

Particles: presupposition triggers or context markers

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1 Introduction

This paper discusses two possible formal approaches to the semantic/pragmatic particles of a subclass of the modal particles. It may well be that the approaches can be applied to other particles or that they can be applied to certain intonational patterns (e.g. contrastive stress), to morphemes (past tense, agreement) or to words (pronouns), constructions (some uses of definite descriptions, clefts), but I will not try to show that here.

The first approach is based on the optimality theoretic reconstruction (Blutner & Jäger 2000) of a theory of presupposition that has become fairly standard, the Heim/Van der Sandt view of presuppositions as anaphora (see Zeevat 1994 for an introduction and comparison). The first half of the paper critically reviews my earlier views on these, the second part introduces a novel view, again based on optimality theory, which takes as a starting point the marking constraints that are a necessary ingredient of my earlier treatment.

The advantage of the second treatment is not so much that it gives a better account of the particles in question but that it generalises better to other particles and that it is more economical. There are more particles that can be seen as context markers than as non-standard presupposition triggers. More comprehensive treatments of particles would be possible by developing the notion of a speech act marker in the current framework. I sketch some of the issues involved in that in the final section.

The empirical content of this paper is limited to some well-known observations on the English particle *too* (Kripke) on the Dutch/German particle *toch/doch* (see (Karagjosova) and related particles Zeevat02).

The methodology is standard semantics/pragmatics, i.e. one tries to find formal linguistic and logical models that explain the inferences that language users appear to make.

2 A Presupposition Theory of Certain Particles

The particle “too” has occupied a central place in the presupposition literature, both before and after Kripke’s underground paper on this particle. The view of *Karttunen* is that a presupposition must be true in the context of an utterance of a sentence that contains a presupposition trigger that triggers it if it is not filtered away or stopped by a plug (filters are operators that let through some but not all of presuppositions of their arguments, plugs operators that let none of them through). This condition is always met by simple context of the trigger, like the one in (1).

- (1) John will have dinner in New York too.

What is the presupposition? If John carries so-called contrastive stress, it is the statement that somebody different from John will have dinner in New York. Now New York has many inhabitants and most of them have dinner there every night. In addition, everybody knows that. So in a normal context of utterance, Karttunen’s theory (and similar theories like *Gazdar’s*, *Heim*, *Stalnaker’s* and *Van der Sandt’s* run into the same problem) predicts that the particle *too* cannot change the felicity of the utterance, because its presupposition is trivially met. But it does matter: the sentence is infelicitous if the previous conversation has not mentioned another person who will have dinner in New York.

One can try to escape from Kripke’s argument by assuming a different presupposition, e.g. x is a person different from John who will have dinner in New York. This is an open formula and can only be satisfied by finding a binder for the x in the context: it is very much like a pronoun. This has been proposed by *Van der Sandt and Geurts* in the context of a discourse representation theory and is compatible with Heim’s approach. A problem is then that presupposition triggers in these theories generally allow the possibility of accommodation and that the most natural way for applying accommodation in this case leads to regaining the original problematic presupposition: there is somebody apart from John who will have dinner in New York too. Van der Sandt and Geurts remedy this problem by treating the free variable as a proper pronoun and argue that since pronouns do not accommodate “because they lack descriptive content”, this hidden pronoun in the presupposition triggered by *too* does not accommodate either. (Pronouns indeed do not accommodate their antecedents and have little descriptive content. But not less than “the man” or “the woman”.)

This however still allows for partial accommodation: resolve the pronoun to some known entity and accommodate that the person will have dinner in New York ¹. E.g. (2)

- (2) A man is walking in the park. John will have dinner in New York too.

¹I thank Nick Asher (p.c.) for this argument

could (must, under the assumptions of Van der Sandt and Geurts) be treated by resolving the pronoun from the presupposition triggered by *too* to the walking man in the first sentence and by accommodating the remaining part of the presupposition, making it equivalent to (3). This prediction is wrong.

- (3) A man is walking in the park. He will have dinner in New York.
John will have dinner in New York too.

The assumption that pronouns do not accommodate because of a lack of descriptive content leads to other problems as well. The particle *indeed* (or the Dutch *immers*, roughly “As you know”) presupposes the sentence in which it occurs and thus has arbitrary amounts of descriptive content. But the presuppositions of these cannot be accommodated anymore than the presupposition of *too*.

In fact, it is a general property of particles that are presupposition triggers that their presupposition cannot be accommodated. *Again* clearly has this property like *indeed*, *instead*, German/Dutch *doch/toch*, Dutch *immers* and others.

But they also have other properties that make them unlike normal presupposition triggers. First of all, they are not optional in the sense that if one finds them in a body of natural occurring text or dialogue they can just as well be omitted. (4) is an example, but one really needs to consider many cases².

- (4) A: Bill will come tonight.
B: John will come *(too).
A: Bill is ill.
B: He is *(indeed).

Second, they have a rather minimal meaning apart from their presuppositional properties. *Again* in (5)

- (5) Mary has failed again.

does not inform us of anything apart from the presence in the context of an earlier occasion of failing on Mary’s part. The truth-conditions are the same as the sentence without the particle. It does not assert the existence of another occasion of failing. For that, we have locutions like: *for the second time*.

A third and even more puzzling characteristic is that the antecedents of some of these particles can occur in contexts that are not accessible from the position of the trigger in the sense of discourse representation theory.

- (6) Mary dreamt that night that she failed the exam and indeed she did.

²Corpus work by Tim Kliphuis and myself suggests that omitting them nearly always leads to awkwardness, or differences in the implicatures.

None of the triggers that are central in the presupposition literature have these properties. The only exception might be the obligatory nature of the trigger. Is the use of presupposition triggers instead of non-presupposing alternatives obligatory if the presupposition is fulfilled? I think not, but the situation is not as clear as one would like.

If I say (7)

(7) John believes/suspects that p .

when I know that p is the case, I am not pragmatically incorrect. I merely suggest that John does not have the appropriate epistemic access to p to warrant the use of *know*.

If we have discussed a new girl at the office, it is not incorrect for me to report that I saw John with a girl in town, instead of saying that I saw John with the new girl at the office: I may consider the connection irrelevant in the context. (I would only suggest that they are different, if the hearer would think the identity would be relevant.) To the extent that the standard triggers like *know* or *the* are obligatory, they are so because they are liable to mislead the hearer. Not using them can be a transgression of Grice's maxim of quantity. But the particles are different. They can only be used when the presupposition is there (since they do not accommodate) and their absence cannot really mislead the hearer if the presupposition is satisfied, since the presupposition is common knowledge already. Yet, it is pragmatically wrong not to use them when their presupposition is fulfilled or to use them when the context does not contain their presupposition.

There are unclarities here, but it is obvious that *know* and *the* accommodate, have content and do not take inaccessible antecedents.

(8) John knew that Mary has failed.

(8) can be used to convey that Mary had failed. Knowledge is more than just belief with a presupposition and so has independent content. The truth of the presupposition is therefore not enough to make it necessary to use the word *know*. (9) only is acceptable with the extra accommodation, that the dream is true.

(9) Mary dreamt that she would fail the exam. Bill knows that she will.

Similar examples with *the* are given in (10).

(10) I met the director of Peter's school.
Mary dreamt there was a burglar in the house. The police captured the burglar after a chase in the garden.

The first sentence can be used without Peter’s school having been mentioned before or the fact that it has a director. The second sentence of the second example can only be understood as an elaboration on the contents of Mary’s dream.

It is clear that if we want to analyse particles as presupposition triggers, we must be able to modify our presupposition theories to make it possible that the particles come out as a special case with special properties: no semantic content of their own, no accommodation, the possibility of inaccessible antecedents and the obligatory character of their use. The next section is a resume of my earlier attempt to do just that (*Zeevat02*).

3 An Alternative Presupposition Theory

The following is a sketch of the core of current presupposition theories. There a class of lexical items, intonational patterns and syntactic constructions that are presupposition triggers, i.e. they induce a presupposition.

Some examples are the factive verbs *know* and *be glad that*, the determiner *the*, the cleft construction and topic-focus intonation.

- (11) John knew that Mary had left.
Mary had left.
John is glad that Mary left.
Mary left.
The king of France is bald.
There is a king of France.
It was Bill who ate the cake.
Somebody ate the cake.
BILL ate the cake.
Somebody ate the cake.

The traditional view is that sentences have presuppositions and that presuppositions are entailments that are shared both by the sentence and its negation. There are however serious problems with this view and, anyway, we should attribute presuppositions not to sentences but to sentences in a context, i.e. utterances. (12) for example does not intuitively entail that France has a king, though if we change “the king of France” to “the professor of internal medicine” it seems to entail that there is a professor of internal medicine. The difference is whether the context contains the information that the noun has an empty extension (we all know that France has no king) or not. If we know there is no king of France, we do not assume the presupposition, if we know there is, we already assume it and if we do not know whether there is one, we start assuming that there is.

- (12) Russell and Strawson disagreed about the king of France.

Second, the word entailment is not correct. Positive environments of the trigger (not (12)) mostly entail their presupposition, but that their negative counterparts do cannot be maintained in the light of examples like (13).

(13) It was not John who ate the cake, Mary threw it away.

If the first clause would entail that someone ate the cake, this would contradict the second clause of the example. The same example can be used to show that, sometimes, the negation does not imply, implicate or lead to the assumption of the presupposition triggered in its scope.

What remains of the traditional definition is the statement that if the common ground between speaker and hearer is an information state CG , a sentence triggering a presupposition p is uttered the presupposition is afterwards part of the new common ground CG' and that if the negated version of the sentence is uttered and CG does not have the information that p is false and the negated sentence does not entail that p is false, p also becomes part of the new common ground CG' .

As a diagnostic test for presuppositions, it is much better to look at modal operators like *can* or *maybe* that preserve the presuppositions of their arguments much better (though not perfectly). As a definition of presupposition, one could perhaps use: an implicature of all environments of the trigger in all contexts, but an implicature that can be blocked by special factors, involving the context or the content of what is said in the utterance.

This is illustrated in (14) which gives a wider range of possible environments, all to be read in a context that neither contains the information that Mary is away or that she is not, and which all give rise to the implicature.

(14) John is glad that Mary is away.
If John is glad that Mary is away, he must hate her.
If Tom is going to be there tonight, John is glad that Mary is away.
Maybe John is glad that Mary is away.
John is not glad that Mary is away.
Harry thinks that John is glad that Mary is away.
It is impossible that John is glad that Mary is away.
It is impossible that Harry thinks that John is glad that Mary is away.

In the following, I will use the notion of an *information state*. Information states will be sets of possibilities (possible states of affairs). We will say that a statement φ holds on an information state IS (written $IS \models \varphi$ if and only if φ holds in each of the possibilities in IS). Updating information states with a statement φ means the elimination from the information state of all those possibilities in which φ is not true. More precise definitions are given in the appendix.

I mentioned one information state that can be involved in blocking presuppositions, the common ground between speaker and hearer. But complex sentences will in general invoke other information states from which blocking effects may result.

These are temporary information states involved in the evaluation of logical operations like negation, implication or disjunction. Or derived information states like the collected beliefs of some person according to the common ground. Updating with a negation *not* – A involves eliminating all those possibilities in which A is true. These can be found by updating the information state with A . This gives a temporary information state that can be discarded after the original information state has been updated.

Updating with a clause *if* – A – *then* – B is eliminating those possibilities where A is true but B is false. These can be obtained by constructing a temporary information state TS from the common ground by updating with A and updating TS with B (another temporary information state AT). The update for *if* – A – *then* – B is then given by first eliminating the possibilities in AT from TS , obtaining an auxiliary information state $TS - AT$ containing the possibilities that have to be taken from the original information state CG .

Updating CG with A – *or* – B is creating a temporary information state by an update with *not* – A and *not* – B (this involves 2 more auxiliary information states) and eliminating the possibilities in the temporary information state from CG .

Likewise, we can collect the beliefs of a person x in the common ground, by collecting $BEL(x) = \{A : CG \models x - \text{believes} - A\}$ in a temporary information state (the information state is the set of possibilities in which each element of $BEL(x)$ is true. To update with $x - \text{believes} - B$ is to add B to $BEL(x)$ and eliminate the possibilities from CG in which $BEL(x) \cup \{B\}$ is not part of x 's beliefs.

The temporary information states we needed all branch off from an other information state. We can say that this information state is the parent of the temporary information state. An ancestor is a parent or an ancestor of a parent. The common ground itself lacks a parent and is an ancestor of all the temporary information states that are formed in updates of it.

A presuppositional update is an update with a presupposition trigger. Updating with a presupposition trigger is only possible if the presupposition induced by the trigger already holds on the information state to be updated or on one of its ancestors.

But if the presupposition does not hold on the information state or its ancestors, we have the possibility of *accommodating*: we can add the presupposition to the information state or one of its ancestors if the negation of the presupposition does not already hold there. This seems to happen in preference at information states which are not completely known, like the common ground itself and the belief states of persons as represented in the common ground, with a strong

preference for the common ground itself.

For the temporary information states involved in the updates for logical operators, what holds in the ancestors also holds locally. For information states involved in belief systems this is not the case: information in its parent information state can only hold through a “bridging inference” based on the sometimes plausible assumption that a person believes what is the case.

Let us analyse a couple of examples within the assumptions I just made.

(15) If Mary is ill, John knows that she is ill.

The sentence is infelicitous (it does not meet Grice’s maxim of Quantity) if the common ground already has the information that Mary is ill or if the common ground has the information that Mary is not ill. Otherwise “Mary is ill” will be entered into the first temporary information state which is the parent of the information state for the consequent with the presupposition trigger *know that*. The presupposition therefore holds in an ancestor (the parent) and accommodations are unnecessary. Therefore the utterance of (15) does not lead to the addition of *Mary is ill* to the common ground.

(16) If John is sad that Mary is ill, he must love her.

This time it is the first temporary information state that contains the trigger. If the common ground does not already contain that information or its negation, accommodation will add it there. If it is common ground that Mary is not ill, we get a local accommodation: (16) becomes equivalent to (17).

(17) If Mary is ill and John is sad that Mary is ill, he must love her.

The next example illustrates another point.

(18) What your generalisation captures is exactly nothing

The pseudocleft construction (like the normal cleft-construction) is a trigger of *Your generalisation captures something*. If we accommodate this into the common ground we get an inconsistency with what the sentence says: that your generalisation captures nothing. The auxiliary information by the implicit negation in *nothing* allows a remedy: it is possible to accommodate the presupposition there and so explain why the presupposition is blocked while the utterance still gives information.

(19) John thinks that Mary is ill. He is sad that she is.

Here we have a wrong prediction. The second sentence is added to the common ground and John’s beliefs do not form an ancestor of that. Nevertheless, it is

clear that the information that Mary is ill is not added to the common ground. The situation can be saved by stipulating that the parent of *be sad* is in fact the information state given by John's beliefs as represented in the common ground. The theory that I gave (an abstract and informal version of Van der Sandt 1992, based on insights of Karttunen and Gazdar and rather similar to Heim 1991) is committed to two theses that are problematic for presuppositional particles: resolution is only possible to ancestors and accommodation is always an option. We will generalise the concept of resolution and try to give an explanation why accommodation is not always possible.

3.1 Inaccessible contexts

There is class of auxiliary information states that seems to be properly closed for resolution processes, even though there are ways of reopening them by means of anaphoric processes. These are the temporary contexts necessary for the updates with logically complex sentences, like negation, implication and conjunction. Even particles do not seem to be able to break in. *Indeed* seems the most liberal in allowing antecedents, witness (20).

- (20) John dreamt that Mary would fail her exam and she failed indeed.
 John suggested that Mary would fail her exam and she failed indeed.

But it does not like to appear with antecedents under a logical operator, as is illustrated in (21).

- (21) A: If John comes, the party will be a success.
 B:?? John comes indeed.
 B:?? The party will indeed be a success.
 A: John did not come.
 B:* John came indeed/*John did indeed come.
 A: John came in or Mary left.
 B:? John came indeed.
 B:? Mary left indeed.

But we can be liberal with those operators that do not involve a hidden negation. The auxiliary information states that they introduce seem to be accessible for resolution processes. Possible environments are the complements of verbs like dream, say, think, suggest and also cases where suggestions are made indirectly, e.g by saying *maybe John will come*. Iterations of these also seem to be fine.

- (22) A: John said that Bill maybe has to stay home.
 B: Charles also has to stay home.
 Mary dreamt that she would pass and indeed she did.
 Bill suggested that Mary was not pleased. She was indeed rather unhappy.

The problem is to explain why in specific cases the larger class of antecedents is not available. My explanation is that this is due to overlaps between the presupposition of the trigger and its semantic content. The presupposed complement of *know* can only be a fact, i.e. information that is true in the local information state or in its ancestors. So an antecedent from a dream, or from John's beliefs is not sufficient for giving the semantics of the verb *know* what it needs. The semantics of the particle *again* that presupposes an earlier occasion of the same state occurring or event happening imposes a temporal relation of precedence between the earlier state or the current one in the local information state. A state or event that is not available in the local information state cannot precede the current state or event in the information state. The cases where the weaker antecedents are possible are the ones that have little to no semantics: too, indeed, doch/toch, wel etc.

Marking Principles

It is not possible to explain the obligatory occurrence of anything within the bounds of a purely interpretational theory and the presupposition theory that I have been describing is exclusively concerned with interpretation. My solution to that is to assume a set of marking principles in Bidirectional Optimality Theory. Marking principles enforce the presence of certain features of the semantic input in the linguistic output. For a particle like *too* that is the presence of a similar item. For accented *doch* or *toch* the presence of the negation of the sentence in which it occurs, for *indeed* the presence of the same information. I will try to be more precise about these marking principles in the next section.

Non accommodation

Blutner and Jäger reformulate presupposition theory in bidirectional optimality theory (over a system like that introduced in this section) by two constraints: ***Accommodate** and **Strength**. The first constraint prefers interpretations in which accommodation does not occur, the second prefers the strongest readings. Two other constraints that we need are **Consistent** that prefers interpretations that are consistent with the context over those that are not and a constraint **Trigger** that asks that presuppositions of triggers hold in their local context. Thereby resolutions are preferred over accommodations and if accommodations have to occur, they occur in the common ground, unless that makes the common ground inconsistent (in general accommodating the presupposition in the common ground gives more information than adding it to a temporary information state.) Within this theory one can show that adding a particle is ruled out if its presupposition leads to an accommodation. In that case there is competition with the sentence without the particle. Under the assumptions of bidirectional optimality theory the violation of the constraint ***Accommodate** is fatal for the version with the particle.

The principle is general: If a presupposition trigger has a simple non-presupposing alternative that does not presuppose, it does not accommodate. It has been questioned whether the principle is correct for other presupposition triggers. Geurts (p.c.) argues that the trigger *manage* is a proper counterexample.

- (23) a. John managed to open the door.
 b. John tried to open the door.
 c. John opened the door.

(23a.) presupposes (23b.) while it seems clearly in competition with (23c.) and the presupposition can be accommodated.

It may be that the problem is with the analysis of *manage* as a presupposition trigger (presupposing that the action was tried or that it was difficult). It seems I can say (24) even if I never tried and it would not have been difficult to do so, without misleading anybody.

- (24) I did not manage to phone Mary.

Manage seems to force the focus of the question to be whether the action happened or not. This does not make sense unless we find or assume a corresponding topic (in (24), this is maybe my promise to do so). But if the presupposition is a topic, maybe one should not treat *manage* as a presupposition trigger at all, but as a context marker or a speech act marker. I do not think the argument is conclusive either way.

It is important to note that our alternative presupposition theory forces the replacement of **Trigger** by **Weaktrigger**, the requirement that the local context of a presupposition trigger needs to have access to the suggestion of its presupposition. But this has an unfortunate consequence. We now also need to make sure that the “normal” presupposition triggers that need the full truth of their presupposition in their local context get what they need. The idea that for them the presupposition itself is part of their meaning and that without the truth of their presupposition they cannot be true is intuitively correct, but it is not enough. Without further constraints, we would allow updates which are partially defined: for some of the possibilities in our information states, the presupposition is true and they can be eliminated or not. On others however, the presupposition is not true and therefore the trigger does not define (a contribution to) a criterion which could eliminate the possibility. In these cases, the update is not defined. Now this can be remedied by a constraint **Defined**, asking us to make our interpretations an update that is defined everywhere on the information state. But this is just a reformulation of the principle **Trigger** that we had before, with the difference that it is now limited to a subclass of the triggers: those that require the local truth of their presuppositions. It just shows that something has gone wrong with our attempt to understand particles as presupposition triggers. The constraint **Weaktrigger** is just a special postulate needed for particles. In fact, given that the particles do not accommodate, none of the constraints for presupposition triggers in general seem to play any role in understanding the particles. All the constraints have to do with regulating accommodation and the choice between accommodation and resolution.

There is no other possibility it seems then to admit that thinking of particles as presupposition triggers has no explanatory value. One can do so but it does

not help. I would still hold, however, that it is possible to think of them as presupposition triggers.

A theory of particles like *too* that is not presuppositional should be able to explain only two things: that the use of the particle requires the local truth of the suggestion of the “presupposition” and that the use of some particles (*again, immers*) requires the local truth of the “presupposition” itself.

4 An Alternative Particle Theory: Context Marking

The marking principles that we had to adopt in our analysis of the presuppositional particles are additional: there is no way we can derive them from an analysis that is content with saying that they just presuppose that particular presupposition, have that particular content (if they have any).

A natural strategy towards understanding them better is therefore to turn the argument around and investigate whether we can understand why they are like presupposition triggers if we assume that they are markers of a relation of the content of the current sentence to the context (or to another parameter of the utterance context) and can be there because of either a functional necessity (if the relation in question is unmarked, wrong interpretations) or of a universal principle that requires the marking of the relationship (which according to e.g. (*Haspelmath*) also requires a functional grounding).

The kind of relations for which we have a marking principle are:

The content is already part of the common ground. (**old**, indeed, *immers*, *inderdaad*, *tatsächlich*, *doch/toch* (unaccented), *ja*).

The content has been suggested to be false in the context. (**adversativity**, *doch/toch*, *pro-concessives*, *concessives*)

The content was denied in the common ground. (**correction**, *sondern*, *WEL*, *NIET*, *DO*, *DIDn't*, also emphatic adversatives)

The topic has been addressed before but the content gives an expansion of the earlier answer. (**additive**, *too*, *also*, *ook*, *auch*)

The topic has been addressed before, but this contribution needs to be replaced. (**replacing additive**, *instead*).

The new content addresses the inversion in polarity of the old topic (**contrast**, *but*, *maar*, *aber*).

Are these marking strategies universal? I do not know. There are many things unknown about discourse particles and they are hard to understand even in a single well-studied language. It suffices for our purposes to assume that there is a strong functional pressure to have ways of expressing these relations. That assumption is necessary, since otherwise it is not clear how we could have particles like the ones listed above or how they can appear so often. And we can try

to make clear what could go wrong in the interpretation process if the particles (or other forms of marking) would not be there.

Old Marking

If an old element is not marked as old, it may be interpreted as new even if it is formally identical to some extent (indefinites, tense). The original element is integrated into the semantic representation by the original interpretation process, the new version will lack these.

Adversative Marking

If the presence of a suggestion to the contrary is not noticed, this means that the suggestion to the contrary will be unchecked and can be the source of later errors.

Correction Marking

This should lead to the retraction of the corrected element. Like suggestions to the contrary, these should be checked, since they can create wrong information later on.

Additive Marking

Additive marking finds an old topic and the way this was addressed before. Without the additive marking, a different topic may be assumed. Without additive marking, the two occasions of addressing the same topic remain unintegrated and can lead to wrong information due to exhaustivity effects.

Substitution Marking

Here it is essential to make sure the two ways in which the topic is addressed are kept distinct and that the two answers are not taken as a joint answer to the same topic.

Contrast Marking

If the polarity switch remains unmarked, it may be unnoticed. Misinterpretations can also result from interpreting the second conjunct as belonging to the topic of the first conjunct.

These motivations suggest that it is in the speaker's interest to mark these relations: without marking, she may well be misunderstood. And it is in the hearer's interest to pay attention to the marking particles: without that, she may be confused.

5 Context Marking in Bidirectional Optimality Theory

Let us assume the convention around our particles is very simple: if the relation R obtains between context parameters and the current utterance, add P to the utterance. (A more abstract version only asks for R to be marked somehow and so allows for more marking devices than just P). This convention (a

constraint **max(R)**) overrules a constraint against special devices (an economy constraint ***PARTICLE**). The combination of the two constraints guarantees that P appears if and only if R holds between the content and the context parameters. From the point of view of the interpreter of the utterance, an occurrence of P indicates that R holds. Since the hearer now knows the content of the utterance and already knew the context parameters, she can make sure for herself that R holds. This check of R will force certain identifications, involving the current utterance, the common ground and the topic. The check is part of the interpreter's task of reconstructing the intentions of the speaker. It is also part of the interpreter's task of integrating the new information within her overall representation of the world and of doing so in an efficient way.

Can we now understand why there are similarities between presupposition triggers and a class of particles? What we have so far is a tentative explanation of two properties of our particles: the fact that they do not accommodate and the fact that their occurrence is not optional but obligatory. The other things we need to explain is the fact that they lead to a resolution process in which certain material is identified in the context and the extra embeddings under which this material may occur. The first part of this is relatively trivial. The relation R needs to be recognised as holding between the current utterance and the context parameters.

Let us go through these for each of our R s.

Old markers

φ is the content of the current utterance, CG the common ground. $old(CG, \varphi)$ holds iff $CG \models suggested(\varphi)$.

$suggested(\varphi)$ can be defined by a recursive definition, using a set $\{O_1, \dots, O_n\}$ containing operators like *dream*, *suggest*, *believe*³, etc.

$$(25) \quad suggested(\varphi) \leftrightarrow \varphi \vee O_1\varphi \vee \dots \vee O_n\varphi \vee suggested(\varphi)$$

Each of the particles does more than just mark R , almost by definition in this case. *Indeed* indicates the presence of better evidence for φ , *immers* makes φ a reason for assuming the current discourse pivot (the discourse element to which the current utterance is related by a discourse relation, normally the previous utterance), *doch/toch* without accent makes the old information subject of discussion again, *ja* presents it as common ground between speaker and hearer (and allows further causal or other connections based on that). This makes it hard for *immers*, *ja* and unaccented *toch/doch* to have antecedents which are merely suggested⁴.

Adversative Markers

$adversative(CG, \varphi)$ holds iff $CG \models normally(\neg\varphi)$ or $CG \models suggested(\neg\varphi)$

³In the form *Somebody dreamt that*

⁴This makes a proper account of them dependent on the constraint **Defined** that I discussed earlier on

The semantics of *normally* is the subject of default logic and there is no standard view. The truth of *normally*(p) on an information state requires that the $CG \models \psi_1, \dots, \psi_n$ and that ψ_1, \dots, ψ_n together constitute a reason for thinking that p , while at the same time the CG must not support a similar argument for $\neg p$.

The easiest case is that of full concessives. The complement of the concessive clause gives the argument for $\neg\varphi$ and also chooses *normally* instead of *suggested*. Since the complement of the concessive connective is presupposed, it can be treated as part of the common ground. Pro-concessives (e.g. isolated *though* in English) indicate that the complement is highly activated. The other branch, based on *suggested* is necessary. Compare (26):

(26) Mary dreamt that she failed the exam. She had passed though.

It seems impossible to construe dreams as arguments for the truth of its propositional content. So this is really a non-concessive adversative reading of *though*. If there is a grammaticalisation path here, it goes from proper concessives to the vaguer adversative meanings.

Accented *doch/toch* is adversative. Partly these are pro-concessives with a normal stress (like *trotzdem*, *nevertheless*, *desondanks*), partly *doch/toch* has contrastive stress contrasting with an activated negative version of the current sentence. The real puzzle with *doch* and *toch* are the unaccented cases that can be proper *old*-markers without the slightest trace of adversativity⁵, as in (28).

(28) Wenn er doch hier ist, kannst du es ihm auch selbst fragen.
When he is here anyway, you can ask him yourself.

Corrections

correct(CG, φ) holds iff $CG \models \neg\varphi$. The corection relation is an extreme case of adversativity: the best reason for believing that φ is false is knowing that it is. At the same time unlike the weaker possibilities for adversativity, the current sentence is then not consistent with the common ground. The intended change to the common ground is a combination of retraction of $\neg\varphi$ and the addition of φ as a replacement.

Doch/toch with contrastive stress is one correction marker. Others are Dutch *wel* and *niet* (both with contrastive stress), English *do* and *do not* (both with contrastive stress).

⁵These can probably be connected to affirmation questions with a positive bias, elicited by an apparent opposite opinion of the interlocutor.

(27) A. Ich werde es ihm nächste Woche sagen.
B. Dann bist du doch verreist?

Though *doch* is here appropriate because *B* seems to imply that what *A* said is false, it also expresses that according to *B* the common ground is that *A* is abroad next week. Reanalysis as an old marker is thereby possible. Hans-Martin Gärtner observes that there are two intonational contours for this *doch* only one of which can be combined with *aber*

Additive Markers

Common grounds naturally record their own history and any formal model of them must follow suit. $additive(CG, \varphi)$ is then a combination of a complex relation to the common ground and a special intention.

The relation is between the common ground, a topic and a proposition. The topic must be such that φ addresses it. The proposition must be the strongest to hold on the common ground that addresses the topic and the common ground must “remember” that the proposition addressed the topic. This calls for a special predicate.

$$(29) \quad CG \models addressed(\psi, T)$$

The predicate should entail: $CG \models \psi$ and $address(\psi, T)$ and there should not be a χ such that $CG \models \chi$, $\chi \models \psi$ but $\psi \not\models \chi$ which also addresses T .

On a proper model of topic, addressing should be a formal relation between the formal topic and the sentence. E.g. on a model of topics where they are Hamblin-style questions, a proposition addresses a topic if it is member of the topic.

The intention of the speaker is that now the conjunction of ψ and φ becomes the information that the common ground has about the topic. I.e. $addressed(\psi, T)$ will be false on the new common ground and $addressed(\varphi \wedge \psi, T)$ will be true. Close to *additive* markers in functionality are “*other-* markers” like *another* in *Another girl walked in*. If we think of the noun *girl* as a topic that is addressed by the indefinite, their treatment is formally the same. But it makes no sense to think of the noun as an additional topic.

Replacing Additive Markers

Replacing additive markers like *instead* are only different in the intention. We here want the effect that the proposition that used to address our topic is replaced by the current proposition φ , so that afterwards the common ground has it that $addressed(\varphi, T)$ is true and $addressed(\psi, T)$ is false.

The choice between additive and replacing additive markers explains the relative uncomfotability of antecedents that are only suggested. If in the first of (30) one uses *too*, the suggestion is that Sue is in Spain next to John, if in the second, one uses *instead*, one suggests that the dream is false. Leaving out the particle completely is not an improvement. We now no longer mark that the topic has been addressed before.

- (30) Mary dreamt that John is in Spain. (?) Sue is also in Spain.
Mary dreamt that John is in Spain. (?) Sue is in Spain instead.
Mary dreamt that John is in Spain. (?) Sue is in Spain.

In (31) we see how subtle this is. The situation (A and B are children in a secret phone call) makes it clear that B’s parents do not know about the other child. And many people find the example mildly anomalous.

- (31) A: My parents think that I am in bed.
 B: My parents think that I am also in bed.

One way of describing the anomaly is to say that *too* and *instead* are not a pure context markers, but also speech act markers for the specialised speech act of adding to an old topic. But whether this is so really depends on your reaction to examples like (31).

Contrast Markers

The most complicated relation I consider here is contrast and one might well wonder whether it belongs in this sequence. I think it does and that it is a mere coincidence that contrastive markers often appear as coordinating sentence connectives. In German, *aber* (but) also appears in later positions in the sentence and an extensive corpus study (*Schösler*) reveals that there is no essential difference in these uses, which are translatable by *echter* in Dutch or by *however* in English. My provisional analysis, derived from *Umbach*, goes as follows, using the machinery of above.

Let ψ be the discourse pivot (the predecessor of the current utterance) and let $CG \models addressed(\psi, T)$. φ is contrastive iff it directly or indirectly addresses $negate(T)$. Here, $negate(T)$ is the topic that is addressed by the negation of any formula that addresses T . For example in the view of *Hamblin*, we can obtain $negate(T)$ from T by replacing T 's elements by their negations.

We can say that the sentence S indirectly addresses a topic T iff the common ground updated with the information that S answers its own topic T entails an element of the topic.

I illustrate the analysis by (32). In a. the second conjunct directly addresses the topic of the first sentence: who was ill. I will assume that this as the topic of the first conjunct also in b. and c. In b. we can construct the topic of the second as e.g. who was fit as a fiddle? or Was John as fit as a fiddle. In both cases the answer entails that John was not ill. In c. the topic of the second conjunct is something like: What about John? The fact that the answer does not include that he was ill and the fact that the negation of the topic of the first conjunct must be addressed implies that John was not ill.

- (32) a. Mary was ill but John was not.
 b. Mary was ill but John was as fit as a fiddle.
 c. Mary was ill but John came to the party.

With *Umbach*, I hold that the concessive uses are derived⁶ In (33), a. can be rephrased by b.

- (33) a. Although Mary was ill, John went to the party.
 b. Mary was ill, but John went to the party.

⁶This can be doubted. Prof. Asiatini of the Tblisi State University noticed (p.c.) that in Georgian the concessive and contrastive uses of *but* are lexicalised in a different way. This shows at least that normal language users do not conflate the two uses and that contrastive markers do not always allow concessive interpretations.

Here *but* is reanalysed as a proconcessive, taking its antecedent from the first conjunct. This requires that the common ground makes Mary's illness a reason for thinking that John would not go to the party (it may be known that in such cases he feels his duty is at home). I would now think this is a natural reanalysis, based on the fact that often one positive answer to a topic makes further positive answers more plausible. If you know Mary and John, the fact that Mary goes to the party makes it a pretty good guess that John will go there as well. So in that case the contrastive *but* in (34) also marks adversativity. (A separate adversative marker is not necessary anymore.)

(34) Mary goes to the party, but John is not.

A simple treatment of *and* along the same lines is to say that *and* forces the second conjunct to at least indirectly address the same topic (this is consistent with the analysis of *Gomez-Txurruka*).

6 Conclusion

I have discussed so far what is context marking if we assume that syntax tells us to mark certain relations of the current utterance to context parameters like topic and common ground and if the interpreter's task is just to reconstruct the speaker intention. We have assumed that the presence of context markers is largely explainable by the difficulties facing the hearer in properly integrating the current utterance with the information that she has already got. Particles in this view are the signals from one copy of the human conversational faculty to another. They may make not make much sense to us as rational agents, but they do a lot for the proper storing and connecting of the bits and pieces that come in.

The only assumption that we need to make for obtaining the presuppositional behaviour is that for embedded occurrences of triggers, the local context is the one with respect to which marking needs to take place. This will explain those cases in which the common ground does not itself have the required relation to the content of the sentence, as in (35).

(35) Falls du nach Berlin kommst, triffst du ihn ja.
In case you come to Berlin, you will meet him *ja*.

The presuppositional character of some of the particles is basically the reconstruction by the hearer of the relation marked by the particle under which the utterance is made. This forces the identification of a topic or a proposition in the common ground. There is no accommodation because the parameters are overt: it makes no sense to warn the hearer about a relation that does not obtain. Suggestions can open topics and address them. They can address them positively and negatively. That is enough to understand why old, adversative and additive markers can take indirect antecedents.

It is therefore not necessary to invoke “presupposition theory” for the analysis of discourse particles. In fact, one may wonder whether presupposition -or presupposition trigger- must be considered to be a natural class in linguistics, since, after all, the triggers normally considered in the presupposition literature fall into at least three classes: the ones considered here, referential devices like definite descriptions and the lexical presupposition triggers, like *bachelor* all three with different projection behaviour.

An attempt to understand particles as presupposition triggers also runs into the problem that many are not. It is clearly the case that more particles can be analysed as context markers.

But this should not fool us into thinking that context marking is all there is to particles. Very obviously many discourse particles mark speech acts. The clearest case are markers like Chinese *ma* that makes questions out of assertions as in (36)

- (36) Ni hao ma?
You good QUESTION-PARTICLE.
Are you OK?

Or take the unaccented *wel* in Dutch as in (37).

- (37) Het komt wel goed.
It'll be fine.

The particle tones down the preconditions of normal assertion (the speaker has to believe to know what she is telling the hearer) to mere undersupported belief. This -like a repetition or a correction- is a specialisation of the speech act of assertion. An analysis of speech act markers must however be deferred to another occasion.

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bf Appendix
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