

Have you noticed that your Belly Button Lint colour is related to the colour of your clothing?

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Abstract. Karttunen identified a class of semi-factive verbs. This was erroneous, but enlightening. Stalnaker and Gazdar explained Karttunen’s data as involving cancellation of presuppositions as a result of pragmatic reasoning, an account reformulated by van der Sandt. In this paper I present a large number of naturally occurring examples bearing on the question of how factive verbs interact with implicatures, and show that many of these examples are problematic for existing accounts. I end by presenting suggestive evidence involving the relation between presupposition and information structure.

1. Pre-fight coverage

In the red corner, stands a presupposition trigger. In the blue corner, a quantity implicature. Who wins? Stalnaker (1974) says the implicature is stronger. Gazdar (1979) says the implicature gets the first punch. Knockout. van der Sandt (1992) says the presupposition runs away, cowering in a dingy corner of an embedded DRS. All suggest the presupposition has no chance: conversational principles will soon swagger about the ring while the champion implicature gives interviews. The pundits have spoken, but what really happens?

This paper is about the interaction between presuppositions and implicatures triggered by factive verbs (Kiparsky and Kiparsky, 1970). I will be concerned with *cognitive factives*, which is the class of factive verbs used primarily to convey information about what information the subject has or how the information is acquired or lost. Members of this class in English, often requiring the complementizer “that” to establish factivity, include “know”, “realize”, “discover”, “notice”, “recognize”, “find out”, “remember”, “forget”, “be aware that”, “be unaware that”, “admit”, “intuit”, and a subclass of sensory factives “sense”, “see”, “smell”, “hear”, “detect”, “observe”. The other major class of factive verbs, the class I will largely ignore, is the *emotives*, factive verbs used primarily to convey the subjects emotional attitude towards information. This class includes “regret”, “be annoyed”, “be upset”, “be glad”, “be happy”, “be ecstatic”.

After reviewing what has been said on the interaction between presuppositions and implicatures of factives, I will go on to consider nat-

urally occurring data. The bulk of this paper consists of examples occurring on the world wide web located using the Google search engine. The logic behind using the internet rather than a more structured linguistic corpus is simple: first, my goal in this paper is not to establish quantitative results but to show existence proofs, i.e. that certain types of example do occur naturally; second, there is a huge difference of scale. In many cases the patterns I have searched for are quite rare, and existing linguistic corpora are not large enough to be useful. To give an example, a search for the pattern “I am not aware that” produced six examples in a corpus of ten years of the New York Times, which took several minutes using the the Unix command `fgrep`. The same request produced 4 examples using the online British National Corpus, and took about 20 seconds. But Google was able to locate 15,000 examples of this string in 0.14 seconds. Some of these examples are below.

While some of the data I will present is in agreement with the theoretical predictions outlined above, much is problematic. In fact, I will eventually suggest that in concentrating on the interaction between presupposition and implicature, we might just be watching the wrong fight.

2. On the record

Stalnaker was looking at data due to Karttunen (1971), data involving factive verbs embedded in hypothetical and question contexts. General conversational principles tell us (i) that when a hypothetical is uttered there is normally doubt as to whether the hypothesis is true, and (ii) when a question is uttered, there is normally uncertainty as to the answer. Stalnaker argues that these principles, combined with the semantic content of the utterance, help determine what a speaker might be presupposing. An occurrence of a factive verb, a presupposition trigger, provides us with evidence that the propositional complement of the verb is being presupposed. But, according to Stalnaker, we should ignore that evidence if it conflicts with the above two conversational principles. Here are some examples, those in (1) and (3) being from Karttunen (1971):

- (1)
 - a. Did you regret that you had not told the truth?
 - b. Did you realize that you had not told the truth?
 - c. Did you discover that you had not told the truth?
- (2)
 - a. Did she regret that you had not told the truth?
 - b. Did she realize that you had not told the truth?

- c. Did she discover that you had not told the truth?
- (3)
- a. If I regret later that I have not told the truth, I will confess it to everyone.
 - b. If I realize later that I have not told the truth, I will confess it to everyone.
 - c. If I discover later that I have not told the truth, I will confess it to everyone.
- (4)
- a. If she regrets later that I have not told the truth, I will confess it to everyone.
 - b. If she realizes later that I have not told the truth, I will confess it to everyone.
 - c. If she discovers later that I have not told the truth, I will confess it to everyone.

Here the factive verbs are “regret”, “realize” and “discover”. So the issue is whether the complement “I have not told the truth” is presupposed in each example. According to both Karttunen and Stalnaker, examples (1a,b) and (3a) carry this presupposition¹, while (1c) and (3b,c) do not. According to Stalnaker, third person uses of the factive verbs, as in all the remaining examples (2a,b,c) and (4a,b,c), should be expected to carry the factive presupposition.

Consider (3b). Abbreviate “I have not told the truth” as ϕ . Stalnaker argues that since the hypothesis that the speaker will realize ϕ is open, and the speaker has *indicated* this by use of the conditional, the speaker cannot already believe ϕ . So although use of a factive verb leads to a *presumption* that ϕ is being presupposed, in this case there can be no presupposition. Similarly for (3c). However, when the trigger is “regret” as in (3a), the argument does not go through: the fact that it is open whether the speaker will regret ϕ does not tell us that the speaker does not already believe ϕ , so the presupposition goes through. Likewise for all of the third person cases in (4a,b,c): it can be open what attitude “she” will have towards ϕ in the future although the speaker and hearer already believe ϕ . So the presupposition survives.

The reasoning for the question cases in (1) and (2) proceeds along the same lines: the presupposition that ϕ survives unless that would foreclose the addressee’s answer.²

¹ More properly, for Stalnaker speakers rather than sentences presuppose.

² The distinction between “realize” and “discover” in (1b,c) emerges, according to Stalnaker, only once we take into account the different aspectual classes of these two verbs. He claims that (1b) carries the presupposition because the question “Did

Gazdar (1979) presented a formal theory in which quantity (and other) implicatures cancel presuppositions. Gazdar proposes that a hearer starts with an information state consisting of a set of propositions which have been established, then adds the ordinary semantic content of a new utterance, then adds any potential implicatures which are consistent with this set (and each other), and then adds any potential presuppositions which are consistent with that set (and each other). The presuppositions of an utterance are just those potential presuppositions which survive this vetting procedure. In (3), the potential implicature that the speaker does not know whether he or she will realize ϕ is added to the information state before the potential presupposition triggered by “realize”. For Gazdar, presuppositions are epistemic, and in this case the potential presupposition is that the speaker knows ϕ . Assuming some further axioms that enforce monotonic growth of information, the potential presupposition is not compatible with the implicature, so the potential presupposition never gets added. In Gazdar’s terms, it is canceled.

What we see in Gazdar’s treatment of this type of example is a codification of Stalnaker’s account. Stalnaker’s “presumptions” that the speaker is presupposing something becomes Gazdar’s “potential presuppositions”; what Stalnaker called “indications” that the speaker was making are recognized as Gricean implicatures, and formalized via a mechanism that generates “potential implicatures”; the fact that indications are stronger than presumptions in the examples Stalnaker discusses becomes in Gazdar’s model a general principle that we update with implicatures before presuppositions, and only add presuppositions if they do not conflict with anything added earlier.

Note that Gazdar does not explicitly deal with the question cases above. But for the purposes of argument, I will suppose that he would treat polar questions as involving an epistemic operator “?”, such that “ $\phi?$ ” does not entail ϕ or its negation. In this case, we expect clausal implicatures to be triggered by questions, and, modulo specifying the lexical meaning of the factive verbs themselves, we would be able to formally reproduce Stalnaker’s analysis of second person questions.

The last theoretical perspective on presupposition/implicature conflict that I want to mention is that of van der Sandt (1992). In this account, there is no such thing as cancellation. Following on from ob-

you realize . . . ?” refers to some specific time in the past, and the question of whether the addressee realized at that time that ϕ is not foreclosed by the addressee knowing now that ϕ . On the other hand “Did you discover . . . ?” is claimed to quantify over all prior times. If the addressee knows ϕ now, then he or she must have discovered it at some prior time, and so would be forced into a positive answer. To return the addressee the option of a negative answer, we must accept that ϕ is not presupposed.

servations of Heim (1983), van der Sandt proposes a model in which the question is not whether a presupposition is projected or cancelled, but whether it is accommodated globally or locally. There is a general preference for global accommodation, but accommodation must respect general conversational principles of informativeness and consistency. Put differently, the presupposition wants to contribute to the main context, but runs away and hides in an embedded context on pain of producing conflict with Gricean principles.

The result is that although van der Sandt does not spell out implicatures in the way Gazdar does, his model predicts local accommodation whenever Gazdar’s model would predict cancellation, at least in cases of cancellation due to clausal implicature or the need to preserve consistency with the main entailment of the utterance. Gazdar also analyzes scalar implicatures, which are not formally dealt with in van der Sandt’s account, but all the cases considered above can either be seen as involving clausal implicatures (for hypotheticals and questions), or involve potential inconsistency with the main entailment (for the negation examples). So, once we have identified cancellation with local accommodation, the predictions of van der Sandt’s model are exactly the same as Gazdar’s in the cases discussed above. In fact, apart from a small group of cases that will be discussed below, the predictions are the same for all examples to be considered in this paper. I refrain here from a detailed formal presentation of the models of Gazdar and van der Sandt: apart from the original sources cited above, the reader is directed to Soames (1982) and Mercer (1992) for discussion of and extension to Gazdar’s model, Zeevat (1992), Kamp and Rossdeutscher (1994), Krahmer (1998), Kamp (2001a, 2001b), Beaver (2002) and, especially, Geurts (1999) for discussion and development of van der Sandt’s model, and Beaver (1997, 2001) for discussion of both models and comparison with a range of alternatives.

3. Implicature wins as predicted

Is there naturally occurring data which accords with the models described? Although the literature is based entirely on artificial examples, it is easy to find naturally occurring cases. As a first illustration, consider the use of the phrase “I am not aware” by such luminaries as John Stuart Mill, Theodore Roosevelt, Sherlock Holmes, General Myers (Chairmen of the Joint Chiefs of Staff) and Deputy Postmaster General John Nolan (relevant occurrence of factive verb is boxed for ease of identification):

- (5) *First person, cognitive factive under negation, cancellation:*

I am not aware that any community has a right to force another to be civilised.

J. S. Mill, *On Liberty*, ed. R. B. McCallum (Oxford, 1946), p. 83

- (6) *First person, cognitive factive under negation, cancellation:*

I think Great Britain is now showing great courtesy and forbearance. I believe that she has done things to our ships that ought not to have been done, but I am not aware that she is now doing them.

Theodore Roosevelt, letter to Sir Edward Grey, 22 January 1915

- (7) *First person, cognitive factive under negation, cancellation:*

“I think that I may go so far as to say, Watson, that I have not lived wholly in vain,” he remarked. “If my record were closed tonight I could still survey it with equanimity. The air of London is the sweeter for my presence. In over a thousand cases I am not aware that I have ever used my powers upon the wrong side.”

Arthur Conan Doyle, “The Final Problem”, in *Memoirs of Sherlock Holmes*, Harper and Brothers, New York, 1894.

- (8) *First person, cognitive factive under negation, cancellation:*

QUESTION FROM INTERFAX: Can we expect Russian military forces to be among the Coalition forces deployed at Manas airport?

GENERAL MYERS: I am not aware that there will be Russian forces here. I mean I can't rule it out, but I am personally not aware that there will be Russian forces here as part of the coalition.

Press Conference, Bishkek, Kyrgyz Republic, February 18, 2002,

- (9) *First person, cognitive factive under negation, cancellation:*

Responding to a reporter's question Wednesday about the 911 call, Deputy Postmaster General John Nolan said, “I am not aware that he [Morris] saw the Daschle letter ... aware he saw some letter.”

CNN, November 8, 2001

What if we spread our net wider than “aware”? There is no shortage of similar examples of cancellation of first person factives under negation. Witness the following uses of “know”, “*trouver*”/”discover” and “notice” due to Dickens, Rousseau and Roosevelt again:

- (10) *First person, cognitive factive under negation, cancellation:*

‘This night, my husband being away, he has been with me, declaring himself my lover. This minute he expects me, for I could release myself of his presence by no other means. I do not know that I am sorry, I do not know that I am ashamed, I do not know that I am degraded in my own esteem. All that I know is, your philosophy and your teaching will not save me. Now, father, you have brought me to this. Save me by some other means!’ [Louisa Bounderby, *née* Gradgrind]

Charles Dickens, *Hard Times*, Bradbury & Evans, 1854

- (11) *First person, cognitive factive under negation, cancellation:*

Pour avoir commencé tard mettre en exercice ma faculté judiciaire, je n’ai pas trouvé qu’elle eût perdu sa vigueur; et quand j’ai publié mes propres idées, on ne m’a pas accusé d’être un disciple servile, et de jurer *in verba magistri*.

Jean Jacques Rousseau *Les confessions*, H. Launette & Compagnie, Paris, 1889 (originally published 1782, 1789).

Though it was late before I began to exercise my judicial faculties, I have not discovered that they had lost their vigor, and on publishing my own ideas, have never been accused of being a servile disciple or of swearing in verba magistri

Translation: W. Conyngham, Tudor Pub. Co., New York, 1935.

- (12) *First person, cognitive factive under negation, cancellation:*

She is so bright and amusing and now seems perfectly happy, and is not only devoted to Archie and Quentin but is very wise in the way she takes care of them. Quentin, under parental duress, rides Algonquin every day. Archie has just bought himself a football suit, but I have not noticed that he has played football as yet.

Theodore Roosevelt, Letter to Kermit Roosevelt, Oct. 15, 1904

And here is a morbid example of cancellation involving the factive “find out”:

- (13) *First person, cognitive factive under negation, cancellation:*

I haven't had any dealings with Tri-State since 1996. Hopefully, I won't find out that any of the bodies found there were ones I sent. I know I did send 11 bodies around 1991–1992. I find myself thinking about what a perverse mind one must have to just pile lifeless, decomposing bodies on one another so he can save money.

Bob Perry, Perry Funeral Home owner, as quoted in *The Post*, Alabama, February 25, 2002

Cancellation of presuppositions when a cognitive factive trigger in the first person is embedded in a conditional also occur in natural contexts. For example, this seems to be common in a previously undescribed genre of academic disaster text:

- (14) *First person, cognitive factive in conditional, cancellation:*

Cheating is not allowed in this class. If I notice that you appear to have trouble keeping your eyes on your own paper during a quiz or the final exam you will be asked to sit in the front row to complete the quiz or exam. If it is evident that you have copied from a neighbor you will receive a 0 on that particular quiz or exam and will be subject to disciplinary procedures within the College of Business and Public Administration and Drake University.

Marie Klugman/Stuart Klugman, *Stat 60*, Department of Actuarial Science and Statistics, Drake University³

- (15) *First person, cognitive factive in conditional, cancellation:*

Excessive absence (over four absences) will result in a grade of F. ****Unexcused absences over the two class limit will lower your grade by a half letter for each class.**** If I notice that you leave class during the break without consulting me, I will mark you absent for that class. Tardiness will count as absence if you fail to tell me (at the end of class) that you are present. These policies are not negotiable.

Albert Rouzie, *Course Policies, English 153, Writing & Rhetoric – Special Topics*, Ohio State University, 1999⁴

- (16) *First person, cognitive factive in conditional, cancellation:*

³ <http://www.drake.edu/cbpa/acts/stat60.htm>

⁴ <http://www-as.phy.ohiou.edu/rouzie/fall153/policy.html>

You may use your laptop to take notes; however, you should not use your laptop for anything else. If this is a problem for you, I would encourage you to use a pen or pencil for your notes. You should not be connected to the network during lecture periods, and I may disconnect you from the network without warning if I notice that your network cable is in use.

Christopher C. Taylor, *General Course Policies*, Milwaukee School of Engineering, 1998–2002⁵

- (17) *First person, cognitive factive in conditional, cancellation:*

If I discover that you have turned in plagiarized work, I will report this immediately to the Dean of Studies and you will receive an automatic grade of F for that piece of work, and, in most cases, a final grade of F for the course.

Nicola Denzey, *Grading Policies: The Bible in contemporary American Film*, Skidmore College, Summer Session, 2001⁶

- (18) *First person, cognitive factive in conditional, cancellation:*

If I discover that your work is plagiarized, I will be forced to notify the Dean.

Beth Berkowitz, *Requirements*, C1001 – Literature Humanities; Section 52⁷

- (19) *First person, cognitive factive in conditional (plus quantificational adverb), cancellation:*

(1) Please ask for additional clarification on any grade that you do not understand. I will never penalize you in any way for doing this, even if I discover that your actual grade should have been recorded as lower.

Theodore D. George, *Social and Political Philosophy*, Phil 332-500, Spring 2002⁸

- (20) *First person, cognitive factive in conditional, cancellation:*

What if I discover that my book has missing pages half way through the semester? Caribou Bookstore, help page⁹

⁵ <http://people.msoe.edu/taylor/resources/policy.htm>

⁶ http://www.skidmore.edu/ndenzey/re330_film/filmcontract.htm

⁷ http://www.columbia.edu/itc/lithum/berkowitz/course_requirements.html

⁸ <http://www-phil.tamu.edu/Philosophy/Faculty/george/332SYL02A.html>

⁹ http://www.cariboobookstore.com/outerweb/store_information.asp

Second-person question cases like those described by Karttunen and Stalnaker also appear naturally. People and groups offering help have a penchant for asking very suggestive questions, as shown in the following examples. Note that while in some cases it might be claimed that the presupposition is projected for the intended audience of the text, in other cases it is clear that the truth of the presupposition remains open. In (26), the potential presuppositions conflict with each other, so it is clear that neither is actually presupposed.

- (21) *Second person, cognitive factive in question, cancellation:*

Have you ever found yourself “disillusioned” with part of your life? Was there a hope or dream that didn’t turn out as expected? Have you discovered that some things you thought were true didn’t turn out to be? Illusions are self-created and do supply some benefit, but they require substantial energy to maintain and can interfere with your relationships.

Bernice L. Ross, *Lessons for Living and Learning*, ULiveandLearn.com, Inc., Copyright dated 2000 – 2002 ¹⁰

- (22) *Second person, cognitive factive in question, cancellation:*

What can you do with this new found knowledge? Have you discovered that you often remind yourself of your mother when she scolded you as a child (and you swore you would never be like her!); then you can make your Action Plan – I will not say those words to my child, I will find a better way to communicate. Have you discovered that you are often shy and allow others to step all over you? Then your Action Plan might be – I will stand up for myself the next time I feel I’m being used.

Bobbie Ann Pimm, *Your Action Plan*, Copyright 2001 ¹¹

- (23) *Second person, cognitive factive in question, cancellation:*

Answering yes to some or all of the questions in a section might mean that you’ve been taken advantage of. [...]

Did an agent sell you an “investment” or “pension” plan that turned out to be insurance?

Have you discovered that the “cash value” of your policy has decreased or disappeared?

Has your agent made promises that turned out to be untrue?

¹⁰ <http://www.uliveandlearn.com/lessons/lessonlist.cfm?kc=6&u=fr>

¹¹ <http://www.bobbieann.net/YourActionPlan.html>

James Hoyer, Attorney's at Law, *Consumer Checklist* ¹²

- (24) *Second person, cognitive factive in question, cancellation:*

Did you ever realize that you did something only because you were 'supposed' to, or maybe because that's what everyone else was doing.

Brenden Clarke, *Life re-examination leads to fundamental questions*, Eastern Echo, Fall Edition, 2000

- (25) *Second person, cognitive factive in question, cancellation:*

Did you learn something about yourself? Did you discover that you were stronger than you thought? Did you discover that you were not as strong as you thought?

Harley King, *Grief Support Writing: How to Write and Share Your Story of Pet Loss* ¹³

- (26) *Second person, cognitive factive in question, cancellation:*

What surprised you? Did you discover that some things you thought were true have turned out to be false? Did you discover some things you thought were false that you now know are true?

Journal and Report on METRO-APEX Participation ¹⁴

Sometimes presuppositions in second person questions are cancelled quite wistfully:

- (27) *Second person, cognitive factive in question, cancellation:*

When you were a kid, did you ever realize that you were going to hate a teacher on the second day of school, only to realize soon thereafter that you were stuck with her and her goddamn for-a-grade book report dioramas for the foreseeable future no matter what you did? Well, that's my daily trip past the mirror, buddy! This lumpen mass isn't going anywhere fast, and I do not have the patience to see this health kick through.

Jimski, *The World is Out of Stuff*, October 3, 2000¹⁵

¹² http://www.jameshoyer.com/problem_lifeinsurance.html

¹³ www.petloss.com/writing.htm

¹⁴ <http://www.usc.edu/schools/sppd/classes/ppmt/220/journal/summary.html>

¹⁵ <http://www.jimski.net/oct00.html>

- (28) *Second person, cognitive factive in question, cancellation:*

Did you ever realize that you
 Just simply couldn't be without someone
 And that you would risk your whole damn life
 For their tender precious love
 You don't want to do anything
 Without their hand to hold
 You simply cannot move
 Without their arm around you
 You just can't find your strength
 Without that special touch
 Its like your soul is entirely shut off
 And has just went blank
 Sugar_spice_15, *Suicidal Love*¹⁶

As a final example in this section of examples that basically accord with the Karttunen-Stalnaker generalization, a second person modal factive (followed by a doubly embedded first person factive under a second person factive) on which to reflect:

- (29) *Second person, cognitive factive under negation and modal, cancellation:*

One day Chuang Tzu and a friend were walking by a river. "Look at the fish swimming about," said Chuang Tzu, "They are really enjoying themselves."

"You are not a fish," replied the friend, "So you can't truly know that they are enjoying themselves."

"You are not me," said Chuang Tzu. "So how do you know that I do not know that the fish are enjoying themselves?"

Recounted by John Suler, *Knowing Fish* (undated web page), Department of Psychology Rider University¹⁷

It is clear that Stalnaker's argument, and thus also the models of Gazdar and van der Sandt, make appropriate predictions in a wide array of naturally occurring examples. But we will return to these very same examples at the close of this paper to investigate whether those models miss an important generalization.

¹⁶ <http://www.4degreez.com/poetry/10984/1018070725.html>

¹⁷ Suler notes a number of reactions to this *Nagelian* story, including: "To think like a fish, you have to drink like a fish."

4. The third person

The formal models (Gazdar's and van der Sandt's) are clear in their predictions: while appropriately tensed first and second person uses of cognitive factives should lead to cancellation, third person uses of cognitive factives should, *ceteris paribus*, be immune to this effect. I will now present counterexamples, third-person uses of cognitive factives in which cancellation occurs.

As mentioned above, there is one type of example of relevance for which the predictions of Gazdar's model are different from those of van der Sandt's model. These are cases in which there is a free variable in the presupposed proposition. A constraint which van der Sandt terms *trapping* prevents the presupposition from being accommodated outside of the scope of the binding operator, which can produce the effect of cancellation (i.e. local accommodation) when Gazdar's theory would predict projection. This situation is not common in the corpus of factives I have collected, but it is sometimes the case that a defender of van der Sandt's model could argue that a free temporal variable is present in the presupposition, and that this is responsible for forcing local accommodation. Consider the following two examples:

(30) *Third person, cognitive factive in conditional, cancellation:*

What can an individual do if he becomes aware that pets kept for sale are being maltreated?

Carrie Jane Canniffe B.L., David Burke B.L., Barra Faughnan B.L., ISPCA Legal Handbook, Irish Society for the Prevention of Cruelty to Animals¹⁸

(31) *Third person, cognitive factive in conditional, cancellation:*

We must look at the regulation of our affairs, a Cheann Comhairle, to ensure strict adherence to the long-held tradition of the veracity of any statement put on the record; and if anyone becomes aware that misleading or inaccurate information is put on the record, that the long-standing practice of correcting the record is strictly applied.

Mr. Howlin, *Flood Tribunal Terms of Reference: Motion (Resumed)*, 1 July 1998¹⁹

The factive complement “pets kept for sale are being maltreated” in (30) is ambiguous: it can refer to maltreatment at the time of utterance, or maltreatment at some indefinite time at which “an individual

¹⁸ <http://www.ispca.ie/content/legal.html>

¹⁹ <http://www.irlgov.ie/debates/1jul98/sect11.htm>

becomes aware”. It is only in the latter case that the binding of the temporal variable becomes relevant, for then the sentence could be paraphrased as “if for some time t an individual becomes aware at t that pets kept for sale are being maltreated at t , what can an individual do at (or after) t ?” Global accommodation of “pets kept for sale are being maltreated at t ” would be blocked on pain of unbinding t . A similar analysis could be given for (31). In these cases, the example remains problematic for Gazdar’s analysis, which does not include any trapping constraint, but with the dependent temporal variable interpretation is not a counterexample to van der Sandt’s theory. What of the other temporal interpretation? If the factive complement refers to the utterance time, van der Sandt’s account makes exactly the same prediction as Gazdar’s, namely that projection/global accommodation will occur. This is clearly an incorrect prediction.

In the remainder of this section many more cases of cancellation of a third person cognitive factive complement will be presented. In a few cases it may be arguable that there is a bound variable reading as in the example above, but even in these cases a non-bound variable reading is available, and cancellation appears to be independent of which reading is selected. Thus the data in this section counter-exemplifies the Gazdar and van der Sandt models equally, and, as will be discussed, much of it is also problematic for Stalnaker’s account.

The following six examples are all cases where the writer explicitly indicates that a person who comes to be in possession of information should pass it on. The implication in all cases is that the writer does not yet have the information, so it is clear informally why cancellation occurs. But the formal models we have considered, Gazdar’s and van der Sandt’s, rely on clausal implicatures to produce cancellation in the first and second person cases we considered above. For these third person cases, the clausal implicature is not enough:

(32) *Third person, cognitive factive in conditional, cancellation:*

They also work well to deter rabbits & foxes from digging into the chook-pen (Hen-run). Dig a shallow trench the width of a single mattress, then place the springs flat in the trench. Drive your fence posts in the mid-line, so half the spring is outside & half inside the pen. I haven’t tried this with wombats, though, & if anyone discovers that the method is also wombat-proof, I’d really like to know!

Radical Recycling !²⁰

(33) *Third person, cognitive factive in conditional, cancellation:*

²⁰ <http://www.merlin.net.au/arachne/mattress.html>

If anyone discovers that Cook-n-Stirs are available to the US market please let the list know.

Marlan Green, *Electric paste pot!*? ²¹

- (34) *Third person, cognitive factive in conditional, cancellation:*

Whether it's still available seems unlikely. This is a British book, part of 'The New "GILCRAFT" series - Number Two'. The publisher is C Arthur Pearson Ltd., Tower House, Southampton St, Strand London. If anyone discovers that this book IS still available, please contact me at the above address.

Bill Nelson, *Games (FAQ 11)*, rec.scouting.* ²²

- (35) *Third person, cognitive factive in conditional, cancellation:*

If anyone discovers that one of our volunteers is charging money for being a volunteer, please notify me ASAP.

Tom Elliott, GenWeb, Waldo County, Maine, 30 Nov., 2000 ²³

- (36) *Third person, cognitive factive in conditional, cancellation:*

LICENSEE shall notify UNIVERSITY if LICENSEE becomes aware that this Agreement is subject to any U.S. or foreign government reporting or approval requirement.

Contractual document, University of Arizona ²⁴

- (37) *Third person, cognitive factive in conditional, cancellation:*

If Member becomes aware that a Project Deliverable may require the use of a patented invention then Member will provide notice to this effect to NACHA within thirty (30) days.

Patent policy excerpted from and based upon American national standards institute (ansi) procedures for the development and coordination of American National Standard ²⁵

The next three examples involve information that might be obtained by scientists or detectives:

- (38) *Third person, cognitive factive in conditional, cancellation:*

²¹ <http://palimpsest.stanford.edu/byform/mailling-lists/bookarts/2000/01/msg00217.html>

²² <http://www.faqs.org/faqs/scouting/games/part1/>

²³ <http://www.rootsweb.com/~mewaldo/newstuff.htm>

²⁴ <http://www.ott.arizona.edu/acrobatpdfs/17-Miscellaneous.pdf>

²⁵ http://www.project-action.org/EXHIBIT_AB.doc

Example: If you believe, as I do, that ‘racial’ discrimination is wrong, you might be tempted (as I have) to claim that discrimination is morally wrong because it is scientifically wrong. That is, one mustn’t discriminate on the basis of race because there are, in fact, no real differences between people of different races (and besides, ‘race’ isn’t even a valid scientific category). But, what if scientists discover that there are in fact differences between the ‘races’. Would that mean that discrimination is now OK?

Edward H. Hagen, “More thoughts on Evolutionary Psychology and political (in)correctness.”, *The Evolutionary Psychology FAQ*, Institute for Theoretical Biology, Berlin ²⁶

(39) *Third person, cognitive factive in conditional, cancellation:*

If scientists discover that worms with ultra-long life spans are metabolically dynamic and not just hibernating in super-suspended animation, they could then attempt to induce similarly efficient metabolic activity, or a dauer stage, in humans.

Kyle Roderick, *Superworm May Hold Key to Human Longevity* ²⁷

(40) *Third person, cognitive factive in conditional, cancellation:*

If detectives discover that those who investigated the shooting ignored evidence or otherwise acted improperly in an effort to support the officers’ version of events, it would move the scandal beyond the Rampart Division and squarely into Parker Center.

Matt Lait and Scott Glover, *LAPD Task Force Probes ’95 New Year’s Eve Shooting*, Los Angeles Times, February 3, 2000

As regards (38)–(40), it is obvious where the theories of Gazdar and van der Sandt go wrong. While it does not follow as a matter of logic that because scientists do not know something, I also do not know it, in many areas of knowledge this is commonly regarded as a strong default. Similarly, my ignorance of a crime does not follow logically from that of detectives. But if we add the additional conversational assumption that the authors of (40) are not publicly implicating that they have information which they have not yet provided to the police, then we can deduce that the factive presupposition must be cancelled.

Although Stalnaker does not present any third person examples involving cancellation, it might be argued that all the examples presented

²⁶ <http://www.anth.ucsb.edu/projects/human/epfaq/galileo.html>

²⁷ www.thirdage.com/news/archive/980808-02.html

so far in this section support his general strategy, for they show that complex conversational reasoning is relevant to presupposition cancellation. The crucial difference between the formal models of Gazdar/van der Sandt and Stalnaker's model is that the formal models rely on *generalized* conversational implicatures, where Stalnaker's model does not. If we take Stalnaker's account to be essentially Gricean, then what this type of example shows is that quite often the right predictions must take *particularized* conversational implicatures into account (i.e. implicatures particular to a specific occasion of use, rather than depending on a general property like the presence of a lexical scale).

Once we move from a theory in which generalized implicatures determine presupposition cancellation to an account in which particularized implicatures are needed, we are on a slippery slope, for we lack any predictive theory of particularized implicatures. Worse still, it seems unlikely that particularized implicature, as understood by Grice (1989), is even up to the job. Particularized implicature rests on the speaker having signaled in some way that a special interpretation is needed, for example by flouting a conversational maxim. But in many of the following 17 additional cases of cancellation involving embedded third person cognitive factives, there is no clear signal (trigger) of this sort. In many cases, one is faced as a reader with a choice of whether to cancel the presupposition, and one's decision appears to be based on no more than the question: is it more plausible that the speaker is presupposing the complement, or that the speaker is not? This, at least, is the case for the written form: at the end of the paper I shall argue that a hearer, as opposed to a reader, is faced with an easier decision.

(41) *Third person, cognitive factive under negation, cancellation:*

160.3 In response to a question by Judge Hunton whether the Pulaski County lawsuit had settled; Dale Evans stated that they did a claim, but he is not aware that it ever went into a lawsuit.

Karen M. Beeks Court Secretary, *Minutes of the special meeting of the Washington County Quorum Court*, May 6, 1999 ²⁸

(42) *Third person, cognitive factive under negation, cancellation:*

Mr. Wynn asked if PennDot's review letters were a reaction to a submission Home Depot made with these changes on it, which generated these review comments. Mr. Furnacola believes that there is written verification from PennDot requesting the

²⁸ <http://nw-ar.com/minutes/1999/wcqc050699.html>

change. Mr. Wynn is not aware that PennDot has ever dictated access on a Township roadway, since it is not in their jurisdiction.

Lynda Seimes, Township Secretary, Hilltown Township Planning Commission, February 18, 2002²⁹

- (43) *Third person, cognitive factive under negation, cancellation:*

Mrs London is not aware that there have ever been signs erected to stop use of the route, nor that there has ever been any obstruction to stop use of the route.

County Environment Director, *Definitive Map Review 1996/2000*, Public Rights of Way Committee, Parish of Aveton Gifford, 2000³⁰

- (44) *Third person, cognitive factive in conditional, cancellation:*

A subsidiary advantage is that I can't make any exceptions for anyone without getting into trouble with everyone else. I really can't, because if anyone discovers that an exception had been made my reputation for fair dealing would be blown away.

Richard Kostelanetz, *Anthologies on anthologies*, 1999³¹

- (45) *Third person, cognitive factive in conditional, cancellation:*

If anyone becomes aware that a chemical is being used in a new way or there is new information about its potential hazards, NICNAS needs to be advised and a secondary notification may have to be made.

Australian government document³²

- (46) *Third person, cognitive factive in conditional, cancellation:*

3. If Susan knows that her eyes are dark brown, then A) She believes her eyes are dark brown B) Her belief that her eyes are dark brown is justified C) This belief is true D) All of the above E) None of the above.

Stefan Sencerz, Introduction to Philosophy (Phil 1301), TEXAS A&M, 2001³³

²⁹ <http://www.hilltown.org/Minutes/PCfeb2002.pdf>

³⁰ <http://atschool.eduweb.co.uk/bheber1/gnvq-ict/External/DCC/reports/ed0094hq.html>

³¹ <http://www.richardkostelanetz.com/retro6.html>

³² <http://www.nicnas.gov.au/obligations/compliance/pdf/compliance.pdf>

³³ <http://www.tamucc.edu/sencerz/exercise4.htm>

- (47) *Third person, cognitive factive in conditional consequent, cancellation:*

Investigation method (1 / 2) 1. When observer gets RESET_NOTIFICATION, it should check if the reset occurred at owner's local bus. 2. If it occurred, the observer should wait for notification from the owner. 3. Then, if the observer can get notification from the owner, the observer knows that the owner has still stayed in the net. 4. If not, the observer knows that the owner has already disappeared since the reset occurred.

P1394.1 working group, *Isochronous owner observation, Proposal for March 19 and 20*, Sony corporation³⁴

- (48) *Third person, cognitive factive in conditional, cancellation:*

In the 1980s jazz composers were seen as the new innovators, relegating improvisers to secondary status. If one accepts the fact that composition was the key element in jazz in the 1980s, however, the central figure of the decade was clearly Duke Ellington, although he died in 1974.

Francis Davis, *Online summary of "Large-Scale Jazz"*, Atlantic Monthly, August 1987

- (49) *Third person, cognitive factive in conditional, cancellation:*

If one accepts the fact that the Wayfarer Songs existed around 1884 only in a piano version, the conclusion would present itself that the instrumental song inclusion in the Symphony No. 1 represents the first orchestra version of the song sections.

Mathias Hansen, *Concluding Remarks, Urtext edition of Gustav Mahler: Lieder eines fahrenden Gesellen*, Peters Music Publishers, Berlin, 1980³⁵

- (50) *Third person, cognitive factive under modal, cancellation:*

Whatever the reason, she knows she can't just bounce back, and she decides to leave. For others, the decision is based purely on fear. Perhaps she knows that if she were to stay another day, her life or the lives of her children would be gone.

Dorothy Stucky Halley, *When violence hits home, Information Guide for Abused Women in Kansas*, Hubris Communications, 1 June, 1998

³⁴ <http://grouper.ieee.org/groups/1394/1/Documents/br016r00.pdf>

³⁵ http://www.edition-peters.com/urtext/mahler/gesellen.lieder/nachwort_engl.html

- (51) *Third person, cognitive factive under modal, cancellation:*

Perhaps God knows that we will never reach the stars and so they are, for now at least, just expressions of His creativeness; just as paintings are but expressions of the artist's creativeness.

The Skeptic, web page³⁶

- (52) *Third person, cognitive factive under modal, cancellation:*

What I mean is, suppose the query is $?[x, y] (...)$, and suppose that the querying engine has found, say, $[[x/a \ y/a] [x/b \ y/c]]$. Has it finished looking? Well, there are several senses. Maybe it knows that there are no other bindings of y that would be paired with the x/a binding, for example, but it hasn't yet finished checking all the x bindings. Or perhaps it knows that there are no other x bindings that would pair with the y/c binding, but it hasn't finished checking other y bindings, and it's not yet sure about all the x bindings for the case y/a .

Pat Hayes, email to Richard Fikes, w3c-rdfcore-wg@w3.org Mail Archives, Oct 25, 2001

- (53) *Third person, cognitive factive under modal, cancellation:*

What's this! It seemed obvious for him to continue trumps, but perhaps he knows that diamonds are running and is trying to set up a trump spot for partner. I don't believe this, but you never know.

Jeff Goldsmith, *Partnerside*, August 4, 1997³⁷

- (54) *Third person, cognitive factive under modal, cancellation:*

Perhaps she knows that she really is to be married, and she, too, is now sad at the end of childhood.

Andrew Moore, *Studying Doris Lessing's Flight*, 2001 ³⁸

- (55) *Third person, cognitive factive under modal, cancellation:*

What the heck was X talking about in the parking garage? Was he referring to the Colonists, Rebels or the Evil!Consortium members when he says that Mulder was going to lead them there? Is this a throwaway line used to set up the much more important idea of Mulder not having what it takes? Or perhaps

³⁶ <http://www.angelfire.com/va/theSkeptic/feedback.html>

³⁷ <http://www.gg.caltech.edu/~jeff/html/partner.html>

³⁸ <http://www.shunsley.eril.net/armoore/gcse/flight.htm>

X is **aware** that the Incorporeals had done something to Scully and he didn't want that knowledge to fall into the Colonist's (or more likely, Rebel) hands?

Michelle Bush, *One Breath*, 2002. ³⁹

- (56) *Third person, cognitive factive under modal, cancellation:*

The first line of this tablet speaks of the gathering of Mycenologists which is to take place in Texas. It reads, “mu-ke-no-ro-ko — te-ka-sa-de — i-jo-te.” This can only be translated as “The Mycenologoi going to Texas.” Interestingly enough, the remainder of the text is identical to that of PY An 1. It is possible that Hand 1 at Pylos was using the text of An 1, a list of rowers going to Pleuron, as a template for this tablet. We cannot be certain why he stopped this list after only one line. Perhaps he **realized** that the number of attendees was too great. Or, better still, perhaps he **realized** that none of the attendees were coming from the region of Pylos.

Kevin Pluta, *NEWS FLASH!!*, *The 11th Mycenological Colloquium, as foretold by Hand 1*, November 2000 [Note the heavy irony in this example! DIB] ⁴⁰

- (57) *Third person, cognitive factive under modal, cancellation:*

Perhaps she **realized** that she was unable to write anything better than “Goblin Market,” or perhaps her “failure” to surpass herself is explained by her turn away from poetry to children's stories and religious materials.

David Cody, *Christina Rossetti's Literary Career* ⁴¹

5. When presuppositions win

So far all the naturally occurring examples we have looked at were cases where a factive presupposition is cancelled, and we considered both cases where standard accounts predict the cancellation, and case where they do not. Now we will consider cases where standard accounts predict cancellation, but in fact the factive presupposition is projected.

In many examples, projection of the presupposition produces a marked, one is tempted to say “weird”, effect. This is strongest in cases involving

³⁹ http://www.geocities.com/mbush1us/TheEpisodes_SeasonTwo_OneBreath.htm

⁴⁰ <http://www.utexas.edu/research/pasp/cipem/tablet.html>

⁴¹ <http://65.107.211.206/crossetti/rossetti5.html>

embedding under negation. If a sentence implies a speaker's knowledge of ϕ , and the negation of that sentence is uttered, we expect to be able to conclude that the speaker does not take ϕ to hold. However, when a first person factive presupposition projects out of negation, this is not the case:

- (58) *First person cognitive factive under negation, projection:*

I do not realize that I am in Wisconsin, as this is a strange place to me.

Attributed to M. Enos, Historical society of the Upper Mojave Desert, vol. 14 no.2, February 16, 1999⁴²

- (59) *First person cognitive factive under negation, projection:*

Q: How did you find out you had lost some sight?

You would think I'd know, given I'm an optometrist. But because of the stroke, I am not aware that I don't see everything. My wife Robyn noticed that I left food on the left side of the dinner plate. I was still hungry but I thought I had finished the meal.

"John", *Recovery after a stroke*, Guide Dog Association of New South Wales and A.C.T., 1997–1999⁴³

- (60) *First person cognitive factive under negation, projection:*

The sun says, "Light is my nature. What else but light could there be in me? I am not aware that I am shedding light. For me, to be is to shine. I am not aware of the strain of giving light. I do not feel that I am doing anything."

Acharya Vinoba Bhave, "The two aspects of Akarma - Yoga and Sannyasa", *Discourses On Gita*⁴⁴

The above three cases seem to involve multiple identities of the speaker. "I" the speaker has a role like an omniscient narrator, and can have a different set of beliefs from "I" the person (or object) experiencing (or seeming to experience) the events described as they occur. While it is certainly true that the presuppositional theories we have looked at provide no way of correctly predicting what should happen to presuppositions in these cases, that is hardly surprising. For, to my knowledge, there is no current predictive theory of how what we might term *split* "I" sentences like those above are interpreted.

⁴² www.ridgenet.net/brucew/Feb99.html

⁴³ http://www.guidedogs.com.au/vision/interview_john.htm

⁴⁴ http://www.hindubooks.org/vinoba/gita/the_two_aspects_of_akarma/page8.htm

We can find the split “I” effect in sentences involving other embeddings than negation. In the following two examples, with cognitive factives in hypothetical contexts, the split “I” is explicit. In (61) (for which, as with some other examples in this section, both the cancellation and projection readings are possible), His Lordship is considering what he would think if he were a pharmacist. In (62), the writer is considering what it is like to watch the Godfather critically, as if ignoring impressions and observations from previous screenings.

(61) *First person cognitive factive in conditional, projection:*

In the Explanatory Notes to Clause 41 there is the interesting statement in paragraph 201 that “NHS contracts are not normally enforceable in the Courts”. [...]

If I were standing in the shoes of a pharmacist contemplating making such an arrangement, I would stop to reflect. If I am aware that the contract on offer cannot be legally enforced, and if, furthermore, as we see from Clause 40, it is a contract that can be brought to an end at the behest of the Secretary of State acting alone, I should seriously question the wisdom of going any further.

Lord Hunt of Kings Heath, Lord’s Hansard, Column 164 24 Apr 2001 [cancellation reading also available]

(62) *First person cognitive factive under modal, projection:*

If I simply watch, what structural features of *The Godfather* catch my eye?

The first time through, I might notice that the extended, half-hour wedding sequence functions as a prologue, but has little plot connection with the rest of the movie.

I might notice that, in terms of plot, the rest of the movie traces the repercussions of a single event that’s announced at the end of the wedding sequence and occurs just after Tom returns from Las Vegas – the Don’s meeting with Sollozzo.

William P. Coleman, *The Godfather*, *The Screenplay Review* 1:2, October 2000⁴⁵

In some other cases of first person cognitive factives in hypothetical contexts, it is harder to justify the availability of projection readings on the basis of split “I”:

⁴⁵ <http://screenplayreview.home.mindspring.com/index.html>

- (63) *First person cognitive factive under modal, projection:*

Maybe I know that he's been a-cheatin'

Maybe I know that he's been untrue

But what can I do

Jeff Barry and Ellie Greenwich "Maybe I Know", *Long Tall weekend*, They Might Be Giants, Emusic, 1999

- (64) *First person cognitive factive under conditionalized modal, projection:*

)But the assertions are merely assertions about syntactic structures.

Ah, no; wait. You know that, and maybe I know that, if we were involved in making those assertions. But nothing in the RDF says this.

Pat Hayes, email to Sandro Hawke, w3c-semweb-ad@w3.org email archive, 15 Jan 2002 ⁴⁶

- (65) *First person cognitive factive under modal, projection:*

Jonah was the kind of guy that wanted to be in charge of his own destiny-he hadn't learned to submit. He actually thought he could change God's plans! He thought that if he ran to Tarshish, he could stop the flow of God's grace. Maybe I'm smarter than that - maybe I know that I can't outrun God or stop Him from doing His will, but sometimes, I'll have to admit, I'm tempted to take credit for what God does when I do submit. Really, what's the difference? That's just watching him pitch, but taking credit for the throw.

Pastor Jim Wilson, *Games People Play*, Lighthouse Baptist Church, Seaside, CA 3-5-2000 ⁴⁷

- (66) *First person cognitive factive under modal, projection:*

I might know that the feeling of Love is the result of endorphins in my brain. This scientific fact came as the result of empirical study, an outgrowth of the dialectic. However... I experience it as LOVE... boundless, loss of the self into another, dripping with poetry and rose oil.

Deean Kett, Jedi Knight, Faculty - The Jedi Academy, email to Master Kan Kage, 6-28-2001 ⁴⁸

⁴⁶ <http://lists.w3.org/Archives/Public/www-archive/2002Jan/0069.html>

⁴⁷ <http://www.freshministry.org/030500.html>

⁴⁸ <http://pub88.ezboard.com/fjediacademyfrm24.showMessage?topicID=18.topic>

- (67) *First person cognitive factive under modal, projection:*

Dear Femstat,

I was watching TV, I believe the show was Seinfeld, I can't remember. But I do remember that your ad came on. It said that I "might notice that other yeast infection medicines take 7 days ..." but you will cure mine in only 3. I MIGHT notice that, but I probably WON'T since I am a GUY.

Now don't get me wrong, I am not saying that you should limit your ads to "Mad About You" and other female shows. But if you are going to advertise on coed programs, acknowledge that out of millions of viewers, many of them are men, and do not need to be addressed.

You can mention all of your selling points without talking as if all of America currently has a yeast infection.

Rich Mackin, "Letter to Femstat", in *Dear Mr. Mackin...*, Gorsky Press, Florida, 2001

As regards second person cognitive factives in questions, it is easy to find cases where the factive presupposition projects, and with absolutely no feeling of oddity. This is seen in all of examples (68)–(72):

- (68) *Second person cognitive factive in question, projection:*

Have you discovered that Pro-Tools can play and record at half speed? This feature makes it easy to do a quick full octave pitch up or down with the aid of an outboard DAT (or other) recorder.

How to Do Some Quick and Dirty Sound Design Without Getting Any Dirt Under Your Fingernails, The Motion Picture Editors Guild Newsletter Vol. 16, No. 6, Nov/Dec 1995.

- (69) *Second person cognitive factive in question, projection:*

Have you discovered that a web site can enhance your business through increased sales and exposure? Let Lone Elk Projects assist you in the design and layout of your new web site.

Lone Elk projects ⁴⁹

- (70) *Second person cognitive factive in question, projection:*

Have you discovered that DEL. is the same as DEL *.* or that DEL DOS will delete all the files in your DOS directory? Go

⁴⁹ <http://www.angelfire.com/falcon/loneelk/>

on, try it if you are feeling suicidal. If you are not now feeling self-destructive you will, if you do try it.

Tom Coleman, *Self-Assessment*, PC Update: the magazine of Melbourne PC User Group, Melbourne, April 1994

(71) *Second person cognitive factive in question, projection:*

Did you discover that this site is filled with “hidden” pages?.
*Loro’s Guestbook*⁵⁰

(72) *Second person cognitive factive in question, projection:*

As the great-grandson of a Lithuanian tavern owner I offer one final question for you to ponder:

“Did you ever realize that your “mouse pad” makes a great beer coaster?”

J.R. Zane, *Roll out the barrel*, July 20, 1998⁵¹

If in some cases of second person factives in questions the presupposition is cancelled, and in other cases the presupposition projects, then what is the status of Stalnaker’s ‘explanation’ of the cancellation cases? Yes, sometimes the questions are rhetorical, so that Stalnaker’s argument does not apply. But in other cases, I can see no feature of the example that would clearly exempt it from Stalnaker’s argumentation.

6. Written vs. spoken form

Here is an intuition, based on looking at hundreds of naturally occurring examples: I doubt that there is any general principle that would enable one to predict from the written form of an arbitrary sentence involving a cognitive factive whether the factive complement is presupposed by the author. Certainly, there is a tendency for the complement to be presupposed. And certainly there are types of sentence involving cognitive factives, notably in the first and second person, for which the complement is rarely if ever presupposed. But the grey area, the range of cases for which no small set of formal features of the text would tell you whether the complement is presupposed or not, is just too big. Most often, it is reasoning about the author’s knowledge and intentions, combined with an estimate of the inherent plausibility of the factive complement being true and known to be true, that tilts

⁵⁰ <http://members.aol.com/loro/guestbook.html>

⁵¹ <http://www.lithuaniangenealogy.org/pa/tales/brew.html>

the reader's opinion about what is presupposed one way or the other. However, I suggest that the situation is subtly different for the spoken form.

Choose one of the above 76 examples involving a cognitive factive. Make it an example in which the factive complement is reasonably short, and where it is not too obvious from the content of the complement alone (i.e. without the rest of the utterance) whether the speaker would believe it or whether it is true. Do I hear (18)? Professor Berkovitz's fearful pronouncement is repeated in (73a) along with some suggestive focus marking, and variants in (73c–d) with alternative placement of focus and alternative choice of factive subject:

- (73) a. If I discover that your work is [plagiarized]_F, I will be [forced to notify the Dean]_F.
 b. If I [discover]_F that your work is plagiarized, I will be [forced to notify the Dean]_F.
 c. If the T.A. discovers that your work is [plagiarized]_F, I will be [forced to notify the Dean]_F.
 d. If the T.A. [discovers]_F that your work is plagiarized, I will be [forced to notify the Dean]_F.

Example (73a) suggests the professor has a suspicious mind, but that the student may be innocent. In contrast, (73b) suggests that the student is innocent, but that the professor is prepared to act as if she had not made the discovery, a split “I” case, we might say, or else that the professor is mad. (73c) does not imply that the student is guilty. And finally, (73d) conjures up an image of complicity between the all-knowing professor and the guilty student. You may find this disturbing.

While looking at naturally occurring examples, I came across a number of cases for which I was not sure whether the factive complement was being presupposed, or only came to the conclusion given above after scrutinizing a considerable portion of the text either side of the example. Here is a case where the intention of the original writer remained unclear to me for some time, although I now favor a cancellation reading:

- (74) *Second person cognitive factive in question:*

Incidentally, Jeff, how did you program the synth? Did you discover that the user interface was the hardest part?

Rev. Bob “Bob” Crispen, email to Jeff Harrington EMUSIC-L Digest, 12 Aug 1993 08:51:09⁵²

⁵² <http://www.ibiblio.org/emusic-1/back-issues/vol056/issue17.txt>

If (74) is read with stress on “discover”, one gets the impression that Bob is taking it for granted that the user interface was the hardest part, presumably because this is a common experience. But if stress is on “user interface” and/or “hardest part”, this is not taken for granted. Certainly, Bob must think it plausible that the user interface was the hardest part, or else it would be odd to even raise the issue, but he need not be presupposing that it was the hardest. Jeff’s actual reply was “You talkin’ that thing I made in high school? It had 16 pots for each harmonic and an electric organ keyboard for its controller. Volume and overall tuning was about it...” He goes on to explain that he saved up for it working at Baskin&Robbins. Judging by the off-hand, “You talkin’ about”, the simple unadorned statement of the facts about how the user interface was constructed, the minimizing “was about it...”, and the unpretentious approach to fund-raising, it seems that Jeff does not necessarily agree that the user interface was the hardest part, and presumably he did not take Bob to be presupposing that it was. But whether Bob had actually been taking it for granted, we will never know.

Looking back at Karttunen’s examples, we can see that intonation also affects interpretation. If “realize” is stressed in “Did you realize that you had not told the truth?” (1b), the presupposition projects. But if “truth” is stressed, both presuppositional and non-presuppositional readings are available.

In some cases certain choices of intonation produce infelicity rather than alternative readings. If “realize” is stressed in (3) “If I realize later that I have not told the truth, I will confess it to everyone” the effect is quite bizarre: the speaker knows that he or she hasn’t told the truth, but has not realized this. Similarly, if General Myers (8) had stressed “aware” in “I am not aware that there will be Russian forces here.”, the audience would have concluded that he was losing his grip. For he would have presupposed something of which he was denying knowledge.

What conclusion can we draw from the plagiarism paradigm in (73) and these additional examples? The implication is clear: the crucial factor determining projection behavior is not the choice between a first or third person subject, but the choice between an accented or deaccented propositional complement. When I commented at the start of the paper that we might just be watching the “wrong fight”, what I meant is that perhaps it is not the interaction between presupposition and implicature which we should be looking at, but the interaction between presupposition and information structure.

Some observations. First, when the factive complement is long, it is likely to contain some pitch accents. For the moment I make no claims about whether presupposition has any intonational correlates in the

case of long factive complements. Second, some complements cannot easily be understood presuppositionally. For example, if a factive is embedded under negation and the complement contains a negative polarity item, as in e.g. Mill's (5), then that will provide an independent reason (reminiscent of van der Sandt's *trapping* constraint) for why local accommodation/cancellation might be preferred over global accommodation/projection. Third, the cases where projection is mandatory involve accent on the factive verb itself. But if the factive verb is being contrasted with a non-presuppositional expression, there is no presupposition, as in "She doesn't [know]_F it, she merely [believes]_F it." Whenever a philosopher stresses a factive verb, be it Mill, Rousseau or Chuang Tzu, one has a tendency to wonder whether the alternatives under consideration include non-factive verbs. The question of whether such contrastive accents are distinct from foci marking new information remains controversial (Krahmer and Swerts, 2001).

For limitations of time and space, I will desist from a detailed consideration of the interpretation of intonational and textual variants of each of the examples I have considered in this paper. I will also desist from a detailed theoretical analysis and comparison with prior work.

7. Further work

I should like to mention some lines of research which I hope to take up in connection with the data I have presented.

There have been a number of papers recently on the pragmatics of presupposition, developments of Stalnaker's approach which are far from those of Gazdar and van der Sandt. In particular I am thinking of work of Abusch (2002) and Simons (2001, 2002, ms). The types of explanation offered by Abusch and Simons are highly suggestive, although neither author uses naturally occurring data and neither author considers the effects of intonation. Abusch's very original use of *alternatives* seems to me to be particularly ripe for adaption to the effects considered in this last section. Where Abusch uses constraints on the alternative set provided by the lexicon, I would want to also consider constraints on the alternative set provided by focus. This last move would be uncontroversial, given that focus is the best known source of constraints on the alternative set (Rooth, 1992). Zeevat (2002), which considers the significance of oldness of information to choice of presuppositional expression, and speculates about the relevance of expression alternatives, is also relevant.

Another line of inquiry centers on the interaction between topic/focus and presupposition. Strawson (1964) started the ball rolling, suggesting

that definites only carried a presupposition when they were in topic (subject) position. Reinhart (1982) and Lappin and Reinhart (1988), among others, have carried this idea further, applying a variant of it to presuppositions of quantifiers. Meanwhile Hajičová (1984) provided several interesting examples of cancellation (or, in her terminology, “allegation” rather than “presupposition”) arising when presuppositional constructions are focussed. These are further discussed by Hajičová et al. (1998) and Partee (1996), and the latter provides a way of thinking of these cases in terms of accommodation.

The other important strand of recent work I should like to mention is the recent empirical research of Spenader. Spenader (2001) studies naturally occurring factives in the London-Lund corpus, and shows that factives are commonly (more than half the time) used when the factive complement is not previously established to be true. Most of the time factive presuppositions have to be accommodated, whether globally or locally. This result seems very much in accord with two observations I have made in this paper, both of which suggest a weakening of the generalization that factive complements are normally presupposed. First, even third person uses of factives do not imply that the speaker is taking the factive complement for granted. second, for spoken utterances the presupposition only seems to fully kick in when the factive complement is deaccented. I leave discussion of the more detailed results of Spenader (2002) for another occasion.

The title of this paper, as you may have guessed, is taken from naturally occurring text. You may have wondered whether the factive complement “your Belly Button Lint colour is related to the colour of your clothing” was presupposed by the author. Or, by now, you may have realized (!) that there are two ways of understanding the example. If you read the title aloud, and stress “noticed”, then it seems presupposed that belly button lint colour comes from clothes. But if you do not accent “notice”, and place the main accent within the complement, then this is not necessarily presupposed. In fact, the question was taken from an online survey,⁵³ and this survey was intended in an objective scientific spirit. The author definitely did not mean to take for granted anything about the life of belly button lint. Indeed, the results of the survey speak for themselves: although 37% of people have lint color related to their clothing color, “some people consistently have BBL in a colour that is not present in their clothing.”

Whether looking at the source of belly button lint or the source of presupposition, contemplating your own navel is not enough. Yet the

⁵³ Dr. Karl, *Survey Questions*, ABC Science Online, Australia, <http://www.abc.net.au/science/k2/lint/why.htm>.

majority of work on presupposition has strayed little further than a small circle of scholastic navels. It would be foolish to deny that my own navel has occasionally been an object of study. The only major line of work of any relevance that has been based on naturally occurring text is that of Prince (1981) and many followers. Yet while such work is relevant to the study of presupposition, it has generally been focussed on discourse structure and given-new, and has not had so much impact on study of the presupposition projection problem. The goal of this paper has not only been to study how presupposition projection and implicature interact, but also to suggest changes to the standard methodology. Thanks to modern technology, these changes can be made without us leaving the comfort of our armchairs.

I do not want to suggest that there is no longer a place for introspective judgments of artificial examples. We are fortunate that as linguists we come equipped with our own languages, and rapid progress in the field is dependent on our taking advantage of this endowment to rapidly prototype theories and suggest new directions for empirical research. But if we stick entirely to artificial examples there is a danger that we will end up with artificial theories. I hope I have convinced at least some readers that the time is ripe for those interested in the study of presupposition to add additional tools to their empirical arsenal.

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