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Modal particles and context updating – the functions of German *ja*, *doch*, *wohl* and *etwa*

1. Introduction[1]

This paper deals with the German modal particles *ja*, *doch, wohl* and *etwa* as illustrated in (1)-(4) (Germ. *Modalpartikeln, Abtönungspartikeln*):

(1)   Du weißt *ja*, dass ich mir eine Kreuzfahrt wünsche.
(2)   Du weißt *doch*, dass ich mir eine Kreuzfahrt wünsche.
(3)   Du weißt *wohl* nicht, dass ich mir eine Kreuzfahrt wünsche!
(4)   Weißt du *etwa* nicht, dass ich mir eine Kreuzfahrt wünsche?

The use of modal particles in German has been extensively studied since the late 1960s (e.g. Weydt 1969, 1977; Thurmair 1989; Helbig & Helbig 1993; cf. also the bibliography by Weydt & Ehlers 1987), and a large number of detailed studies dealing with specific particles are available (e.g. Burckhardt 1982; Doherty 1982; Borst 1985; Hentschel 1986; Lindner 1991; Meibauer 1993; Ormelius-Sandblom 1996; Rinas 2006 on *ja* and *doch*). It is not the objective of this paper to contribute to the pool of descriptive generalizations concerning these elements. Rather, the aim of the paper is to propose a model of utterance interpretation which allows us to regard the function of modal particles as an integral part of the interpretation process. Utterances are analyzed against the background of their ability to update discourse contexts (e.g. Stalnaker 1978; Heim 1982, 1983, 1992; Groenendijk & Stokhof 1991; Chierchia 1995), and modal particles are shown to interact with the process of context updating in a systematic way. The four particles under discussion are claimed to characterize specific types of update functions. In addition to specifying the role of modal particles in the process of utterance interpretation, the analysis is intended to allow for a systematic classification or parameterization of the particles under discussion, which are claimed to constitute a system of oppositions with pairs of minimally contrasting elements.

The paper starts with a brief review of a proposal made by König (1997), who analyzes the function of modal particles in the framework of Relevance Theory, thus arriving at a first subclassification into three types (Section 2). Section 3 provides an outline of a model of utterance interpretation based on Frege's (1918/9) treatise *Der Gedanke. Eine logische Untersuchung* (cf. also Lohnstein 2000), and of theories of context updating which are often subsumed under the term 'dynamic semantics'. In

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Sections 4-7 this model is used to account for the functions of *ja*, *doch*, *wohl* and *etwa*. Section 8 offers a parameterization of the modal particles under discussion. In Section 9, combinations of modal particles are briefly discussed, and Section 10 summarizes the results.

2.   Modal particles and Relevance Theory

Even though the literature on modal particles is vast, surprisingly few attempts have been made to account for their use in terms of a well established model of utterance interpretation. Among the most notable exceptions in this respect are probably Doherty (1985), who regards modal particles as carriers of 'epistemic attitudes' and integrates them into a system of epistemic predicates which is based on a simple predicate calculus, including 'illocutionary predicates' such as 'Ass[ertion]' or 'Pres[upposition]'; Jacobs (1991), who analyzes modal particles as modifiers of the illocutionary force of an utterance; and König (1997), where modal particles are analyzed within the framework of Relevance Theory (Sperber & Wilson 1986; Blakemore 1987, 2002; cf. also Hentschel & Weydt 1994, Ormelius-Sandblom 1996 for analyses referring to Relevance Theory). Since Relevance Theory will also be central to the model proposed in this paper, the analysis of König (1997) will briefly be outlined in this section.

Sperber & Wilson (1986) have proposed to reduce the number of 'atomic' Gricean maxims to one, postulating that the maxim of Relevance is the only basic principle needed for communication to function efficiently. According to their theory, by making an utterance speakers integrate a proposition into a discourse context or 'inferential system' to whose make-up the utterance contributes, in particular, by triggering 'contextual effects':

> "Interpreting an utterance involves more than merely identifying the assumption explicitly expressed: it crucially involves working out the consequences of adding this assumption to a set of assumptions that have themselves already been processed" (Sperber & Wilson 1986, p. 108-117).

Consider example (5) for illustration (cf. Sperber & Wilson: 1986, p. 112):

(5)   a. C[ontext] =   {'If the party broke up late, then it was a success', …}
       b. utterance made by S[peaker]:   'The party broke up late' (proposition P)
       c. inference made by H[earer]:   'The party was a success' (contextual effect Q)

There is a context C which contains background information of different types, for instance episodic statements that have been 'activated' in previous discourse as well as general truths and encyclopaedic knowledge. When a proposition such as P in (5b), expressed in an utterance made by some speaker S, is added to this context, in addition to the proposition itself further information can be inferred in interaction with the information which is already contained in C. In the example given, the (inferred) proposition 'The party was a success' can be added to the context as well since it follows from two propositions forming part of the propositional background. According to Sperber & Wilson (1986), the degree of informativeness of an utterance needs to be

evaluated against the amount of new information that it allows to derive, i.e. against the number and type of 'contextual effects' that it triggers.

Sperber & Wilson (1986, p. 108-117) point out that there are three basic types of 'contextual effects': (i) 'contextual implications' (cf. the syllogism illustrated in (5)), (ii) the confirmation or 'strengthening' of old assumptions, and (iii) the correction or 'abandonment' of old assumptions. König (1997) has argued that German modal particles can be classified in terms of their communicative function with respect to these three types of contextual effects. He distinguishes the following three classes of modal particles:

a) particles identifying contradictions (leading to the abandonment of old assumptions): *doch, etwa*
b) indicators of strength:
   aber, vielleicht, erst, ja, wohl, etc.
c) particles controlling context selection (leading to 'contextual implications'):
   auch, eben, nun mal, halt, eigentlich, etc.

Let us consider three examples, viz. the particles *doch*, *ja* and *auch*. According to König's (1997) analysis, the function of *doch* is to indicate contradictions in the hearer's inferential system. Consider the example in (6):

(6)   A: Ich könnte dich um 17 Uhr abholen. (P)
       B: Um 17 Uhr hast du doch eine Besprechung. (Q)

The context C contains as a piece of background information the general truth that one cannot have two appointments at a time, and the episodic proposition that A has an appointment at 5pm. The proposition P ('I/speaker [A] could pick you up at 5pm') is added to this context, thus creating a new context C':

(7)   C =   {'Wenn man einen Termin hat, kann man für die gleiche Zeit nichts planen', 'A hat um 17 Uhr einen Termin'}

(8)   Q =   'A bietet an, B um 17 Uhr abzuholen'

(9)   C'=   {'Wenn man einen Termin hat, kann man für die gleiche Zeit nichts planen', 'A hat um 17 Uhr einen Termin', 'A bietet an, B um 17 Uhr abzuholen'}

The inferential system resulting from the addition of Q to C leads to an 'inconsistency', i.e. there is a contradiction in C', and this, according to König (1997), is precisely what *doch* signals. In other words, *doch* functions as an invitation to the hearer to check his/her inferential system for inconsistencies. Note that this analysis explains why sentences with *doch* always invite a response: no one likes being accused of inconsistent thinking.

The use of *ja* as an indicator of strength can be illustrated with the following example:

(10)   Heisenberg, dem wir ja diese Erkenntnis verdanken, ...

What is indicated by *ja* is that the state of affairs reported is unquestionable. The hearer is merely invited to recall the relevant piece of information or to re-evaluate it in terms of its epistemic strength or current relevance. The factor of epistemic strength

is also evident in exclamative sentences, where *ja* often has the function of an evidential marker indicating 'immediacy' (immediate visibility, audibility, inferability, etc.). This is illustrated in (11):

(11)   Du bist ja betrunken!

As pointed out by König (1997), the function of *ja* as an indicator of epistemic strength can also be used for the purpose of discourse linkage. It has often been noticed that *ja* sometimes seems to indicate causal relationships between sentences, and some authors have even argued that such causative clause linkage is the primary function, or at least one important aspect, of the use of *ja* (cf. Weydt 1969, p. 36f.; Bublitz & Roncador 1975, p. 148f.; Borst 1985, p. 9):

(12)   Ich kann das jederzeit verkaufen. Es gehört mir ja.

König (1997) argues that the linking function of *ja* is secondary and can be derived from its epistemic function. The reason is that the *explanans* is generally asserted with more certainty than the *explanandum* in causal relationships. This is illustrated in (13):

(13)   P: Ich kann es verkaufen (less certain).
       Q: Es gehört mir ja. (absolutely certain)

The hearer will infer – on the basis of the Relevance Principle – that there is some relation R holding between P and Q. Given the asymmetry in epistemic strength (certainty), s/he concludes that the more certain proposition functions as an *explanans* for the less certain one, and given the overt marking of one proposition as absolutely certain, the speaker makes his/her intentions clear. It is therefore not necessary to assume that *ja* is itself an indicator of causal clause combining.

Finally, the modal particle *auch* is analyzed by König (1997) as giving instructions concerning the contextual embedding of an utterance, and as making 'contextual implications' overt. This can be illustrated with the example in (14):

(14)   A: Sie haben vortreffliche Arbeit geleistet.   (P)
       B: Ich habe auch Tag und Nacht geschuftet.   (Q)

It is part of the background information that good results can only be achieved through hard work. In other words, there is a context C containing the general truth T = '$\forall s \forall x$[s is a situation in which x has done good work $\rightarrow$ s is a situation in which x has done hard work]'. Given P, Q can therefore be derived as soon as P is added to the context C, i.e. Q is implicitly contained in C at the time the utterance is made. The function of Q, indicated by *auch*, is merely to make the implicational link between P, Q and T explicit.

As has been seen, König (1997) intends to relate his classification of modal particles to a more general theory of utterance interpretation. However, his subclassification into three types can obviously only be regarded as a first approximation to a more comprehensive classification of modal particles. In the following, I will propose a modification of this subclassification which is based on the two parameters '(context-)consistency' and 'facticity'. These or similar parameters have also been used in

earlier work on modal particles, and the main objective of the analysis presented in this paper is to explicate their semantic or pragmatic values in terms of a general model of utterance interpretation. The parameter of 'consistency' correlates negatively with what is often called 'adversativity' (cf. Rinas 2006, p. 181-192 and references cited there), but is motivated differently than in the analyses given by 'particologists' such as Weydt (1969, p. 39), Thurmair (1989) or Helbig (1994, p. 119). The parameter of 'facticity' is also used by Helbig (1994) and Ormelius-Sandblom (1996), among others.

I will argue that the two parameters mentioned above can be cross-classified, thus constituting the subsystem of modal particles shown in Table 1, which character-izes a family of 'update functions' in the sense of dynamic models of discourse:

	context-consistent	non-context-consistent
factive	*ja*	*doch*
non-factive	*wohl*	*etwa*

Table 1: Subsystem of modal particles

3.   Outlines of a (dynamic) model of utterance interpretation

This section will only introduce a very rough outline of a dynamic model of utterance interpretation. The presentation is informal, but I suppose that the model could be for-malized, as has been done in the work of some of the authors referred to (e.g. Heim 1982, 1983, 1992). We will start in Section 3.1 by distinguishing several elements of utterance meaning, in particular *Thoughts, Judgements* and *Claims*,[2] following Frege (1918/19) as well as Lohnstein's (2000) elaboration of Frege's ideas. This model will be extended by adding two more concepts relating to the interpretation of utterances, namely *Hypotheses* and *Facts*. Section 3.2 outlines a simple model of discourse in which utterances are regarded as context updating functions.

3.1 Elements of utterance meaning

Frege (1918/19) distinguishes three elements of utterance meaning: (i) *das Denken* ('thinking', 'considering'), (ii) *das Urteilen* ('judging', 'deciding') and das *Behaupten* ('making a claim'; cf. also Lohnstein 2000, p. 73-74). A 'Thought' (*Gedanke*) is said to correspond to the 'sense' (*Sinn*) of a sentence (Frege 1918/19, p. 60-61):

> "Ohne damit eine Definition geben zu wollen, nenne ich Gedanken etwas, bei dem überhaupt Wahrheit in Frage kommen kann. Was falsch ist, rechne ich also ebenso zu

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2   These words will be capitalized in order to indicate that they are used as technical terms.

den Gedanken, wie das, was wahr ist. Demnach kann ich sagen: der Gedanke ist der Sinn eines Satzes, ohne damit behaupten zu wollen, daß der Sinn jedes Satzes ein Gedanke sei."

Both questions and assertions thus express Thoughts. The difference between the two types of sentences or utterances is that an assertion conveys something in addition to a Thought, namely a 'Claim' (*Behauptung*), i.e. a commitment to the truth or falsity of the Thought expressed (cf. Frege 1918/19, p. 61):

"Fragesatz und Behauptungssatz enthalten denselben Gedanken; aber der Behauptungssatz enthält noch etwas mehr, nämlich eben die Behauptung."

Assuming an additional, mediating component between the Thought and the Claim – a Judgement (Urteil) – an assertion can be regarded as encompassing three elements:

"In einem Behauptungssatz ist also zweierlei zu unterscheiden: der Inhalt, den er mit der entsprechenden Satzfrage gemein hat und die Behauptung. Jener ist der Gedanke oder enthält wenigstens den Gedanken. Es ist also möglich, einen Gedanken auszudrücken, ohne ihn als wahr hinzustellen. In einem Behauptungssatze ist beides so verbunden, daß man die Zerlegbarkeit leicht übersieht. Wir unterscheiden demnach

1. das Fassen des Gedankens – das Denken,

2. die Anerkennung der Wahrheit eines Gedankens – das Urteilen,

3. die Kundgebung dieses Urteils – das Behaupten" (Frege 1918/19, p. 61).

For reasons to become apparent below, I will introduce two more concepts in addition to the ones distinguished by Frege. The first will be called 'Hypothesis'. Hypotheses are akin to Frege's *Gedanken* but differ from them in terms of their epistemic status (cf. below). Hypotheses can be regarded as pairs of complementary propositions, and they can be paraphrased using the epistemic predicate *consider* (cf. Lohnstein 2000 for a similar treatment of Frege's ideas in terms of a possible world semantics)*:

(15) *Hypothesis*:
The speaker considers that…
'Fred is smart' – 'Fred is not smart'

When making a Judgement, the speaker 'eliminates' one of the two complementary propositions constituting a Hypothesis. As a result, s/he has a belief about the truth or falsity of a proposition in his/her world (or the 'evaluation world'). Abstracting away from the subjectivity of human thinking, such a belief will be called a 'Fact' (the second concept that I add to Frege's model):

(16) Judgement:
reduces a pair of propositions constituting a Hypothesis and delivers a Fact
'Fred is smart' – ~~'Fred is not smart'~~

Finally, the speaker makes his/her *Judgement* known by making a *Claim*:

(17) Claim:
the Fact is expressed in an utterance
'Fred is smart': is made known, added to the context

I will represent Hypotheses as (tautological) disjunctions of the form 'P or not P'. Accordingly, the 'epistemic condition' of a speaker considering a Hypothesis corresponding to some proposition P can be paraphrased as follows:

(18)   speaker S considers that either P or not P may be true

Instead of saying 'P is true', I will use a 'truth operator' $\lambda P[^{T}P]$ in the following, and ^{T}P stands for 'the proposition P is true'. Accordingly, ^{T}'Fred is smart' stands for 'the proposition "Fred is smart" is true'. Obviously, truth is always assigned relative to some 'epistemic validator' (cf. Stirling 1993 for this term). Usually, but not necessarily, the epistemic validator is identical to the speaker (exceptions are logophoric contexts, e.g. [in]direct speech). A Hypothesis can now be represented as in (19):

(19) $^{T}(P \lor \neg P)$

The fact that Hypotheses (in the technical sense used in this paper) are necessarily true (tautological) is what distinguishes them from Frege's Thoughts, which are not evaluated in terms of truth. Note that it may seem counterintuitive to say that Hypotheses are necessarily true. However, it is crucial to see that a speaker making a Hypothesis never commits himself/herself to the truth of either P or $\neg P$, but indicates that s/he considers both complementary propositions possible, even though s/he may have a preference for one of them (i.e. *making a Hypothesis* is not the same as *making a Claim*).

Finally, by making a Judgement, the speaker eliminates one of the complementary propositions, thus 'transforming' a Hypothesis into a Fact. A Fact has the form shown in (20).

(20) ^{T}P

In a simplified (linear) manner, the process of 'truth finding' or 'utterance generation' outlined above can be illustrated as shown in (21):

(21)   Judgement

Thought $\longrightarrow$ Hypothesis $\longrightarrow$ Fact $\longrightarrow$ Claim

For the following discussion, Hypotheses and Facts will be the most important concepts. Given that Hypotheses and Facts are conceived of as *epistemic conditions* – say, uncertainty in the case of a Hypothesis and certainty in the case of a Fact – they are not associated with specific types of utterances or sentences, though the mapping from epistemic conditions to sentence types is not arbitrary. For instance, Hypotheses are typically expressed in questions (*Is John smart?*), but as I will argue below, they can also be expressed in declarative sentences, which is signalled by specific modal particles (e.g. *wohl*). Facts, by contrast, are typically encoded in declarative sentences (*John is smart*), but can also be conveyed using rhetorical questions or other expressive devices which commit the speaker to the truth of a (contingent) proposition.

3.2   Update functions

In addition to the epistemic distinction between Hypotheses and Facts, a second aspect of utterance interpretation is needed to account for the function of modal particles, namely the contextual embedding of utterances. The model of Relevance Theory was outlined in Section 2. This section broadens the perspective by introducing a simple model of linear discourse organization which regards discourse as a sequence of information states (or contexts).

Theories dealing with the linear interpretation of utterances relative to some context are commonly summarized under the term 'dynamic' (see e.g. Roberts 2004). Using Stalnakers's (1978) notion of 'common ground', semanticists or pragmaticists such as Heim (1982, 1983, 1992) ('File Change Semantics', 'Context Change Semantics'), Kamp (1981) ('Discourse Representation Theory'; cf. also Kamp & Reyle 1993) and Groenendijk & Stokhof (1991) ('Dynamic Predicate Logic') have proposed models capturing the change in the 'information state' of interlocutors:[3]

> "If one restricts oneself to purely informative discourse, one can look upon context change as information change, and hence upon interpretation as an incremental process of updating information. A context can be identified with an information state, and the meaning of a sentence can be characterized as an update function on information states" (Groenendijk & Stokhof 1996, p. 105).

Given the informal orientation of this paper, I will not use a sophisticated version of any of the models mentioned above, but I will pursue the very general idea of regarding utterances as 'update functions' (for a formal treatment focusing on the updating of propositional meanings, cf. Heim 1992). According to this view, we can regard an utterance as a function mapping a given input context C_i to an output context C_o. I will use the symbol Φ to represent such update functions. An utterance can thus be conceived of as a mapping from contexts to contexts, as is illustrated in (22) (as in Section 2, contexts will be regarded as sets of propositions; cf. Heim 1992, p. 214 [Note 4], referring to Karttunen 1973, for such a treatment; Heim herself regards contexts/states of information as sets of possible worlds):

(22) $\Phi(C_i) = C_o$

Let us consider how a dynamic model of context interpretation can be combined with the 'compositional' model of utterance meaning outlined above. Consider (23):

(23) A: Is Jane married?
      B: No.

Prior to A's question, there is a context C_0 which contains some basic pieces of information that are contextually salient, e.g. that there is a person called Jane who is identifiable to all discourse participants.[4] A's utterance introduces into this 'initial con-

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3   Cf. also Heim (1992, p. 185).

4   Moreover, it is known to all discourse participants that this person is known to all discourse participants. Such 'meta-information' will not be considered in the following.

text' C_0 a Hypothesis, i.e. it creates a context C_1 which in addition to the basic information mentioned above contains the Hypothesis ^{T}'Jane is married $\vee$ Jane is not married'. This does, of course, not result in an increase of knowledge, but it creates *awareness* on the part of the hearer. In terms of the present model, A maps (or instructs B to map) C_0 (the input context of Φ_1) to C_1 (the output context of Φ_1). As a result of B's reply, C_1 is then further modified in such a way that the Hypothesis ^{T}'Jane is married $\vee$ Jane is not married' is reduced to the Fact ^{T}'Jane is not married'.

(24) a. $\Phi_1(\{^{T}$'There is a person called Jane'$\})$
        $= \{^{T}$'There is a person called Jane', ^{T}('Jane is married $\vee$ Jane is not married')$\}$
    b. $\Phi_2(\{^{T}$'There is a person called Jane', ^{T}('Jane is married $\vee$ Jane is not married')$\})$
        $= \{^{T}$'There is a person called Jane', ^{T}'Jane is not married'$\}$

In this model, two basic types of utterances can be distinguished, which I will call 'divergent' and 'convergent updates'. In 'divergent updates' (typically questions), new Hypotheses are introduced into the context, i.e. the context is 'extended'; in 'convergent updates' (typically assertions), existing Hypotheses are reduced by eliminating one of the disjuncts, i.e. by making a Judgement, thus establishing a Fact. These two types of update functions will be called Φ_{DIV} and $\Phi_{CONV.}$

A 'convergent update' is represented in Figure 1. Each of the two sets corresponds to the information consciously known by one of the interlocutors. The intersection of these sets constitutes the 'common ground', or simply the 'context'. The context is conceived of as a set of propositions that are *contextually salient*, i.e. a set of propositions that both interlocutors are aware of.
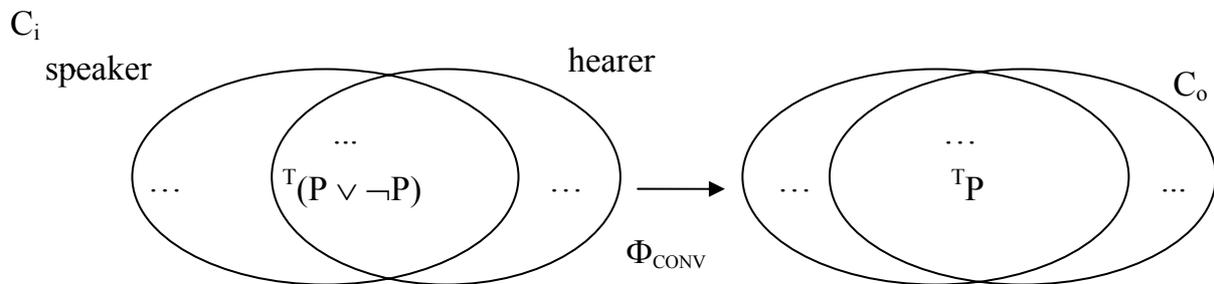
C_i

Figure 1. A 'convergent update'

Equipped with the simple model outlined in this section, we can finally return to a consideration of modal particles. The hypothesis explored in the following sections is that specific types of modal particles characterize specific types of utterances which are neither 'divergent' nor 'convergent' in the sense described above, and which can be characterized in terms of properties of the argument taken and the value delivered by the update function.

4. *Ja* as an indicator of trivial updates

As pointed out earlier, this paper does not aim to make any empirical generalizations concerning modal particles. In a recent book, Rinas (2006) has provided a comprehensive (semantic/pragmatic) overview of the two modal particles *ja* and *doch*. I will basically rely on Rinas' analyses given in Chapters 4 and 5 of his book, to which the reader is referred for more information (note that most of Rinas' analyses are uncontroversial anyway).

Concerning the function of *ja*, Rinas (2006, p. 154) states that this particle is used when a speaker presupposes that the hearer will not contradict or object to what s/he says. There are three subcases: (i) a proposition is commonly known, (ii) a proposition has been contextually established, or (iii) the speaker has an 'advance of knowledge' (*Wissensvorsprung*). I will neglect case (iii) in the following, since in my view, it can be subsumed under (i) and/or (ii) if processes of accommodation are taken into account.[5]

The function of *ja* can be characterized in terms of the present model as follows: *ja* indicates that an utterance constitutes a 'trivial update', i.e. an update in which a context C_i containing a Fact ^TP is mapped onto an output context C_o which is identical to the input context. An example of this is given in (25). The 'trivial update function' is illustrated in Figure 2. It will be represented as Φ_{TRIV}.
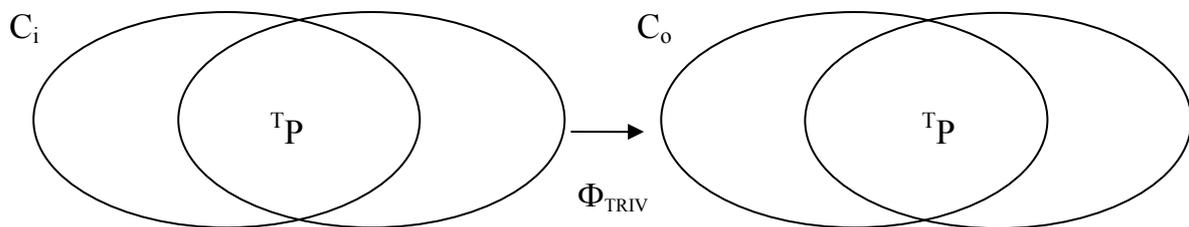
(25) Einstein war ja ein großer Physiker.

Figure 2: A 'trivial update'.

As can be gathered from the survey of previous literature provided by Rinas (2006, p. 139-68), the fact that sentences with *ja* contain information which is (supposed to be) known to both the speaker and the hearer is basically uncontroversial. The question arises why such sentences should be uttered at all. The answer to this question can be given in terms of Relevance Theory: trivial updates are made because they trigger specific contextual effects such as those pointed out in Section 2. More often than not,

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5   In Rinas' case (iii), the speaker merely *pretends* that there is consensus on some state of affairs. If the hearer is cooperative, s/he will 'accept the invitation', adding the relevant piece of information *ex post* to the common ground. When s/he is not cooperative, s/he will have to interrupt the flow of information by questioning the assumption of 'consensus' made by the speaker.

they strengthen existing suppositions or trigger 'contextual implications'. Consider the following example:

(26)   Kannst du mir 1000 Euro leihen? Du bist ja mein Freund.

There is a background assumption that 'Friends lend each other money'. The assertion made in the sentence is that 'You are my friend', and this piece of information is characterized as forming part of the common ground. Hence, it follows (by *modus ponens*) that the addressee will lend the speaker money. What *ja* does in such sentences is make a background assumption explicit which is (supposed to be) taken for granted (a Fact), thus enabling the reader to reach the right conclusions.

As mentioned in Section 2, in exclamative sentences *ja* typically indicates epistemic strength or 'evidential immediacy', as for instance in (27):

(27)   Du bist ja betrunken!

(27) is a 'trivial update' in so far as the state of affairs expressed in the sentence is already given in the context – it is visible or inferable – and the speaker merely makes it explicit. Such a mere 'verbalization' of (supposedly) indisputable facts may be used to express indignation or maybe surprise, i.e. for the expression of emotive meanings. In imperatives, *ja* is typically emphatic and reminds the hearer of an obligation:

(28)   Gib mir ja mein Buch zurück!

In order to understand why *ja* indicates a 'trivial update' in (28), we have to briefly consider the semantics of imperatives. Simplifying somewhat (and abstracting away from matters of illocutionary force), imperatives impose a deontic modality on the hearer, where the speaker is the 'source of necessity'. Therefore, (29a) can roughly be paraphrased as in (29b):

(29)   a.   Gib mir mein Buch zurück!
         b.   Du musst mir (nach meinem Willen) mein Buch zurückgeben.

The deontic proposition 'You have to return my book to me' is given in the propositional background and the hearer, who is supposed to be aware of this piece of information, is merely reminded of it. The utterance adds nothing new to the context, though a Fact which is known to both interlocutors is re-evaluated in terms of epistemic strength.

Finally, *ja* can also be used in monologues:

(30)   (thinking:) Heute ist ja mein Geburtstag!

Again, the fact that the speaker is celebrating his/her birthday is given in the propositional background and merely recapitulated. Usually, a (monadic) utterance such as (30) will also trigger contextual implications, e.g. in so far as it may give an explanation for some state of affairs ('Why is there a cake on the breakfast table?').

Note that the analysis of *ja* as an indicator of 'trivial updates' can account for the well-known distributional restrictions imposed on that item (cf. Kwon 2005 for a

recent survey). For instance, *ja* cannot be used in questions or conditionals, i.e. in any type of sentence or utterance which expresses Hypotheses rather than Facts.

5. *Doch* as an indicator of inconsistencies in the common ground

The modal particle *doch* is often associated with the notion 'adversativity', i.e. with the presence of a contradiction (see for instance Helbig & Helbig 1993, p. 111; Hentschel 1986, p. 148; cf. also the analysis of König 1997 referred to in Section 2). In addition to such contexts involving a contradiction, Rinas (2006, p. 195) identifies a second type of context, where *doch* merely indicates that a proposition is (or should be) known or evident to the hearer. This type of context is instantiated in examples like the following:

(31) Er erhielt die Stellung, war er doch der einzige Spezialist unter den Bewerbern.
      (Borst 1985, p. 11)

However, examples such as (31) are exceptional in so far as they represent idiomatic uses of modal particles in specific clausal configurations which have special syntactic and semantic properties ('constructions') – in the case of (31), a verb-initial adverbial clause of the form $[_{CP} V_{FIN} ... doch ...]$. The idiomaticity or 'frozenness' of this 'construction' is witnessed by the fact that *doch* is obligatory:

(32) *Er erhielt die Stellung, war er der einzige Spezialist unter den Bewerbern.

Still, in some contexts *doch* also seems to be used without there being any clear instance of a contradiction, even though it does not form part of a 'construction' as in (31). One such context licenses what is called 'reminding *doch*' ('erinnerendes *doch*') by Hentschel (1986, p. 133). It is illustrated in (33):

(33) Da war doch neulich der schwere Unfall auf unserer Straße. Und stell dir vor, …

Even though the 'adversative' component in 'reminding *doch*' may not be immediately obvious, it is nonetheless present in so far as the speaker *anticipates* an objection. Usually, reminding *doch* 'prophylactically' prevents an answer of the type 'I don't know what you're talking about'. By using 'reminding *doch*', the speaker makes it clear that the hearer *does* have the necessary information to understand what the speaker is talking about, and that s/he merely has to find it in his/her memory. I will therefore assume in the following that *doch* is generally associated with a contradiction or inconsistency, even though this aspect of meaning is not easily recoverable in all cases.

As has been emphasized by Borst (1985), *doch* is systematically related to *ja* in several ways. Most importantly, it is used as a 'sentence equivalent' in answers when a negated sentence is asserted to be true, thus showing a clear connection to double negation:

(34) A: Kommst du nicht?
      B: Doch

The systematic relationship between *ja* and *doch*, and the association of *doch* with double negation, can also be observed when both particles are used as modal particles. Sentences with *doch* can be paraphrased using *ja* when the sentence features double negation:

(35)   A: Leihst du mir Geld?
       B: Nein.
       A: Warum nicht? Du bist doch mein Freund!
       A': Warum nicht? Es ist ja nicht so, dass du nicht mein Freund bist!

Another feature that *ja* and *doch* have in common is that in both cases the proposition expressed – say, P – is taken for granted by the speaker, and is assumed to be taken for granted by the hearer as well. The difference between *ja* and *doch* is that in the case of *doch*, the complement of P (¬P) is also in the propositional background, in so far as it seems to be taken for granted by the hearer, though not by the speaker. In other words, there is a contradiction or inconsistency in the hearer's inferential system. Let us consider A's communicative intention in (35) to see this.

In contexts licensing (35), the hearer seems to believe that both 'Du bist mein Freund' and 'Du bist nicht mein Freund' are true. The first proposition is taken for granted, and the second can be derived from the hearer's unwillingness to lend the speaker money, in combination with the 'general truth' that friends lend each other money:

(36)   Du willst mir kein Geld leihen? Da Freunde sich gegenseitig Geld leihen, würde dies bedeuten, dass ich nicht dein Freund bin. Aber ich *bin* doch dein Freund. (Aber es *ist* ja nicht so, dass ich nicht dein Freund bin).

In terms of the present model, the function of *doch* can consequently be described like this: utterances containing *doch* are update functions which map an 'inconsistent' context – a context which contains a contradiction – to a context in which one of the complementary beliefs is eliminated. I will represent contradictions as starred conjunctions of the form *(P ∧ ¬P). Sentences with *doch* take an input context C_i containing a contradiction *(P ∧ ¬P) as their argument and map it to an output context C_o which contains a Fact ^{T}P. I will call such utterances 'contradiction-resolving updates' (Φ_{CONTRES}). They can be represented as shown in Figure 3.

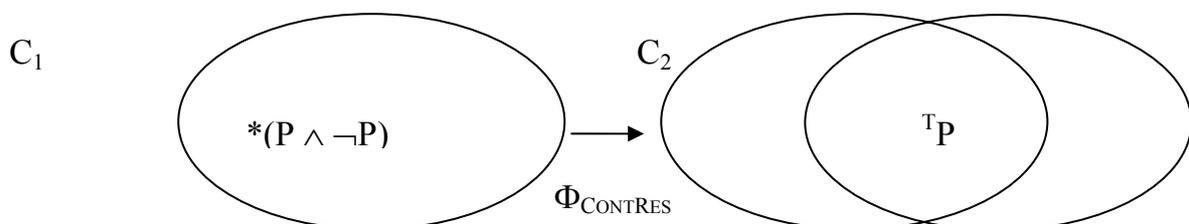**Figure 3:** 'Contradiction-resolving updates'

Note that Figure 3 is, of course, highly simplifying. For instance, the contradiction *(P ∧ ¬P) is regarded as forming part of the propositional background or context – here

represented as the intersection of the speaker's and the hearer's 'active knowledge' –
but its epistemic status in the speaker's mind is clearly different from its status in the
hearer's mind. For instance, the hearer seems to take both P and ¬P for granted, but
s/he is not aware of the contradiction arising from this fact, i.e. s/he does not work out
the consequences of this for her/his inferential system. By contrast, the speaker takes
only P for granted. S/he also has an awareness of ¬P, but s/he believes it to be false.
Again, it should be borne in mind that the notion of 'context' that I am using is a very
general one and encompasses basically everything that is contextually salient and in
the interlocutors' awareness.

Let us consider the use of *doch* in some more contexts in order to corroborate the
analysis outlined above. In exclamative sentences, *doch* is also used to indicate that
there is an erroneous background assumption on the part of the hearer, and hence, an
inconsistency in his/her inferential system. Consider (37):

(37) Der soll mich nach Hause fahren? Der ist doch betrunken!

There is a background assumption that only a sober driver can drive the speaker home
(general truth). Accordingly, the speaker concludes that (the hearer believes that) the
driver is sober. But then, there is visual evidence that the driver is drunk. The hearer
seems to believe that both 'The driver is sober' and 'The driver is drunk' is true. By
uttering (37) the speaker eliminates 'The driver is sober' from the contradiction
forming part of the context. (As an additional contextual effect, this eliminates 'Der
soll mich nach Hause fahren' from the context.)

When used in imperatives, *doch* likewise cancels one conjunct of a contradiction
in the propositional background. For instance, an imperative as the one in (38) is used
when there are indications that the hearer believes that s/he is supposed not to take a
seat. A context licensing (38) is given in (39). P_1 can be derived from the speaker's
behaviour, or maybe from a general truth ('Guests sit down'), and (the comple-
mentary) P_2 follows from the hearer's behaviour.

(38) Setz dich doch!

(39) $P_1 \in C_i$: 'Du sollst dich setzen'.
      ('Gäste setzen sich', 'Das hab ich doch schon mal gesagt', etc.)
      $P_2 \in C_i$: 'Du sollst dich nicht setzen'.
      ('Da du nicht sitzt, ich aber voraussetze, dass du dich setzen möchtest, scheinst du zu
      glauben, dass du dich nicht setzen sollst'.)

(40) $P_1 = \neg P_2$
      $*(P_1 \wedge \neg P_1) \in C_i$

As a first step in our classification of modal particles, we can now compare *ja* and
doch in terms of the argument taken, and the value delivered, by the update function
Φ: While both types of utterances deliver contexts containing a Fact ($^T P$), they differ in
that sentences with *ja* require an input context containing only $^T P$, whereas sentences
with *doch* require an input context in which the complement of P is also contained, i.e.
there is a contradiction $*(P \wedge \neg P)$. I will call modal particles like *doch*, which require a

contradiction in the background 'non-context-consistent', and particles like *ja* 'context-consistent'. The parameter of 'context-consistency' is illustrated in Table 2:

	Argument	value	parameter setting
ja	$^{\mathrm{T}}$P	$^{\mathrm{T}}$P	'context-consistent'
doch	*(P $\land$ ¬P)	$^{\mathrm{T}}$P	'non-context-consistent'

Table 2: Argument and value of utterances with *ja* and *auch*.

6. *Wohl*: From Hypotheses to Hypotheses

Considering the two particles *wohl* and *etwa* will lead to the inclusion of an additional parameter of classification, which I will refer to as 'facticity'. As mentioned above, this parameter has also been used in earlier work on modal particles (e.g. Helbig 1994), and the main objective of this section is to point out how this parameter can be explicated in terms of a general model of utterance interpretation. *Wohl* is character-ized by Helbig (1994, p. 283) as follows (cf. also Doherty 1985, p. 112; Dahl 1988, p. 137; Zimmermann 2004, p. 256; Kwon 2005, p. 163 for similar characterizations):

> "The speaker signals that he entertains doubts concerning the facticity of P, while still considering P possible. [...] He characterizes the statement [...] as a hypothesis" (Helbig 1994, p. 283, my translation).

Some authors have pointed out that *wohl* signals a relatively high degree of certainty when it occurs in declarative main clauses (e.g. Asbach-Schnitker 1977, p. 41; Helbig & Helbig 1993, p. 238). I will argue nevertheless that *wohl* indicates Hypotheses, as pointed out by Helbig (1994, p. 283), and that the impression of a relatively high degree of certainty can be derived from other principles of utterance interpretation.

In order to approach the function of *wohl*, it is instructive to compare the use of this particle in exclamative sentences to the use of *ja*:

(41)   Der ist *ja* betrunken!
(42)   Der ist *wohl* betrunken!

What (41) and (42) have in common is that in both cases there is (visual, inferential, etc.) evidence that the person in question is drunk. The difference is that in (41) this seems to be an undeniable Fact, whereas in (42) it is merely a Hypothesis. According-ly, a speaker uttering (41) does not expect a reaction to his/her utterance whereas a speaker uttering (42) positively invites a reaction.

Another important aspect of the function of *wohl* in (42) is that the Hypothesis expressed is given in the context even before the utterance is made. This means that information is available to all interlocutors suggesting that the referent of *der* is drunk. Such information could be inferred from other pieces of information in the context, or it could simply be visually evident. Given that the Hypothesis that the person in question is drunk is accessible at the time the utterance is made, and given that the

proposition expressed also has the epistemic status of a Hypothesis, utterances such as (42) can be characterized as update functions which map a context C_i containing a Hypothesis H to an output context C_o which also contains that Hypothesis H. I will call such update functions 'trivial Hypotheses' ($\Phi_{TRIVHYP}$). They are illustrated in Figure 4.
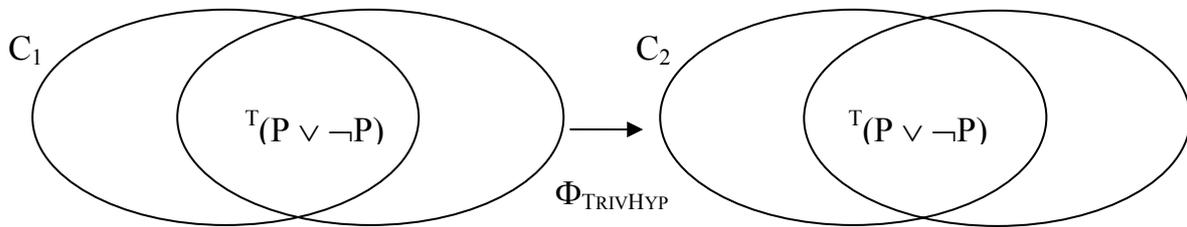

Figure 4: 'Trivial hypotheses'.

The fact that sentences with *wohl* express Hypotheses which are contextually available even before the utterance is made is particularly transparent in repeated questions. In such cases, *wohl* cannot simply be omitted:

(43) A: Wird Ahmadinedschad zur WM kommen?
       B: Tja, wird er #(wohl) kommen / ob er #(wohl) kommen wird?

Similarly, *wohl* can be used when the speaker supposes that the hearer is thinking about a Hypothesis which is considered by the speaker at the same time (cf. (44)). By contrast, the use of *wohl* is infelicitous when the Hypothesis in question is completely new (cf. (45)).

(44) Was meinst du – ob Ahmadinedschad wohl wirklich zur WM kommen wird?

(45) Haben *Sie* da (#wohl) eben gelacht?

As mentioned above, a Hypothesis expressed in a declarative main clause with *wohl* may either be given by visual evidence, or it may be inferable from the context. In either case, it is accessible to both the speaker and the hearer. (46)-(48) are cases in which a Hypothesis follows from some other piece of information which is known to both interlocutors and can thus be inferred:

(46) Sie wird wohl noch später kommen. (Es ist viel Verkehr.)

(47) Es ist wohl besser, wenn wir jetzt gehen. (Die Gastgeber streiten sich.)

(48) Es wird wohl Schnee geben. (Das Wetter sieht danach aus.)

Once again, the analysis proposed in this section raises the question of why such (trivial) utterances are made at all. The same answer can be given that was also given with regard to the use of *ja*: such sentences are informative only in terms of the contextual effects that they trigger, in particular, with respect to their contextual implications. Very often, they are also used for matters of turn-taking or discourse control. For instance, the expression of a Hypothesis always prompts the hearer to react and to position him/herself with respect to the proposition expressed. As will be argued in

Section 9, it is this function of *wohl* that figures prominently when *wohl* is combined with either *ja* or *doch*.

It remains to address the question of why sentences with *wohl* often seem to indicate a certain bias to or preference for the propositional content conveyed in the relevant sentence, i.e. why such sentences seem to be characterized not only as possible, but also as probable. Note first that the impression of probability is only found in declarative sentences (cf. (46)-(48)), but not in questions (cf. (44) and (45)), and only to some degree in exclamations (cf. (42)). Secondly, it is important to distinguish the truth-conditional commitment made by a speaker from his/her *beliefs* concerning the truth of a proposition. Crucially, sentences with *wohl* do not commit the speaker to the truth of a proposition, as is illustrated by the following conversation:

(49)   A: Wo hat Karl denn gestern geschlafen?
       B: Er hat wohl bei seiner neuen Freundin übernachtet.
       A: Nein, das kann nicht sein. Ich weiß mit Sicherheit, dass er dort nicht war.
       A: #Du lügst. Ich weiß mit Sicherheit, dass er dort nicht war.

The accusation of lying would only be appropriate if the speaker had said 'Er hat bei seiner neuen Freundin übernachtet'. Still, the speaker signals that s/he believes the proposition 'Karl slept over with his new girl friend' to be probable. This effect can be explained in terms of 'communicative strategies' and is quite parallel to the process of truth finding in science. When a linguist makes a hypothesis, s/he will usually formulate one s/he believes to be true, not one s/he believes to be false. This is a matter of 'economy': every act of hypothesis testing costs effort. Similarly, a speaker, who always has the choice between positive and negative polarity, will phrase his/her Hypothesis in such a way that it is likely to be true, in accordance with his/her beliefs. S/he does not, however, commit her/himself to the truth of the proposition.

Note also that *wohl* behaves quite differently from *wahrscheinlich*. While *wohl* requires that a Hypothesis be accessible at the moment of utterance, *wahrscheinlich* is not subject to any such restriction. Suppose someone gives you bad news on the phone and wants to prepare you for the shock. In that case, (50) would be fine while (51) would be inappropriate:

(50)   Sie werden jetzt wahrscheinlich erschrecken. Ihr Haus ist abgebrannt.

(51)   #Sie werden jetzt wohl erschrecken. Ihr Haus ist abgebrannt.

In other contexts, *wohl* is possible whereas *wahrscheinlich* is out, for instance when the semantics of Hypothesis making is exploited for rhetorical purposes, as in the following idiomatic insult which is commonly used by elderly German drivers in downtown traffic:

(52)   Sie haben wohl Ihren Führerschein im Lotto gewonnen!

(53)   #Sie haben wahrscheinlich Ihren Führerschein im Lotto gewonnen!

7.   *Etwa*: **From Contradictions to Hypotheses**

Etwa is the last modal particle that will be considered in this paper. It is usually found in (verb-initial) question sentences and in indirect questions (see for instance Helbig & Helbig 1993, p. 141-143; Kwon 2005, p. 121-128). Kwon (2005, p. 121) characterizes the function of *etwa* as follows and provides the example in (54):

> "Die Modalpartikel *etwa* wird typischerweise in V-1-Fragesätzen und selten auch in *ob*-V-L-Sätzen verwendet, in denen es sich um die Gültigkeit der Folgerung handelt, die der Sprecher aus seiner Beobachtung oder einer Vorgängeräußerung des Gesprächs-partners gezogen hat. Das heißt, die V-1-Fragesätze mit *etwa* setzen einen Kontext vor-aus, in dem der Sprecher auf seine Beobachtung oder eine Vorgängeräußerung des Gesprächspartners Bezug nehmen kann:"

(54)   O Gott, ist das etwa Diana, die da sitzt? (TAZ, 11.07.1995, 19)

Some authors have emphasized that questions with *etwa* invite a negative answer (e.g. Weydt 1969, p. 33; Helbig & Helbig 1993, p. 141; König 1977, p. 26), but I will argue below that this can be derived as a secondary effect from other properties of sentences with *etwa*. Such a negative expectation is present in examples like (55) and (56):

(55)   Willst du etwa dieses Kleid kaufen? (Ich hoffe, nicht!)

(56)   Bist du etwa schon wieder hungrig? (Ich kann mir das gar nicht vorstellen.)

When we compare *etwa* to the other modal particles considered above, it seems to share features with *doch* and *wohl*, but not with *ja*: what it has in common with *doch* is that it points out an inconsistency in the hearer's inferential system; what it shares with *wohl* is that it expresses Hypotheses rather than Facts.

The 'non-context-consistency' of *etwa* can be seen in examples such as (55) /(57), which entails that there is some piece of information in the context from which it can be derived that the hearer will not (be able to) buy the dress in question. Similarly, (56)/(58) is appropriate only if the hearer is expected not to be hungry:

(57)   Willst du etwa dieses Kleid kaufen? (Dafür hast du doch gar kein Geld.)

(58)   Bist du etwa schon wieder hungrig? (Das kann doch gar nicht sein, wir haben eben erst gegessen.)

Just as in the case of *doch*, there is conflicting information in the propositional background: in (57) there is both a proposition saying 'You want to buy that dress' (evidence) and one saying 'You don't want to buy that dress' ('because you cannot afford it'). In (58) both 'You are hungry' ('you said so') and 'You are not hungry' ('we've just eaten') seem to be taken for granted by the hearer.

The second important semantic property of *etwa* pointed out above (which makes it similar to *wohl*) is that it never expresses Facts, but always Hypotheses. This proper-ty of *etwa* can straightforwardly be derived from its distributional restriction to ques-tion sentences (direct or indirect). Accordingly, the function of *etwa* can be described like this: *etwa* characterizes update functions which map an input context C_i con-taining a contradiction $*(P \land \neg P)$ to an output context C_o which contains a Hypothesis

$^{T}(P \lor \neg P)$ (cf. Figure 5). I will refer to such utterance types as 'contradiction-displaying updates' (Φ_{CONTDISP}).
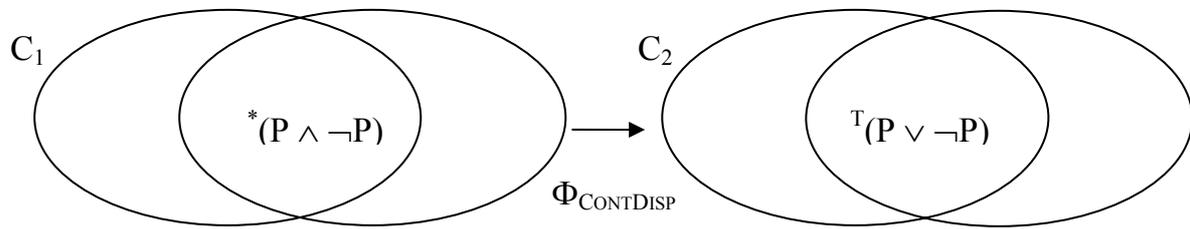

Figure 5: 'Contradiction-displaying updates'.

For further illustration, consider (59):

(59) Willst du etwa den Karl einladen?
       $P_1 \in C_i$: 'Karl ist doof' (background knowledge)
       $P_2 \in C_i$: 'Doofe Leute lädt man nicht ein' (background knowledge)
       $P_3 \in C_i$: 'Du willst Karl nicht einladen' (follows from P_1 and P_2)
       $P_4 \in C_i$: 'Es gibt Anzeichen, dass du Karl (doch) einladen willst'

A sentence such as *Willst du etwa den Karl einladen?* is appropriate when there are indications that the hearer considers inviting Karl (P_4). At the same time, the speaker believes that this is out of the question because Karl is stupid, and because no one would invite stupid people to a party (P_1-P_3). In other words, there is a contradiction in C_i (C_i is inconsistent), and it is this inconsistency that is indicated by *etwa*. Unlike in the case of *doch*, however, the inconsistency is not resolved by the speaker but is cast into the form of a Hypothesis or question.

We now have to address the question of why there seems to be a negative expectation concerning the hearer's response in questions with *etwa*. The answer to this question can, again, be related to matters of 'conversational strategy'. As has been pointed out, the use of *etwa* always implies that there is a contradiction in the context. This contradiction is put up for consideration by the speaker (hence, 'contradiction-displaying update'), which means that the hearer is expected to give up one of his/her contradictory assumptions. However, rather than pointing out the whole contradiction, the speaker merely refers to one of the contradictory conjuncts. Again, it is a matter of 'conversational strategy' which proposition will be chosen. Unlike in the case of declarative sentences with *wohl*, where a speaker chooses the more likely proposition for his/her Hypothesis, in the case of questions with *etwa* it is strategically wiser to ask for the more unlikely proposition, since the complementary one is taken for granted anyway (e.g., the speaker is not willing to give up 'Du willst ihn nicht einladen' in cases such as (59)). If the speaker wants to resolve the contradiction with as little communicative effort as possible, s/he will consequently ask for the proposition which s/he considers most likely to be false. Since the hearer is aware of such 'strategic' considerations on the part of the speaker, s/he can infer the speaker's attitude. As a con-

sequence of such considerations, the invitation to give a negative answer may have become a conventional implicature of questions with *etwa*.

8.   Parameters of classification

As the preceding discussion has shown, the four modal particles under consideration can be characterized in terms of the type of argument and value of the update function associated with each particle. This is summarized in Table 3:

	argument	value	update function
ja	^TP	^TP	Φ_{Triv}
doch	$*(P \wedge \neg P)$	^TP	$\Phi_{ContRes}$
wohl	$^T(P \vee \neg P)$	$^T(P \vee \neg P)$	$\Phi_{TrivHyp}$
etwa	$*(P \wedge \neg P)$	$^T(P \vee \neg P)$	$\Phi_{ContDisp}$

Table 3: Arguments and values of update functions in sentences with modal particles

As pointed out in Section 2, two parameters of classification can be derived from Table 3: first, there is a difference between modal particles that take a contradiction as an argument (*doch, etwa*), as opposed to those where this is not the case (*ja, wohl*). This distinction has been captured by the parameter of 'context-consistency'. Second, there is a difference between modal particles that deliver a Fact as their output (*ja, doch*) as opposed to those that deliver a Hypothesis (*etwa, wohl*). The first group has been called 'factive' and the second 'non-factive'. We can now cross-classify these parameters. The resulting cross-classification was shown in Table 1 above, which is repeated here as Table 4:

	context-consistent	non-context-consistent
factive	*ja*	*doch*
non-factive	*wohl*	*etwa*

Table 4: Cross-classification of (non-)factive and (non-)consistent modal particles

9.   On combinations of modal particles

In addition to all the difficulties associated with a semantic or pragmatic analysis of individual modal particles, there is the further complication that modal particles can be combined. A comprehensive treatment of combinations of modal particles would be beyond the scope of this paper, and the reader is referred to pertinent studies such as Thurmair (1989) (as well as Abraham's 1991 review of it), Lemnitzer (2001) or Rinas (2006, Chapter 7) for more information. Still, some remarks should be made on how combinations of modal particles are dealt with in the framework proposed in this article.

There are two ways of dealing with combinations of modal particles in a compositional way, which we can call the 'additive' and the 'hierarchical' approach. According to the 'additive' approach (advocated by Thurmair 1989), the features of individual particles are simply added up in combinations of particles. According to the 'hierarchical' approach, modal particles stand in scope relationships to each other (e.g. Rinas 2006). Both approaches face serious challenges. Thurmair's (1989) assumption of 'feature addition' has been severely criticized by Rinas (2006). Even though Rinas may be too categorical in some respects, some of his arguments against Thurmair's analysis seem to be compelling. However, Rinas' own ('hierarchical') account is not fully convincing either. Let us consider the combination *ja wohl* for illustration:

(60) Das wird der Peter ja wohl schon erledigt haben.

According to Rinas (2006, p. 247), in sentences such as (60) both *ja* and *wohl* have their common meanings, and *ja* takes scope over *wohl*. Under the assumption that *ja* indicates consensus and *wohl* probability ('vermutlich'), the meaning of (60) can be represented as in (61) and paraphrased as in (62):

(61) unkontrovers(vermutlich(P))

(62) Es ist unkontrovers, dass der Peter das vermutlich schon erledigt hat.

Even though (62) is probably not a very close paraphrase of (60) (which may be attributed to a difference in register), the two sentences seem to be more or less equivalent. The trouble is that this cannot be said of many other examples. For instance, the two sentences in (63) have little in common in terms of their communicative implications, especially if one considers that the adverb *vermutlich* is particularly inappropriate when relating to the hearer's information state:

(63) a. Das war ja jetzt wohl gelogen!
      b. Es ist unkontrovers, dass das jetzt vermutlich gelogen war!

All attempts to accommodate the meaning of modal particles in some kind of compositional semantics – either additive or hierarchical – seem to fail in at least some cases, plausible though they may be in others. Combinations of modal particles often seem to involve a certain vagueness with respect to the contribution of each of the particles. This is in accordance with the observation made by both Thurmair (1989) and Rinas (2006) that one element of a chain of modal particles is often redundant, and also with the fact that modal particles have highly abstract meanings, which makes them extremely sensitive to semantic properties of the context.

As far as the elements considered in this paper are concerned, I would like to argue that combinations of modal particles can be analyzed in a partially, but not fully, compositional way. They are compositional in so far as the single elements of a 'particle chain' are often associated with exactly the function that they also have when standing by themselves. They are non-compositional in so far as they may trigger communicative effects on different levels of utterance interpretation. I will try to illustrate this using the combination *ja wohl*. This combination presents a challenge for the present approach because *ja* has been claimed to characterize utterances conveying

Facts, whereas *wohl* has been said to express Hypotheses. How are sentences such as (64) interpreted, then?

(64) Einstein war ja wohl einer der wichtigsten Physiker des 20. Jahrhunderts.

The scope approach does not deliver satisfying results, since (64) does clearly not express that 'It is undeniable that there is a Hypothesis that Einstein was one of the most important physicists of the twentieth century' (again, assuming that *wohl* means 'probably', as does Rinas 2006, would also lead to non-equivalent paraphrases such as 'It is uncontroversial that Einstein was probably one of the most important physicists of the twentieth century'; the difference is that a speaker uttering (64) signals absolute certainty rather than probability). This could mean that the 'additive' approach applies, and that *wohl* is simply redundant, since its meaning is 'overridden' by the stronger (factive) *ja*. However, in that case (65) would have the same distribution as (64), which is clearly not the case. What is the difference between (64) and (65), then?

(65) Einstein war ja einer der wichtigsten Physiker des zwanzigsten Jahrhunderts.

The main difference is that (64) invites the hearer to react verbally whereas (65) discourages him/her from doing so. The 'combined effect' of *ja* and *wohl* in (64) is, thus, that (i) a well-known fact is made explicit (the function of *ja*), and (ii) the hearer is nevertheless invited to react to the utterance, preferably, of course, in an affirmative way. By using both *ja* and *wohl*, the speaker can thus combine the 'epistemic effect' of *ja* (pointing out an uncontroversial fact) with the 'communicative-interactive effect' typically associated with *wohl* (inviting a verbal reaction).

The 'combined effect' of *ja* and *wohl* can also be observed in the following example (from Thurmair 1989, p. 211), which is also discussed by Rinas (2006, p. 246):

(66) Das hat ja wohl Zeit bis nach'm Abendbrot.

On the one hand, the propositional content of the sentence is uncontroversial, in the eyes of the speaker. On the other hand, s/he asks the hearer for confirmation. Note that not reacting to a sentence such as (66) would amount to non-cooperative communicative behaviour.

10. Summary and conclusions

This paper has pursued two major goals: first, it has intended to propose an analysis of modal particles which is framed within a more or less explicit model of utterance interpretation. This seems to be necessary if one wants to keep the various semantic and pragmatic effects in the use of modal particles apart. The second aim has been to provide a set of features or parameters characterizing the four modal particles *ja*, *doch*, *wohl* and *etwa*, thus allowing for a description of these elements as members of pairs constituting minimal semantic oppositions.

Obviously, such an approach is rather ambitious and moreover necessarily imprecise, as it abstracts away from specific idiomatic usages of modal particles and

from what was called 'conventional implicatures' in Section 7. Idiosyncrasies and difficulties of compositional analyses were also pointed out in the context of combinations of modal particles. Analyses of the type proposed in this paper should thus not be taken to compete with fine-grained studies such as the work done by Harald Weydt, or also the recent book by Rinas (2006). While the latter aim to describe the meaning and use of modal particles as accurately as possible (in the case of Rinas, with a didactic purpose), it has been the objective of this paper to determine the place of modal particles in grammar and communication, and to shed light on their interaction with different types of conversational inferencing.

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