

# Factive presuppositions, accommodation and information structure

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**Abstract.** There are three ways to refer to a fact from the complement of a factive verb: 1) via abstract object anaphoric reference, or, with a full sentential complement that will be interpreted either 2) as a bound presupposition or 3) as triggering a presupposition of a fact that will have to be accommodated. Spoken corpus examples reveal that these three possibilities differ in relation to the type of information they tend to contribute, and this has two effects. First, the information status of the fact and its role in the discourse seem to affect the preference for one construction over another in a particular context. Second, presupposed factive complements that need to be accommodated tend to be hearer-new and the focus of the utterance, meaning that information structure seems to contribute to the felicity of accommodation of presupposed facts.

**Keywords:** presuppositions, anaphors, factives, information structure, focus, accommodation

## 1. Introduction

There are three ways to refer to a fact from the complement of a factive verb. It can be done as in (1a) below, by referring to the fact with an anaphoric expression such as a demonstrative, as shown, or with the personal pronoun *it*. Reference can also be made via a presuppositional expression to an already given fact in the discourse context, as in (1b). Finally, a presupposition<sup>1</sup> induced by the factive can be accommodated in the discourse, as shown in (1c) below, where the linguistic expression from which the presupposition will be derived is given in italics. Note that each expression also explicitly informs via the matrix sentence about the students knowing or noticing the fact derived from the clausal complement.

Example (1)

a. Computational linguists are in demand. Students apply for our program because they have **noticed** *this*.

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<sup>1</sup> Please note that throughout the text ‘presupposition’ refers to inferences that tend to survive in non-entailing contexts, and not to the very different use of the term presupposition to refer to thematic or old information.

- b. Many companies and government agencies are looking to hire computational linguistics. Students apply for our program because they **know** that *computational linguists are in demand*.
- c. Students apply for our program because they **know** that *computational linguists are in demand*.

The aim of this work is to give an account of the use of these three constructions and the type of information they are associated with in spoken discourse. The constructions are comparable in that they all make reference to facts, contribute additional information about facts, or ascribe to individuals an awareness or attitude towards facts. Each construction is examined in relation to two dimensions of information structure (IS), the status of the information to be communicated to the hearer and the focus-ground structure of the utterances.

Examining the use of these expressions in naturally produced spoken discourse reveals that bound factive presuppositions and abstract object anaphoric reference from the complement of a factive have different functions, and that accommodated factive presuppositions are often hearer-new, and in the majority of the cases also the focus of the utterance. These different characteristics play a role in when and why speakers choose to use one or the other form and may in part explain what makes accommodation of factive presuppositions so common, and so felicitous.

## 2. The binding theory, factive presuppositions and abstract object anaphors

I consider presuppositions to be best treated as anaphors at the level of representation, following the binding theory of presupposition (van der Sandt, 1992). This theory maintains that presuppositions and anaphors can be resolved in the same way. It achieves this by extending Discourse Representation Theory (DRT) (Kamp & Reyle 1993) to handle presupposed information. Inferred information induced by a presupposition trigger needs to be bound with a discourse-given antecedent in the discourse representation. For anaphoric reference, as in (1a), the demonstrative needs to be bound in order to get an interpretation. In a parallel way, the binding theory considers the presupposition induced by the factive verb *know* in (1b) to need to be bound to a discourse given antecedent in order to get an interpretation. The information contributed by the first sentence in (1b) can be considered to be similar enough to function as an antecedent. Interpretation of the anaphor from the complement of the factive in (1a) and reference to the same infor-

mation via the presuppositional expression in (1b) will both result in a similar representation in the discourse representation structure (DRS) associated with the discourse. Thus, the binding theory considers the information contributed by these two structures to be quite similar. However, the process by which each structure gets to the resulting representation is different, and the contexts and functions for which each is used may perhaps also be different. These differences are one of the issues explored in this paper by looking at naturally produced examples.

In the binding theory, presuppositions do differ from empty anaphors in one crucial way. If there is no suitable antecedent (such as in (1c) when it is used in an empty context), then the presupposition can create its own antecedent by revising the context so that it contains the presupposed information. This is done by the process of accommodation, introduced in Karttunen (1974) and Stalnaker (1974) and given its name by Lewis (1979). Accommodation is when the discourse context is revised so that the use of the presupposition is satisfied, and is believed to be the equivalent of the hearer's adjusting their discourse model to what they believe the speaker is assuming. This leads to a revision of the incoming DRS by adding the presupposed information to the representation. In this way, the construction illustrated in (1c) will contribute almost the same information as that contributed by (1a) and (1b).

We know very little about accommodation in naturally produced data. Even simple questions regarding what licenses accommodation and what makes it felicitous, are not well understood. Two explanations have been given in the literature for what makes accommodation felicitous. Van der Sandt (1992) has argued that it is descriptive content and Zeevat(1999) and Blutner (2000) believe that it has to do with what non-accommodating alternatives are available. One of the reasons for comparing abstract object anaphoric reference from factive complements as well as bound presuppositions in this study is because they both can be regarded as potential alternative expressions to accommodated presuppositions.<sup>2</sup>

Factives in particular have always been considered to be a trigger which can induce presuppositions that can be felicitously accommodated. Consider the following example from Karttunen (1974:191, ex. 26a)

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<sup>2</sup> Note that Geurts (1999) considers it more correct to view anaphors as presuppositions and as such all three of the constructions studied here are presuppositions.

**Example (2)** We **regret** that children cannot accompany their parents to commencement exercises.

The triggered presupposition, that *children cannot accompany their parents to commencement exercises*, is new to the discourse and still felicitously accommodated. But this type of usage with presuppositions is often considered to be special and unusual. However the spoken corpus data that I will present shows that the major usage of factive presuppositions is presuppositions that have to be accommodated, making it desirable to be able to say something about what characteristics make accommodation felicitous. I will argue that information structure plays a key role in the licensing of accommodation and the felicity of the resulting discourse, as well as in the utility of the construction.

These three structures all involve some type of introduction of or reference to a semantic fact. Semantically, facts are abstract objects. Abstract objects are special in that they are not individuated in the same way that concrete semantic individuals are but are “a matter of convention within our conceptual scheme” (Asher 1993:258). This means that our perception of facts is more dependent on the manner in which they are introduced and described in the discourse than our perception of concrete individuals. Thus, many abstract ‘objects’ originate as known or discourse-given information that is not conceived of as a distinct object until delimited by some type of linguistic reference to it, a process called reification. Abstract objects are also subject to *type-coercion*. This is the well known phenomenon where an abstract object of one type can be referred to anaphorically with an expression of another abstract semantic type, and a common occurrence is that the factual aspect of an *event* or *situation* in the discourse context can be referred to, leading to the reification and addition of a semantic fact to the context.

Each of the three methods of reference to facts affects the discourse representation in a slightly different way. Abstract object anaphors used in the complement of a factive can refer to an already given fact, can introduce a semantic fact by referring to the factual aspect of an abstract object of another type which is already part of the discourse record via *type-coercion*, or can introduce a fact in the discourse by reifying already given information. Bound presuppositions also can refer to a fact in one of these three ways. Induced presuppositions that have to be accommodated introduce an entirely new fact in the discourse representation. In order to properly handle the representation of abstract objects, an extension of standard DRT is needed. For a detailed proposal see Asher (1993) or see a more conservative extension in Geurts (1999). In this article, the technical issue of the actual DRT

representation can be side-stepped because the effects at the level of representation can be understood even if discussed in an informal way.

In order to find out more about how these constructions are used by speakers in naturally produced discourse, examples from a spoken corpus were excerpted.

### 3. Empirical Data and Method

Examples of factive verbs (see Kiparsky & Kiparsky 1970) were excerpted from the London-Lund Corpus of Spoken English (LLC)<sup>3</sup>. This is a corpus of British English that was surreptitiously transcribed in the late 60's and early 70's. The transcript contains limited prosodic marking, but the audio files are not available to protect the privacy of the participants. 50 multi-speaker dialogues were used, which contained roughly 233,000 words. The following factive verbs were excerpted:

**Factive verbs: subject complements** *count, make sense, suffice, amuse, bother, matter*

**Factive verbs: object complements** *discover, find out, know<sup>4</sup>, notice, realize, regret, resent, see*

Examples without a complement, or with a non-abstract NP-object complement, were discarded. The majority of the subject complement factive tokens found were *make sense* and *matters*. The majority of object complement factive tokens were *know*. There were no tokens with the correct structure of *regret*, *resent* and *suffice*. For each example, the relation between the earlier context and discourse structure was examined, noting speaker shifts, distance in utterances, and any other relevant aspects.

In the binding theory, binding is preferred to accommodation and the algorithm requires first trying to bind presupposed information to discourse-given material. Meaning similarity was the most important requirement for determining if a triggered presupposition had an antecedent in the previous context. The entire transcript from the beginning of the recording to the trigger was examined for the same or similar information that could function as an antecedent at the level of discourse representation. Binding is preferred to be as close as possible

<sup>3</sup> Information on obtaining this corpus can be found on the ICAME website at <http://www.hd.uib.no/icame.html>

<sup>4</sup> Examples of *know* in present tense with the subject *you*, without a complement marking *that*, and where the factive is found on a tone unit boundary were excluded from analysis because it was not possible to distinguish these examples from the use of *you know* as an emphatic marker. There were 47 cases of this structure in all, where 38 would have been analyzed as accommodation and 9 as binding.

Table I. Corpus examples studied

Type	Total	abst obj ana	bound presupp	accomm presupp
object comp	127	18	28	81
subject comp	12	12	0	0
TOTALS	139	30	28	81

to the context in which the presupposition is triggered, and in the case of presuppositions triggered under embedding, each embedded context is considered in turn. If no antecedent is found then the presupposition has to be understood via accommodation.

### 3.1. RESULTS

Table I presents the results. By far the most frequent usage was a presupposed proposition that had to be accommodated (81 examples).<sup>5</sup> The next largest group found were abstract object anaphoric references, 30 in all. There were only 28 examples of bound presuppositions. For almost all examples of abstract object anaphoric reference, a linguistic expression that could be the informational source of the abstract object could be found in the previous adjacency pair in the dialogue, or in the same adjacency pair, though there were a few exceptions. In 3 cases of abstract object anaphoric reference it was impossible to pinpoint exactly what utterance(s) provided the antecedent though the information was clearly part of the preceding context (cf. Eckert & Strube (2000) who also found a great number of abstract object anaphors with vague or difficult to identify antecedents).

## 4. Information structure and factives

There are many different units of information structure and many different levels on which information structure can be discussed, but I relate the examples here only to two. First, is the fact referred to believed by the speaker to be hearer-new or hearer-known? Abstract object anaphors and induced presuppositions that get bound refer to

<sup>5</sup> Presuppositions triggered under logical embedding can be accommodated globally in the main DRS, locally in the DRS where triggered, or anywhere in between, i.e. intermediate accommodation. If there is no embedding the presupposition is accommodated in the main DRS. These distinctions are not important for the further discussion so the number of examples in each category found are not given here.

hearer-known information. But what is the status of induced presuppositions that have to be accommodated? Knowing this would tell us something about what type of information speakers believe factive presuppositions can communicate.

Second, what is the *focus* and what is the *ground* of the utterance? We can divide an utterance into the intended point of the message, which I will call the *focus*, and information communicated to support the intended point, which I will call the *ground*. Is there any identifiable pattern in focus and ground in any of the three structures?

#### 4.1. HEARER-NEW OR HEARER-KNOWN?

The categories of hearer-new and hearer-known refer to the speaker's view of what information he shares with the hearer, as far as this can be determined from the transcript.<sup>6</sup>

##### 4.1.1. *Abstract object anaphors and bound presuppositions*

Even if both abstract object anaphors and bound presuppositions refer to hearer-known information, they differ in their contribution to the understanding of the information referred to. Abstract object anaphoric references, unless they refer to an already reified fact, can contribute a small amount of hearer-new information in that they affect the representation of the information in the discourse record by reifying some of it into a fact. Additionally, the construction as a whole contributes new information about the subject's attitude towards the fact. Consider example (3).

#### **Example (3)<sup>7</sup> Abstract object anaphoric reference with a demonstrative**

**Speaker A:** So that it's the faculty of arts or the faculty of economics or both that'll be putting him forward (a)

**Speaker B:** Mmm. (b) But they can put it forward for any title that they like apparently.(c) I didn't **realize** THIS. (d)

**Speaker A:** No, I didn't **know** THAT. (e)

<sup>6</sup> In this way the categories are focused on shared knowledge, and differ from categories used in more discourse-oriented information structure hierarchies such as Prince's (1981) taxonomy. Note also that most information structure taxonomies are oriented towards categorizing the information status of concrete objects, while factive presuppositions are abstract objects with an internal structure, which complicates using existing taxonomies.

<sup>7</sup> Some of the corpus examples have been simplified to save space and increase clarity

Here, THIS (d)<sup>8</sup> refers to an abstract object derived from the linguistic expression in discourse segment (c), which is underlined. This will result in an abstract object of a semantic fact being added to the discourse context. THAT in (e) refers to this same abstract object. The constructions also give explicit information about Speaker A and Speaker B's realization or knowledge of the fact in (c).

Most of the examples were easily resolved and often there was an earlier comment revealing that the information was unknown or new, just after the antecedent information. Consider the following two simplified examples.

**Example (4) Abstract object anaphoric reference**

**Speaker B** They didn't confiscate the the gun. They were just using it without a permit (...)

**Speaker c** You need a permit for an air gun?

**Speaker B** Yes.

**Speaker c** Gosh, since when?

**Speaker B** Since, I don't know, couple of years ago, very recently.

**Speaker C** I didn't **know** THAT .

**Example (5) Abstract object anaphoric reference**

**Speaker A** In fact, Heather, the assistant housemother lived there for a couple of years.

**Speaker B** Did she?

**Speaker A** Yes, She knew it very well.

**Speaker B** I never **knew** THAT.

Determining the amount of previous context that was necessary to consider to be part of the antecedent was sometimes problematic. In the two examples, THAT in (3) may or may not also include the information *since the last couple of years* and the THAT in (4) may or may not include the information that Heather knew it very well. Usually one part of the previous discourse was easily identifiable as part of the intended reference, but whether or not additional information was also intended was unclear. The perceived 'scope' of the reference may also vary from individual to individual. This problem is partially due to the lack of individuation in abstract objects. If the reference is limited because of the turns of the speakers, or delimited by their comments, as in the two examples above, this is only a minor problem. If the factual aspect of an already given abstract object is referred to, as in in Example (3)(e), this is also not a problem. Note also that in Example

<sup>8</sup> Letters follow the sentences they mark.

(3) the discourse segmenting is marked by the cue phrase *But* in (c), making it impossible for the THIS in (d) to refer to information in (a).

Problems determining the scope of the antecedent don't occur with bound presuppositions because the descriptive content associated with the presupposition delimits the abstract object referred to. Example (6) shows a case of presuppositional binding.

**Example (6) triggered presupposition: you're going to knock out an expectant mother**

**Speaker A:** It was lethal to expectant mothers with small children.(a)

(38 intervening lines of text).

**Speaker A:** After all, I mean you can't go down and shop if you **know** that *you're going to knock out an expectant mother* ... it was some violent streptococcus that he'd got (b)

Here the presupposition is that "you" (or anyone, in a generic sense) who is infected with the streptococcus referred to by "it" in utterance (a) would knock out an expectant mother. The information presupposed in (b) is not new, because utterance (a) refers to the same situation, though in a slightly different way. The reference of the presupposition is clearly limited to the danger that someone who has been in contact with the illness presents for pregnant mothers. Note that it would not be possible to replace the presupposition with an abstract object anaphor.

**Example (7) triggered presupposition: he looks funny**

**Speaker c** He's absolutely huge.

**Speaker B** Oh, he's, I know, his features are fast disappearing actually, it's all face (...) I can't do anything about it. He's now known as the fat man of Ludlow Park. (...) It's a shame, and he doesn't **know** *he looks funny*, does he.

In this example the different descriptions of the overweight man that they are discussing are summarized in one presupposition: the man looks funny. It is the descriptive content of the factive presuppositions that allows it to shape and delimit the boundaries of the perception of this already given information.

Sometimes the presupposed information may already be given in the discourse but it is perhaps not clear to all discourse participants. The following example illustrates a case where the full presuppositional expression could be replaced with an abstract object anaphor. But the use of the presuppositional expression has the additional function of

making explicit a conclusion that is only inferable from the context. Speaker B is telling a story to Speaker a. Speaker C also knows the story. Speaker B knows that the information communicated to Speaker a is new, but is unsure if the information presupposed will be hearer-new or not. This is because the presupposed information is inferable from the earlier context in (a) (i.e. if you are put on probation you must have been prosecuted in court), but the whole focus of this point in the story is that this connection was not made by Fan (*Fan didn't realize...*). Speaker C's addition in (b) (*She was prosecuted...*) makes the connection more clear. This further confirms that the speakers seem to be unsure if Speaker a will be able to make the same conclusion that their friend Fan was not able to make.

**Example (8) triggered presupposition: she must also have been up before the court**

**Speaker a** \*(- laughs)\*

**Speaker B** \*And he was\* , put in gaol. I said to Fan, well I don't like to rub it in, but - it must have been some huge affair, because - what Fan didn't realize, not being a lawyer, or a lawyer's wife - that apparently the wife was put on probation. (a)

So that Fan, Fan didn't **realize** that that *she must also have been up before the court*. You can't be put on probation, not unless you're guilty.

**Speaker C** Oh yes, she was prosecuted too (b).

Multi-speaker dialogue may need to use bound presuppositions in situations where an abstract object anaphor was not possible perhaps because establishing information as mutually known is a more complex task when several discourse participants are involved than when only two participants are involved. All conclusions may or may not have been realized by all discourse participants. In fact, it would be strange if we would not need to explicitly conclude things on occasion, as a form of grounding.

In summary, both abstract object anaphors and bound presuppositions refer to discourse-given information, information that must be considered hearer-known. However, their use affects the perception of this information. In particular, bound presuppositions affect how the information referred to is individuated and perceived. This is only possible because they have a greater descriptive content which allows them to refer more precisely or specifically to abstract objects in the discourse context.

Table II. Accommodated factive presuppositions: Hearer-known or hearer-new from the speaker's perspective

Category	known	maybe known	maybe new	new
Number	15 (18%)	12 (15%)	7 (9%)	47 (58%)

#### 4.1.2. *Accommodated presuppositions*

Generally it is assumed that presupposed information should be shared information, and that when presuppositions are used without antecedents in discourse then the information was already known to the hearer. Delin (1995) however strongly questions this view. Based on her corpus study of *it*-cleft presuppositions, she argues that many of her examples, like examples of information bearing clefts discussed in Prince (1978), actually presuppose hearer-new information. We can then ask if the accommodated factive presuppositions in the corpus are contributing information that the speaker believes is hearer-new?

There are two types of evidence that have been discussed as clues to the information status of presupposed information. The first is the presence of prosodic prominence, used in Delin (1995). Delin considers pitch accent within the clefted constituent in *it*-clefts as signaling that at least part of the information presupposed must be hearer-new, and she uses this as her main evidence for identifying *it*-clefts that contribute new information. The second type of evidence is length, pointed out by Prince (1978) in her study of information-bearing *it*-clefts. Length signals informativeness, and a very long sequence is taken as evidence that some of the information is new.

Other types of evidence can be used to determine if the speaker believed the information was hearer-new or hearer-known; e.g. the way the speaker has set up his message, the message itself, the role of the message with the presupposed information in the discourse and the hearer's reaction. Relying mainly on these characteristics, including also length, I re-examined the 81 factive presuppositions from the corpus that would have to be accommodated because they lacked a discourse-given antecedent.

Each example was categorized according to whether or not it seemed as if the speaker believed the presupposed information was known to the hearer, maybe known to the hearer, maybe new to the hearer, or certainly new to the hearer. The results are given in Table II. In 47 examples, making up 58% of the entire sample, the speaker seems to believe that the presupposed information is new to the hearer, while only in 15 examples is it fairly clear that the speaker believes the

information is shared. It would seem that the most frequent function of factive presuppositions in the corpus was to communicate hearer-new information. Below is an example typical of the presuppositions considered to be hearer-new.

**Example (9) triggered presupposition: the tremendous number of claims against the railway companies were people whose fingers had been caught in doors...**

**Speaker C:** When I worked on the railways these many years ago, I was working in the claims department, at Pretona Station Warmington as office boy for a short time, and . one **noticed** that *the tremendous number of claims against the railway companies were people whose fingers had been caught in doors as the porters had slammed them.*

**Speaker A:** Really. Oh my goodness.

In this example Speaker C is telling a story seems to believe that the presupposed proposition is hearer-new (otherwise, why tell the story?) Additionally, we see from Speaker A's reaction that the information was hearer-new. Length was mentioned above as clue to informativeness. Here the complement of the factive from which the presupposition is derived is very long, and this would also seem to be evidence that it is unlikely that all the presupposed information could be known.

The following example is similar. The presupposition is made in the context of the speaker telling a story. The information presupposed is quite long and the reaction of the hearer also points to it being hearer-new, and the content is unlikely to have been inferred from the context.

**Example (10) triggered presupposition: there were also about twenty-five cows**

**Speaker A** And there were two two two mares in the field which was . rather extraordinary cos then we **discovered** that *there were also about - twenty-five cows* ( - laughs) —

**Speaker b** (laughs)

**Speaker A** Who sort of loafed about

How do these examples differ from cases where the speaker seems to believe the information must have been known to the hearer? In the next example, the information offered by Speaker A about Yoolat and the fact that he has already arrived makes it quite clear that Speaker A knows that it was earlier decided that Yoolat was coming so Speaker B cannot believe his presupposition is new. Only the asserted information regarding his own knowledge about the arrival can be new here.

**Example (11) triggered presupposition: he was coming**

**Speaker A** Have you met our man Yoolet yet, the one who's a student for the diploma.

**Speaker B** No, no, no.

**Speaker A** Mmm.

**Speaker B** I **knew** that *he was coming*. I've heard Stan Carter mention him and they've obviously...

## 4.2. FOCUS OR GROUND?

Utterances can be divided into that which is the purpose of the utterance and which moves the discourse forward, the *focus* (rheme, comment, what Gundel (1994) calls semantic focus, what the speaker is trying to communicate), and that which is supporting the purpose of the utterance and which anchors this focus, the *ground* (theme, topic).

Presupposed information is generally assumed to be shared knowledge, different from the information contributed by its carrier sentence, i.e. it is expected to be part of the ground. Presuppositions are also characterized as taken for granted, and this is regardless of whether the information is discourse-given, hearer-known or hearer-new. There are two potential divisions into information structure of ground and focus for the three constructions studied here.<sup>9</sup> Either the matrix sentence is the focus and the presupposed information or anaphoric information is the ground, or the clausal complement from which the presupposition is derived, or the anaphoric expression,<sup>10</sup> is the focus, and the information in the matrix sentence is the ground.

Pattern 1. Subject [**factive verb**]<sub>focus</sub> (that) sentence/anaphor.

Pattern 2. Subject **factive verb** [(that) sentence/anaphor]<sub>focus</sub>

4.2.1. *Abstract object anaphors and bound presuppositions*

For abstract object anaphors, the focus seems to be on who *knew*, *discovered* or *found out* something, i.e. the matrix sentence would seem to naturally be the focus, following Pattern 1 above. This makes sense given that the complement is an anaphor. Also, 17 of the 18 examples of factives with abstract object anaphoric references from their object complements had first person subjects, e.g. *I didn't know that, I know*

<sup>9</sup> Note that factives with abstract object anaphoric references in subject position, e.g. *it matters, that doesn't make sense to me*, don't have this type of information structure and therefore this discussion is limited to the object complement factives.

<sup>10</sup> In this case the anaphoric expression generally would need to receive pitch accent.

*that, I never knew that, I realized that, but I haven't discovered it yet, I first found out this*, etc. The focus is always on the speaker's previous or current knowledge (or lack of it) about a fact.

However, bound presuppositions seem to be able to occur with several patterns: the matrix sentence can be the focus, the presupposition can be the focus, or both the matrix and presupposition can be the focus in some cases. Actually, here it was often difficult to tell what the focus was. Consider the example below where both the matrix and the presupposition seem to be important.

**Example (12) triggered presupposition: it was all lies**

**Speaker C** The thing was . he he would he would concoct anecdotes - - and he'd tell them to me over and over again . you know obviously not realizing that he'd told them to me before and they were obviously all invented because the there'd be slight variations from time to time

**Speaker a** oh well that's nice - - - \*( . laughs) - ( -laughs)\*

**Speaker C** Or they'd be told . about different people. I mean the same story except it wasn't about so and so\* it was about somebody else you know . and though I **knew** *it was all lies* and . I'd just get so fed up in the end with this sort of fantasy thing.

Another case where both seem to contribute equally focussed information is example (4) where it seems that the presupposed information is being emphasized as much as Fan's realizing the presupposed information. Example (13) below illustrates a bound presupposition where the focus seems to be on the knowing because the prosodic marking shows that *know* gets phonetic prominence.

**Example (13) triggered presupposition: we (speaker & "they" = academics) are all fiends**

**Speaker A** Mind you academics do tend to be a bit cruel to each other I think sometimes

**Speaker C** Oh they're fiends. I **know** *we're all fiends*.

In conclusion, it seems that bound presuppositions exhibit both types of focus patterns, focussing either on the presupposed information itself, or the matrix clause, and it is difficult to see any particular pattern.

4.2.2. *Accommodated presuppositions*

Accommodated presuppositions however, seem to often be the focus of the utterance and the matrix sentence seems to be the theme, following Pattern 2. This is the case in examples (9) and (10) presented earlier, where the content of the matrix clause is less important than

the information contributed by the clausal complement (especially in (9) where the subject is the quite uninformative generic subject *one*). Additionally, many of the accommodated examples that are hearer-new seem to be opinions, where the matrix sentence contribution is not very significant. Consider the following example.

**Example (14) triggered presupposition: this is very serious, this = the earlier list of events (not shown)**

**Speaker a** But who else has been responsible for the Carriage and Pair, the Duke of Preston, the Apple Tree. Do you **know** that *this is very serious*. We've lost, we've lost several pubs around here within - sort of living memory within the last five or six years...

In the next example, one of the main clues that the information is in the focus is that the speaker seems to be trying to convince the other discourse participants, offering the presupposed information as information to strengthen his point.

**Example (15) triggered presupposition: this (= doing many things which they could do quite legally) would be the death (?of) fiddling**

**Speaker B** But Laurie, do you find, because yours is an international company, -that a lot of getting round the British tax laws?

**Speaker a** No.

**Speaker B** No.

**Speaker a** Because Quadrille is both a big company and therefore has to watch its Ps and Qs, and because it is a company which has always been ultra honest, and also because the eye of everybody is on international companies now, it not not only obeys the letter of the law but the spirit of the law, so that they are very legal.

**Speaker C** Mm.

**Speaker a** And don't do many things which - they could do quite legally - because they **know** that *this would be the death- (1 to 3 sylls) fiddling*

In fact, in most of the examples that were hearer-new, the presuppositions was also the focus of the utterance, i.e. Pattern 2. Examples that were hearer-known, like the one illustrated in (11) above, seem to have the focus on the matrix sentence, i.e. Pattern 1. That hearer-new information and focus information should coincide is not unexpected or strange. However, that accommodated presuppositions should coincide with hearer-new, focussed information is unexpected, given the traditional understanding of presupposition.

## 5. Relationship between information structure and accommodation

Observations were made above about the information structure of utterances containing factive verbs. Most of the corpus examples of factives triggered a presupposition that needed to be interpreted via accommodation.

The process of accommodation is not currently well understood. Generally described as a repair strategy from the perspective of the hearer, it involves adjusting the discourse model assumed by the hearer, e.g. at the level of representation the incoming DRS must be revised in order to already contain the presupposed information, thus making the presupposition felicitous. As such, it is not the most straightforward method, or even perhaps a recognized preferred method by which to inform hearers about new facts. But this view of accommodation as a repair strategy is difficult to reconcile with the result that it is the main usage for factives. Is the frequency and felicity of accommodation with factives in part a result of their information structure?

### 5.1. WHAT LICENSES ACCOMMODATION?

There are two explanations in the literature for what licenses felicitous accommodation. Van der Sandt (1992) proposes that the ability to accommodate and the naturalness of the resulting discourse will be related to the amount of descriptive content that the presupposition contributes. The reason why pronominal anaphors do not accommodate well is because they have little or no descriptive content.

Zeevat (1999) and Blutner (2000) propose an alternative explanation. They argue that the use of an expression that needs to be accommodated will only be a preferred communication strategy in situations where alternative expressions that do not require accommodation are unavailable. Blutner (2000:212) formulates this claim, attributing it to Zeevat, in the following statement:

*A trigger for a presupposition does not accommodate if any occurrence of it has a simple expression alternative that does not trigger.*

Blutner (2000) reworked the binding theory in bi-directional Optimality Theory, proposing the OT-constraint AVOIDACCOMMODATION. In the evaluation of candidate forms for generation, AVOIDACCOMMODATION will incur a violation for each reference marker that has to be accommodated. This means candidates in generation that bind will always win over candidates that need to be accommodated. This constraint is

meant to capture the preference for binding over accommodation. But AVOIDACCOMMODATION does more; it makes using assertional means to introduce information preferable to presuppositional means. In this way it differs radically from van der Sandt's view.

Additionally, Heim (1982) also discusses accommodation in relation to definite NPs and maintains that in order to be felicitous, new definites have to be somehow linked with the earlier context.

Each of these explanations can be related to factives and the results here. Factive presuppositions certainly fulfill van der Sandt's requirement that material to be accommodated has to be descriptively rich: they presuppose full propositions. Zeevat and Blutner's explanation is not as easy to evaluate. We have to know what should be considered an expression alternative for an accommodated factive, i.e. what other candidate outputs compete in the same competition. Depending on the definition of the input, both bound presuppositions and abstract object anaphoric reference from the complement of a factive would seem to be alternatives. But the number of anaphoric references and bound presuppositions was very small compared to the number of examples of presuppositions that have to be accommodated. There are 30 abstract object anaphors, as well as 28 bound presuppositions, versus 81 accommodated presuppositions. Either these are not expression alternatives, or the explanation is not quite right. There does seem to be some support for Heim's suggestion in the material. Many of the accommodated factives contain information that is anaphorically linked to the previous discourse so this could contribute to the naturalness of the usage.

None of these explanations make reference to information structure. The extent to which the information structure of the inducing sentence and the information status of the presupposed information affects the utility of the construction and the felicity of the resulting discourse has not been discussed in the literature on accommodation.

## 5.2. ACCOMMODATION AND INFORMATION STRUCTURE

In the corpus examples there is a clear relationship between information structure and the accommodated presupposition: in a majority of cases accommodated factives tend to be hearer-new and the focus, or in a small number of cases, hearer-known and the ground. It seems that the major function of factive verbs with full sentential complements is to inform hearers of facts they do not know about.

These results suggest that we should revise our view of accommodation and what makes it felicitous. Accommodation is an exploitable communication strategy for the speaker and a repair strategy for the hearer, but the degree to which it is truly exploitation and the degree

to which the hearer truly has to "repair" depends on the trigger involved, the information status of the presupposition and the role that the presupposition plays in the current discourse.

When the semantic content of the trigger is rich enough that accommodation can proceed without the danger of misinterpretation on the part of the hearer, then it may be the most effective way to communicate the message. With their rich descriptive content, factives with presupposed accommodated complements generally will not be misunderstood. In this way, sufficient descriptive content, as discussed by van der Sandt (1992), is a prerequisite for accommodation.

However, information structure plays a role in determining in what context and with what intention accommodation is felicitous and even advantageous: if you use a factive presupposition to communicate hearer-new information that will have to be accommodated, then this information should fulfill at least one of two requirements, it should either 1) be sufficiently linked to the previous discourse to make it entirely understandable, or 2) be the focus of your utterance. The first requirement is an expansion on Heim's interlinking requirement for new definites. The second seems to reflect a principle that makes sense given our general understanding of presupposition as something the speaker is taking for granted: hearer-new presupposed information should be clearly presented for the potential inspection or objection of the hearer. It can't be used felicitously to support another message from a background position, i.e. as the ground, if it is believed to be new to the hearer.

The general felicity of accommodation with factives can be explained as a result of sufficient descriptive content and an information structure that makes the presupposed information the focus, thereby making accommodation unproblematic. The high frequency of accommodation with factives is a reflection of the utility of the construction compared to other alternative methods of introducing facts, and this is also a consequence of a particular information structure.

## 6. Choice of factive expression and information structure

When do speakers use each of the three types of factive expressions and how does their choice relate to the information structure of the message? The appropriateness of each possibility seems to depend in part on the information status of the fact, (e.g. hearer-new or hearer-known) and the role of the fact in the discourse (e.g. focus or ground).

It seems that speakers use abstract object anaphoric reference when there is an already given abstract object or a clearly delimited unit of

information. At least in dialogue, the focus of factive utterances with anaphoric complements seems to be on the speaker's attitude towards or awareness of the information, e.g. hearer-known and Pattern 1.

Bound presuppositions can be more precise in specifying what information is considered to be an antecedent because of their additional descriptive content compared with anaphoric alternatives. This construction thus functions well when it is unclear if all discourse participants have understood the information in the same way, perhaps common in multi-speaker discourse. It also allows the already given fact to be the focus, and examples in the corpus exhibited both Pattern 1 and Pattern 2.

Bound presuppositions and abstract object anaphors therefore seem to have complementary functions: for given information that is currently salient and recent you use an anaphoric expression if you can. If the antecedent is distant or if you want to individuate or structure an already given abstract object, then a bound presupposition is the better choice.

Finally, a factive construction can be used to evoke a presupposition that has to be accommodated, and this presupposed fact can be either hearer-new or hearer-known information. However, there is a strong tendency to use factives to introduce hearer-new facts that are also the focus of the utterance, and information structural characteristics contribute to making accommodation an effective communicative choice.

In summary, while the three constructions examined are quite similar in that they all will contribute a fact to the discourse in which they are used, each tends to be used with facts that have different information statuses and different roles in the current discourse.

## 6.1. FUTURE WORK

It would be illuminating to have more data to see if certain patterns are very common. Also, the classification of the information as hearer-new or hearer-known, and the classification of what was the focus and ground of the utterances was done only by the author. Here some type of annotation task done by several native speakers with evaluation (e.g. the kappa-statistic) would increase the reliability of the classification. Also, clues to the information structure present in the prosodic realization of the utterances should also be taken into consideration in the analysis. Finally, it would be interesting to look at the information structure of other presupposition triggers, in particular to see if accommodated presuppositions tend to be hearer-new and part of the focus. This would permit a more general evaluation of the role

that information structure plays in the felicitous accommodation of presuppositions.

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