Discourse Particles
as Speech Act Markers

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Abstract

Eine Reihe von Diskurspartikeln werden mit dem Ziel analysiert, die Rolle, die sie bei der Markierung von Sprechakten spielen können, zu erklären. Die Analyse verwendet eine optimalitätstheoretische Rekonstruktion der Präsuppositionstheorie.

1 Introduction

When one tries to further develop Stalnaker's ideas (cf. Stalnaker (1978)) on the conditions for pragmatically correct assertion (informativity and consistency with respect to the common ground between speaker and hearer), it is natural to come up with conditions like the following[1].

(1)   a. it is not common ground that the speaker believes A.
        b. it is not common ground that the speaker believes that not A.
        c. it is not common ground that the hearer believes A.
        d. it is not common ground that the hearer believes that not A.

If one of these conditions is not fulfilled, the assertion is improper, or non-standard. In the first case there is little to no effect that the speaker can hope to gain by what she has said: it cannot be a proposal to eliminate possibilities from the common ground. In the second case the speaker is self-correcting, and so faces an inconsistency with her own beliefs as represented in the common ground. In the third case, the speaker is also doing something that is not an assertion in Stalnaker's sense: she is at best assenting to an assertion by the hearer. In the fourth case as well, the speaker is correcting the hearer rather than asserting something.

These theoretical speculations are confirmed by looking at Dutch or German sentences that realise such non-standard assertions: they invariably contain discourse particles, like toch (doch), inderdaad (tatsächlich), immers (ja), wel (doch).

The following examples bear this out. (a) can be a self-correction, (b) an assent to the hearer, (c) a reiteration, (d) a hearer correction.

(2) a.   Peter is toch thuis.
     a'.   Peter ist doch zuhause.
     a".   Peter is at home (after all?).
     b.   Peter is inderdaad thuis.
     b'.   Peter ist tatsächlich zuhause.
     b".   Peter is indeed at home.
     c.   Peter is immers thuis.
     c'.   Peter ist ja zuhause.
     c".   As you know, Peter is at home.
     d.   Peter is wel thuis.
     d'.   Peter ist doch zuhause.
     d".   Peter IS at home.

It is important to make the following observations. In contexts for (2a) in which the common ground contains the speaker's opinion that Peter is not at home, omitting the *toch* makes the utterance infelicitous. Likewise (2b) without the *inderdaad* is infelicitous if, according to the common ground, it is already the hearer's opinion that Peter is at home. (2c) without immers is infelicitous if it is common ground that Peter is home and (2d) without *wel* is infelicitous if the hearer has just said that Peter is not at home. This is indeed just what follows from Stalnaker's views on assertion. The particles seem to have the power to make otherwise infelicitous assertions into specialised non-standard assertions that have other goals than standard assertions, like correcting opinions expressed earlier on or reconfirming established opinions.

An initial hypothesis might be that the particles are in the language just to mark the non-standard character of certain speech acts. But this hypothesis is easily refuted.

If this were so, it would not be possible to combine all four particles as in (3), which, though not easy to contextualise, is nevertheless perfectly acceptable Dutch.

(3)   Peter is toch immers inderdaad wel thuis.

It follows minimally that the particles do not mark a particular combination of speaker and hearer commitments to the truth or falsity of the proposition, becau-

se that combination would be inconsistent. The hypothesis also has to go when one considers the full uses of the particles in question in Dutch or German, as we will later on. And finally, it turns out that although the particles may indicate a combination of speaker and hearer commitments, they also allow other interpretations.

This raises two questions. First, how is it possible that the particles can mark deviant speech acts, i.e. one would like to have an account of their use from which it follows that they can sometimes mark a hearer or speaker commitment? Second, can these insights be used to improve the recognition of the user intention in dialogue systems? In addition, the function of these particles is unclear and any elucidation is welcome.

This paper gives an experimental account of these four particles in terms of an extended presupposition theory and manages to explain the uses quoted in this introduction. It follows that there is a potential use of the particles in future dialogue systems, i.e. the ones that have a capacity for presupposition treatment. Section 2 introduces the presuppositional treatment of particles and sections 3, 4 and 5 apply the treatment to the four particles in question.

2 The proper treatment of the particle *too*

Kripke's notes on presupposition Kripke (s.d.) started a new period in the study of presupposition where the analogy with anaphora became more and more prominent. The two most successful accounts are Heim (1983) and Van der Sandt (1992). Yet, in terms of Kripke's original example these theories do not perform very well at all.

Kripke is puzzled by the example (4).

(4)   John will have dinner in New York too.

The traditional theories predict that this sentence presupposes (5) which for (4) is a mere triviality.

(5)   Someone other than John will have dinner in New York.

After all, New York is a vast city where millions have dinner every night. If this

were the presupposition, the *too* would not give us extra information about the context. It would also be the case that we can always add a *too* to the sentence *John has dinner in New York*. Both of these predictions are wrong: *too* is infelicitous if the common ground does not entail that another person has dinner in New York and it gives us the information that the common ground has this property. Kripke's suggestion is that *too* tells us that the context and not the world contains another person who has dinner in New York and that the *too* is anaphoric to this part of the linguistic context.

Both Heim's and Van der Sandt's theories contain a resolution mechanism that can pick up the antecedent in the context (in that case the *too* does not give new information). But they also allow the presupposition to be accommodated. In that case, we get precisely the prediction that Kripke criticises, i.e. the requirement of an unidentified other person who has dinner in New York. The theories should rule out accommodation for *too*, but do not have the means to do that. In this way, the theories also predict that *too* can be freely added to our example, without truth-value change or infelicity.

There are some other aspects of *too* in which it is different from standard presupposition triggers, like factive verbs, definite descriptions and lexical preuppositions. The first is that *too* itself does not seem to give information. The following example of Heim brings this out. Two kids are secretly phoning each other after bedtime without the permission or knowledge of their parents.

(6)   A: My parents think I am in bed.
             B: My parents think I am in bed too.

In one of the interpretations of the utterance by *B*, the *too* belongs to the complement of the belief sentence. Yet, *B*'s parents know nothing about *A* being in bed or not. The example also illustrates another problem with *too*.

Too (and other particles) take antecedents that are not available according to Heim or Van der Sandt. The antecedent *A is in bed* in (6) is not entailed under the operator *B's parents think* and neither is it accessible according to the Discourse Representation Theory in which Van der Sandt's theory is couched. The last property of *too* that is unexplained by the two theories is that its occurrence is obligatory in the sense that in most of the utterances in which it occurs it cannot be omitted without resulting infelicity.

My proposal (Zeevat(2000)) is to (a) liberalise the set of allowed antecedents for presupposition triggers to the veridical contexts and to (b) assume a generation constraint. (c) Embedding the theory within a form of Bidirectional Optimality

Theory then allows an explanation of the absence of accommodation for *too* and other presupposition triggers. I will sketch the three steps.

Veridical contexts were proposed by Giannakidou (1998) as a characterisation of the contexts that do not license negative polarity items and include beliefs, dreams, suggestions, possibilities and iterations of these. Properly inaccessible antecedents (and negative polarity items) must be in the scope of at least one non-veridical operator. (7) shows some of the possibilities with *too*.

(7)   A. Maybe John will go to Paris.
             B. I will go there too.
             John suggested that Mary left and Bill said Susan did
             too.

There are some limitations to the antecedents *too* can take, as illustrated by (8) which some people do not like.

(8)   John dreamt that Bill is Paris and Tom will go there
             too.

The English *indeed* is more liberal and (9) illustrates the wider range of antecedents it can take. I do not know why *too* is less liberal than other particles in this respect.

(9)   John dreamt that he passed the exam and indeed he
             passed.
             John thinks that Mary hates him and Bill said that
             she does indeed.

Generation constraints are defeasible constraints that the human generator tries to optimally satisfy when generating a sentence from a characterisation of the semantics. The generation constraint needed for *too* is **ParseOther**, a principle that forces the marking of the presence of another entity of the same type in the context. *Too* marks the presence of another element of the same type, like *also, another or a different*. It is possible to defend the view that this is all that we have to say about the semantics of *too* and that its function provides the explanation of its lack of semantic content.

A similar principle is **ParseOld**, a principle that forces the marking of material already the context as old material. *Indeed* is one of the linguistic elements that carries out this job, other are pronouns and definite descriptions.

In a bidirectional optimality theoretic framework we can combine the above generation principles with Blutner (2000)'s reconstruction of Van der Sandt's presupposition theory by two interpretation principles: **DoNotAccommodate** and **Strength**. The first principle, ranked above the other, militates against accommodations, the second one selects the strongest reading from among the different readings that come out of the accommodation possibilities. In the resulting system, the following principle (Blutner's Law) can be derived.

(10)   If a presupposing expression has simple non-presupposing alternatives, it does not accommodate.

The motivation is simple: with a common ground that requires accommodation, a speaker will always select the non-accommodating alternative because it does not lead to a violation of **DoNotAccommodate**. (In the particular version of bidirectional optimality theory advocated by Blutner interpretation constraints are scored together with generation constraints in both directions.)

The predictions that our theory makes for *too* are non-accommodation (this does not rule out a fair amount of partial resolution), the availability of all veridical antecedents, and obligatory occurrence when the veridical context contains another element of the same type. Non-accommodation is a consequence of existence of the simple expression alternative where *too* is omitted. The lack of semantic content is responsible for the possibility of veridical antecedents: it does not matter where the antecedent comes from because it does not need to exist locally.

In these respects, *too* contrasts sharply with a trigger like *regret*. First of all *regret* does not have simple expression alternatives, which means that it allows accommodation. Second, its presupposition makes a strong semantic contribution: it identifies the fact to which the subject has her emotional reaction. This fact must at least be a belief of the subject for the subject to have an emotional reaction to it. Therefore, only real facts and beliefs of the subject can be antecedents and other veridical antecedents are ruled out. The strongest requirement arises when the antecedent identifies a participant, a cause or a precondition of the event described by the clause that contains the trigger (pronouns or definite descriptions). Here the only antecedents are proper constituents of the context of the trigger.

The specification of a trigger is exhausted by a statement of its presupposition and its semantic contribution. The overlap between presupposition and semantics filters away unwanted veridical antecedents. Accommodation or not is controlled by the inventory of the language.

For further details I refer to Zeevat(2000).

3 *Inderdaad* and *Immers*

My hypothesis about *inderdaad* (*tatsächlich*, *indeed*) is that it is just a presupposition inducer, in this case presupposing the positive version of the sentence to which it attaches. As such, it is an old marker and the generation constraint **ParseOld** is responsible for its obligatory occurrence. It takes veridical antecedents, because it does not contribute to the semantics of the clause. It does not accommodate, because as a particle it has a simple expression alternative: the sentence without the particle.

What does this predict about the speech acts in which it occurs? Basically, it says that the hearer, or the speaker or both can have an old opinion that the sentence is true. But it is not necessarily the opinion of one or both of the conversational partners, since the antecedent can also be the opinion of a third party or even weaker, the content of a dream, a suggestion etc. A dialogue system can conclude from an occurrence of *inderdaad* that what is said is already present and it is only the presupposition resolution itself that forces the selection of a speech act of reconfirmation, when resolution is to the speaker or the common ground. It can be the speech act of assenting if the resolution is to a hearer opinion that is not shared. Absence of *inderdaad* when no other old-marker is present, can lead to the conclusion that we have a proper assertion and not a reconfirmation or assent.

The same holds for an occurrence in a question.

(11)   Is Harry inderdaad thuis?
             Is Harry indeed at home.

(11) presupposes that Harry is at home. In imperatives, it can only presuppose the imperative itself (or the desirability of the course of action).

If we look at a sample of actual uses the hypothesis is largely confirmed, except for an antiquated use as a synonym for *feitelijk* (in fact). This older use is important, because *inderdaad* seems to imply that the new information is better than what we had before. This is either because *inderdaad* retains some properties of *feitelijk* or it is a pragmatic implication of *reconfirmation* or *assent* as such. If *inderdaad* does not add semantical content, the purpose of reconfirmation or assent can only be that new evidence has been found. There is also a subtle

distinction between an assent with an isolated *inderdaad* and one with *ja* (yes) or a nod of the head. If *inderdaad* is used, the speaker claims to have better information than the other speaker whose assertion she assents to. We could capture the distinction by claiming that a sentence with *inderdaad* must still be informational in the sense of Stalnaker, in indicating that the speaker believed it not as a result of what the interlocutor asserted, but already before that. If we supply our reconfirmation or assent with an assertion containing *inderdaad*, the new information can only be the elimination of an existing uncertainty.

Immers is like *inderdaad* in presupposing the truth of the clause to which it attaches, but it is quite different at the same time. *Immers* makes a quite clear semantic contribution. It turns the clause into a reason for accepting what was said just before. Now reasons why something is the case must be the case as well in order to qualify as proper reasons. That John dreamt he was in Spain, or that Charles has suggested so are not reasons why John is away from home. That is why *immers* in simple clauses only takes proper antecedents and no non-entailed veridical contexts. It also does not bring the effect of the new and better view that we noticed with *inderdaad* and we would not expect that, since *immers* contributes to the semantic content of the clause.

Like *inderdaad*, it is obligatory. If the statement is already common ground, *immers* is needed to mark the fact that we are dealing with old information. This leads to the following curious fact. *Omdat* like its English counterpart *because* is a presupposition trigger. This gives Dutch two ways of expressing the sentence (12a).

(12) a. He did not come because he is in Paris.
      b. Hij kwam niet omdat hij immers in Parijs is.
      c. Hij kwam niet omdat hij in Parijs is.

(12b) is obligatory resolved to the common ground. (12c) is obligatory accommodated, because, if it were old information, *immers* would have to appear. *Omdat* without *immers* is a presupposition trigger that is marked for obligatory accommodation, comparable to a complement of *regret* that has new intonation, or perhaps also indefinite NPs.

Formally, *immers* A has two presuppositions, the one we discussed and the current last sentence. It asserts that the first presupposition is a reason why the second one holds.

Looking at our data, one finds complete confirmation, although there cases where the causal connection is not very clear. *Immers* is not a high frequency item

unlike its german approximate equivalent *ja* which has quite a number of other uses next to the one discussed here. Questions and imperatives with *immers* are not possible and the analysis given here explains why.

The occurrence of $immers$ in a user utterance is a reliable indication for assuming that the user is not making a normal assertion, but assumes both that the material is already established and relevant at the current point in the dialogue.

4 *Wel*

The marker *wel* in the uses we are focussing on is the typical marker of a correction to a negative utterance made by the other party. It is accented in that case and the most likely explanation is that *wel* is entering in a contrast relation with the negation in the corrected sentence.

(13)   A: Jan is niet thuis. (Jan is not at home)
              B: Jan is WEL thuis. (Jan IS at home)

In corrections to non-negated sentences, accented *niet* takes over this role.

(14)   A: Jan is thuis.
              B: Jan is NIET thuis.

But it is not clear there is an element here with which *niet* contrasts. Nevertheless, the relation of contrast with the corrected sentence is so strong that the correct explanation is probably that the whole sentence bears contrast, with everything except *niet* deaccented as old material.

There are many other uses of *wel*. Typical is the use in a concession:

(15)   A: Jan kwam het boek toch gisteren terugbrengen.
              A: John was going to return the book yesterday,
              wasn't he?
              B: Jan kwam WEL, maar hij had het boek niet bij
              zich.
              B:John came allright but he did not have the book.
              B1: Jan kwam niet, maar hij heeft het boek WEL
              teruggegeven.

B1: Jan did not come, but he gave the book back allright.

Here the *wel*-clause marks the part where the speaker agrees with the other speaker. But this can be reversed, as in B1. The A. sentence invokes a context in which the plan that Jan was bringing the book yesterday is assumed and evidence is available that the plan has not been carried out. Another case is (16).

(16)   A: So they came?
             B: Jan WEL, maar Marie NIET.
             (Jan did, but Marie did not)

(17)   So they did not come?
             Jan WEL maar Marie NIET.

Almost idiomatic are the unaccented combinations with modal verbs.

(18)   Het moest wel.
             It had to be.
             implies: I/we did not want to but I/we had no choice.
             presupposes: opposite inclination (?)

(19)   Het zal wel beter gaan in het voorjaar.
             It will probably be better in spring
             In context: denies that the current bad situation will
             continue

(20)   Het zal wel.
             Ironical way of expressing disbelief.

(21)   Het lijkt wel of je nooit meer thuis bent.
             It would appear that you are never at home anymore.
             presupposes falsity of what appears to be the case (?)

(22)   John shows Mary his new dog.
             M: Het lijkt wel een varken.
             M: It looks like a pig.
             presupposes it is not one (?)

(23)   Kom je WEL? (presupposes the opposite)
                Kom je wel? (expresses doubt)

(24)   Wil je wel?
                DO you want?
                expresses doubt

Quite generally, we seem to be able to say that *wel p* presupposes $\neg p$. In concessive phrases, the presupposition can disappear and the main function is the contrast with the negation in the other half of the pair. The presupposition is perhaps still around in the unacccented cases, but it may be that a case for case analysis like the one I will supply later on for *toch* is in order.

The accented uses require overt negations to contrast with, either within a concessive pair or outside one. In the last case, the negated clause coincides with *wel*'s antecedent.

The explanation of *wel*'s appearance in a sentence must be two-fold. We need a principle that inserts it in a concessive pair, if the concession is built around a positive and negative element, but the generation of concessive constructions does not concern us in this paper. The other occurrences are due to the **ParseOld** principle we discussed before.

Wel takes veridical antecedents, as shown in (25).

(25)   Karel droomde dat hij niet voor zijn examen zou slagen,
        maar hij haalde het WEL.
        Karel dreamt he would not pass his exam, but he
        passed it allright.
        Piet zei dat Marie niet zou komen, maar ze kwam
        WEL.
        Piet said that Marie would not come, but she did.

The use of *wel* can help in identifying the dialogue move the speaker is making. It is helpful in identifying corrections, though it must be distinguished from concessive uses and from other presupposing uses.

5 *Toch*

This is by far the most complicated of the four particles that are the protagonists

of this paper. Compare the examples in (26), based on clauses meaning: *he is in Amsterdam or come to Amsterdam*

(26) a. Laten we hem vrijdag opzoeken. Hij is dan toch
in Amsterdam.
a'. Let us visit him on Friday. He is then in Amsterdam
anyway.
b. Hij is toch in AmStErDaM?
b'. He is in Amsterdam, isn't he.
c. Hij is TOCH in Amsterdam.
c'. He is in Amsterdam after all.
d. Is hij TOCH in Amsterdam?
d'. Is he in Amsterdam after all? (We thought
he would not be)
e. Kom toch naar Amsterdam. (exhortation)
e'. Come to Amsterdam. (you know you'll like it).
f. Kom TOCH naar Amsterdam.
f'. Come to Amsterdam, (although I see why you do
not want to).

The emphatic uses of *TOCH* are pretty straightforward. They indicate that the speaker presupposes the negation of the statement or question she is making. In the case of the imperatives, it is the opposite plan or the desire not to that is presupposed. But the non-emphatic uses are difficult to accommodate in this scheme.

Example (26b). is the most involved. Often it is treated as a question (a confirmation question) but the form is of an assertion and the intonation is not that of a normal question. Also the facial expression appropriate to its utterance indicates that it is really an assertion uttered expressing surprise at the content, like the assertion in (27).

(27) Hij is in AmStErDaM?

The surprise indicates that the speaker believes to know that what he says is false, in (27). It is a reaction to information that „he" would be in Amsterdam. What the *toch* does in (26b) is to invert these speaker assumptions: the speaker

now believes that „he" is in Amsterdam and reacts to information to the contrary.

We could perhaps say that *toch* resolves to the negation of the statement made by the interlocutor. But then after resolution we have assertion with the expression of surprise, which is quite different: the speaker is not surprised that „he" is in Amsterdam, she is surprised that „he" is not. It would seem that this indicates that the *toch* here resolves to the positive information that „he" would be in Amsterdam and – because that rules out surprise at the positive information – the surprise is caused by something else, nl. the information supplied by the interlocutor. If we look at (26a) this confirms that pattern.

The *toch* here is a device of reminding the interlocutor of some old information and it is functioning not unlike *immers* which could take the place of *toch* in this context. In fact, there are dutch speakers who never use *immers* and always use unaccented *toch* instead. In my dialect, it normally just means that the fact he is in Amsterdam is independent of the current issue, more or less like the english *anyway*. It can be common ground that he is, but it can also just be unrecorded speaker information that he is.

Uses of unaccented *toch* in questions seem to be impossible. In imperatives, it softens the appeal made on the interlocutor. It does not seem to be impossible to understand this as presupposing a similar desire in the interlocutor. Again the opposite of the accented *TOCH* which presupposes a contrary attitude to the action ordered in the imperative.

In my corpus, by far most uses of *toch* are pro-concessives, i.e. single word concessives (like isolated *though* in English) that can be paraphrased by full although-sentences whose content is given by the context. This is a weakening of what we find in (26c) which seems naturally characterised by presupposing the negation of the clause. Though concessive sentences provide reasons for thinking that the main-clause is false, they do not (cannot) provide the information that the negation is true. It is possible to bring them closer by the notion of a suggestion. The contextually given concessive material can be taken as a suggestion that the clause is false and this would be an appropriate veridical antecedent. Alternatively, we should start from the notion of a reason to be false and let (accented) *TOCH* presuppose a reason for the clause to be false. I prefer the first alternative, since the second alternative makes the integration of the unaccented uses even more problematic than they are already.

What can we make of *toch* in our presuppositional theory? I am not very sure. I would like to say the following. *Toch* is just an old-marker without a preference for positive or negative antecedents. If the antecedent of *toch* has the same

polarity as the current clause, no accent is provided by the speaker because there is no contrast between the clause and the recovered presupposition. If the antecedent has opposite polarity, accent results from the recovery of the antecedent. The accent would just be the result of the existence of an alternative in the speaker's mind, here created by the speaker's awareness that she is old-marking a clause for the prior occurrence of a negated version of the clause. I do not have a fully worked out accenting theory from which this accenting pattern would follow, but such a theory is needed. The alternative is that we have a tonal distinction between two lexical items *toch* and *TOCH* with different semantic properties. But this runs against the following argument that I owe to Manfred Bierwisch (p.c.). It would then be completely incomprehensible how it can be that Dutch and German have almost exactly the same *toch*/*doch* and *TOCH*/*DOCH* and the same for other accented and deaccented particles. In addition, it would make Dutch and German into tonal languages, a claim for which we do not have independent evidence.

Let us go through the examples. In (26a), the lack of accent indicates that the presupposed material is of the same polarity as the current clause: the second sentence presupposes that the unknown *he* will be in Amsterdam on the Friday. A problem is that it seems to be possible as well that the antecedent is not – even veridically – common ground. The speaker may merely indicate that the *he* is Amsterdam for reasons unrelated to the current purposes of the conversation.

In (26b) we meet a pure confirmation of the hypothesis. The presupposition is that *he* is in Amsterdam and this is expressed by the unaccented *toch*. The sentence itself is triggered by surprise over contrary information supplied by the other speaker.

In (26c), the accent indicates that the old material is of contrary polarity. The sentence corrects the old material. The same in (26d) which must be prompted by a suggestion that contrary to what we appeared to know he is in Amsterdam.

(26e) is more problematic. The insertion of the *toch* tones down the imperative to an exhortatation, and this can perhaps be explained by assuming that a positive inclination on the part of the hearer to do just that is assumed by the speaker. But like in (26a) it is not strictly required that the positive inclination is registered in the common ground. It may be, but it need not.

(26f) finally confirms our hypothesis in much the same way as (26c) and (26d). It would be appear that we find full confirmation for the hypothesis looking at the accented *tochs* and rather shaky confirmation for the unaccented uses. Here it seems that its function of marking a specific speech act has partly usurped its semantic contribution. But there is another way to look at this. We started by

assuming that the function of the *toch* is being an old-marker and we derived from that accommodation is impossible: there is a simple expression alternative which does not do old-marking, nl. the sentence without the particle. Now in the problematic cases, it is questionable whether the sentence without the *toch* means the same. Leaving out the *toch* in (a.) fails to express that *he* will be in Amsterdam on Friday for independent reasons, (e.) becomes a full imperative. Now if the meaning changes when the *toch* is omitted, accommodation is possible, and that, I would suggest, is what happens. The story about *toch* can be as I indicated but it must take account of idiomatic further meanings acquired in discourse. Here I would suggest that an unaccented *toch* in imperatives, presupposing the action ordered, naturally changes the imperative into an exhortation to follow one's inclination to do as ordered. And, unaccented *toch* in an assertion, presupposing the truth of what is asserted, makes the truth of the assertion independent of the current discussion: it becomes a reiteration. In the absence of other means of expressing exhortations or reiterations, unaccented *toch* will also become a marker of these special speech acts.

(26b) is as we noticed also a case where a simple expression alternative is lacking: the surprising fact changes polarity if we take out the *toch*. This would predict that, also in this use, accommodation is possible a prediction that seems to be borne out.

In other respects, *toch* seems to follow the pattern of the other particles discussed in this paper. It takes veridical antecedents as in (28), it makes no contribution to the content of the clause and it cannot be omitted (but sometimes replaced) where it occurs.

(28)   Jan droomde dat hij was gezakt voor het examen,
          maar hij had het TOCH gehaald.
          Jan dreamt he failed the exam, but he passed.

Toch is useful for future dialogue systems as an indicator of corrections when it is accented and when the corrected element can be found in the common ground.

6 Conclusion and Further Research

My first encounter with particles occurred half-way the eighties when I was

working on pronoun resolution. Hypotheses about discourse and dialogue structure can have dramatic consequences for correct resolutions. It was then —as it is only marginally less now— difficult to recognise discourse and dialogue structure and in our system we did not even have the resources to reconstruct speaker plans. Particles seemed a way out: in German they are extremely frequent and together with tense shifts and topic they seemed to offer a heuristics that would make our recognition of the discourse and dialogue structure better.

This did not work because particles are not very well understood: many meanings are normally distinguished and few of the meanings seem to be very relevant for the discourse grammarian. The *anyway*, the „pop-marker" of classical discourse grammar is almost an isolated case. And *anyway* is not a pop-marker at all. It marks that what is said in the current clause does not depend on the issue of the last clause or paragraph. The discourse function of closing of a topic is derived from this more primary function.

It is much the same I believe with the particles I have focussed on in this paper. Their function can be clarified to a large extent by analysing them as as presupposition triggers with a number of special properties. It follows that they have certain discourse functions, but those functions are not their primary function. As I hope to have shown in this paper, a reduction to presupposition makes it feasible to use certain particles for the recognition of the speech act the user is making.

There is a considerable class of particles that can be analysed as presupposition triggers. For *again*, I refer to c. Next to *again* we find *still*, *yet*, *already* and *notanymore*. Our four old-markers should also include *instead* and perhaps *dan*. As presupposition triggers, they have overwhelming similarities, like the avoiding of accommodation and a strong preference for partial resolution. The dividing line is the question of semantic contribution.

The temporal particles clearly sit with *immers* in requiring proper antecedents, because next to marking old material, they also make a contribution to the temporal semantics.

The implementation of the current approach to particles is not much more involved than the general approach to presupposition and anaphora resolution implemented in e.g. Johan Bos's DORIS system, an approach that could clearly be integrated in logic based dialogue systems. The main but unimportant difference is that a larger class of contexts needs to be searched to take care of veridical antecedents as well. A difference —really an advantage— is that the generation constraints also allow inferences about the absence of certain antecedents. The most serious obstacle to a full implementation is the difficulty of doing partial

resolution, but this is a difficulty shared with any computational treatment of presupposition. A good discussion of the task for German *wieder* can be found in [Kamp/Rossdeutscher (1994)].

Future research will have to determine what other discourse particles can be captured in the presuppositional analysis proposed here.

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NOTES

1   For a full discussion of these conditions see [Zeevat1997].

2   Giannakidou's notion is more restricted and omits suggestions and *maybe*-environments that in some languages allow certain negative polarity items.

3   I used a net-version of Multatuli's Max Havelaar, a classic dutch novel.

4   *Feitelijk* is not a presupposition trigger, though it can indicate another point of view on the issue at hand. Its analysis is not straightforward.