Meaning and context:
German aber and sondern *

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1 Introduction.

What is a possible word meaning? What is the range of meaning distinctions to which particular words can be sensitive? Such questions have been at the forefront of research in lexical semantics in recent years (see Talm (1985), Talm (1988), Pinker (1989), Jackendoff (1990), Bach (1995)). These questions are typically addressed in the context of the meaning of verbs or spatial prepositions; the major issue is then one of event or spatial relation packaging: what kinds of events or spatial relations can be denoted by verbs or prepositions and what parts of our conceptualization of events and spatial relations is lexicalized by verbs or prepositions in different languages? In this paper, we want to contribute to this debate on the limits of lexical meaning by examining another kind of words, conjunctions, and a different kind of meaning, than types of eventualities, one more akin to pragmatics in nature. Our goal is to assess the kinds of constraints on their contexts of occurrence words can impose. Said differently, we are interested in the kind of pragmatic content that individual words can conventionally encode. We concentrate on two German conjunctions aber and sondern, both of which are generally translated by but, and one aspect of their meaning which has hitherto gone unnoticed. We show that aber and sondern are sensitive to meaning distinctions of a kind that has not been previously recorded: they impose different constraints on the type of inferential processes via which

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interpreters derive interpretations of utterances in which they occur. The conclusion we draw— which constitutes a fact not previously observed, to our knowledge— is that the meaning of lexical items can make reference to and distinguish between R-based and Q-implicatures, in the terminology of Horn (1984).

2 Q- and R-maxims and the neo-Gricean view of the interaction between semantics and pragmatics.

The issue of the possible pragmatic content of words we raised in the introduction arises out of the ‘classical’ view of the relationship between sentence-types and interpretations put forth in Grice (1975) and Grice (1989). According to this view, the interpretation of utterances proceeds in two steps. In a first step, a decontextualized, linguistic convention-driven semantic meaning is computed. To simplify, this first step can be analyzed as a function which takes as input a lexicon and a set of combinatory rules and returns expressions of a suitable logical language. In a second step, the interpretation of the utterance-token is derived. This second step takes as input the output of the first step— i.e. logical expressions—, as well as general conversational maxims and particular world beliefs shared among the speech participants, and derives the contextual interpretation of utterances.

For Grice himself, a crucial component of this second step is the addition¹ of inferences licensed by general conversational maxims to the linguistically-licensed meaning of utterance types. Grice called such inferences conversational implicatures. By distinguishing between sentence meaning and interpretations derived via conversational maxims, Grice intended to capture the difference between conventionally-driven and non-conventionally-driven aspects of utterances’ interpretations. Formally, we can model this second step of the interpretation of utterances as follows.

Conversational maxims are additional axioms of a suitable formal language. Conversational implicatures are then simply inferences drawn from the propositions expressed linguistically, the axioms representing the conversational maxims, and (optionally) world knowledge accessible to the speech participants. In other words, an utterance’s implicatures differ from its semantic entailments in the kind of premises one uses to derive them: only logical axioms are used to derive the latter, whereas conversational axioms

¹The effect on interpretation of Grice’s conversational maxims is not always additive. It can also be to reverse or otherwise modify the literal meaning of a sentence, as in instances of irony, metaphor, and so forth. Such additional effects are not relevant to the issues discussed in this paper.
are also used for the former (see Hirschberg (1991/1985) for an example of such a formalization of Grice’s program).

Whereas the fundamental division between entailments and implicatures is widely accepted, there has been much discussion regarding the proper number and formulation of the conversational maxims governing the contextual interpretation of utterances. One influential reformulation of Grice’s original description is due to Horn (1984) and Horn (1989). Horn argues that Grice’s maxims can be reduced to two general principles, the q- and r-principles, as he calls them.\(^2\) These two principles are defined as follows (see Horn (1989), p.194):

1. **q-maxim:** ‘Make your contribution sufficient: Say as much as you can (given both quality and R).’

2. **r-maxim:** ‘Make your contribution necessary: Say no more then you must (given Q).’

The second maxim is as an economy maxim: speakers should leave out of their utterances what they can reliably expect their addressees to be able to infer. The first maxim is a minimal commitment maxim: speakers should be assumed to commit themselves to the minimum amount of information consistent with the meaning of the utterance. The r-maxim is at play when we infer from an utterance of *I lost a finger* that it is my finger that I lost (example from Horn (1984), see also Atlas and Levinson (1981)). The implicature that the lost finger was mine need not be made explicit by speakers: hearers can be reliably expected to add this piece of information on their own, given the r-maxim. The q-maxim is at play when we infer from an utterance of *John bought 5 CD’s* that John bought 5 CD’s and no more. Again, speakers need not make explicit the implicature that *only* 5 CD’s were bought: hearers can be reliably expected to add this piece of information, given the q-maxim.

An implicit assumption of this neo-Gricean research program is that q-based implicatures and r-based implicatures are on a par. Both should be distinguished from entailments as well as inferences which can be drawn from world-knowledge. The class of inferences which are drawn from utterances is thus divided into three subclasses: logical inferences, conversational implicatures, and world-knowledge based deductions. The table in 1 summarizes the differences between the three kinds of deductions. As can be

\(^{2}\)Wilson and Sperber (1986) purport to reduce the number of maxims even further to one general Relevance maxim. But their notion of relevance involves the weighting of two separate conditions: (i) the number and informational weight of inferences one can draw from the utterance’s meaning and (ii) the cost of these inferences. Sperber and Wilson’s notion of relevance therefore also includes *two* competing conditions, as does Horn’s model based on q- and r-maxims.
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Table 1: A traditional classification of inference-types

seen in the table, differences between the three classes of deductions reduce to differences in the kind of premises used to derive them. Different sets of premises are used to derive each class of inferences. All three classes use logical axioms and rules of inference. But conversational implicatures add as premises suitable formalizations of the Q- and R-maxims. Deductions based on world-knowledge add as premises propositions taken from a knowledge base. For ease of reference, from now on we call these various classes of inferences L-, Q-, R- and W-inferences respectively.

The classification of inferences summarized in table 1 is widely accepted within the neo-Grecian community. As we show in the next section, the semantics of aber and sondern challenges this tripartite classification of inferences. They group together sets of inferences which cut across the tripartite classification represented in table 1. Sondern groups together inferences based on Q-maxims and logical entailments; aber groups together inferences based on R-maxims and world knowledge.

3 The meaning of aber and the pragmatic content of lexical semantics.

As is well-known, many languages encode what is expressed by but in English in at least two different manners (see Anscombe and Ducrot (1977), Anscombe and Ducrot (1983), Lang (1984), among others). Languages such as English or French use basically one conjunction to mark the idea of contrast between two propositions: but in English, mais in French. Languages such as German and Spanish, on the other hand, use two different conjunctions to mark the same meaning: aber and sondern in German, pero and

3Of course, different logical systems use different axioms and different rules of inference. Such differences are not relevant to the issues discussed in this section.

4In the table, we assume, for simplicity, that deductions based on world-knowledge do not encompass conversational implicatures as premises.

5More precisely, as discussed below, sondern requires its first conjunct to include a metalinguistic negation, and metalinguistic negations crucially distinguish between R- and Q-implicatures.
sino in Spanish. We begin this section by a brief description of the meaning of aber. Our description is inspired by Anscoumbre and Ducrot’s analysis of French mais (op.cit.).

We then turn to the hitherto unnoticed sensitivity of aber to the distinction between q- and r-inferences.

Intuitively, as many scholars have noticed (see Lakoff (1971), Anscoumbre and Ducrot (1977), Anscoumbre and Ducrot (1983), Lang (1984), Blakemore (1989) among others), the basic function of aber is to contrast two propositions. Sentences (1)-(2) illustrate this contrastive function of aber. We call the two propositions which aber contrasts α and not α.

1. Jana ist nicht groß, aber eine gute Basketballspielerin.
   ‘Jana is not tall but a good basketball player.’

2. Jana ist nicht groß, aber das ist nicht schlimm.
   ‘Jana is not tall, but that does not matter.

In (1), for example, what is being contrasted are the propositions expressed by ‘She is not a good basketball player’ (our α) and ‘She is a good basketball player’ (our not α). Note that α and not α do not have to be the propositions expressed by the two sentences conjoined by aber. Whereas not α corresponds to the proposition expressed by the second conjunct in (1), this is not the case for α and the first conjunct. Similarly, in (2), the contrasting propositions might be—depending on the particular context of utterance—‘We should not add Jana to the team’ (our ) and ‘We should add Jana to the team’ (our not ).

This last example illustrates another important property of the two propositions which utterances containing aber contrast: their identity is underdetermined by the meaning of sentences in which they occur. Various contextual conditions—including the particular beliefs speakers assume to be mutual beliefs—influence the choice of α’s and not α’s in particular situations. In what follows, we reserve the symbol α and not α for the two contextually determined contrasting propositions. We use p and q for the propositions expressed by the first and second clauses conjoined by aber. The upshot of examples such as (1)-(2), then, is that although α is related to p and not α to q, they cannot be identified with p and q. The question

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6Since we concentrate in this paper on the interaction between the meaning of aber and sondern and Gricean Maxims, we cannot go into the details of Anscoumbre and Ducrot’s description of the uses of French mais which correspond to German aber. Suffice it to say that their description is couched within their general ‘rhetorical’ theory of linguistic meaning—what they call ‘Argumentation Theory’ (see their book for details). Because of empirical and epistemological doubts on the viability of Argumentation Theory, we refrain from adopting as is their definition of the meaning of mais/aber and recast their insight in a dynamic, ‘logical’ approach to meaning. Despite significant technical differences, we believe the spirit of our definition to be very similar to theirs.
then arises of the kind of semantic or pragmatic relationships which can exist between \( \alpha \) and \( p \).

Intuitively, \( \alpha \) in (1) (the proposition expressed by ‘she is not a good basketball player’) follows from \( p \) (the proposition expressed by ‘she is small’), if we make the assumption that small people are not good basketball players. Similarly, \( \alpha \) in (2) (the proposition expressed by ‘We should not add Jana to the team’) follows from \( p \) (the proposition expressed by ‘she is not tall’), if we make the assumptions that people only want to add to their teams good players and that small people are not good basketball players. Finally, \( \text{not } \alpha \) in this case (the proposition expressed by ‘We should add Jana to the team’) follows from \( q \) (the proposition expressed by ‘it doesn’t matter’), given the assumption that if arguments against somebody’s proposed course of action are irrelevant, one should \textit{ceteris paribus} follow the proposed course of action.

To model the observed dependency of the interpretations of utterances containing \textit{aber} on the speech participants’ assumptions about the world, we borrow the concept of common ground from the work of Stalnaker (1978), Heim (1983), Chierchia (1995), and others. The common ground is defined for the time being as the set of assumptions about the way the world is mutually believed (or taken to be so) by speech participants. We can now give a more precise (preliminary) definition of the semantic contribution of \textit{aber}.

(3) \( A \textit{ aber } B \)

- Context checking:
  1. There is a proposition \( \alpha \) which is (generically) entailed by \( p \) together with the common ground.
  2. There is a proposition \text{not } \alpha which is (generically) entailed by \( q \) together with the common ground.
- Context change: add \( p \), \( q \), and \text{not } \alpha to the common ground.

We have now defined the notion of contrast which \textit{aber} marks: two propositions one of which is the negation of the other. We have also defined the relationship between the contrasting propositions and the propositions directly expressed by the two sentences conjoined by \textit{aber}. The contrasting propositions must be (generically) entailed by the common ground and the two propositions directly expressed by the two conjoined sentences.

Several comments on this definition are in order. First, there are many ways to define the notions of common ground and generic entailments. For our purposes, it suffices that there are “generic” entailments—i.e. generic propositions from which other propositions can be derived. How such generic propositions and their entailments are ultimately modeled is not our concern
(see Carlson and Pelletier (1995) on the notion of generic propositions). Similarly, we assume the common ground to be defined (for now) via a set of propositions (some of which generic) which are mutually believed (or taken to be so) by the speech participants.

Second, we define the semantic contribution of *A aber B* in terms of a context-update view of meaning made popular by Stalnaker (1978) seminal article and represented in work such as Heim (1983) and Chierchia (1995), among others. In such a view, meanings are viewed as ways to check or update the context or common ground—i.e., the set of possible worlds compatible with the common ground. As is typically the case with words carrying presuppositions (in the broad sense of the term), our particular definition of the effects on the common ground of *aber* comprises two parts, a context-checking and context updating part. Felicitous uses of *aber* require the existence of two generic entailments, $\alpha$ and not $\alpha$ from $p, q$, and the common ground. It also requires adding to the common ground $p, q, \text{ and not } \alpha$.\footnote{Adding propositions to the context or common ground in this approach to meaning is equivalent to intersecting the set of possible worlds compatible with what is currently mutually believed and the set of possible worlds in which the proposition to be added is true.}

Let’s apply our definition of the semantic contribution of *aber* to an example, which we borrow from Ducrot (p.c.):

(4) Marc: Lass uns einen Spaziergang machen
‘Let’s go for a walk’

Eric: Das Wetter ist gut, aber meine Füße tun weh
‘The weather is nice, but my feet hurt’

$\alpha$ here is paraphraseable (under one contextual interpretation) as ‘I’d like to go for a walk’ and not $\alpha$ by ‘I wouldn’t like to go for a walk.’ $p$ (the proposition expressed by ‘the weather is nice’) (generically) entails $\alpha$ in contexts where the proposition ‘If the weather is nice, one likes to go for a walk’ is part of the common ground. The context checking conditions on *A aber B* are satisfied; the propositions expressed by $p, q, \text{ and not } \alpha$ can be added to the common ground.

Note that our definition of *aber* is (partly) asymmetric: aside from $p$ and $q$, only not $\alpha$ is added to the context. $\alpha$ belongs to the ‘working sheets’ of the computation of the meaning of the utterance, but does not affect the new common ground created by the utterance in (4). By distinguishing between context-checking and context updating, we model both the symmetric and asymmetric facets of the semantics of *aber*. With respect to context checking, the two conjuncts behave symmetrically: both must generically entail a proposition, given a common ground. With respect to context updating,
the two conjuncts behave asymmetrically: of the two propositions which must be generically entailed by the common ground, \( p \) and \( q \), only one (\( \text{not } \alpha \)) is added to the common ground and is thus relevant to subsequent conversational turns.

The definition of the meaning of *aber* in (3) merely recasts Anscombe and Ducrot’s intuitions within a dynamic view of meaning. But it is inexact as is. In particular, the expression ‘(generically) entails’ we used to characterize the relationship between \( p \) and \( \alpha \) is too broad. Not all kinds of (generic) inferential relations between \( p \) and \( \alpha \) are possible. Consider sentences (5) and (6):

(5) *Jana ist groß, aber sie ist klein.*

‘She is tall but she is short.’

(6) *Sie ist groß, aber riesig. ‘She is tall but a giant.’

Clearly, we can logically infer (L-infer) \( \alpha \) (‘she is not small’) from \( p \) (‘Jana is tall’) in (5). The context-checking condition mentioned in (3) is apparently satisfied. Still, (5) is ungrammatical. Similarly, in (6), we can infer via the Q-maxim (Q-infer) ‘she is only tall’—i.e. not very tall—from \( p \) ‘she is tall’. Again the context-checking condition seems satisfied and we expect (6) to be grammatical. But it is not.

The contrast between (1)-(2) and (4)-(5) is not isolated. It ranges over the whole gamut of L-inferences and Q-implicatures (Q-inferences in our terminology). In all cases where \( \alpha \) is Q-inferred from \( p \), the sentence is ungrammatical. We give a few other examples in (7)-(9): \(^8\)

(7) *Sie mochte ihn, aber liebte ihn*

‘She liked him, but \( \text{aber} \) loved him’ (The Q-inference ‘she didn’t love him’ is \( \alpha \), not \( \alpha \) is ‘she loved him’)

(8) *Sie kaufte drei Bücher, aber vier Bücher*

‘She bought three books, but \( \text{aber} \) four books.’ (The Q-inference ‘she didn’t buy four books’ is \( \alpha \), not \( \alpha \) is ‘she bought four books’)

(9) *Ich bin in der Lage das zu tun, aber ich werde es tun*

‘I am able to do it, but \( \text{aber} \) I will do it’ (The Q-inference ‘I will not do it’ is \( \alpha \), not \( \alpha \) is ‘I will do it’)

\(^8\)In all examples to follow, we subscript *but* in the translation of German examples with either *aber* or *sondern* to indicate the German word it translates.
The conclusion is clear. The proposition α mentioned in (3) cannot be related to p via either L- and Q- inferences.  

The reverse is true of r- and w-inferences— aber welcomes them. Example (1) we discussed above illustrates w-inferences: inferring that Maria is a bad basketball player (= α) from the fact she is small (= p) requires us to use as an additional premise a culture-bound belief that (typically) small people are not good basketball players. In our terminology, α is w-inferred from p.

(11) Gestern habe ich ein Buch verloren, aber nicht meins.
‘I lost a book yesterday, but aber not mine.’

(12) John hat gestern getrunken, aber keinen Alkohol.
‘John had a drink yesterday, but aber it was not an alcoholic one.’

Sentences (11) and (12) show that r-inferences can indeed relate p and α. Following Atlas and Levinson (1981) and Horn (1984), I assume that the proposition that the speaker lost his book yesterday (= α) is r-inferrable from the proposition that the speaker lost a book yesterday (= p). Intuitively, hearers of (11) might infer *ceteris paribus* that the book was the speaker’s by reasoning that speakers can leave out the specification of whose book it was and hope the hearer can recover that information. In other words, if we hold the premise that (cooperative) speakers leave out of their utterance information they expect their addressees to be able to recover, we can infer from the first conjunct of (11) that the book was the speaker’s. It is this r-entailed proposition which the second conjunct of an aber sentence contradicts. Via the same reasoning, the proposition expressed by the first conjunct of (12) r-entails that the drink was an alcoholic beverage, a proposition which is negated by the second conjunct.

To summarize, we can characterize the possible inferential relations between p and α as in (13). (14) gives a suitably revised definition of the meaning of aber.

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9Garcia Negroni (1996) discusses an interesting class of examples involving French *mais* which seem to contradict this generalization:

(10) Pierre est riche, mais riche (heavy stress on ‘riche’)  
‘Pierre is rich, but *really* rich’

Corresponding examples are impossible in German, according to our informants. Examples such as (10) are still puzzling, given the otherwise similarity in the meaning of French *mais* and German aber. Our explanation of these data is similar to Garcia Negroni’s. What *mais* ‘cancels’ in (10) is the r-implicature that Pierre’s degree of wealth is ordinary, i.e. that Pierre is an ordinary wealthy man. Such ‘normality’ implicatures are characteristic of r-implicatures (see Horn (1984)), suggesting that (10) does not provide a counterexample to our hypothesis that α cannot be L- or Q-inferred from p.
(13) \( p \) and \( \alpha \) can be related via (a chain of) generic \( w \)-inferences or \( r \)-inferences. They cannot be related via (a chain of) \( l \)-inferences or \( q \)-inferences.

(14) \textit{A aber B} (Revised formulation)

- Context checking:
  1. \( p \), together with the common ground (generically) \( r \)- or \( w \)-entail a proposition \( \alpha \).
  2. \( q \), together with the common ground, entails \( \neg \alpha \).
- Context change: add \( p \), \( q \), and \( \neg \alpha \) to the common ground.

The definition of the semantic content of \textit{aber} in (14) is theoretically significant. It presents new evidence relevant to the broad questions we mentioned in the introduction. First, the lexical meaning of \textit{aber}, as stated in (14) refers to what the Gricean pragmatic component is supposed to do (\( q \)- or \( r \)-inferences). The very fact that the lexical semantics of \textit{aber} must make reference to what is generally considered the province of pragmatic processes challenges the traditional view of a strict division between semantics and pragmatics. Of course, we are not the first ones to point out the need to loosen the division between semantic and pragmatic processes (see Carston (1988), Recanati (1993) among others). Many studies have suggested that the semantics of natural languages include underspecified meanings to be determined pragmatically. In particular, it underlies recent work on the meaning of particles and conjunctions (see Ducrot (1984), Kay (1990), Michaelis (1993) \textit{inter alia}). According to this research, the interpretation of particles is only partially specified grammatically. Some aspects of their interpretation is left open and must be filled pragmatically. The semantics of \textit{aber} summarized in (14) confirms the findings of this research tradition.

But there is a second, more fundamental way in which the semantics of \textit{aber} challenges the Gricean view that the computation of the conventional meaning of sentences precedes— and is the input to— the pragmatic determination of utterances’ contextual interpretations. The meaning of \textit{aber} not only introduces variables whose values can only be specified pragmatically, it imposes constraints on the pragmatic processes by which the values of these variables are to determined. \( r \)- and \( w \)-inferences are appropriate means of deriving \( \alpha \), \( l \)- and \( q \)-inferences are not. Words such as German \textit{aber} suggest that the meaning of individual words can include the specification of which kinds of inferences must be drawn from utterances containing them. It’s not only that lexical semantics can explicitly leave something for pragmatics to do, it can tell pragmatics what kind of tools to use!

Finally, by lexically distinguishing \( l \)- and \( q \)-inferences from \( r \)- and \( w \)-based inferences, the meaning of \textit{aber} sets up a new lower bound on the
variety of semantic distinctions individual words can encode: not only must metalinguistic notions such as ‘inference’ be among the semantic vocabulary available to lexical semantics, distinctions among types of inferences and types of premises used to draw these inferences must also be countenanced.

4 Sondern, metalinguistic negation, and what speakers say.

Although the argument is more indirect, the meaning of the second German conjunction which can be translated as English but corroborates one of the theoretical consequences we draw from the meaning of aber: the neo-Gricean grouping of Q- and R-inferences to the exclusion of L- and W-inferences is not warranted. But, first, we must describe the meaning of sondern. As is well-known, the first conjunct of sentences containing sondern must include a negation. As argued convincingly by Anscombe and Ducrot, the purpose of the first conjunct of a sondern sentence is to challenge a prior utterance; the second conjunct then (typically) presents a correct formulation the addressee should have used instead. Not all aspects of a previous utterance can be challenged in the first conjunct of a sondern sentence, though. Consider (15)-(20).

(15) Jana ist nicht groß, sondern klein.
    ‘Jana is not tall but sondern small’

(16) Jana mochte ihm nicht, sondern liebte ihn.
    ‘Jana didn’t like him, but sondern loved him.’

(17) Jana hat nicht drei Bücher gekauft, sondern vier Bücher.
    ‘Jana didn’t buy three books, but sondern four books.’

(18) *Jana ist nicht klein, sondern eine gute Basketballspielerin.
    ‘Jana is not short, but sondern a good basketball player.’

(19) *Gestern habe ich ein Buch verloren, sondern nicht meins.
    ‘I lost a book yesterday, but sondern not mine.’

(20) *Sandra und Tom haben ein Klavier gekauft, sondern sie haben es nich zusammen gekauft.
    ‘Sandra and Tom bought a piano, but sondern they did not buy it together.’

The first conjunct of a sentence containing sondern can negate L- or Q-inferences of the proposition expressed by its positive counterpart (henceforth p’), as (15) and (16)-(17) show. The first conjunct of (15), for example, negates that Jana is tall, a trivial L-inference from p’ (i.e. ‘Jana is
tall`). Similarly, the first conjunct of (16) and (17) negates \( q \)-inferences of \( p' \) (i.e. ‘Jana only liked him’ and ‘Jana only bought three books’ respectively). But the first conjunct of a sentence containing \textit{sondern} cannot negate \( w \)- or \( r \)-inferences of \( p' \), as (18) and (19)-(20) show.

In this respect, the behavior of \textit{sondern} is the mirror image of that of \textit{aber}. The contrast between \textit{sondern} and \textit{aber} is summarized in the minimal pairs in (21)-(24).

(21) a. Sie ist nicht groß, sondern klein.
   `She is not tall but \textit{sondern} small’ (L-inference)

   b. *Sie ist groß, aber klein.
   `She is not tall but \textit{aber} small’

(22) a. *Sie ist nicht groß, sondern das macht nichts.
   `She is not tall but \textit{sondern} that does not matter’. (W-inference)

   b. Sie ist groß, aber das macht nichts.
   `She is not tall but \textit{aber} that does not matter’

(23) a. Sie ist nicht groß, sondern riesig
   `She is not tall, but \textit{sondern} gigantic’ (Q-inference)

   b. *Sie ist groß, aber riesig
   `She is tall, but \textit{aber} gigantic’

   `I lost a book yesterday, but \textit{sondern} not mine.’ (R-inference)

   b. Gestern habe ich ein Buch verloren, aber nicht meins.
   `I lost a book yesterday, but \textit{aber} not mine.’

Sentences (21)-(24) show that whereas \textit{aber} requires \( \alpha \) and \( p \) to be related via either \( r \)- or \( w \)-inference, \textit{sondern} requires the relationship between \( p' \) (the positive counterpart of \( p \)) and what is being challenged to be one of \( L \)- or \( Q \)-inference. The constraints on the target of the negation that must be included in the first conjunct of a \textit{sondern} sentence can be used to make the same point we made with respect to \textit{aber}. \( Q \)- and \( r \)-inferences are not on a par contrary to the neo-Gricean claim. But the argument is more indirect here because the restriction on the negation’s target is not a unique, lexical property of \textit{sondern}. Whereas it is legitimate to ascribe to the lexical meaning of \textit{aber} the requirement that \( \alpha \) must be derived from \( p \) via \( w \)-
or R-inferences, the corresponding target of negation constraint for *sondern* follows from the metalinguistic nature of the negation its first conjunct contains. Sentence (25) below demonstrates the metalinguistic nature of the negation included in the first conjunct of a sentence containing *sondern*:

(25) Es heißt nicht [ökonomif], *sondern* [ökonomif]
    ’It’s not [ökonomif], but *sondern* [ökonomif]’

As in other instances of metalinguistic uses of negation (see Horn (1985)), the negation present in the first conjunct of sentences containing *sondern* can target not only implicatures, as in (16) and (17) above, but also the pronunciation (or otherwise conventional properties) of utterances.

Confirmation of the metalinguistic nature of the negation present in the first conjunct of *sondern* sentences is provided by an interesting syntactic difference between *aber* and *sondern*. *Aber* can occur sentence initially in German, as (26) shows. In other words, the first conjunct need not be expressed syntactically. We analyze these sentences in the same way we did before, although, since there is no first conjunct, *p* here corresponds to a proposition describing a perceptually salient event or is otherwise provided by the context.

(26) Aber laß das!
    ’But *aber* stop that (sic)’

(27) *Sondern laß das!
    ’But *sondern* stop that’

By contrast, *sondern* does not allow such linguistically implicit first conjuncts. In particular, *sondern* cannot open a discourse (see (27)). If the first conjunct of sentences containing *sondern* involves a metalinguistic negation, this difference is easily accounted for. For a proposition to be metalinguistically negated, it must be present in the discourse context and the objection registered by speakers of sentences containing *sondern* must also be expressed. If the function of the first conjunct of sentences containing *sondern* is to object to an utterance already present in the context, a sentence containing *sondern* can hardly be used as the first turn of a conversation. Hence the contrast between (26) and (27).

Assuming, now, that the negation contained in the first conjunct of sentences containing *sondern* is used metalinguistically, we are prevented from ascribing to the meaning of *sondern* the contrast between (15)-(17) and (18)-(21). Metalinguistic negation—irrespective of its inclusion in a sentence involving *sondern*—does not allow the basis of the negation to be a R-inference, as already noticed by Horn (1984) in another context. Horn contrasts, for example, the following two sentences:
(28) He didn’t eat 3 carrots— he ate 4 of them. (his (10a))

(29) She wasn’t able to solve the problem. (his 11a)

(She was able to solve it, but didn’t)

Whereas metalinguistic negation can cancel utterances’ q-implicatures (‘He only ate 3 carrots’ in (28)), it cannot cancel r-implicatures (‘She solved the problem’ in (29)). Since the contrast between (15)-(17) and (18)-(20) stems from the presence of a metalinguistic negation, not sondern per se, we cannot directly use sondern as further evidence that some lexical items distinguish between r- and q-implicatures.

But the semantics of sondern can indirectly be used to make the same point: it is part of the nature of metalinguistic negation, we claim, to distinguish between q- and r-implicatures. It thus suggests, as the semantics of aber did, that q- and r-inferences do not form a natural class, contrary to the neo-Gricean claim summarized in table 1. Our analysis directly challenges Horn’s account of the same facts. Horn suggests that the fact that metalinguistic negation cannot bear on R-inferences follows from general considerations and need not be stipulated as part of the import of metalinguistic negation. Horn’s explanation of the restriction on metalinguistic negation exemplified in (28)-(29) is as follows.

In both sentences (28) and (29), Horn reasons, the non-metalinguistic interpretations of the negated propositions means ‘less’ (information theoretically speaking) than their positive counterparts (‘He ate three carrots or more’, and ‘she was able to solve the problem, but might not have solved it respectively’). In the case of (28) the negated proposition can be paraphrased as ‘he ate less than 3 carrots’ and in (29) as ‘she wasn’t even able to do it (let alone dit it)’. But in (28), the stronger proposition that he ate 4 carrots is given and directly contradicts this interpretation, thus, triggering a reinterpretation of the first conjunct in which the negation is understood metalinguistically. In (29), no contradiction arises: the negation of the R-implicature (that she didn’t solve the problem) is not incompatible with the ordinary negation (that she did not have the ability to solve the problem). There is therefore no need for reinterpreting the negation as a metalinguistic implicature canceller. A Horn-style account of the data in (16)-(24) would, then, be perfectly compatible with the claim that q- and R-implicatures form a natural class of inferences. R-implicatures cannot be metalinguistically negated simply because negating sentences which implicate them never triggers the reinterpretation process via which metalinguistic uses arise. The observed difference between q- and r-implicatures does not follow from the semantics or pragmatics of negation, but from the absence of any reinterpretation-triggering contradiction in the case of sentences such as (29).
One drawback of Horn (1984)'s explanation is its claim that logical contradiction is at the root of the reinterpretation of an ordinary use of negation as metalinguistic. If, as Horn (1985) argues and example (25) illustrates, metalinguistic uses of negation can bear on non-propositional aspects of utterances (or even non-linguistic vocalizations), metalinguistic interpretations of negation cannot depend on discovering logical inconsistencies. The question then remains why can L-, Q-inferences or inadequate pronunciations be cancelled via metalinguistic negation, but not R-inferences? We claim that the impossibility to metalinguistically negate W- and R-inferences stems from the nature of metalinguistic negation, which thus provides further evidence that R- and Q-inferences do not form a natural class.

Why, then, do Q- and R-inferences behave so differently under metalinguistic negation? Recent work in psycholinguistics by R. Gibbs and his associates (see Gibbs and Moïse (in press)) provides an answer, we believe. Their experiments show that hearers' understanding of what was said in an utterance can include Gricean implicatures. But, their data suggest that hearers crucially distinguish between Q- and R-implicatures. Only the latter are included in people’s judgments of what speakers say by their utterances. Subjects when presented with sentences such as (30) judge the Q-implicature that John has only three dogs part of what the speaker said. But, when presented with sentences such as (31), they do not deem the R-implicature that Robert broke his own finger part of what the speaker said by uttering the sentence. If this is true, the fact that the former but not the latter can be metalinguistically negated should come as no surprise. Through a metalinguistic negation, speakers challenge the appropriateness of some aspect of a previous utterance. What is challenged must be “part” of the utterance, either via its pronunciation, syntax or its conveyed meaning. If hearers deem Q-implicatures—but not R-implicatures—part of what was said, they can only challenge via a metalinguistic negation the former: one cannot challenge that which one does not assume to be part of a speaker’s utterance.

(30) John has three dogs.
(31) Robert broke a finger last night.

Even more interestingly, sentences for which subjects included R implicatures in what they thought speakers said (see (32a) and (33a) from Gibbs and Moïse) correspond to utterances on the putative R-implicatures of which metalinguistic negation can bear, as (32b) and (33b) show (uttered as answers to a. and b. respectively).

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10This last point is not Gibbs and Moïse’s interpretation of the results. They are puzzled by the fact that some, but not all implicatures are judged part of what speakers say. They do not notice that the difference in hearers’ judgments parallel the distinction between Q- and R-implicatures.
(32) a. It will be a while before Tom arrives.
   b. It won’t be a while before Tom arrives, he’s coming right now.

(33) a. Christmas is still some time away
   b. Christmas isn’t still some time away, it’s right around the corner.

(32a) and (33a) trigger the (putative) R-inferences that neither Tom nor
Christmas will arrive soon. Both inferences were considered by Gibbs and
Moise’s subjects part of what the speaker said; both can be polemically
negated.\footnote{Horn notices this fact already with respect to drank which in English means drank an
alcoholic beverage. Note that German speakers we interviewed do not allow metalinguistic
negation to bear on the corresponding R-implicature of drunken, as (20) shows.

\footnote{As Horn (1985) convincingly shows, metalinguistic negation can also be used to object
to expressions that are not linguistic in nature. For the purposes of this paper we restrict
ourselves to instances of metalinguistic negation which bear on linguistic utterances. Our
description can be generalized to non-linguistic vocalizations, if popular songs are treated
as conventions of sorts—i.e. if we assume one can be right or wrong about a tune. Pointing
out something is wrong in somebody’s expression (be it linguistic or not) would then be
what underlies all instances of metalinguistic negation.}}

What metalinguistic negation targets, then, is what hearers consider
part of speaker’s utterances,\footnote{As Horn (1985) convincingly shows, metalinguistic negation can also be used to object
to expressions that are not linguistic in nature. For the purposes of this paper we restrict
ourselves to instances of metalinguistic negation which bear on linguistic utterances. Our
description can be generalized to non-linguistic vocalizations, if popular songs are treated
as conventions of sorts—i.e. if we assume one can be right or wrong about a tune. Pointing
out something is wrong in somebody’s expression (be it linguistic or not) would then be
what underlies all instances of metalinguistic negation.} on either phonological, syntactic, or semantic
grounds. Non-conventionalized R-implicatures—like W-inferences—are
culture-dependent: they are not part of the ‘conventions’ of what is
communicated. By contrast, Q-inferences are based on a general condition on
the amount of information hearers can cooperatively take speakers to be re-
ponsible for. They are part of the ‘convention’ of what is communicated.
Consider Horn (1984) following two examples of R-implicatures:

(34) Mort and David took a shower
\[ \models_R \text{They took separate showers} \]

(35) Mort and David bought a piano
\[ \models_R \text{They bought a piano together} \]

The different R-inferences licensed by (34) and (35) stem from our distinc-
tive beliefs about events of piano-buying and shower-taking. In our culture,
we are more likely to buy pianos together and take showers alone. What aber
requires then, is a relation between \( p \) and \( \alpha \) dependant on particular beliefs.
With sondern and metalinguistic negation in general, just the opposite is
true: what can be challenged is what speakers commit themselves to by
virtue of linguistic conventions or our general assumptions about the
nature of conversational interactions. Hearers judge that Q-implicatures are
part of what was said because the interpretation of the sentence they can
cooperatively assume the speaker is committing herself to is the (minimal)
Q-implicated interpretation. They do not judge (non-conventionalized) R-
implicatures part of what was said because they depend on culture-bound
beliefs that are not part of the conventions of language or conversations.

To conclude, the fact that metalinguistic uses of negation distinguish
between R- and Q-implicatures confirms what aber already suggested: the
traditional neo-Gricean classification of inference-type summarized in ta-
table 1 must be reorganized. Q- and R-implicatures do not form a natu-
ral class. Rather, the major division of inference-type is between cultural,
belief-bound, and non-cultural, non-belief bound inferences. In that respect,
Q-inferences and L-inferences are on a par: they are not culture-bound, they
only depend on universal principles of logic and communicative behavior.
Table 2 summarizes the classification of inference-types to which aber and
sondern (via metalinguistic negation) are sensitive.\textsuperscript{13}

\begin{table}
\centering
\begin{tabular}{|l|c|c|c|}
\hline
 & \textbf{Quasi-Logical inferences} & \textbf{W-inferences} \\
\hline
\textbf{Quasi-Logic} & \textbf{L-inference} & \textbf{Q-inference} & \textbf{L-inference} \\
\hline
Logical axioms & \checkmark & \checkmark & \checkmark \\
\hline
Q-maxim & No & Yes & No \\
\hline
Knowledge-base & No & No & Yes \\
\hline
\end{tabular}
\caption{A new classification of inference-types}
\end{table}

5 Conclusion.

We began our paper by asking what kinds of meaning distinctions can be
encoded in words. What our study of German aber and sondern suggests
is that the range of meaning distinctions is larger than previous studies in
lexical semantics have suggested. Distinctions in inference-types must be
among the vocabulary of semantic primitives from which lexical items can
draw. But the nature of the meaning distinction lexically encoded in aber is
of wider theoretical significance. It shows that lexical semantics can be sen-
sitive to distinctions hitherto believed to only be relevant to the contextual
interpretation of utterances. This lexical sensitivity further challenges the
‘pipeline’ model of interpretation originally proposed by Grice, according to
which pragmatic interpretation follows semantic decoding. The semantics of

\textsuperscript{13}✓ (No) in a cell indicates what kinds of premises can (cannot) be used for various kinds
of inferences. As sentences (32a) and (33a) suggest, some R-implicatures are conventional-
ized or short-circuited, to borrow a term from Morgan (1978). In such cases, R-implicatures
differ from W-implicatures. But, then, they are not live implicatures anymore.

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aber refers to the inner workings of the pragmatic component and constrains the pragmatic interpretation of sentences that contain it.

The meaning of aber, and its contrast with metalinguistic negation and the meaning of sondern, also suggest that the neo-Gricean classification of inferences is not warranted: Q- and (non-conventionalized) R-inferences are not on a par; they are more similar to logical entailments and world-knowledge-based inferences respectively than to each other. As we showed our ‘re-classification’ of inferences to which utterances can lead is further supported by recent psycholinguistic work: Q-implicatures— but not R-implicatures— are part of what listeners deem ‘said’ by the utterance of a proposition.

References


