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Presuppositions, Truth Values, and Expressing Propositions*

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Philosophers like to talk about propositions. There are many reasons for this. Perhaps the most common is that philosophers are sometimes more interested in the content of a thought or utterance than in the particular sentence or utterance that might express it on some occasion. Propositions are offered as these contents.

Like many philosophical notions, this one has been the subject of extensive debate. For instance, it has been challenged on the basis of Quinean queasiness about intensional objects, and Chomskian qualms about the explanatory value of truth-conditional semantics. These are foundational worries about the notion of proposition. But there is another kind of worry about propositions, which leads to the topic of this essay. The notion of proposition has been used to make some highly contentious *philosophical* claims. In particular, strong claims have been made by declaring that particular utterances, or whole classes of utterances, do not *express propositions*. Consider the following classes:

(1) a. **Moral evaluation:** Torture is wrong.

b. **Borderline cases:** John is bald.

c. **Semantic paradoxes:** This sentence does not express a true proposition.

d. **Indicative conditionals:** If the book is not here, it is at home.

For each of these, it has been claimed that no proposition is expressed by all or some utterances of them.[1]

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[1]The first is, of course, a fairly crude form of emotivism. In pure form, it may be found in Ayer (1946),

The first of these runs us headlong into some substantial metaethics. The rest display philosophical logic at its most contentious. At the very least, we have gone far beyond the apparently innocuous idea that we can just talk about the content of an utterance.

Some have responded to such claims by suggesting that we should never talk about failure to express a proposition, or at least never in any but the most obvious of cases. At the very least, the questions surrounding these examples demand that we provide some kind of explanation of just what it is to express a proposition: an explanation sufficiently devoid of philosophical suppositions that we could *apply* it to explain such philosophically contentious cases.

The obvious place to look for such an explanation is linguistics. After all, whether or not an utterance of some sentence expresses a proposition is presumably a claim about natural language; one of which we might hope linguistics offer an independent analysis. Now, linguists do not often talk about expressing propositions they way philosophers do. But there is a phenomenon much discussed by linguists as well as philosophers of language which appears to be closely related to what we are after: *presupposition*. For instance, the recent textbook of Heim and Kratzer (1998) comes very close to identifying presupposition failure with failure to express a proposition. They say:

> If it is a contingent matter of fact that α is outside the domain of $[\![\ ]\!]$, then α is a *presupposition failure*. (p. 81.)

If we understand being "outside the domain of $[\![\ ]\!]$" as the same as failing to express a proposition, then we seem to have a proposal that comes close to offering an analysis of expressing a proposition in terms of presupposition. Of course Heim and Kratzer are not explicitly talking about the philosophical notion of proposition. But this would just make the analysis all the more useful, as it would be substantially philosophically neutral.

We should not, of course, ask too much of such an analysis. It is unlikely that it would

though it has resonated with a great many more recent and refined expressivists. The last is explicitly endorsed by Adams (1975). The idea that vague predicates with borderline cases fail to express propositions is folklore. I discuss some reasons one might be driven towards it in some unusual cases in my (2004). I am explicitly committed to the claim that some utterances of Liar Sentences fail to express propositions (Glanzberg, 2001).

directly resolve the sorts of philosophical issues we see in (1). Many of the contentious issues that are raised there go beyond firm linguistic judgments, or challenge the underpinnings of apparently firm judgments. Even so, I think that we would be much better equipped to approach these hard cases if we had a better understanding of the cases where there is good linguistic data. We would be better equipped to decide philosophically contentious cases of failing to express a proposition if we could spot it and explain it in uncontentious cases (and better equipped to reply to those who reject the very idea as well).

In this essay, I shall try to come to such an understanding of the linguistic phenomenon of failing to express a proposition, how it may be identified, and what brings it about. Though this will not by itself explain the hard philosophical cases of (1), I do hope it will help us to understand what is at issue for these cases. The essay has three linked goals. The first is to explain what it is to fail to express a proposition. Along with this goes the second goal of showing how failure to express a proposition may be recognized in natural language. This will lead to a discussion of *truth-value judgments*. Perhaps the most common idea about expression failure is that it can be recognized by judgments of lack of truth value. I shall argue that truth-value judgments area not a reliable test, and suggest some more refined discourse-based tests which I think do a better job of detecting failure to express a proposition. My third goal is to investigate how failure to express a proposition arises. As I mentioned, the natural place to look is to presupposition. It is a tempting idea, as the quote from Heim and Kratzer seemed to indicate, that failure to express a proposition is simply the effect of presupposition failure. This proposal, I shall show, is too strong. Once we consider the wide range of presuppositional phenomena, we see that some presupposition failures lead to expression failure, but some do not. To sort out what does lead to expression failure, we thus have to investigate in detail the sources of presuppositions. I shall show how presuppositions fall into two categories, corresponding to those that can lead to expression failure and those that cannot, and I shall offer an explanation of why we find this division within presuppositions.

The central thesis of this essay is thus that we can make sense of the notion of failing to express a proposition, we can identify it by some reasonably reliable discourse tests, and we

can explain how it arises in terms of a subspecies of the linguistic phenomenon of presupposition. The bulk of the paper will be devoted to the last component. It will involve a detailed examination of a range of presuppositions and the effects of their failures. In doing this, I shall offer a unified analysis of the sources of these presuppositions. This analysis will allow us to trace the results of presupposition failure, and account for the difference in effect of different presuppositions. Though this is important for better understanding the philosophical idea of failure to express a proposition, there is also independent interest in understanding some of the details of how presuppositions work, and how and why they can have different effects.

This paper will begin by looking at the notion of expressing a proposition itself in Section (I). Section (II) turns to the issue of how to identify expression failures, and offers an improvement on truth-value judgment tests. Section (III) introduces the notion of presupposition, and Section (IV) surveys a wide range of presuppositional phenomena and shows that some lead to expression failure while some do not. An explanation of this is offered in the detailed analyses of elementary presuppositions in Section (V). The paper ends with a brief conclusion, and an appendix offering some more technical development of the main idea from Section (V).

I Expressing Propositions

I shall begin, in this section, with some traditional, fairly abstract, philosophy of language. Before getting on to detailed analysis, we need to figure out what we are talking about when we talk about propositions and expressing propositions. I shall here propose an essentially Gricean analysis of these notions. This will frame the questions to be raised later, of when and how we succeed or fail in expressing propositions.

The key to a clear understanding of propositions, I believe, is to focus on the actual phenomena we might wish to discuss in terms of them. The primary example is the speech act of *assertion*.

I take it as a truism that the basic point of assertion is to convey information. In asserting *Snow is white* I tell you *that* snow is white, in asserting *The world is all that is the case* I tell you *that* the world is all that is the case.

Not any old rendering available of information amounts to successful assertion, however. For instance, my simply standing in front of an audience conveys huge amounts of information: that I am wearing a jacket, that I am slightly nervous, etc. But none of this is like the conveying of information by assertion. Of course, we normally expect assertions to involve the use of language. But the mere use of language is not enough. Suppose I say, with suitable winks and nudges:

(2) John . . . Jane . . .

I convey plenty of information, by using language, but hardly make an assertion.

What makes assertion different? For one thing, when I tell you that snow is white, I make a specific claim, which represents the world as being some way, and can be assessed as correct or incorrect. Successful assertions thus provide determinate truth conditions. Our cases so far, of conveying information but not being assertion, fail to do this. The utterance in (2) does not specify to most interpreters whether it is to convey, for instance, that John and Jane are having an affair, an illicit affair, or an illicit affair that could lead to Jane getting fired, etc. A sufficiently informed interpreter might be able to choose among these, but probably because she already had the information in question available.[2] Outside of this, the utterance is not specific enough to be determinately falsifiable by any given circumstance. Does evidence that Jane's job is secure amount to evidence that the claim is false? What of evidence that they are merely bridge partners? We are lacking, in an utterance like this, a specific claim with determinate content. We are lacking, at least, a determinate collection of truth conditions which correspond to the particular way the world is being represented as being.

Successful assertion must at least fix such determinate truth conditions. We may introduce *propositions* as the information conveyed in successful assertions. Hence, a proposition must at least encapsulate the determinate truth conditions of an assertion. For discussion purposes, I shall follow the familiar custom of taking the additional step of identifying a proposition with its truth conditions. In doing so, I put aside the question of whether or not propositions pro-

[2]Hence, in some contexts where a great deal of background information is available, this sort of case might satisfy the requirements for successful assertion I shall propose. The context I have in mind here is the 'water-cooler', in which not very much about John or Jane is known, but innuendos fly.

vide more fine-grained information than truth conditions. It will not matter for our purposes here.

I should also stress that though I shall talk about propositions as if they were objects, I am not here concerned with the ontological question of whether or not there really are such objects. What is important is that one speaker conveys a specific content to another. Any way of describing this is fine with me.[3]

Merely requiring a proposition is not enough to describe successful assertion, however. If information is easy to find, so is *specific* information. (Sherlock Holmes, for instance, is portrayed as a master of gleaning highly specific information from non-assertoric situations.) What marks off assertion from any old way of finding specific information—of finding a proposition—is that assertions *convey* information. In assertion, the hearer is being *told* the specific information by the speaker, and this is something that is transparent to both of them. Sherlock Holmes' acumen is not required in such a case; only linguistic competence. As Grice observed, not only must information pass from one person to another, it must pass in virtue of both speaker and hearer recognizing that the information is to be transmitted by the making of the assertion. In the terms of Grice (1969), asserting that snow is white requires *meaning* that snow is white.

Grice's analysis of meaning in terms of intentions is notoriously complex, but for our purposes, we can replace the attempt at analysis with a more simple constraint, based on the notion of *common ground* (e.g. Stalnaker, 1978; essentially the same as the idea of *mutual knowledge* in Schiffer, 1972). Common ground information is information taken for granted among speakers at some point in a conversation. This is a strong notion: it requires not merely that each speaker accept a proposition (or at least, take it for granted for purposes of the current conversation), but that they recognize that all speakers do so, and that they recognize this

[3]As I have set up the issue, the brute ontological question of whether there objects called 'propositions' is not of great interest. If we help ourselves to enough mathematical objects (as I think we should), we can find reasonable objects to bear the name.

What is an interesting question if whether or not the kinds of analyses I offer here *commit* me to the existence of propositions. Most of what I say about propositions can be easily paraphrased so as to avoid reference to the objects themselves, in favor of success conditions on acts of assertion. Whether or not all such talk can be paraphrased away is an open question. To the extend it cannot, we have a familiar kind of argument for an ontological commitment.

to be the case, etc. Common ground is the commonly recognized background against which a conversation proceeds. (Common ground propositions need not be believed, as speakers can take something for granted within a conversation but not in fact believe it.)

With the notion of common ground, we can formulate the following constraint on successful assertion:

(3) For an assertion to be successful, the following must become common ground:

a. The proposition encapsulating the information conveyed.

b. That the information was to be conveyed by the assertion.

As both Grice (1975) and Stalnaker (1978) stress, assertion is a cooperative endeavor. It requires not just that speakers coordinate on what information is being conveyed, but on how it is being conveyed.[4]

I shall reserve the term *expressing a proposition* for circumstances in which the conditions of (3) are met. Spelling out the truism that the basic point of assertion is to convey information, we may now say that expressing a proposition is the *success condition* for assertion. It is what we are normally trying to do in making assertions. It is tempting to say, using the language of Austin (1975), that this gives the *felicity conditions* for assertion. However, as we will see below, this term is best reserved for a less demanding sort of condition.[5]

[4]The initial, much modified, proposal of Grice (1969) was U means something if U intended audience A to:

a. Produce response r.

b. Recognize that U intends (a).

c. Fulfill (a) on the basis of (b).

[5]I have discussed the idea of the basic point of a speech act at length in my (2004). In that paper, I suggest that failure to express a proposition amounts to failure to make a genuine move in the practice of using language. A speaker is attempting to make a (genuine) assertion by some action, and if they fail to express a proposition, they fail to do so. As I stress there, this is not to say they have done nothing by their action, nor that they have done nothing intentional, but they have failed to make the specific act of assertion. For most of what I say in this paper, it would be acceptable to describe the case of failing to express a proposition as involving a genuine assertion, but one that is defective in its basic structure (though I think that just amounts to failure to make a genuine assertion in the first place).

As an anonymous referee points out, the Grice-and-Stalnaker-inspired view I am proposing here does raise some difficult issues, related to speaker-hearer asymmetries, or different intentional states of different members of a conversation. For instance, consider a conversation in which one person utters some sentence, and some but not all members of the group thereby presuppose its content. The criterion given in (3) would count this as failure, though that may appear too strong.

These sorts of issue area interesting and important, but the common ground approach I have adopted here

Expressing a proposition is a rather demanding task. How do we ever manage to do it at all? In most cases (and I suspect in virtually all cases), we rely upon language. To simplify, let us concentrate on what Grice would call the proposition *said* by an utterance. I express the proposition that snow is white—I convey it in the right way—by uttering the declarative sentence *Snow is white* with the right intonation. I chose the words whose linguistic meanings combine to fix the proposition that snow is white, and use them to express that very proposition. It is *expression*, as I may take it to be common ground what these words mean, and that used in the right way, with the right intonation, they are to convey that proposition. To stress, even when a proposition is encoded by the words uttered, it is still the Gricean idea of meaning, and the restrictions of (3), that are fundamental to the account of expression.

Of course, this simple story is not often, if ever, applicable on its own. Most any sentence encodes a proposition only with the help of linguistic context. And since Grice pointed out the difference between what is said and what is implicated (both of which are part of what is meant), we cannot restrict ourselves even to linguistic encoding plus context. In what follows, I shall usually concentrate on what is *said* when looking for the proposition expressed by an assertion (though implicatures will become important for the discussion of factive presupposition triggers in Section (V)).[6]

II Expression Failure and Truth-Value Judgments

If expressing a proposition is the success condition for assertion, then it should be unremarkable that there is such a thing as failing to express a proposition. Any failed assertion is an example.

However, expressing a proposition is a demanding task, and there is a lot that can go wrong

in effect idealizes away from them. It assumes that well-running conversations achieve more perfect exchange of information than they often do in real life. But, I think we can make progress in understanding the way information is conveyed in conversations by adopting this kind of idealization as a starting point.

[6]There is a vigorous debate over whether what is said by an utterance can be read off the logical form of a sentence uttered, plus contextual contributions, or if autonomous pragmatic processes such as 'enrichment' are needed. I tend to operate as if the former holds, and am inclined towards this position, but nothing I say here relies on it. For the former position, see Stanley (2000). For the latter, among many authors, see Sperber and Wilson (1986), Carston (1988, forthcoming), and Recanati (1993) (as well as related work of Bach (e.g. Bach, 1994), though Bach takes a somewhat different view of what is said than I have been assuming here).

in attempting to express a proposition. Failure to do so can come in more or less drastic forms. At the most extreme, one could attempt to say something, but start laughing instead, and fail to make an utterance at all. Or one might try to speak, but for whatever medical reason, manage to make only some odd croaking noises. Somewhat less extreme cases are those in which a performance error leads to uttering an ungrammatical sentence, and examples like (2). We will see others in a moment.

The kind of failure to express a proposition that is of interest here, which might be found in controversial examples like (1), is different. Cases like (1) do not involve an utterance which lacks an uttered sentence, or has a sentence which displays some gross defect or is incomplete. Rather, they are cases in which we have sentences that are fully well-formed syntactically, and we may assume they are properly produced in utterance. Yet, it is claimed, no proposition is expressed nonetheless. Let us reserve the term *expression failure* for this sort of case, where an act of assertion gets as far as producing a well-formed sentence, and yet still fails to express a proposition.

Though the examples of (1) are contentious, I believe there are some relatively uncontroversial examples of expression failure. The clearest come from failures of demonstratives. Suppose I say:

(4) That palm tree is going to fall.

Suppose I am point off into the distance, where there is no salient object, and certainly nothing like a palm tree. To be on the safe side, suppose also there are no grounds for treating this as shifted reference to some photograph of a palm tree, or as a report of my private sensory state. Suppose there is no salient candidate object available.[7]

I am going to take this as a paradigm case of expression failure. It fails to meet condition (3). It attempts to convey a proposition by way of the truth conditions determined from a sentence together with context. As no referent of *that palm tree* is available in the context, no

[7]I have discussed the specific case of complex demonstratives at greater length in work with Susanna Siegel (forthcoming). I should mention that we are not at all sure that complex demonstratives are devices of reference, and are inclined to follow King (2001) in treating them as quantifier phrases. However, this does not impugn their standing as sources of examples of expression failure.

such truth conditions are determined, and the attempt to convey information fails.

In this case, I think the judgment that there is something grossly wrong with the utterance is clear. And the fact that we cannot compute its truth conditions, as we do not have a value for the demonstrative phrase, supports the idea that we have failure to express a proposition. But most cases are not so clear. We need some way to spot expression failure more generally, and it turns out to be somewhat elusive.

The classic approach to this problem is based on *truth-value judgments*. The idea at least appears fairly straightforward. We are looking for cases in which an attempt to convey a truth-conditional proposition fails. We detect this by focusing on what would be potentially conveyed by an utterance, and asking if it is true or false. If, in cases where we are apprised of all the relevant facts, this fails to lead to a truth-value judgment, it appears the reason is that there are no truth conditions conveyed upon which to base those judgments. We fail to reach truth-value judgments because of expression failure.

As was pointed out by Strawson (1950), we are often in cases like (4) unwilling to give judgments of truth value. (As he later puts it (1964), we are "squeamish.") But there are some circumstances in which this tendency can be overridden. One fairly typical one is a pattern of what is sometimes called 'presupposition-canceling negation', such as replying to (5a) with (5b) in:

(5) a. That palm tree is going to fall. George said so.

b. That palm tree is NOT going to fall—there in no palm tree.

Actually, for the demonstrative NP *that palm tree*, (5b) takes some effort. It is much easier to get with the definite description *the palm tree*. But with the right intonation pattern, with stress on the negation, and a kind of stress on each each word of the original sentence, it does seem we can say this.[8]

Another problematic case is what we might call 'repair-to-negation':

[8]As Roger Schwarzschild suggested to me, the intonation pattern here does not seem to have much to do with focus. Rather, it seems to indicate that the words used are unacceptable, inviting us to see this sort of case as one of metalinguistic negation in the sense of Horn (1989). We do not need to decide now whether the phenomenon here is one of metalinguistic negation or not. We merely need to note that there is a kind of negative judgment available, which complicates the question of whether we have an assessment for truth value or something else.

(6) a. Is that palm tree going to fall?

b. Er . . . no . . . , there is no palm tree.

In cases like this, we note a defect in an utterance, and reach a negative judgment on the basis of it. In (6), it may be as much that we are rejecting some implication of the attempted claim, such as that we are in danger of being hit. But we can also get rejection of what may *look like* what is said itself. For instance, we have:

(7) a. This pen [demonstrating a pen] is in danger of being struck by that palm tree.

b. Well, there is no palm tree, so I guess not.

The speaker here manages to reason from the defect in the utterance to its somehow not being able to be true, and gives a negative assessment.

It is not easy to decide exactly what these sorts of examples show. But they do present enough problem cases to cast doubt on the idea that our dispositions to provide truth-value judgments form a good guide to whether a proposition is expressed. They are just not stable enough. Insofar as there is no proposition expressed in (4), for instance, there is little reason to think there is a proposition expressed in (5) or (6); yet we are inclined to offer what look very much like truth-value judgments in the latter. Examples like (7) raise a number of questions about how closely our dispositions to give truth-value judgments are tied to subtle features of sentence structure. But still, they show enough plasticity in the availability of truth-value judgments to make us doubt how reliable these judgments can be as a test for successful expression.[9]

Even so, I believe these sorts of examples do point the way towards a better, more reliable test for expression. Examples like the repair-to-negation cases (6) and (7) display a common move in discourse, known as a conversational *repair*. This is a conversational move of correcting a defect in a discourse. The range of repair phenomena is quite large, and not by any means restricted to issues of proposition expression. But we tend to see some typical markers of repair, such as some discourse markers like the *er* particle I used above. This is characteristic of what conversational analysts call 'other-initiated repair', as are pattern of pausing

[9]Some of the issues surrounding cases like (7) are discussed in von Fintel (forthcoming) and in my (2002).

between turns, and other markers.[10] It appears that the intonation pattern in (5) also marks repair.

The notion of repair allows us to sharpen the Strawsonsian test based on truth-value judgment into an empirically more robust set of diagnostics. We may think of truth-value judgments as occurring in discourse as responses to yes-no questions like (8a), or to tag questions, or corresponding queries about assertions like (8b):

(8) a. Is that palm tree going to fall?

b. i. That palm tree is going to fall.

ii. Is that right?

The Strawsonsian idea about paradigm case of expression failure like (4) can be put that speakers cannot answer such queries. We have seen this is not quite right. They can, but in doing so, they must initiate a repair. They key mark of expression failure, I propose, is the need for repair in assessment.

Discourses are messy things, so it is not always that easy to detect this sort of need for repair. Speakers can sometimes talk around conversational defects rather than fix them. However, there are some discourse settings which bring out the need for repair more clearly, and we may use these to construct some tests for expression failure.

One is what I shall call the *echo-assessment* test. In this, we ask speakers not only to make an assessment, but to attempt it with the same words as the initial assertion (or as close as we can come, modifying, for instance, occurrences of terms like *I* and *you*). So, for instance, we have no trouble with:

(9) a. Is Al Gore president?

b. No, Al Gore is not president.

On other hand, what is correct about the Strawsonsian observation is that speakers will not offer:[11]

[10] See Schegloff *et al.* (1977) and Levinson (1983).

[11] I mark discourse unacceptability by '#'.

(10) a. Is that palm tree about to fall?

b. # No, that palm tree is not about to fall.

In cases like this is speakers will only give an assessment by initiating a repair, as in (5) or (6). When they do, they typically tend to avoid echoing the defective construction, as in (6), or at least use it only in a marked way, as in (5). We do not see:

(11) # Er . . . there is not palm tree, so I guess that palm tree is not about to fall.

In defective cases, the echo-assessment test asks speakers to do something which would reproduce the defect. If repair of the defect is required, speakers will not do this. Rather, if they make any assessment, they will initiate a repair and work around the defective construction. Thus, we can use the echo-assessment test to spot cases where repair is necessary.

A second diagnostic for the need for repair is the *indirect speech report test*. In cases like (4), speakers will be unwilling to provide *indirect* speech reports without initiating a repair. Normally, the repair is given by offering a direct quotation instead. Compare:

(12) a. # George said that that palm tree is going to fall.

b. George uttered 'That palm tree is going to fall', but there is no palm tree.

As with the echo-assessment test, this test asks speakers to do something which would reproduce a defect. If the defect requires repair, speakers will not be willing to do so, or at least not unless they can do so in a way that also makes the needed repair.[12] I shall group the echo-assessment and indirect speech report tests as the *repair tests*.

In canonical cases of expression failure, like (4), repair is required in order to report what was said, or to evaluate it. This is revealed in the repair tests, where we observe speakers unwilling to make echo-assessments or indirect speech reports. For shorthand, I shall call this status simply *repair obligatory*. In keeping with my usage of 'expression failure', I shall reserve this label for cases in which we have an acceptable utterance of a well-formed sentence, and yet still have obligatory repair.

[12]The repairs made by shifting to direct quotation are quite weak, amounting to marking what is defective about an utterance, and moving on. A more elaborate repair might be provided by the original speaker in the next turn. They might say something like 'oh, I meant . . . '. But this does not appear to be required, once the initial repair is made.

Even when restricted to well-formed utterances of fully grammatical sentences, the status of repair obligatory contrasts with a much weaker kind of defect. Suppose we are discussing how well some contextually salient group of people did on an exam:

(13) a. How did the exam go?

b. JOHN passed.

(Capitals indicate 'focal stress', or more properly, pitch accent.) In many contexts, this will generate the scalar implicature that no one other than John passed.[13] But suppose it is already established, and common ground in the context, that this situation cannot happen. We might respond with either (14b-i) or (14b-ii):

(14) a. How did the exam go?

b. JOHN passed.

i. Yes, John passed.

ii. Yes, John passed . . . but you don't mean the rest didn't, do you?

Likewise, in reporting, we could say either of (15a) or (15b):

(15) a. He said that John passed.

b. He said that John passed, but he oddly seemed to suggest that the rest didn't which is not so.

Options (14b-ii) and (15b) amount to initiating repairs, much as we saw before. But in these cases, unlike the previous ones, the repair appears to be optional. The (14b-i) and (15a) options, not making the repair, are acceptable as well.

Depending on the circumstances, we might or might not make a repairs like these, perhaps depending on how central we think the generation of the unacceptable implicature might be for the wider purposes of the conversation, or what the premiums for repair in the conversation might be. In settings like the ones we see in courtroom dramas, where a witness is required

[13]This example is modified from Rooth (1992). If the context provides us simply with a set of salient people, the implicature that no one else passed will be generated. But if the context provides other information, different implicatures are possible.

to answer questions truthfully, but with no regard to implications, there would be a strong preference *not* to make the repairs. I shall refer to these sorts of cases as *repair optional* as opposed to *repair obligatory*. As usual, I reserve this term for optional repairs of well-formed utterances of fully grammatical sentences.

The mark of cases where no proposition is expressed, I propose, is the discourse status of *obligatory repair*. We have seen that the paradigmatic cases of expression failure, like (4), have this status. But moreover, obligatory repair is just what we should expect for cases of expression failure, by the standard for successful expression given by the conditions of (3). When these are not met, speaker either cannot identify a propositional content at all, or cannot identify it in a way that makes clear that it is the proposition being conveyed. Thus, without initiating a repair, they cannot assess the information conveyed, or report it as information conveyed. The result is repair obligatory status, as detected by the repair tests. Conversely, when we find repair obligatory by these tests, we are detecting a problem either in the providing of propositional content (the first clause of the expression condition 3), or in the conveying of that information (the second clause). The repair tests target the first clause, by asking a speaker to evaluate or report a specific content. They target the second clause, by asking the speaker as closely as possible to do so in the same way the content was to have been conveyed by the assertion in question. The repair tests, and the status of obligatory repair they detect, thus provide a good guide to when expression failure occurs.

The idea of repair-obligatory status, and the repair tests which detect it, improve upon the Strawsonsian idea that expression failure corresponds to lack of truth value. It must be granted that the notion of repair is not as worked-out as we might like, but I believe it is more empirically robust than the dispositions to make truth-value judgments with which we began, and it is better-targeted at the phenomenon described in the conditions of (3). At least, it is sufficiently refined to avoid the problems for truth-value judgment tests we saw in (5–7). It is important to stress that it is *obligatory* repair that marks expression failure. We have already seen that the weaker status of optional repair marks a lesser failing in an assertion, and this

will become important in the discussion of presupposition to follow.[14]

The status of obligatory repair is quite specific. First of all, as I mentioned above, it is restricted to well-formed utterances of grammatical sentences. However, to see better the sense in which speakers can find a conversational repair to be obligatory, it will be useful to consider how repairs are applied when grammatical flaws are present. Consider some familiar cases:

(16) a. * John elapsed that Bill would come. (Subcategorization.)

b. * Poirot believes that himself is the best. (Binding.)[15]

Now, consider applying the echo-assessment or indirect speech report tests to any of these. In each case, the speaker will not simply repeat the grammatical error, and so they will not give echo-assessments or indirect speech reports. In the binding error case, the repair is quite minor. Speakers will say:

(17) He said Poirot believes the *he* is the best.

This simply makes the repair without marking it, as it is quite clear what is happening.

A case like the subcategorization violation seems to require a more clearly marked repair. One might see:

(18) He said that John expected that Bill would come . . . at least, I think that's what he said, if he meant *expected* where he used *elapsed*.

What is important is that in these cases, it is unacceptable to repeat the error in the sentence, and a repair is initiated to avoid it.

I reserved the term 'expression failure' for cases where we had no grammatical error, so these are not the cases we are interested in. But the normative force of obligatory repair is the same in both kinds of cases. Speakers are highly unwilling to repeat grammatical errors,

[14]Let me stress that many of the cases of obligatory repair we have looked at here are are *interpretable*, in that a sympathetic interpreter in a situation of utterance could often come up with a plausible interpretation. But even when this can be done, there will be nothing *expressed* by the utterance. If an interpretation is available, it does not live up to the high demands on expressing a proposition given in (3).

[15]These are well-known. I draw the first from Chomsky (1965), and the second from the textbook of Haegeman (1994).

and will not do so unless they are themselves making performance mistakes. Now, it should be mentioned that it is not quite true that speakers will not repeat such defective sentences under any circumstances. If you really use brute force, you could get them to make all kinds of noises. But the norms of language use still preclude speakers from repeating grammatical errors. In the same way, they obligate repair in cases of expression failure.

Even so, applying the repair tests is not always so easy. Discourse is much more messy than, say, syntax, and speakers will quite often tolerate defective discourse, given the other demands placed on communicative exchanges. The norms of language use obligating repair competes with other norms. The repair tests are designed to screen off these competing demands as much as is possible, but they need to be handled carefully to do so effectively. For one thing, the tests should only be applied in cases where all speakers are apprised of all the relevant facts, including facts about what words the speaker used, about the context, and about whatever bears on the truth of the claim made. (Otherwise, we could see repair initiated not because of expression failure, but because the hearer simply did not hear the speaker properly, or did not know the value of an indexical.) To best screen-off other norms of language use which might cloud the status of obligatory repair, it is best to imagine the tests applied in a 'courtroom' setting, where the person applying the tests is a witness on the stand. Here, the conversation places a premium is only accurate reporting and assessment, without regard for how useful or misleading that may be. The only norms that count are the ones relevant to obligatory versus optional repair.[16]

Though testing for a normative notion like obligatory repair can be difficult, the repair tests provide us with a better tool than either our direct intuitive judgments of whether a proposition is expressed, or the Strawsonsian truth-value judgment test. They are, I believe,

[16]As comments by Gregory Ward me me appreciate, there are quite a number of delicate issues for applying the tests with ordinary speakers. For instance, different speakers will make different assumptions about the relative importance of assessing what was said versus any implicatures. Different speakers will also take the standard of assessment in echo-assessment somewhat differently. Some take it to be truth, as most philosophically trained readers will; but some take it to be a more epistemic notion. The precise *form* of denial used in the test is important for both issues.

Clearly, the tests, and especially, the protocols for testing, need to be refined to make them empirically more robust; though, as I say, I do think they already represent an improvement over direct intuitive judgments about expression, or the Strawsonsian truth-value judgment tests. I hope to carry out these refinements, and add some more substantial data, in future work.

empirically more substantial, and less philosophically biased.

III Presupposition

So far, we have an abstract characterization of what it is to express a proposition, leading to the constraint (3). More concretely, we have identified a discourse status which corresponds to expression failure: that of obligatory repair. We also have some tests for detecting obligatory repair: the repair tests. But we still lack an explanation of how expression failure comes about, and of the conditions in which it comes about. We thus need a richer theory. To develop one, I shall begin by returning to the idea that I considered at the beginning, that an analysis of presupposition might provide the kinds of theory we need.

The analysis of presupposition that lends itself to an account of expression is that developed by Stalnaker (e.g. 1974). It has several components, which I shall discuss in turn.

The first component is an analysis of a *context* as a kind of information state: the context at a given point in a conversation consists of the information that is common ground among participants in the conversation at that point. A context may thus be represented as the set of propositions which are common ground, or as the set of possible worlds compatible with all the common ground propositions. If we think of propositions themselves as sets of worlds, the context is then the intersection of all the common ground propositions.[17]

In light of this model of context, we can recast the basic idea that the point of an assertion is to convey information. Conveying information is always done against a background of shared information. This is just the context in which an assertion is made. In conveying information, a successful assertion will make it the case that an additional proposition becomes common ground, and so is simply added to the context. Of course, the conditions of (3) still apply. It is not enough merely to add the proposition to the common ground; it must be done in the right way to count as conveying information. By (3), this requires adding to the context the additional information that the proposition was conveyed.

[17]Stalnaker further analyzes a context in terms of the notion of *speaker presupposition*: the propositional attitude of taking for granted or presupposing. There are a number of issues that might be raised about whether speakers' individual presuppositions or the common ground is primary. However, for our purposes here, I shall suppress these, and simply work with the common ground.

Thus, generally, the task of assertion is that of *updating* a context. For the most part, we are concerned with the content of an assertion itself, and may suppress the additional common ground information that the proposition was conveyed by the assertion. Under this assumption, a context behaves as a record of the contents of assertions made in a conversation. Each successive proposition asserted is added to the record.

Let us introduce the notation $[\![S]\!]^C$ for the semantic value of sentence S in context C: the semantically encoded information of S evaluated in C. We may then then write the result of updating context C by an assertion of sentence S as $C + [\![S]\!]^C$. In terms of possible worlds, $[\![S]\!]^C$ is a set of worlds, and the result of updating the context is $\{w \mid w \in C + [\![S]\!]^C\} = C \cap [\![S]\!]^C$.

Against the background of information in C, the information conveyed by asserting S is what it adds to C. This is $C + [\![S]\!]^C$. Thus, in accord with the discussion of Section (I), we can identify $S + [\![S]\!]^C$ as the proposition expressed by the assertion of S in context C.[18]

Stalnaker's theory analyzes presupposition in terms of the context-as-information picture. It does so by way of the notion of *presuppositional requirements*. These are requirements a sentence places upon a context for the sentence to be *felicitous* in the context. Thus, presuppositional requirements are relations between a sentence S and a proposition p such that if S is felicitous in context C, C entails p. (If we think of contexts as sets of propositions, the requirement is simply that C includes p.)[19]

A presuppositional requirement is a constraint on what an information state must be like for an assertion to be *felicitous*. Presupposition failure results in infelicitous utterance. We

[18]Thus, with Stalnaker (1978), and much of the subsequent work on dynamic semantics, I identify the proposition expressed with the information conveyed, $C + [\![S]\!]^C$, rather then with $[\![S]\!]^C$ itself.

[19]A similar idea was developed by Karttunen (1974). Generally, the Stalnaker-Karttunen approach to presupposition makes it a pragmatic notion; unlike, for instance, the semantic notion of presupposition deriving from Frege (1892) and Strawson (1952). The idea of implementing the Stalnaker-Karttunen approach in a dynamic context comes from Heim (1983). It has been developed extensively by a number of authors, as I shall discuss in Section (V)

It is common to see presuppositions identified by a test for implication under embedding in a family of environments, including negation, antecedents of conditionals, and interrogatives. This sort of test works in tandem with the characterization in terms of infelicity, as it is a diagnostic for what is presupposed by a given construction. This is a useful guide, but as Chierchia and McConnell-Ginet (1990) point out, it tends to overgenerate. In their terms, it accepts implications that do not intuitively have presupposition status, or lead to infelicity. They give the example of nonrestrictive relative clauses. I am inclined to add selection restrictions as well, which seem to me to give very marginal judgments of infelicity. (This issue is discussed further by Kadmon (2001).)

must be somewhat careful about just what presupposition failure is. It has been well-know since Lewis (1979) that in many cases, presuppositions required by a sentence but not present in the context can be added to render an utterance of the sentence felicitous (the process Lewis dubbed *accommodation*). It is also known that many presuppositions are contextually defeasible. Infelicity only results if a presuppositional requirement is genuinely active, and so not defeated, and cannot be accommodated. Let us reserve the term *presupposition failure* for these cases.

This leaves the notion of felicity unanalyzed. As with the discourse notions I used in Section (II), it is taken for granted that it is clear enough in specific cases to make the characterization of presupposition useful. Especially when we leave felicity unanalyzed, it is tempting to make the generalization I mentioned at the outset, that presupposition failure and expression failure are one-in-the-same. Insofar as the basic point of assertion is to express propositions—to convey information—is not the linguistically relevant notion of felicity that of expressing a proposition? If so, does not the notion of presupposition failure correspond exactly to that of expression failure (once we factor out cancelation and accommodation)? One half of this correspondence holds trivially. Any expression failure will be an infelicity of some kind. Hence, according to the characterization of presupposition I have sketched here, all expression failures are presupposition failures. It is the converse direction which is more problematic. The conjecture that all presupposition failures are expression failures is tempting, but I shall argue in the next section that it does not hold.

IV Presuppositional Phenomena

The characterization of presupposition given in the last section is highly abstract. To test the conjecture that all presupposition failures are expression failures, we need a better picture of the range of presuppositions to be found in natural language.

Linguists have identified a great many presuppositional phenomena. They are usually described in terms of *presupposition triggers*: constructions or lexical items whose presence generates, or at least usually generates, a presuppositional requirement. Presupposition triggers

themselves come from many sources. Here is a sample of such requirements and their triggers and sources. Following common usage, I label the presuppositional requirements generated by each sentence simply as its presupposition:

(19) a. **Demonstrative NPs:** That palm tree is about to fall.

- Presupposition: Contextually available value of *that palm tree*.
- Trigger: Demonstrative NP *that palm tree*.
- Source: Semantic value of trigger.

b. **Factives:** John regrets voting for Bush.

- Presupposition: John voted for Bush.
- Trigger: Lexical item *regret*.
- Source: Conversational implicature.

c. **Clefts:** It was John who solved the problem

- Presupposition: Someone solved the problem.
- Trigger: Structure of cleft.
- Source: Linguistic rules (usually classified as conventional).

d. **Focus-sensitive particles:** Even John solved the problem.

- Presupposition: Someone other than John solved the problem, and it was unlikely or unexpected that John did.
- Trigger: Lexical item *even*.
- Source: Conventional implicature (?).

e. **Iteratives:** John solved the problem too.

- Presupposition: Someone other than John solved the problem.
- Trigger, lexical item *too*.
- Source: Conventional implicature (?).

I shall discuss the sources of these presuppositions further in Section (V), and in the cases of conventional implicatures, I shall question the aptness of the label (though not really the basic

point). This list is hardly exhaustive, or beyond controversy, but it does give a representative sample of the types of presuppositions.[20]

We have already seen that demonstrative presupposition failure normally leads to expression failure. Applying the repair tests, we may ask about the rest of the presuppositions on the list. The failure of factive presuppositions appears to induce obligatory repair. Consider a context in which it is common ground that John did not vote for Bush, so the presupposition of *regret* (19b) cannot be accommodated. We see obligatory repair. The echo-assessment test yields:

(20) a. John regrets voting for Bush.

b. Is that true?

c. Er . . . John did not vote for Bush.

Applying the indirect discourse test we find:

(21) a. # John said he regrets voting for Bush.

b. John said 'I regret voting for Bush', but he did NOT vote for Bush in the first place.

This gives failure for (19b) the same status as demonstrative failure (4). It counts by our tests as failure to express a proposition.[21]

[20]Surveys of presuppositional phenomena, along with original references, may be found in van der Sandt (1988), Soames (1989), and Beaver (1997). Karttunen and Peters (1979) identify the presuppositions of *too* and *even* as conventional implicatures. Stalnaker (1974) argues that factive presuppositions are conversational. The argument is developed in Chierchia and McConnell-Ginet (1990). Related arguments are applied to other presupposition triggers in Levinson (1983) and Simons (2001b, MS). A survey of the issue of sources of presuppositions is given in Kadmon (2001).

There are a number of other commonly identified presuppositions, and some controversial ones. Demonstratives are usually classified as carrying referential presuppositions. Definite NPs more generally carry presuppositions, though there is controversy over exactly what the presuppositions are. The same holds for many quantificational NPs. Implicative verbs (e.g. *manage*) trigger presuppositions, presumably through their conventional implicatures. Sometimes one sees predicates with selectional restrictions counted as triggering presuppositions, though I think a Stalnaker-type analysis of presupposition makes this dubious. There is some controversy over whether focus generates presupposition, which we shall look at briefly in Section (V). The question of focal presupposition is addressed in Jackendoff (1972), Rooth (1999), Herburger (2000), and Kadmon (2001).

[21]Mandy Simons suggested a case where *regret* may not appear to trigger obligatory repair:

(i) a. John Doesn't regret voting for Bush.

b. Yes, that's right, he didn't vote for him.

There are two points to make about this sort of case. In many contexts, the continuation of the answer is strongly required, and it seems to me to count as a repair. Hence, this need not present a counter-example. But perhaps more importantly, as I shall discuss at more length in Section (V.4), factive presuppositions are contextually

I find the same results for clefts (19c). Thus, we have presupposition failure for the first three entries on the list leading to expression failure, as our conjecture predicted.

However, quite a few presuppositions do not have this status. Instead, they have the status of repair *optional* discussed in Section (II). Representatives on our list are *even* (19d) and *too* (19e). Consider a context where the presupposition of (19d) cannot be accommodated. Suppose, for instance, that it is common ground that John is the most likely among relevant people to have solved the problem (and that this is not open for revision or discussion). We get:

(22) a. Even John solved the problem.

b. Yes, John did . . . but why did you say 'even'?

c. # That's NOT SO. He would have solved it if anyone did.

The indirect speech report test supports this:

(23) a. Even I solved the problem. (Said by John.)

b. John said that even he solved the problem . . . but of course, that's a bid odd, as he would have if anyone did.

c. # John said 'Even I solved the problem', but that doesn't make sense, because he was most likely to have done it.

Our repair tests indicate that none of these amounts to expression failure; rather, they have the weaker failure marked by *optional* repair. I believe raw intuitions agree (for what they are worth). In the *even* case, the proposition expressed appears to be just that John solved the problem. We seem to get exactly the same proposition in the *too* case. The contrast with

cancelable. Much as Simons (2001b, MS) herself argues for change-of-state verbs, factives appear to be canceled in contexts of total ignorance of the circumstances. Suppose we have:

(ii) a. I wonder what's going on with John.
b. Well, he doesn't seem to regret voting for Bush.
c. That's right (he didn't vote for him at all).

Here the continuation may be merely optional, but I am inclined to think the presupposition is simply canceled in this context, so we do not have presupposition failure at all.

cases like (4) is strong. Though there is clearly *something* wrong with these utterances, neither intuition, nor the repair test, indicates expression failure.[22]

The breakdown appears to be this: our representatives of presuppositions triggered by semantic value requirements, structural positions, and conversational implicatures all appear to induce expression failure upon presupposition failure. For them, infelicity is expression failure. But our representatives of the presuppositions triggered by lexical items that carry conventional implicature appear to induce only the weaker status of repair optional. This is infelicity, as there is something wrong that is liable to be repaired, but it does not appear to be expression failure.[23]

The conjecture that all presupposition failures are expression failures is thus false. A great many presuppositions do not lead to expression failure. This leaves us with a number of puzzles. First of all, we need an explanation of what does lead to expression failure, if not presupposition failure generally. We still need to understand how expression failure comes about, and what role presupposition plays when it does. To achieve this, we need a better understanding of the nature of the infelicity that arises when specific presuppositions fail. But moreover, we would like to explain the division among presuppositions this section has pointed out. It is not a simple conventional vs. conversational division, for instance, as we find conventional elements on both sides.

V Analyzing Elementary Presuppositions

The only way to solve these puzzles is to look more closely at the details of some cases of presupposition. I started in Section (I) with a highly abstract picture of what it is to express or fail to express a proposition. The subsequent sections began to fill in some details in this abstract picture. Section (II) offered some details on how expression failure may be identified. Sections (III) and (IV) began to fill in some details of how expression failure arises, by connecting it to presupposition and to the well-known range of presuppositional phenomena. But by

[22]Observations along similar lines are found in Stalnaker (1973) and Karttunen and Peters (1979). Karttunen and Peters note that criticism of a speaker for a failed presupposition of *even* would "normally be rather mild" (p. 12).

[23]This bears out a distinction drawn by Soames (1989), between *expressive* and *pragmatic* presuppositions.

the end of Section (IV) we saw that the picture cannot be completed without a more thorough investigation of specific presuppositions.

I shall do this here for some of the key cases. The question we face is somewhat different from the usual one in the presupposition literature. I shall be almost entirely unconcerned with the projection of presupposition in complex sentences. Rather, we need to find out how specific triggers give rise to presuppositions in simple sentences, and what happens when these presuppositions fail. This is task of analyzing *elementary* presuppositions.

V.1 More on Update Semantics

To analyze elementary presuppositions, I shall rely on the basic framework of assertion as context update described in Section (III). This has been applied to presupposition by a number of authors (e.g. Heim, 1983, 1992; van der Sandt, 1992; Zeevat, 1992; van Eijck, 1994; Krahmer, 1998; Beaver, 2001), mostly in connection with the projection problem. As I will not be concerned with projection, I need only some very basic features of the framework.

As we saw in Section (III) above, the assertion of sentence S in context C conveys information by producing an update of C. Following the discussion of Section (I), we may assume it does so by way of some instructions linguistically encoded by S, which I shall call *update instructions*. As we may assume the encoding of these instructions, and the use of the sentence to convey that they are to be applied to C, are common ground, this ensures that the update of C by S amounts to the expression of a proposition, by the Gricean standard given in (3).

In the simplest case, as I discussed in Section (III), the update instruction encoded by S is simply to add the semantic value of S to C. The proposition expressed is then $S + [\![S]\!]^C = C \cap [\![S]\!]^C$. Where possible, I shall omit the double brackets. So, if S is an atomic sentence $F(t)$ displaying no context-dependence, then I indicate the update instruction encoded by S as:

(24) $C \mapsto C + [F(t)]$

However, it is known that there are other sorts of update instructions, which do more than simply adding a proposition to a context.

The kind of update instruction which will be of importance here involves setting up tar-

gets for inter-sentential anaphora. This is typical of indefinites (as in the treatments of Heim (1982) and Kamp (1984)) or so-called 'dynamic' existential quantifiers (as in the treatment of Groenendijk and Stokhof (1991)). To take a simple example (from Groenendijk and Stokhof (1991)), consider:

(25) A man walks in the park. He whistles.

The update instructions encoded by this discourse is:

(26) $C \mapsto C + [\exists x P(x)] + [W(x)]$

I shall for the most part skip the technical development of dynamic quantifiers (a brief presentation is given in the Appendix). But informally, the first instruction sets up a discourse referent x which is taken to satisfy P. Subsequent occurrences of x are anaphoric on this discourse referent. Hence, x in the second instruction behaves as if 'dynamically bound' by the existential quantifier in the first instruction. (Of course, we then have to think of truth or falsehood as relative to both possible circumstances and assignments of values to discourse referents.)

Presuppositions can behave in ways similar to discourse anaphors, as was noted by van der Sandt (1992). Borrowing one of his examples, compare:

(27) a. A man walks in the park. He whistles.

b. John is ill. Mary regrets it.

The propositional anaphor *it* satisfies the presupposition of the factive, by finding the right proposition provided by previous discourse. I shall exploit a connection between between presupposition and discourse anaphora, though a somewhat different one, as I develop an explanation of some elementary presuppositions.

Now that we have the basic framework of update semantics, I shall apply it to explain how elementary presuppositions arise, and what happens when they fail. I shall propose that a single dynamic operator creates presuppositional update instructions. Understanding how this operator relates to other update instructions will help explain why presupposition failures

fall into two categories, and will, I believe, shed some light on how expression failure arises.[24]

I shall present my analysis in the course of examining one important presupposition trigger, the *cleft construction*, in Section (V.2). Then in Sections (V.3) and (V.4), I shall show that the same analysis can be applied to other presuppositions mentioned in the list (19) of Section (IV).

V.2 Clefts

To see how elementary presuppositions relate to update instructions, we must look at individual cases of presupposition. It turns out to be useful to start with the cleft construction.

Clefts pattern with demonstratives and factives in inducing expression failure, according to the repair tests. As I noted in (19c), clefts carry an existential presupposition. Consider a context C in which this presupposition cannot be accommodated; for instance, one in which we are discussing the fact that no one has solved the problem. In such a context, we find repair obligatory:

(28) a. The problem is unsolvable.

b. It was John who solved the problem.

c. Is that right?

d. Err . . . no one solved the problem (as we all know).

No assessment or reporting of content seems possible until we repair the utterance. We have expression failure.[25]

[24]Much of the discussion of the relations between presupposition and anaphora, starting with van der Sandt (1992), have concentrated on how this might explain presupposition projection. As my interest here is not in projection, my discussion here will be somewhat different in focus.

I should also mention that many treatments of presupposition in dynamic frameworks dispense with 'static' meanings altogether, in favor of 'context-change potentials' as in Heim (1983). In Section (III), I offered a Stalnaker-inspired hybrid, with both dynamic and static elements. The rest of my discussion follows suit. I believe this is all that is needed to make the points I offer here, but all that I say can easily enough be converted into a fully dynamic framework. For critical comments on some of the motivations for such a framework, see Stalnaker (1998).

[25]There are some well-known complications about the discourse status of clefts. It is quite common to see clefts used to induce accommodation. The example I discuss has a pitch accent on the clefted constituent *John*. There is a distinct class of clefts that have a pitch accent on the CP (a focus?). These have notably different discourse properties, as discussed by Prince (1978) and Delin (1992).

The truth conditions of a cleft are plausibly that the clefted constituent (which immediately follows *it was*) gives an exhaustive list of what satisfies the following CP, where exhaustiveness is restricted to a contextually salient set of individuals I_C. Thus the truth conditions of (19c) are:

(29) a. It was John who solved the problem.

b. $\forall x \in I_C(P(x) \longleftrightarrow x = j)$

I suggest we see the update instructions encoded by a cleft like (19c = 29) as looking like:

(30) Find an x such that $P(x)$ in the context. An exhaustive list of the contextually salient values x can take is given by j.

I shall first discuss how to represent these instructions, and then discuss how we get them from the cleft construction.

I shall write the instruction 'find an x in the context satisfying $P(x)$' as $\downarrow xP(x)$. As we must bear in mind accommodation, we can see successful processing of this instruction as occurring in one of two ways:

(31) $\downarrow xF(x) =$

a. Find an x satisfying $F(x)$ in the context, or

b. Update the context to include an x satisfying $F(x)$, and proceed.

(Actually, I am unsure if we need to write the second clause explicitly into the semantics of $\downarrow$. As a kind of repair strategy, accommodation is always available, and the second clause simply describes how it would be carried out for the case of $\downarrow xF(x)$. But regardless, the second clause serves to remind us that accommodation is available.)

On the proposal I shall make, it is the presence of $\downarrow$ that sets up a presupposition (and creates their anaphoric potentials). For the moment, I shall skip the formal development, as I think the intuitive idea of finding something in the context, and thereby making it salient in way that allows for anaphoric reference, is clear enough.[26] (A brief and preliminary sketch of a more technical development of the semantics of $\downarrow x\phi(x)$ is given in the Appendix.)

[26]There are a number of other proposals for how to account for presuppositions via a dynamic operator; notably, the ∂ operator (due primarily to Beaver (e.g. Beaver, 2001), also discussed extensively in Krahmer (1998)).

Using this notation, the update instruction for the cleft (29) is:

(32) $C \mapsto C + [\downarrow x P(x)] + [x = j]$

These instructions result in the truth conditions given in (29). They also provide for the existential presupposition. The instruction $[\downarrow x P(x)]$ can only be processed if the context entails $\exists x P(x)$.

Though these update instructions get the right truth conditions and presupposition, it still needs to be shown that they derive from the compositional semantics of the cleft. Unfortunately, a great deal about clefts—both their syntactic structure and many of their semantic properties—remains controversial. As I shall not be able to resolve these issues, I shall not be able to provide a compositional derivation of the update instructions. Even so, I do want to pause to note that an independently motivated analysis of clefts fits well with what I have proposed. I hope this at least makes my suggestion plausible.

Following Kiss (1998), let us suppose that the clefted constituent is marked for what she calls *identificational focus*. The function of identification focus, unlike the more familiar focus marked by pitch accent in English, is to mark a collection of values for which some predicate might hold as the exhaustive list of values for which it does hold. Identificational focus creates the truth conditions of exhaustive listing we saw in (29).

Structurally, this puts the clefted constituent in a syntactically marked position. We can think of this as looking something like:[27]

(33) [It was [John$_i$]$_{F^{ID}}$ [who$_i$ t$_i$ solved the problem]]

These proposals generally base presupposition on *partiality*, either by making the context-update function partial, or by making the update operation itself a partial operation in a many-valued or partial logic (cf. Heim, 1983; van Eijck, 1993, 1994; Krahmer, 1998; Beaver, 2001). Examples like (22) , which show that we can have presupposition failure without expression failure, suggest that such an analysis is not refined enough. My analysis via $\downarrow$ seeks to uncover more details about how elementary presuppositions emerge, and what happens when they fail. In starting with a non-partial framework, and in exploiting connections with anaphora, my approach has some affinities with that of van der Sandt (1992), though the question of how closely they might be related is a complex one. (For some discussion of the relations between dynamic approaches to presupposition, see Zeevat (1992).)

[27] Kiss (1998) argues for a much more specific proposal on the structure of clefts. She proposes that the clefted constituent occupies the specifier position of a functional projection FP (focus phrase). Her analysis provides a structure like:

(i) [$_{IP}$ It was [$_{FP}$ John$_i$ [$_{CP}$ who$_i$ [$_{IP}$ t$_i$ solved the problem]]]]

Spec-FP is the F^{ID}-position.

According to É. Kiss, the semantics of the F^{ID}-position provides the value of an operator expressing exhaustive listing. Writing this operator EXH, the relevant semantic structure looks like:

(34) a. [[John$_i$]$_{F^{ID}}$ [who$_i$ t$_i$ solved the problem]]

b. John = EXH_i[t$_i$ solved the problem]

Semantically, we thus have the same structure in:

(35) a. It was John who solved the problem.

b. John is the one who solved the problem.

Both have the truth conditions given in (29).

We get the update instructions of (32) by breaking up the processing of EXH into two steps, given informally in (36b) and more formally in (36c):

(36) a. $EXH_x(P(x)) = j$

b. Find an x in the context. An exhaustive list of the values x can take is given by j.

c. $[\downarrow xP(x)] + [EXH(x) = j]$

The first part of the processing of EXH is its presuppositional contribution. The second provides its asserted content, based on that presupposition.

More needs to be said to fully explain the mapping of LF to update instructions for clefts, but I hope this is enough to make the update instructions I have proposed plausible. I am more concerned now to point out that the update instructions explain both the presuppositions triggered by clefts, and their repair obligatory status.

First, executing the instruction $[\downarrow xP(x)]$ requires there to be a contextually salient x such that $P(x)$. Hence, the context must entail $\exists xP(x)$ for the execution of this instruction to be possible. For an utterance to be felicitous, it must be possible to carry out the update instructions it encodes (bearing in mind the possibility of accommodation). We thus find that for a cleft to be felicitous, we must have $\exists xP(x)$ implied by the context. This is just the presuppositional requirement we saw above.[28]

[28]I thus depart fairly dramatically from the classic discussion of Atlas and Levinson (1981). With Kiss, I am

Second, in this case, if the presupposition fails, we get expression failure. This may explained by (32), together with the Gricean constraints on expression from (3). First of all, we should note that if the instruction $[\downarrow x P(x)]$ cannot be executed, neither can the instruction $[x = j]$. Hence, if the presupposition fails, none of the update instructions can be carried out. This is enough of a failure to violate the conditions of (3). The speaker is trying to convey a proposition by entering into the common ground that it is to be identified by executing a sequence of update instructions. The attempt to execute the instructions fails entirely, leaving the conversation no common ground information about what the speaker is trying to convey. Expression fails.

The failure to express a proposition has both semantic and Gricean factors. Semantically, it should be stressed that when the presuppositional instruction $[\downarrow x P(x)]$ fails, x is not set up as a discourse referent. As a result the subsequent instruction $[x = j]$ is not even defined. (As I discuss briefly in the Appendix, this is already a stronger sort of failure than we see in the repair optional cases, where the relevant instructions are defined, but executing them leads to a failure state.) This sort of catastrophic failure of the update instructions creates a situation where no proposition can be the proposition conveyed, by the Gricean constraints of (3).

In repair optional cases, we will see that these factors can interact in other ways. In these cases, the update instructions fail in more innocuous ways, which allow for identification of a proposition expressed. To see how this may occur, we should turn our attention to the repair optional cases of *even* and *too*.

V.3 Presuppositions from 'Conventional Implicatures'

Many presupposition triggers appear to derive from conventional implicatures, including our examples of *even* (19d) and *too* (19e) (as was argued in the classic Karttunen and Peters (1979)).[29] We have also seen a marked difference in behavior between the presuppositions deriving from conventional implicatures and others we have considered. Presupposition fail-

agreeing with Atlas and Levinson that the semantics of clefts includes exhaustiveness. For an opposing view, see Horn (1981).

[29]For further discussion see Kadmon (2001).

ure for presuppositions with sources in conventional implicature does not appear to induce expression failure. We get the status of only repair optional. I shall propose that we can see these presuppositions as having the same basic source as clefts: the presence of a ↓ operator. The difference in effects upon failure is the result of what happens when the update instructions are processed; not a difference in the basic nature of the presuppositions themselves. Indeed, I shall conclude this subsection by asking to what extent the category of conventional implicature might be subsumed under that of presupposition—under that of the ↓ instruction.

Let us look more closely at the case of *even*, more or less following Rooth (1985). In (19d) I was not careful about where the focus (the 'focal stress' or pitch accent) falls. It is probably natural to read it as *Even JOHN solved the problem*. This might appear to have the structure:

(37) [[$_{\text{NP}}$ Even JOHN] solved the problem]

One of the important points about *even* is that its semantics is sensitive to which constituent is in *focus*. Once we mark that, it will simplify our discussion, and not seriously effect the content of what I shall propose, to treat *even* as a sentential operator, giving:

(38) [[Even] [[John]$_{\text{F}}$ solved the problem]]

The constituent marked F is in focus, realized in English by a pitch accent (the 'focal stress' indicated by capitals in (37)).

The interpretation of (38) is usually given in two parts:

(39) a. $[\![\text{Even John solved the problem}]\!]^C = [\![\text{John solved the problem}]\!]^C$

b. Presuppositions:

i. N solved the problem, for some contextually salient $N \neq$ John (the value of the focused constituent).

ii. For any contextually salient N such that N solved the problem, it is more likely/expected that N solved the problem than that John solved the problem.

The presuppositional clause may be explained using the alternative semantics for focus (Rooth, 1985, 1992), in an appropriate form. For a sentence S with a focused constituent, let $Alt(S)$

be the set of propositions that result from replacing the focused constituent of S with each of its contextually salient alternatives. The presuppositional clauses then tell us that $Alt(S)$ is nonempty, and for any $p \in Alt(S)$, p is more likely than $[\![S]\!]^C$. Let us abbreviate these conditions as $L_C(S)$. We can then abbreviate the semantic contribution of *even* as:

(40) a. $[\![\text{Even } S]\!]^C = [\![S]\!]^C$

b. Presupposition: $L_C(S)$

There are quite a few ways this might be refined. For instance, the presupposition may require a context-dependent scale or measure of likelihood. This may or may not be a matter of probability *per se*. But we still have enough information in hand to begin to analyze the presupposition carried by *even*.[30]

We would like to offer the same sort of analysis as we gave for clefts, in terms of update instructions including ↓ instructions. It appears we can do so quite easily:

(41) $C \mapsto C + [\downarrow p(p = L_C(\text{S}))] + [\![S]\!]^C$

The presupposition here is conventionally attached to the lexical item *even*, by way of this update instruction. As usual, it generates the presuppositional requirement that $L_C(S)$ be implied by C, just as we expected.

Why then do we get only repair optional when we encounter failure of the instruction $[\downarrow p(p = L_C(\text{S}))]$? After all, in the last case, we saw this sort of failure lead to obligatory repair.

The answer, I suggest, lies in the lack of connection between this instruction and anything else. In the cleft case, the ↓ instruction sets up a variable that is picked up by a later instruction. When the ↓ instruction fails, the variable is not set up, and the later instruction becomes undefined. This results in problems that interrupted the Gricean process of recognizing a proposition as conveyed, and so we have expression failure.

In the case of *even*, on the other hand, the ↓ instruction has no further effect. The semantics of *even* tells us what we are to look for in the context via ↓, but then provides no instructions

[30] As I mentioned, I am more or less following Rooth here. His analysis builds on earlier work of Karttunen and Peters (1979).

relying on the context being that way. It makes no use of the variable ↓ sets up. Rather, it says simply: check to see if the context satisfies L_C, but then update by computing $[\![\mathrm{S}]\!]^C$.[31]

When this instruction cannot be executed, it is a defect. Hence, we have infelicity, and indeed we get repair optional status. But, it is not a defect that interrupts the Gricean process. We can still determine the information content—the proposition—conveyed, by the subsequent instructions. These are well-defined, and are entered into the common ground by the utterance. Hence, we do meet the Gricean constrains of (3), even in spite of the failure to execute the ↓ instruction.

We see a similar result for iteratives like *too*. There we find something like:

(42) C + JOHN left too = $C + [\downarrow x(x \neq \text{John} \wedge \text{left}(x))] + [\![\text{John left}]\!]^C$

This puts us in just the same situation as *even* when the presupposition fails.[32]

One moral of this situation is for the way we understand update computations. We have here an instance of a 'fault-tolerant' computation: one which is able to reach its end in spite of failure in one of its instructions. In the case of ↓ instructions, in particular, the semantics tells us something about where a fault-tolerant computation might be available. According to the semantics of the Appendix, failures of ↓ instructions are not matters of the operation being undefined. As ↓ sets up discourse referents, it is always defined. Rather, failure of a ↓ instruction amounts to not finding what we need in the context. In the formal semantics, this results in the context being updated to the empty set. This is a violation of the Gricean norms of assertion (as in Stalnaker (1978)), and so an infelicity. But we have a natural fault-tolerant option when this happens. Simply rest to the prior context, and go on. In the cases of *even* and *too*, this process allows us to successfully compute the instructions that tell us what the asserted content of the sentence is to be, so we satisfy the Gricean constraints on expression as in (3). In the cases of clefts, however, the result of the fault-tolerant option is that the remaining update instructions become undefined entirely. We cannot even attempt to execute

[31]That the presuppositions and asserted content of *even* are independent (often called the phenomenon of 'presuppositional independence') was noted in Karttunen and Peters (1979).

[32]Here again, the basic analysis of *too* comes from Karttunen and Peters (1979). The anaphoric aspect of *too* was noted by Kripke (reported in Soames (1989)), and is discussed in Heim (1992). For a treatment in DRT, which also explains the presuppositional independence of *too*, see van der Sandt and Geurts (2001).

them. Thus, we violate the requirements of expression.

My analyses of *even* and *too* provide lexical entries which include ↓ instructions. These parts of the entries cover what is usually glossed as the conventional implicatures of these terms. Before leaving these examples, we should ask if this is the right result.

To a great extent, I am not sure if there is a substantial issue here. The lexical entries I have given make it the case that these terms conventionally carry information that is clearly separate from their propositional content (the update instructions that have any truth-conditional effect on context). Thus, we have the marks of conventional implicature. We could, if we wanted, replace my lexical entries with ones that had a special category of 'conventional implicature'. But if we did, we would then need to have a rule that made conventional implicatures affect update by being placed in the scope of a ↓ operator. The results would be exactly the same.

It thus seems simpler to me to to treat these expressions as presuppositional, and not worry about the category of conventional implicature. I suspect that one reason for resisting this is the sense that the failure of a presupposition associated with a conventional implicature is different from that of demonstratives presuppositions or cleft presuppositions. But one of the virtues of my analysis is that this difference is explained directly, and so we do not need to appeal to the additional category of conventional implicature.

V.4 Factives

So far, we have seen how to account for some presuppositions by way of update instructions based on the ↓ operation. Moreover, these analysis offered us a way to explain the difference in expressive status of presuppositions like those of clefts, which lead to expression failure, and those of *even* and *too*, which do not. This is explained by the interaction of ↓ with other update instructions, and whether this leads to a sufficiently catastrophic crash of the update process to undermine the Gricean conditions on expression.

But so far, we have only looked at cases where a presupposition is conventionally encoded; by my analysis, encoded by a ↓ instruction. I have taken it for granted that there are some

presuppositions whose sources are *conversational*. If the ↓-analysis of presupposition is to be adequate, we need to find a way of explaining such conversationally generated presuppositions in terms of it.

Above I offered factives (19b) as a typical case of a conversationally generated presupposition. This analysis is usually defended on the basis of the contextual defeasibility of these presuppositions, which comes close to the cancelability of conversational implicatures. Standard examples of contexts in which we do not have presuppositions for factives include:[33]

(43) a. i. If I discover that I left my bag in the restaurant, I'll be angry.

ii. Context: looking for the bag (do not know where it is).

b. i. At least John won't have to regret that he did a PhD.

ii. Context: John dropped out of graduate school.

I shall assume these establishes that factive presuppositions are conversational in nature, but they do not show just what the conversational source of is, or how it works.

I noted in Section (IV) that presupposition failure for factives leads to expression failure: we get obligatory repair. We could explain this if we found them to induce ↓ update instructions, and make further use of the variables these instructions set up (as we saw with clefts). This is what I shall propose. But in this case, due to the conversational nature of the presuppositions, no analysis which simply locates ↓ instructions in the meanings of factives can succeed. We need to explain how *conversational phenomena* can introduce ↓ instructions into the update procedures for factives.

An account of the generation of factive presuppositions, which I shall partially endorse, is found in Stalnaker (1974). It is based on the observation that factives *entail* their complements. *John knows p*, for instance, entails *p*. An entailment is not normally a presupposition: entailments do not normally survive under negation. Why should this entailment be different? Stalnaker argues as follows. Consider a typical utterance of *j knows p*:

[33]Many authors have discussed these issues. The first example below is based on Stalnaker (1974), and the second on Levinson (1983). These sorts of examples are discussed at length in Chierchia and McConnell-Ginet (1990) and (somewhat critically) Kadmon (2001). Similar arguments for change-of-state verbs are given in Simons (2001b, MS).

> [The speaker] would be leaving unclear whether his main point was to make a claim about the truth of [p], or to make a claim about the epistemic situation of [j] (the knower), and thus leaving unclear what direction he intended or expected the conversation to take. (Stalnaker, 1974, p. 55.)

The story is basically Gricean. Speakers would be uncooperative if they failed to indicate which claim is primary. This can be remedied by making one claim presupposed rather than asserted.

There is a potential problem with this story: it might imply much too much. It seems as if it could be applied to *any entailment*. But many entailments do not carry presuppositions, even highly defeasible ones. We do not expect a conjunction $A \wedge B$ normally to presuppose one of its conjuncts, for instance. Consider:

(44) I voted for Bush and I don't like it.

In a setting in which I am well-known to have never even entertained voting for him, you will simply reply 'that is obviously not true'. Maybe this will tend to induce interpretations of irony, but not necessarily. If you overhear me trying to get in good with the lapsed Democrats club, you might just mutter under your breath 'liar'.

Indeed, we see this with the contents of factives themselves. Let us suppose that factives break down into two components: a fact component and an agent component. For *know*, this is given by the traditional analysis of knowledge, which breaks it down into an epistemic component (justified belief plus whatever else is required), and a factive component (the truth of the belief). We can likewise think of *regret* as being defined in terms of an agent component (the agent taking a negative propositional attitude—something like being sad) and a factive component.[34] Hence, we may suppose:

(45) a. $\text{know}(x, p) \longleftrightarrow E(x, p) \wedge {}^{\vee}p$

b. $\text{regret}(x, p) \longleftrightarrow S(x, p) \wedge {}^{\vee}p$

(I do not want to make any particular claim about lexical decomposition here. Any way in

[34] *Sad* does not quite express what we want, as it itself appears to be factive. We need a non-factive negative propositional attitude.

which the meanings of these terms can be broken down into these components that makes the breakdown available to speakers for Gricean computations will suffice.)

The presupposition of *regret* would be nicely explained if its semantics generated an update instruction like:

(46) $C \mapsto C + [\downarrow x(x = p)] + [S(j, x)]$

(Cf. Beaver, 2001, Ch. 6.) But this is not what the analysis of the meaning of *regret* in (45) gives us. Moreover, if it were, we would lose the conversational nature of the presupposition. What we need, it seems, is for there to be some conversational way to make the step from $S(j, p) \wedge {}^{\vee}p$ to $[\downarrow x(x = p)] + [S(j, x)]$. Moreover, this must occur in a way that does not require all entailments to undergo a similar transformation. I shall attempt to derive such a transformation along the lines Stalnaker suggests. But to avoid the over-generation of any old entailment turning into a presupposition, we will have to be much more careful with ideas about the ways that assertions relate to the direction of conversation.

First, I shall try to fill in the idea of direction in a conversation. The basic idea for doing so is one of coordinating on discourse topics. One way to set a discourse topic is to ask a question:

(47) Where is Bill?

a. Bill is at the store.

b. # Mary is at the store.

Answering a question properly amounts to a kind of conversational relevance. Failing to do so is a kind of irrelevance. It is clear enough that this leads to some sort of conversational infelicity.

A similar constraint operates even when no explicit question has been asked. Compare:

(48) John did not come to work to day.

a. He must be sick.

b. # It might rain today.

The initial utterance, together with background circumstances, sets a discourse topic. This is so whether the utterance asks a question as in (47) or makes an assertion as in (48). The second utterance is only felicitous if it collaborates on the discourse topic.

This suggests a general principle:

(49) **The Topic Collaboration Principle:** A felicitous utterance must collaborate on the current discourse topic.

For most of what follows, this rough and informal statement will be clear enough. But I shall spend a moment discussing what would be involved in making it precise.

First, we might take more or less seriously the idea that a discourse topic is a question. Following Roberts (1996), we might develop this idea as follows. In the tradition of Hamblin, we can see the semantic value of a question as a set of propositions: those that count as answers to the question. For the wh-question *Who came to dinner?* asked in a context C with a contextually salient set of individuals I_C, this looks like $\{[\![x \text{ came to dinner}]\!] \mid x \in I_C\}$.

Roberts defines a *partial answer* to a question in a context as any proposition that contextually implies an element of the semantic value of the question or the negation of one. A sufficient condition for collaborating on a discourse topic is then given by:

(50) If an assertion is a partial answer to the discourse topic of a context, it satisfies the Topic Collaboration Principle.

This is not anywhere near the whole story. I doubt it is even a genuine sufficient condition, as the range of contextually available implications will outstrip those that really make an answer count as appropriate. As I have argued elsewhere (2002), the topic structure of discourse is about as complicated as anything can be.[35] But for our purposes, we can work with (50) as a rough approximation of the felicity constraint we need.

Stalnaker's suggestion can be spelled out by looking at the behavior of conjunctions as answers to questions. Compare:

(51) a. What are we going to do today?

[35]These issues have been discussed in a number of other places, including Carlson (1983) and van Kuppevelt (1995).

b. We are going skiing and we are going to the museum.

(52) a. What are we going to have for dinner?

b. # We are having pasta for dinner and it is raining outside.

The apparent generalization here is:

(53) A conjunction collaborates on a discourse topic only if each conjunct does.

This principle is reasonably well motivated, as it basically combines the Topic Collaboration Principle and the idea that each conjunct effects a separate update instruction, and so acts 'as if' a separate assertion. (I am putting aside the well-known fact that conjunctions generate implicatures, roughly of temporal or causal connection between the conjuncts.)

However, the principle is not sufficiently accurate. There are at least two ways a conjunction can collaborate on a topic: they can each partially address the topic, or the second conjunct can address a subtopic introduced by the first conjunct. Compare:

(54) a. Why is John a good baseball player?

b. He runs fast and he throws far.

(55) a. What happened to John.

b. His sister got sick, and she was taken to the hospital.

A more accurate principle seems to be:

(56) A conjunction $A \wedge B$ collaborates on a discourse topic Q only if either:

a. A collaborates on Q and B collaborates on Q.

b. A collaborates on Q and B collaborates on the topic of $Q + A$.

This is fairly close.[36] It is not perfect, as it does not fully reflect some rather delicate constraints on how topics may evolve in a discourse. For instance, it does not rule out:

(57) a. What happened to John?

b. ?? His mother died and he stubbed his toe.

[36] A similar idea is developed for disjunction in Simons (2001a).

However, I think we are close enough to try to address the behavior of factives.[37]

In light of this principle, let us consider again the case of *regret*. A fairly typical discourse topic for its appropriate use is something like:

(58) How is John feeling?

a. # He voted for Bush.

b. #/?? He feels sad about voting for Bush and he voted for Bush.

c. He regrets voting for Bush.

Likewise we see:

(59) Can John pass the physics test?

a. $\#\, F = MA$.

b. #/?? He believes $F = MA$ and $F = MA$.

c. He knows/realizes that $F = MA$.

As these illustrate, in many cases where we would like to use terms like *regret*, the factive conjuncts of their meanings cannot collaborate on the discourse topic.

Now, any time we have a conversational rule like (56), and an utterance to which it applies, it is indicated conversationally that the utterance is in compliance with the rule. This is just a special case of Grice's general cooperative principle. And as with any application of this principle, conversational implicatures can be generated to preserve compliance with it.

In cases like (58) and (59), using the conjunction (b) would violate the conversational rule (56). This sets up the opportunity for an implicature to corrects the violation. In these case, I suggest the implicature is that the factive component is to be put in the scope of a $\downarrow$ instruction. For the case of *regret*, for instance, this transforms the update instructions from $[S(j,p) \wedge^{\vee} p]$ into $[\downarrow x(x = p)] + [S(j,x)]$.

Now, instructions of the form $[\downarrow x F(x)]$ appear to be immune from the topic collaborating principle. We see this with more explicit directions as well:

(60) How is John feeling?

[37] I examined constraints that might be relevant to cases like (57) in my (2002).

a. #/?? He feels sad about voting for Bush and he voted for Bush.

b. Well, you already know he voted for Bush, and he feels really sad about it.[38]

c. $[\downarrow x(x = [\![\text{John voted for Bush}]\!])] + [S(j, x)]$.

We can thus reconstruct the transformation as a typical kind of conversational reasoning:

i. The assertion of *John regrets voting for Bush* does not appear to be in accord with the conversational principle (56).

ii. It fails to be so because its content is in the form of a conjunction, where the conjunct $^{\vee}p$ does not collaborate on the discourse topic.

iii. The utterance would thus satisfy the principle if the conjunct $^{\vee}p$ were put in the scope of $\downarrow$.

The result is just the presuppositional requirement we have seen for factives. Successful execution of $[\downarrow x(x = p)]$ requires precisely that the context already imply p.

As with clefts, failure of this sort of presupposition results in expression failure. Again as with clefts, the update semantics, together with the Gricean constrain on expression, explains why. If the instruction $[\downarrow x(x = p)]$ fails, then the instruction $S(j, x)$ is undefined. As with clefts, this creates a situation where the constraint on expression (3) cannot be satisfied.

In this case, we might wonder why a different fault-tolerant strategy might not be available, which could reduce the infelicity to repair optional, rather than expression failure. When the $\downarrow$ instruction fails, why not just revert to computing $S(j, p)$, skipping the need for x and making the instruction well-defined? The reason, I suggest, is again basically Gricean. This process will not manage to provide a proposition *expressed*, by the conditions of (3). In cases where the presupposition is not contextually canceled, it is already in the common ground that to be cooperative, the utterance must be interpreted using the $\downarrow$-structure. For the speaker to succeed in what they are trying to accomplish, this instruction must be used. Hence, we can

[38]The discourse marker *well* by itself is much more flexible than $\downarrow$. As Schiffrin (1985) documents, it can be used in many ways to mark points where some constraint on discourse coherence appears to be violated. *Well you already know* seems to mark deviation from (56) which $\downarrow$ simply avoids.

only recognize a proposition as having been conveyed by the speaker, by the lights of (3), in virtue of having been computed via this instruction. It is common ground that this cannot be done. Hence, no proposition can be expressed.

As a further test of the conversational account, we may verify that adding a ↓ instruction by way of the Gricean computation respects the accommodation and cancelation behavior of factives. As I noted when I defined it, ↓ allows for accommodation if material is not already in the context. Hence, if we have no information about who John voted for, we can still have the presuppositional reading in:

(61) a. What is going on with John?

b. He regrets voting for Bush.

We find the presuppositions of factives to be canceled in those cases where we can see both conjuncts of the meaning analysis as collaborating on a topic. Here is a reasonably clear case:

(62) a. What is likely to change your mood?

b. If I discover that I left my bag in the restaurant, I'll be upset.

Here information about the bag is conversationally topical, and the presupposition is canceled. In contrast, we do get presuppositional readings in:

(63) a. What's John's mental state like?

b. If John discovers he left his bag in the restaurant, he'll be upset.

(64) a. How are you feeling?

b. ? If I discover that I left my bag in the restaurant, I'll be upset.

The first of these is fine; the location of the bag is not topical, and it has a presuppositional reading. The second is marginal. Indeed, it appears to violate a Q-maxim (Quantity) whether it is presuppositional or not, so it may not be a case where we even get to the Topic Collaboration Principle.

Now, assuming we can make sense of the conversational addition of ↓ instructions, we still have to clarify the difference in status between (58b) and (58c). The explicit conjunction is

marginal to infelicitous, whereas the factive which should start out with the same content is fine. If we have an implicated instruction to add ↓, why should we not have it in both?

I believe there is a competing conversational principle that accounts for just the difference we see:

(65) No felicitous utterance provides only update instructions in the scope of ↓.

An utterance that is entirely an instruction to find information in the background cannot be cooperative, as it cannot be informative. (This is thus an aspect of the informativeness principle of Stalnaker (1978).) We can apply something like this to conjunctions as well. In update terms, we take each conjunct to count as a separate assertion, made in sequence. Thus, we should have:

(66) No felicitous utterance contains conjuncts which provide only update instructions in the scope of ↓.

This, of course, applies to explicitly uttered conjunctions, not to instructions encoded in the meaning of a single sentence.

We thus find (58b) to violate either (66) or (56). The impression I get upon hearing it is of attempting to satisfy (56) and getting only a marginal result, as in doing so we wind up violating (66). In contrast, we have no such problem with (58c).

To put the matter less formally, uttering *John regrets voting for Bush* threatens to violate the Topic Collaboration Principle by virtue of the content it provides. We can satisfy the Principle by re-assigning some of that content to be found already in the context. In contrast, the explicit conjunction explicitly offers a combination of two claims, one of which cannot satisfy the Principle. We could suppress it, by consigning it to the context, but then we violate the rule that one should not say something uninformative.

Let me conclude this section with a couple of remarks. I have offered a conversational account of the source of the presuppositions of factives. It must be noted, though, that a conversational instruction to put material in the scope of a ↓ operator is not an ordinary conversational implicature. Its content is something about the interpretation process itself,

rather than more information about the world. There is one other clear example of this sort of process: the application of the diagonalization operator in Stalnaker (1978).

It might be best to think of the conversational process as more on par with the process of choosing readings of sentences. It amounts to showing that only one reading is available in a wide range of context. There are a few examples which tend to admit both presuppositional and non-presuppositional readings, such as:[39]

(67) She broke the camera before she took the picture.

This has a factive reading, where she took the picture, and a non-factive reading, where she did not. These can be bought out by:

(68) a. Did Sue take a picture?

b. She broke the camera before she took the picture (so I'm not sure if she was able to do it).

(69) a. Is Sue likely to break the computer?

b. She broke the camera before she took the picture.

The second answer is presuppositional, the first is not.

Finally, let me say a word about the status of conversational principles like the Topic Collaboration Principle. These are instances of the general Gricean cooperative principle, but they also reflect the specific nature of discourse as a cooperative endeavor. I am sympathetic to the idea that they should be derivable from the cooperative principle, in the manner of the familiar Gricean maxims, perhaps together with a few more facts about discourse. But I do not have such a derivation, and I would not mind if they turned out to be special cooperative principles governing the rather special activity of communicating through discourse.

VI Conclusion

My goal in this paper has been to shed some light on the phenomenon of expression failure. In Section (I), I examined in highly general terms what it is to express a proposition. This resulted

[39]Examples like this are discussed in Levinson (1983).

in the Gricean constrain (3). I then turned to the question of how we may test for expression failure. I argued in Section (II) that it corresponds to the discourse status of obligatory repair, which can be detected by the repair tests. In the remainder of the paper, I turned to the issue of how expression failure arises. As I discussed in Section (III), the notion of presupposition provides a very general framework in which to investigate infelicities. This made inviting the conjecture that presupposition failure and expression failure are equivalent, and that to investigate the sources of expression failure, we simply need to catalog presupposition triggers. But we saw in Section (IV) that this is not so. Some presuppositions lead to obligatory repair—to expression failure—upon failure, while some lead to the weaker status of repair optional. Explaining this difference led to a detailed examination of some elementary presuppositions in Section (V). This section showed how certain sequences of update instructions can interact with the Gricean constraint on expression to produce expression failure, while some can avoid expression failure even if they contain failing instructions.

The analyses I offered in Section (V) were all based on the ↓-operator. Though I hardly began to analyze the full range of elementary presuppositions, I did consider some typical cases. This leads me to conjecture that all presuppositions can be explained in terms of ↓. Does this mean that all expression failure is derived from the kind of interaction between ↓-instructions, other update instructions, and the Gricean constraint we saw with clefts and factives?

Perhaps. At the very least, it does show us one fundamental way that expression failure can come about, even with a well-formed utterance of a grammatical sentence. Appreciating how this works, and how it differs from the situation in which the weaker status of repair optional emerges, gives us a richer understanding of the phenomenon of expression failure. It shows us not just how to test for expression failure in discourse, but how to explain what about the semantics and pragmatics of an utterance makes it fail to express a proposition.

VII Appendix: A Toy Semantics for ↓

This is a sketch of some important parts of a highly simplified toy semantics for ↓ (using as a framework, a simplified version of Groenendijk *et al.* (1996)).

Start with a set W of worlds, and a domain of discourse D. D is the domain of contextually salient individuals, and we can pretend all worlds in W have universe D.

We can define a system of discourse referents r in D to be a (finite) partial function from the set of variables to D.

We then define $r[x/d]$ to be like r, but $dom(r[x]) = dom(r) \cup \{x\}$ and $r[x/d](x) = d$.

(The system of Groenendijk *et al.* (1996), like many systems of dynamic semantics, links variables (working as anaphors) first to discourse markers, and then interprets the discourse markers in D. But I will not make use of this feature here.)

A *possibility* based on D and W is a pair $\langle r, w\rangle$ where r is a system of discourse referents in D and $w \in W$.

An *information state* is a set of possibilities s such that if $i, i' \in s$, then i and i' have systems of discourse referents. Information states are sets of possibilities relative to a fixed system of discourse referents.

Let $i = \langle r, w\rangle$, $i' = \langle r', w'\rangle$. $i \leq i'$ iff $r \subseteq r'$ and $w = w'$. $s \leq s'$ iff $\forall i' \in s' \exists i \in s (i \leq i')$.

Say s subsists in s' if $s \leq s'$ and every possibility in s has an extension in s'. If s subsists in s', s' changes s only by adding discourse referents.

Most context update clauses are standard. Update operations are applied to information states. For instance, writing $s[F(t)]$ for the update of information state s by $F(t)$, we have $s[F(t)] = \{i \in s \mid i \vDash F(t)\}$.

Genuine dynamic update is done by the existential quantifier ∃. Let $i[x/d] = \langle r[x/d], w\rangle$, and $s[x/d] = \{i[x/d] \mid i \in s\}$. The existential quantifier is then defined by:

$$s[\exists x \phi] = \cup_{d \in D}(s[x/d][\phi]).$$

∃ can set up genuinely new discourse referents.

We now need to define the ↓-operator. $\downarrow x F(x)$ instructs us to find x such that $F(x)$ in the context if it is there. If it is, we set up x as a discourse referent, but otherwise, do nothing to the context. We are testing the context to see if it contains x such that $F(x)$, and the success of the test introduces the discourse referent but otherwise adds no content. The semantics of ↓ thus looks like

(70)
$$\downarrow x\phi(x) = \begin{cases} \cup_{d\in D}(s[x/d][\phi]) & \text{if } s \text{ subsists in } \cup_{d\in D}(s[x/d][\phi]) \\ \varnothing & \text{otherwise} \end{cases}$$

This works like ∃, setting up a discourse referent which can take as value in the context anything which is F, so long as the context guarantees that something is F in every open possibility.

↓ outputs ∅ when the presupposition it introduces fails. ∅ is one way to interpret a fail state in dynamic semantics. (Stalnakerian principles of assertion predict that any assertion updating the context to ∅ is infelicitous.[40]) Above, I suggested a kind of fault-tolerant computation process which would revert back to the prior information state if we reached this sort of failure.

But now consider a sequence of instructions like $s[\downarrow x F(x)][R(x)]$, much as we used in the cleft and factive cases above. Suppose the presupposition fails. In such a case, $s[\downarrow x F(x)]$ results ∅. By the fault-tolerant strategy, we may reset the information state to s. But then we find that $s[R(x)]$ is *undefined* (so long as x is a new variable). This is a stronger sort of failure. It is not that the update reaches a failure state, but that the update instruction is undefined on the information state entirely.

There are many issues yet to be explored here. Many presuppositions, including some I discussed above, require propositional values of ↓. Work on dynamic Montague grammars could be used to extend the proposal here to propositions. Certainly a more extensive discussion of the cross-categorial nature of presupposition is still needed.

[40]More formal work with this sort of idea, see van Eijck (1993).

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