reading. For the second conjunct, this produces a curious kind of contrast with the first conjunct and violates the required parallelism between the two conjuncts.

So far for the parallels between outer negation and the negation in denials. Another piece of evidence for the restriction of wide scope readings in interrogatives to outer negation comes from structures with indefinites. Büring and Gunlogson (2000) argue that in German polar questions with outer negation, NEG does not merge with the indefinite (or zero) determiner to *kein* ('no'), which it would normally do in the case of inner negation. Similarly, English *no* only allows inner negation. Now, in gapping with a wide scope reading, only *nicht* can be used and not *kein*, i.e. only outer negation is possible¹² (the same holds

¹²The argument is somewhat weakened by the fact that *kein* except for cases of narrow scope is bad in gapping anyway. However, a distributed reading can be saved by the repetition of *kein* in the second conjunct, which, of course, is not possible in wide scope readings:

- (i) Hat Hans keinen Wein getrunken und Maria keinen Fisch gegessen?
 'Did Max drink no wine and did Mary eat no fish?'

for English):

- (42) a. Hat Hans nicht Wein getrunken und Maria Fisch gegessen?
b. *Hat Hans keinen Wein getrunken und Maria Fisch gegessen?
'Wasn't it the case that Hans drank wine and Mary ate fish?'

Let us next turn to *wh*-questions.

2.2.2 Wh-questions

Wh-questions function more or less like polar questions in gapping. This can be shown for the position of the negative marker, see (43)a vs. (b) (position of ordinary clausal negation); for the ban on fusing NEG and *ein* to *kein*, see (44)a vs.(b); and for the occurrence of PPIs such as *schon* ('already'), see (45):

- (43) *Context: A game where the participants have to hand various toys to two kids.*
- a. Wer hat denn NICHT dem Jungen den Ball gegeben und dem Mädchen das Seil?
 - b. *Wer hat denn dem Jungen den Ball NICHT gegeben und dem Mädchen das Seil?
'Who DIDn't give the boy the ball and the girl the rope?'
- (44) a. Wer hat denn NICHT Hans einen Ball zugeworfen und Maria einen Reifen?
'For whom is it the case that s/he didn't do the following: throw a ball to Hans and took a hoop to Mary'
b. *Wer hat denn Hans KEINEN Ball zugeworfen und Maria einen Reifen?
'For whom is the following the case: s/he didn't throw a ball to Hans and a hoop to Mary?'
- (45) Wer hat denn NICHT schon bei Klose Bier gekauft und bei Vino Italia Wein?
'Who HASn't already bought beer at Klose's and wine at Vino Italia's?'

Note that in the felicitous examples the negative marker needs to be stressed, which is different from the polarity questions. This might have to do with the fact that negative *wh*-questions as such are not unusual: they do not have the same answer set as their positive counterparts, as is the case with polarity questions. It seems that the high position of the negation here also needs to be signalled by intonational means in addition to the changed position of the negative marker just as the denial reading in declaratives usually needs to be signaled by intonational means.

In the introductory paragraphs to this section on interrogatives, I pointed out that the second conjunct in the wide scope readings may not contain a *wh*-word (recall ex. (29) above). In the distributed readings, in contrast, this is perfectly possible, at least, if they are positive, see (46)a and (b). And

even though negative *why*-questions cannot be coordinated in the distributed readings, negative *who*-questions can, see (47):

- (46) a. Wer hat dem Jungen den Ball gegeben und wer dem Mädchen das Seil?
 'Who gave the boy the ball and who the girl the rope?'
 - b. Why did John read the book and why Mary the magazine?
- (47) a. Who didn't give the boy the ball and who the girl the rope?
 *Why didn't John read the book and why Mary the magazine?

I will have to leave the reasons for the difference between *why*-questions and *who*- or *what*-questions open.¹³ As for the ban on the occurrence of *wh*-words in the second conjunct of the wide scope readings, I already mentioned above that this is essentially a ban on the occurrence of the question marking element, which in polarity questions is the finite verb in its clause-initial position. This indicates that we are dealing with only one question in the wide scope readings: the question takes scope over the whole coordination. This parallels the situation in the wide scope declaratives: the denial rejects the whole coordination.

To summarise, interrogatives only allow a wide scope reading of the negation if they contain outer negation. This holds both for polarity questions and *wh*-questions. We have identified many parallels between outer negation and the negation in denials. In the next section, I shall propose how this parallelism can be accounted for.

2.3 Imperatives

Imperatives are the third sentence type that needs to be investigated in the context of wide scope readings. For reasons of space, however, I can touch upon this only briefly (on the topic of coordinated imperatives and negation, also see e.g. Merin, 2002; Schwager 2003). The first thing to be noticed about English imperatives is that - similarly to polarity questions with preposed negation - the finite verb plus negation always occurs at the left periphery of the clause, e.g.:

- (48) Don't let the left eye go up and the other down!

This opens up the possibility to assume a coordination of small conjuncts quite independently of the question whether the negation here is a high negation or not.

Again, a look at German turns out to be helpful here. The imperative in (49)a, where the negation takes its ordinary position, is slightly marginal and, if anything, has a narrow scope reading ($\neg A \& B$), no matter whether the negative marker is accented or not. The sentence in (49)b, on the other hand, where the negation is preposed and accented, gives us the desired wide scope reading:

¹³ *Why*-questions are different from the other questions in many ways. For instance, *why* takes clausal scope. It asks for an event that causes another event. *Who* or *what* only ask for arguments. Also, *why* gives rise to inner island effects, for which both syntactic, semantic and pragmatic reasons have been given. Argument *wh*-phrases do not.

- (49) a. ?Mach die Tür nicht/NICHT auf und das Fenster zu! ($\neg A \& B$)
 '(Don't open the door) (and close the window!)'
 b. Mach NICHT/*nicht die Tür auf und das Fenster zu! $\neg(A \& B)$
 'Don't (open the door and close the window)!'

So, again, it seems that we are dealing with a high negation. The question is, however, what this means in the context of imperatives especially with respect to the discussion in section 3, where I consider the high negation in declaratives and questions as a strength operator (see below for details). I will have to leave this issue open.

3 Epistemic Speech Act Operators

The aim of this section is to explain the great similarities between the negation in denials and outer negation in interrogatives. Denials, we said, are speech acts that reject a previous positive utterance. We saw that the negation has been suggested to be part of the speech act operator. For questions with outer negation, we found that a positive proposition, believed by the speaker to be true, is checked against some non-positive background. In what follows, we shall take a closer look at how outer negation has been analysed. This will pave the way for a unified analysis of denial and outer negation.

Ladd's (1981) original idea was that the difference between inner and outer negation is due to a difference in scope, viz. that in the case of outer negation, the negation indeed is outside the questioned proposition. Romero and Han (2004) also assume a scopal difference to be behind the two different kinds of negation but the elements involved are different. They propose that the general epistemic implicature negative polar questions give rise to is a conversational epistemic implicature which at Logical Form introduces the conversational (i.e. illocutionary) epistemic operator VERUM. VERUM, according to Romero and Han, is used by the speaker to assert that s/he is certain that the proposition VERUM embeds, should be added to the Common Ground.¹⁴ It is the VERUM operator that interacts with the negation (see below for further details).

The term VERUM comes from the study of VERUM focus, a concept which was first introduced by Höhle (1988, 1992). VERUM focus can be expressed by stress on an auxiliary in a positive sentence. The effect is that the utterance is understood as something like a positive denial, i.e. a negative proposition is rejected, as illustrated in the following dialogue:

¹⁴The exact definition is as follows (x is a free variable whose value is contextually identified with the addressee/speaker):

$$(i) \quad \llbracket \text{VERUM}_i \rrbracket^{gx/i} = \lambda p_{<s,t>} \lambda w. \forall w' \in \text{Epi}_x(w)[\forall w'' \in \text{Conv}_x(w')[p \in \text{CG}_{w''}]] \\ = \text{FORE-SURE-CG}_x$$

$\text{Epi}_x(w)$ is the set of worlds that conform to x's knowledge in w. $\text{Conv}_x(w')$ is the set of worlds where all the conversational goals of x in w' are fulfilled (according to the Maxims of Quantity and Quality). $\text{CG}_{w''}$ is the set of propositions that the speakers assume in w'' to be true (= common ground).

- (50) A: Peter wasn't in last night.
 B: He WAS in, you just didn't hear him coming.

B's utterance rejects the assertion made by A.

Höhle also assumes that VERUM is an illocutionary operator. He argues that the meaning of the focus on the finite element of the clause is that the speaker insists on the truth of the proposition. The focus is on the assertion of the sentence, or, as Klein (1998) puts it, the actual 'claim' is highlighted. Erb (2001) takes a slightly different view and suggests that VERUM indicates the speaker's opinion on the truth of the proposition, that is, like Romero and Han (2004), she considers VERUM as having an epistemic component, although not an illocutionary one. Note that Höhle (1992) himself gives examples for VERUM focus where the alternatives to the focus involve epistemic expressions. The following is from Erb (2001):

- (51) A: Peter was not at the party yesterday.
 B: SURE he was at the party.

VERUM focus is not restricted to declaratives. Questions, imperatives or expressive counterfactuals can contain VERUM focus as well (Höhle, 1992):

- (52) a. NÄHME er sich doch einen Stuhl! (Höhle 1992: 120)
 'If he only took a chair!'
 b. Who DID come to the party, then?

Obviously, VERUM here can hardly mean that the speaker insists on the truth of the proposition or that s/he highlights the claim. It seems that VERUM does different things in different sentence types. Höhle (1992) proposes that VERUM in *wh*-questions means something like 'for which x is it really the case that...'. This paraphrase suggests that Erb's (2001) and Romero and Han's (2004) proposal for an epistemic component is the correct kind of analysis.

I said above, that in Romero and Han's (2004) account, VERUM as an illocutionary epistemic operator, which signals that the speaker is sure that the proposition at hand should be added to the common ground, interacts with the negation in polarity questions. Applied to an example of outer negation, this yields the following (tense and polarity item ignored):

- (53) Isn't Jane coming (too)? (= ex. (35))
 LF: [CP Q not [VERUM [IP Jane is coming]]]
 {it is not for sure that we should add to CG that Jane is coming;
 it is (not not) for sure that we should add to CG that Jane is coming}

Thus, the first answer in the set of answers to the question says that it is not the case that the proposition *Jane is coming* should be in the common ground. The second answer says that it is the case that that proposition should be in the common ground.

An interrogative with inner negation has an LF where *not* and VERUM swap places, i.e. the scope is reversed:

- (54) Isn't Jane coming (either)? (= ex. (36))
LF: [CP Q VERUM [not [IP Jane is coming]]]

The result is that the set of answers to the question is about the proposition *Jane is not coming* being in the common ground, rather than its positive counterpart as in the case of inner negation.

Romero and Han (2004) also define an operator for negative denials (and polarity questions with stressed, non-preposed negation), which they call NOT or FOR-SURE-CG_x-NOT, and which basically says that the speaker is sure that a negative proposition should be added to the common ground. In other words, the negation operates on the proposition. This is the same as for inner negation (with the exception, of course, that the meaning is not a set of propositions but a single proposition). This is somewhat surprising because we said that a negative denial rejects a positive proposition. Furthermore, the fact that the negation in denials and outer negation share many characteristics comes completely unexpected under this analysis. If anything at all, it should be p that is fixed in the formula for negative declarative denials and not $\neg p$. Thus, we need a high negation rather than a low negation.

Before we come to an implementation of this, let us examine the idea of a conversational epistemic operator a bit more closely. Apart from VERUM, there are other epistemic operators at the level of the speech act. For instance, Romero and Han (2004) suggest that the adverb *really* is such an operator. *Surely*, as well as the German adverbs *sicherlich* ('possibly') (Krifka, 2004) and *wohl* ('possibly') (Krifka, 2004; Zimmermann, to appear) are also good candidates. All these adverbs have epistemic content - but why would we say that they operate on the speech act and not on the proposition?

First, whereas epistemic speech act operators cannot occur in the antecedent of conditionals, epistemic propositional operators can (Krifka, 2004; Zimmerman, 2005):

- (55) Wenn es sicher/vielleicht/*sicherlich/*wohl regnet, nehmen wir einen Schirm mit.
If it is certainly/*surely going to rain we must take an umbrella.

The reason for this effect according to Krifka (2004) is that the antecedent of conditionals cannot embed a speech act (Frege, 1919; Horn, 1989). Note that if we have a focus on the negation in such environments this can only be understood as being an ordinary focus on the polarity, marking the alternativeness, without the denial element (as in *Did he come or did he NOT come?*):¹⁵

- (56) Wenn es NICHT regnet, brauchen wir keinen Schirm mitzunehmen.
'If it doesn't rain, we don't need to take an umbrella.'

¹⁵Correction structures are fine in such environments:

- (i) Wenn Paul nicht beide Kugeln wiederfindet, sondern nur eine, kriegt er Probleme.
'If Paul does not find both marbles but only one he is in trouble.'

A second piece of evidence is pointed out by Zimmermann (to appear). The adverb *wohl* must be deaccented due to lexical blocking by accented *wohl* functioning as an affirmative particle (which itself looks very much like a VERUM operator: *Hein ist WOHL auf See.* 'Hein IS/surely is at sea.'). Therefore, in a focus-background structure, unaccented *wohl* is expected to be part of the background, i.e. the background should be epistemically modified. Yet, this expectation is not borne out, see (57). Note that a propositional relative of *wohl*, *womöglich*, is fine in this context.

- (57) PEter_{Foc} ist # wohl/womöglich gestern nach Hamburg gefahren, auch wenn ich nicht ganz sicher bin, dass überhaupt jemand nach Hamburg gefahren ist.
 'Peter possibly went to Hamburg yesterday, although I am not sure that anybody went to Hamburg at all.'

Wohl does not take part in the information structuring of the proposition. Zimmermann concludes from this that it must be outside the proposition.

Another feature that sets epistemic speech act operators apart from propositional ones is that the former cannot be picked up in a correction and be embedded under another speech act operator while the latter can (This only holds, of course, if the adverbs are not read as quotes, which would be a case of metalinguistic negation).

- (58) a. *Er hat nicht WOHL das Haus verlassen sondern {definitIV/vIELLEICHT}.
 'He didn't {possibly/surely} leave the house but {definitely/perhaps.}'
 b. Er hat nicht möglicherWEISE das Haus verlassen, sondern definitIV.
 'He didn't possibly leave the house but definitely.'
 c. He didn't *{SURELY/CERTAINly} leave the house but perHAPS.

What exactly does it mean for an epistemic operator to operate on the level of the speech act? Searle and Vanderveken (1985) and Vanderveken (1990) propose that speech acts come with certain sincerity conditions. A sincerity condition determines the 'psychological modes of the mental states that the speaker must have if he is sincerely performing a speech act with that force in a possible context of utterance' (Vanderveken, 1990: 117). A sincerity condition for an assertion would be that the speaker believes the truth of the asserted proposition. The mental states that are relevant for a sincerity condition come in varying degrees of strength, e.g. how strongly is a speaker committed to the proposition uttered. Thus, the degree of strength is essentially a notion of epistemic modality on the level of the speech act. The domain of comparison consists of illocutionary forces with the same illocutionary point (e.g. assertives, with world-to-word fit).

I suggest that all the epistemic speech act operators that we have seen, including VERUM, are operators that are best considered in terms of degree of strength. VERUM itself signals a very high degree of strength, which for assertives means that the content of the proposition at stake should indeed be added to the common ground. English *surely* and German accented *wohl* also express

a high degree of strength. German *sicherlich* and unaccented *wohl* express a lower degree of strength. It is a natural step from here to assume that there should also be operators that signal an extremely low degree of strength, such as zero degrees of strength. Let us assume an operator FALSUM for this. FALSUM occurs in negative denials: the degree of strength for adding the assertion to the common ground is so low that it should not be added. Therefore, FALSUM will be translated as *Don't add P to CG / Remove P from CG*. In other words, the negation truly operates on the speech act level. The fact that in the case of proposition denials the truth-conditional meaning of the denial corresponds to that of a negative assertion (the meaning captured in the formula of Romero and Han, 2004) is shown by van der Sandt (1991) to fall out from the semantic-pragmatic analysis of a high negation in interaction with the characteristics of denials to be echoic and to occur at turn changes (see his fn. 14 on p. 343 f.).

Questions with outer negation can be taken to ask for the degree of strength, cf.:

- (59) Isn't Jane coming too? (= ex. (35))
 LF: [CP Q [FALSUM [IP Jane is coming]]]
 {There are zero degree's of strength for adding *Jane is coming* to CG;
 There are not zero degree's of strength for adding *Jane is coming* to CG}

This gives us the alternatives to have p in the common ground or not. Inner negation can be represented as VERUM scoping over propositional negation, as in Romero and Han (2004).

Vanderveken (1990) suggests to measure the degrees of strength by the use of (Abelian) integers. Zero is the neutral degree of strength, +1 is the next stronger degree of strength, +2 the next stronger, -1 is a smaller degree of strength etc. The various degrees of strength must adequately reflect illocutionary entailments so that for instance (60)a entails (60)b.

- (60) a. I assert that the giants won yesterday. (Vanderveken 1990: 53)
 b. I report that the giants won yesterday.

For the epistemic operators investigated above we get a scale like the one in (61) (for assertives). The degree of strength is high (positive) on the left, and low (negative) on the right.

- (61) VERUM, *surely*, WOHL \succ neutral assertion \succ *sicherlich* \succ *wohl* \succ negative denial

It seems attractive to use Vanderveken's insights for the definition of the individual operators. Yet as the exact nature of scales like the above needs close scrutiny, which I cannot provide here, this must await future research. So we must make do with the rough paraphrases given below for the moment (I am ignoring the intermediate stages, see Zimmermann, to appear, for a semantics of *wohl*, which he considers as signalling a hypothetical epistemic state).

- (62) a. $\llbracket \text{VERUM } p \rrbracket$ = high degree of strength for adding p to the common ground
 b. $\llbracket \text{FALSUM } p \rrbracket$ = zero degrees of strength for adding p to the common ground

Applying these considerations to gapping, we get the following:

- (63) Max liest NICHT das Buch und Maria die Zeitschrift.
 'Max ISN'T reading the book and Mary the magazine'
 LF: [CP Decl FALSUM [&P Max liest das Buch und Maria liest die Zeitschrift]]]
 There are zero degree's of strength for adding to CG: *Max is reading the book and Mary is reading the magazine.*

The exact structure of the coordination will be explored in greater detail in the next section.

4 The Syntax of Wide Scope Readings

What do the above findings mean for the syntax of the wide scope gapping sentences? We saw that the negation in the wide scope readings - in contrast to the negation in the distributed or narrow scope readings - is a *high* negation, which we might associate with the speech act operator FALSUM. Assuming a Split CP (Rizzi, 1997), I propose that FALSUM - as well as the other speech act operators we discussed - is situated in the C-system of the clause, more specifically at Logical Form. The surface position of the negative marker is that of ordinary negation, which must be licensed via Agree. Recall that the actual 'preposed' position was due to the focus marking in the clause. Being an illocutionary operator which interacts with the illocutionary force of an utterance, FALSUM must stand in a direct relation to force information, which in Rizzi's system is contained in Force. One way to represent this is to assume that there is a head Strength at Logical Form, which hosts strength operators and which is directly under Force.¹⁶ It is important that Strength is situated below Force because the inverse order would mean that the speech act would be negated, in the sense that there is no denial, or no imperative etc. This is impossible (for a discussion of this e.g. for imperatives see Han, 2001 or Zeijlstra, 2006)¹⁷.

- (64) [ForceP Force [StrengthP Strength [TopP Top [FocP Foc [FinP Fin [IP]]]]]]

For the wide scope gapping sentences we get the following LF-representation:

¹⁶An anonymous reviewer suggests that the relevant position might be Foc because it is the stress on the negation that produces the denial reading. Note, however, that the negation does not always have to be stressed and do not necessarily interact with focus (see section 2), and that Strength also accommodates other operatores (*wohl, surely*) which are not stressed.

¹⁷*wohl* seems to differ from the other speech act operators considered here. Zimmermann (to appear) suggests that *wohl* is situated in the specifier of ForceP because it can scope over the question operator

- (65) Max ISn't reading the book and Mary the magazine. (*wide scope*)
 [ForceP Decl [StrengthP FALSUM [&P [TopP Max is reading the book] [& and [TopP Mary is reading the magazine]]]]]

Thus, wide scope readings are small conjunct coordinations. The coordination splits up below Strength. This way, FALSUM scopes over the entire coordination. In addition, since illocutionary force, or at least the sentence type, is fixed in Force, the fact that the entire coordination is denied or questioned in the wide scope readings, falls out from the syntactic structure, which has only one Force projection for the coordination.¹⁸ Distributed readings, where no such restrictions obtain, are coordinations of large conjuncts:

- (66) MAX isn't reading the BOOK and MARY the magazine. (*distributed scope*)
 [&P [ForceP Max isn't reading the book] [& and [ForceP Mary isn't reading the magazine]]]

For the actual ellipsis I am assuming a syntactic copying account (see Repp 2005).

The assumption that we are dealing with a strength operator above the coordination and not 'just' negation is supported by the behaviour of the other strength operators in gapping. Here is *wohl*:

- (67) Max hat wohl ein Haus gebaut und Maria eine Wohnung gekauft.
 'I assume: Max has built a house and Mary has bought an apartment.'

The adverb clearly scopes over the entire utterance. Distributed scope is impossible. This also holds for main verb gapping (elide *gekauft* ('bought') in the above example). Similarly, and quite surprisingly from the point of view of the distributed readings, the auxiliary in a positive gapping sentence can be accented, which results in a wide scope VERUM focus reading:

- (68) Max HAT ein Haus gekauft und Maria eine Wohnung.
 'It is indeed the case: Max bought a house and Mary an apartment.'

The present proposal that strength operators are situated in a syntactic high position builds on earlier accounts of the negation in denials and in corrections. Several authors have proposed that there is a specific syntactic position for the negation in denials (echoic negation, presuppositional negation etc.), see for instance Cormack and Smith (1998), D.B. Kim (1991), Piñon (1991), Weiss (2002), Zanuttini (1997). As in the present account, this negation is usually assumed to be higher than ordinary sentence negation.

Cormack and Smith (1998), for instance, argue for an 'Echo' position, which can be positive or negative, above C (and below Q). This assumption is mainly fed by the scopal behaviour of what they call echoic negation with respect to

¹⁸As for the *wh*-phrase in the first conjunct of gapping with *wh*-interrogatives, we may assume that it occurs in FocP (see (64) and that a lower TopP lower is targeted by the other contrast phrase (TopP may iterate, Rizzi 1997). The coordination only splits up below that.

modals in English, viz. that echoic negation always scopes over modals; recall our discussion mainly of German modals in section 2.1.2. Evidence for a high position of the negation in denials also comes from negative inversion structures in English. As Romero and Han (2004) point out, the sentence in (69)a, which has a fronted negative adverb and elicits inversion, carries VERUM whereas the sentence in (69)b without inversion does not:

- (69) a. Never has John lied. (Romero and Han, 2004: 654)
b. John never lied.

Inversion structures in English are usually analysed as an instance of T-to-C movement so that the negation again would be situated in the CP.

In various languages, the difference between ordinary sentence negation and echoic negation has a lexical reflex. This is for instance the case in Korean (D.B. Kim, 1991) and in Piedmontese, a Romance variety spoken in northwestern Italy (Zanuttini, 1997, 2000). The latter language distinguishes between the marker *pa* for presuppositional negation and the marker *nen* for ordinary sentential negation. The two markers take different positions in the clause: *pa* appears above adverbs like *gia* ('already'), *nen* below. If, however, *nen*, is in the 'wrong' position - as in (70) below, which normally is ungrammatical, stressing it will produce a denial interpretation.

- (70) *?A l'e nen gia andait a ca.
s.cl. s.cl's neg already gone to home
'He HASn't already gone home' (Piedmontese, Zanuttini, 1997: 70)

Finally, note that correction structures have also been proposed to contain a negation that is situated quite high in the syntactic structure, albeit as part of the complex operator *not-but* (Drubig, 1994, 2000; McCawley, 1991). Drubig (1994) capitalises on the fact that the negation in correction structures associates with focus. Following Culicover (1991), he assumes that a focus phrase moves into the specifier of a functional phrase Pol₂P situated between IP and CP and which is reserved for what Drubig calls 'emphatic' negation/affirmation. By this he means negation that is associated with a focus phrase. In Drubig (2000), he speaks of a 'reclamatory interpretation', and a wide scope position of the negation, i.e. pointing to an element of denial. In addition to Pol₂P, there is Pol₁P, which is situated between VP and IP and is the locus of ordinary sentence negation/affirmation and corrections with clausal focus. In the latter case, the negation eventually moves to Pol₂.

This selection of examples and the discussion in the preceding sections has shown that denial negation and the negation in corrections must be differentiated both syntactically and semantically from ordinary sentence negation. We saw that the negation in denials both with and without a corrective conjunct can be assumed to be situated in a high position in the clausal projection. As far as I know, no detailed syntactic accounts have been given for outer negation in interrogatives although Romero and Han (2004) make it clear that this is what they envision for outer negation, or at least VERUM, too. This supports

our proposal : the three kinds of negation can all be viewed as instantiations of the speech act operator **FALSUM**, which expresses the degrees of strength of the sincerity conditions of an illocutionary force. Such speech act operators occur high in the syntactic structure, in the vicinity of the Force head.

5 Summary and Outlook

Let me summarise my proposal for the wide scope reading gapping sentences. I assume that wide scope gapping sentences indeed are coordinations of small conjuncts. Thus, in spirit, I follow Johnson (1996), López and Winkler (2003) and Winkler (2003). The details are different though, which is due to the fact that the negation in the wide scope readings is not ordinary clausal negation. Consequently, the conjuncts are larger than previously assumed. In addition, the small conjunct analysis cannot be transferred to the distributed scope readings. Wide scope readings are clearly distinct. They occur in different discourse situations and have a different phonology, syntax and semantics. The negation in the wide scope readings is a strength operator which operates on the speech act whereas in the distributed (and narrow) scope readings, we have propositional negation. This difference is reflected in different positions for the two types of negation at LF. Since LF is the level where gapping is licensed, we can assume that the readings have a different structure at that level.

I would like to end on a speculative note. Why do wide scope readings only occur in gapping coordinations but not in coordinations of full clauses? Compare the following examples:

- (71) Kim DID't play Bingo and Sandy sat at home all night!
 $= (\neg A \& B)$

This example can only be understood as a coordination of a negative and a positive clause, for which the best intonation is one where there is a pause between the conjuncts (preferably, there is an accent on *home* in the second conjunct). They can both be considered as denials - one negative, one positive - but the negation cannot scope over both conjuncts.

Now, the traditional assumption about gapping is that it elides the finite verb. If we take a closer look, however, we find that complementisers have to be elided as well (Hartmann, 2000; Wilder, 1995):

- (72) I believe [_{C'} that Peter will travel with his wife to India] and [_{C'} (*that) Martin with his colleagues to Switzerland].

Note that the coordination in cases like (72) only involves the embedded sentences: gapping generally is not possible across clause boundaries:

- (73) *[_{CP} Mr Smith believes that Peter will travel with his wife to India] and [_{CP} Mr Smith believes that Martin will travel with his colleagues to Switzerland].

Also note that the problem is due to the ellipsis and not because it is impossible to conjoin two clauses that start with *that*:

- (74) I believe [_{C'} that Peter will travel with his wife to India] and [_{C'} that Martin will travel with his colleagues to Switzerland].

The same can be observed for non-finite complementisers:

- (75) The party should be really good, with John buying the food and (*with) Mary the drinks.

Complementisers and finite verbs both have an anchoring function. For finite verbs, it has been suggested that they anchor a clause in the factual world in terms of temporal and modal reference (e.g. Bayer, 2004; Erb, 2001; Holmberg and Platzack, 1995; Lasser, 1997; Maas, 2004; Roussou, 1998 on the notion of (semantic) finiteness). Complementisers can be thought of doing the same for a dependent clause by anchoring it in a matrix clause, which itself is anchored in the factual world (see Repp 2005 for details). Now, if we have a coordination of two finite clauses they are independently anchored. In gapping, on the other hand, we just saw that not only the finite verb is elided in the second conjunct but complementisers are elided too. This suggests that the second conjunct is not anchored independently of the first but that it copies the anchor from its antecedent.

Now, the finite verb in verb-second languages can be assumed to be in Fin. For non-verb-second languages, we can assume that there is a finiteness feature in I (e.g. Holmberg and Platzack, 1995). Complementisers can occur in Fin or in Force (Rizzi, 1997). Rizzi argues that in order to express force, a complementiser must be in Force. In order to express finiteness, on the other hand, it must be situated in Fin. Note, however, that it is not always possible for the two functions to materialise as one syncretic head, which is one option to fulfill the two requirements in an economic way (Rizzi, 1997). The following examples show that a topicalised phrase can intervene between Force and Fin:

- (76) a. [ForceP that [_{TopP} tomorrow Top [_{FinP} [IP John will leave]]]] (Rizzi, 1997: 301)
b. [ForceP [_{TopP} tomorrow Top [_{FinP} for [IP John to leave]]]]

Still, the two categories must be linked because the complementiser *that* in Force can only co-occur with a Fin that fits *that*'s finiteness specifications. This link can either be established via movement or via the Agree relation (Chomsky 1995), also see Rizzi (1997) and Roberts (2004) on this. If we have a coordination of two finite clauses where each clause has its own finiteness specification, i.e. there is no ellipsis, it seems that both clauses automatically bring along their Force specification as well. This then prevents Force and Strength from scoping over the whole coordination. This assumption must be investigated in greater detail in future research.

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