Contrast and the structure of discourse*

Maziar Toosarvandani
Massachusetts Institute of Technology

Abstract

The semantics of the coordinator *but* do not fit neatly into the traditional distinction between entailments and conversational implicatures. In its COUNTEREXPECTATIONAL use, *but* can convey an implication relating its two conjuncts, which Grice (1975) classifies as a conventional implicature because its behavior diverges from both entailments and conversational implicatures. I propose that this meaning component arises from *but*'s interaction with the discourse context — specifically, how it makes conventional reference to the QUESTION UNDER DISCUSSION (QUD) in the sense of Roberts (1996, 2004). This derives the variable interpretation of the implication in the counterexpectational use, as well as its absence in the CORRECTIVE and SEMANTIC OPPOSITION uses of *but*. This account provides a new perspective on the relationship between the different uses of *but* as a type of modal polysemy (Kratzer 1981, 1991), and it suggests that other expressions that have been argued to have conventional implicatures might also make conventional reference to the QUD.

Keywords: *but*, contrast, conventional implicature, question under discussion, modality, negation

1 Introduction

Natural language meaning is usually taken to arise in one of two ways. On the one hand, sentences have entailments ('what is said' in Grice's terms), which derive from the composition of a language's atomic expressions, conventional and ultimately arbitrary mappings of form and meaning. On the other hand, speakers can also convey conversational implicatures, which arise from conversational participants reasoning about an utterance's semantic content and participants' attitudes on the basis of the Cooperative Principle (with the maxims of conversation it subsumes).

Some meaning components do not fit so neatly into this two-way distinction. While the coordinator *but* has the same truth conditions as *and* — logical conjunction — there is another aspect of its meaning that 'does not change the sense of

* I thank an audience at Brown University, as well as to Polly Jacobsen, Laura Kertz, and Line Mikkelsen for their comments and questions. I am also extremely grateful to two anonymous referees and David Beaver, who made valuable comments that greatly improved the paper.

the clause but only illuminates it in a peculiar fashion' (Frege 1993: 38). For the sentence in (1), the conjunction that the player is tall and that the player is agile is, as Frege put it, 'illuminated' by an implication holding between the two conjuncts. Namely, if the player is tall, she is not agile.

(1) The player is tall, but agile.

This implication — which creates a sense of contrast between the two conjuncts — does not hold necessarily. The premise is true, since it is entailed by the first conjunct, so we might expect the conclusion also to be true. But this expectation is explicitly denied by the second conjunct, which entails that the player is, in fact, agile.

The implication that holds between the two conjuncts in (1) resembles a conversational implicature insofar as, if it did not hold, we would not say that the entire sentence was false. Even if being tall did not usually preclude being agile, the player could be both tall and agile. Unlike a conversational implicature, though, the implication is not calculated — it is part of the conventional meaning of *but*. For this reason, Grice (1975: 44f.) identifies it as a CONVENTIONAL IMPLICATURE, a category he proposes for expressions for which '... the conventional meaning of the words used will determine what is implicated.' He identifies *therefore* as a member of this category — as in the famous *He is an Englishman; he is, therefore, brave*.

There is some reason to be skeptical that the notion of a conventional implicature, as Grice originally conceived of it, is even a coherent one.[1] As Bach (1999) emphasizes, if the implication in (1) is a conventional aspect of the meaning of *but*, and hence not calculated, how is it an implicature? In addition, as Grice (1961: 128ff.) observes, unlike a conversational implicature, *but*'s implication is not cancelable.[2] It is contradictory to follow (1) up with something like: *In fact, there is no reason to expect that, if the player is tall, she isn't agile.* Bach offers a simple solution — sentences with conventional implicatures entail multiple nonconjoined propositions:

(2) The player is tall, but agile.
'The player is tall, and she is agile.' (primary entailment)
'If the player is tall, she is not agile.' (secondary entailment)

The primary entailment of the *but* sentence in (2) is the conjunction of two propositions. Its secondary entailment is the implication in question, which need not be true

1 Potts (2005) revisits Grice's original discussion of conventional implicatures, revising their definition so that it describes the expressive content of epithets like *damn* and the meaning of appositives. These Pottsian conventional implicatures are always speaker oriented, unlike the implication introduced by *but* (pp. 213–217).

2 Grice (1961: 128ff.) also points out that the implication is detachable. If, in (1), *but* were replaced with the logically equivalent *and*, it would disappear. This distinguishes it from both conversational implicatures and entailments.

for the primary entailment to be true.

This solution — treating the implication itself as just another entailment — is too simplistic. Sometimes, sentences with *but* lack an implication altogether. The sentence in (3) has an interpretation where all it conveys is that Liz does not dance and that she does sing. This CORRECTIVE use of *but* does not give rise to an expectation that is denied, unlike the COUNTEREXPECTATIONAL use illustrated in (2).

(3) Liz doesn't dance, but sing.
'Liz does not dance; she sings.'

(4) John is tall, but Bill is short.
'John is tall; Bill is short.'

Similarly, the SEMANTIC OPPOSITION use of *but* illustrated in (4) also lacks an expectation that is denied. This sentence can be interpreted as simply expressing the two propositions that John is tall and that Bill is short. Nonetheless, in both (3) and (4), there is an intuitive feeling of contrast between the two conjuncts of *but*, which relates to a difference in polarity. In (3), the first conjunct contains negation, while the second conjunct does not. And, in (4), the predicates of the two conjuncts — *tall* and *short* — are antonyms.

In this paper, I give a semantics for *but* that accounts for why the sentence in (2) conveys an implication and why the sentences in (3–4) do not.[3] This variability in the interpretation of *but* arises, I argue, because of how *but* makes reference in its lexical entry to certain aspects of the discourse context. Adopting the question-under-discussion framework (Roberts 1996, 2004) — and, in particular, Beaver & Clark's (2008) idea that linguistic expressions can be conventionally dependent on the QUESTION UNDER DISCUSSION (QUD) — I propose that *but* presupposes that its two conjuncts each stand in an implicational relation to an answer in the QUD. My goal is a single lexical entry for *but*, whose different uses arise as a function of: i) whether the implicational relations between the two conjuncts and the QUD are strong or weak, and ii) what the QUD is.

This seems desirable as an outcome — not just because these uses correspond to a single morphological formative in English — but because many languages of the world have a lexical item with the same range of uses. Yet, with only a few exceptions, all previous work on the subject has followed Anscombre & Ducrot (1977) in assuming that at least the corrective use in English arises from a distinct — albeit homophonous — lexical item. This is not as far-fetched as it might sound at first, since some languages do, in fact, have a phonologically distinct

3 I do not discuss the syntax of *but*, since it is by and large irrelevant here; though, see Vicente 2010 and Toosarvandani, to appear.

lexical item for the corrective use (e.g. German *sondern* and Spanish *sino*). I argue, however, that this should play no role in the analysis of *but* in English, and rather than being homophonous, I propose that *but* is polysemous in the same way that modals are polysemous (Kratzer 1981, 1991).[4]

My discussion proceeds in the following way. I start, in §2, by developing more precise characterizations of the counterexpectational, corrective, and semantic opposition uses of *but*. Then, in §3, I describe the two main approaches to the meaning of *but*, which differ in which use they take to be more basic and to represent most transparently its semantics. I argue that the most general and precise accounts in both traditions fail to derive all three uses in a unified way. In §3.3, I propose a lexical entry for *but* that unifies the two traditions by positing polysemy in the strength of the implications that relate the two conjuncts to the QUD. I show that my proposal for *but* accounts for the counterexpectational use in §4, and it correctly predicts the existence of another, closely related use not usually discussed in the literature. In §5, I show that my proposal is also able to account for the corrective and semantic opposition uses, neither of which gives rise to an expectation that is denied. Moreover, it correctly predicts that the semantic opposition and corrective uses allow different expressions in the two conjuncts to establish a contrast in polarity. I conclude in §6 by looking at other expressions that have been claimed to convey a conventional implicature and whether they, too, might make conventional reference to the QUD.

2 Three uses of *but*

Consider again the three-way distinction between the COUNTEREXPECTATIONAL (5), CORRECTIVE (6), and SEMANTIC OPPOSITION (7) uses of *but*.

(5) The player is tall, but agile. — counterexpectational

(6) Liz doesn't dance, but sing. — corrective

(7) John is tall, but Bill is short. — semantic opposition

The counterexpectational sentence in (5) conveys that the player is both tall and agile. There is also an implication that, if the player is tall, she is not agile. The resulting expectation that she is not agile is explicitly denied by the second conjunct, which entails that the player is, in fact, agile. The corrective and semantic opposition sentences in (6) and (7) also convey the conjunction of two propositions, but there is

4 I set aside exceptive *but* here, as in *Everyone but Marion has fed Dudley*. It truly is a distinct lexical item, since it has a very different syntax and semantics from any of the other uses considered in the text (see von Fintel 1993, 1994: 143–187 for further discussion).

no expectation that is denied. We are not led to expect that, because Liz does not dance, she does not sing — or that, because John is tall, Bill is not short.

Crucially, these are distinct *uses* of *but*, not necessarily distinct *meanings*. A single sentence might — though it need not — have different uses in different contexts of utterance. I chose the sentences in (5–7), because they illustrate the three uses in an out-of-the-blue context. In a different context, (6) or (7) might, for instance, have a counterexpectational use. I go on now to provide more precise characterizations of the counterexpectational, corrective, and semantic opposition uses, because this three-way distinction has been particularly important in shaping the existing literature on *but* (see Lagerwerf 1998: 25–40 for a survey). I should emphasize that, if it seems somewhat arbitrary, that is because the distinction is a product of linguists' impressions about the interpretation of various *but* sentences. I will propose a semantics for *but* that states for a given sentence what its interpretation is in a given context, and we will find that, in the end, the possible range of interpretations for *but* sentences will not be entirely subsumed in the traditional three-way classification.

2.1 The counterexpectational use

In (5), it was relatively easy to characterize the expectation that was denied, since the implication introduced by *but* relates its two conjuncts. Here are a few other examples with the same profile:

(8) a. John is tall, but he is no good at basketball. (Lakoff 1971: 133)

b. He is a Republican, but he is honest. (Anscombre & Ducrot 1977: 29)

c. The cake was low calorie, but I didn't eat it.

Like (5), these examples all contain an implication that, if the first conjunct holds, the second conjunct does not hold. The resulting expectation that the second conjunct should not hold is then explicitly denied by the second conjunct itself. So, in (8a), if John is tall, we might expect him to be good at basketball (or, for him not to be no good at basketball); in (8b), if he is a Republican, we expect him not to be honest; and, in (8c), if the cake was low calorie, we expect that the speaker ate it. Schematically, if *but* conjoins two propositions p and q, the implication that gives rise to the expectation is $p \Rightarrow \neg q$, where the double arrow represents some sort of weak implicational relation.

In some cases, the expectation that is denied is not immediately apparent, at least not in an out-of-blue context. This is because, as Anscombre & Ducrot observe (pp. 28–33), the implication need not relate *but*'s two conjuncts directly to one another. Rather, each conjunct is related independently to a third proposition — the first

conjunct implies this proposition, while the second conjunct implies its negation. Schematically, for some proposition r, $p \Rightarrow r$ and $q \Rightarrow \neg r$. For the example in (9a), Anscombre & Ducrot imagine a context where the two conjuncts are related to the proposition expressed by *I should hire him*.[5]

(9) a. He is intelligent, but he doesn't work.
(Anscombre & Ducrot 1977: 28)

b. We were hungry, but the restaurants were closed.

c. It's raining, but I'm going to take an umbrella.
(Winter & Rimon 1994: 369)

Suppose that I am considering whether or not to hire John. I ask for your advice, and you utter (9a). You do not convey that, if John is intelligent, he works. Rather, you convey that, if he is intelligent, I should hire him. Since the first conjunct entails that he is intelligent, we are expected to draw the conclusion that I should hire him. In contrast to the DIRECT expectation that is denied in (8a–c), this INDIRECT expectation is denied with the help of an additional implication from the second conjunct: if he does not work, I should not hire him. Since the second conjunct entails that he does not work, we infer that I should not hire him. What the third proposition is depends on the context of utterance. In an out-of-the-blue context, though, it might correspond to *We ate* in (9b), and to *I will get wet* in (9c).

Crucially, the implication from the first conjunct is weaker than entailment — even when the implication and its antecedent hold, the consequent does not have to — since its consequent is denied, either directly or indirectly, by the second conjunct. This means that the implication from the second conjunct must be stronger when there is an indirect expectation that is denied. Anscombre & Ducrot (1977) write (p. 28) that we attribute 'more argumentative force to q [the second conjunct] in favor of $\neg r$ [the third proposition] than to p [the first conjunct] in favor of r.' Winter & Rimon suggest (p. 371) that we can see that the implication from the second conjunct is stronger than the implication from the first conjunct by adding a continuation with *therefore*:

(10) a. He is intelligent, but he doesn't work. Therefore, it's not the case that I should hire him.

b. We were hungry, but the restaurants were closed. Therefore, we didn't eat.

c. It's raining, but I'm going to take an umbrella. Therefore, I won't get wet.

5 All examples and quotations from Anscombre & Ducrot 1977 are my own translations from the French.

In (10b), the first conjunct implies that the speaker's party ate, though this is only a weak implication. While it would be reasonable to infer that the speaker's party ate, because they were hungry, it is not a necessary conclusion. Indeed, the speaker denies it with the second conjunct. With the implication from the second conjunct, though, the speaker seems committed to the truth of the consequent — that they did not eat. Similarly for (10a) and (10c).

In sum, the counterexpectational use has two subtypes, both involving an implication or implications from the two conjuncts. A direct expectation arises when a single implication relates the first conjunct to the negation of the second conjunct. An indirect expectation arises when one implication relates the first conjunct to a third proposition and another implication relates the second conjunct to the negation of that proposition. As we will see next, the other two uses of *but* lack altogether the implications that produce an expectation that is denied.

2.2 The corrective use

The sentence illustrating the corrective use of *but* in (6) might be used in the discourse in (11). B does not convey an expectation that is denied. She does not imply that, because Liz does not dance, she does not sing.

(11) A: Liz dances.
B: Liz doesn't dance, but sing.

It is a common intuition that this use of *but* is 'corrective' (Sgall et al. 1973: 21ff., Anscombre & Ducrot 1977: 24–28, Abraham 1979, Lang 1984: 238–261, Umbach 2004: 171ff.).[6] For instance, Anscombre & Ducrot propose that, in its corrective use, *but* requires a previous assertion in the discourse that is rejected by the first conjunct and rectified by the second conjunct. This rejection-rectification pattern is found in (11). A asserts that Liz dances. B rejects A's assertion by contradicting it

6 Horn (2001: 402) considers sentences with the form *not* **X** *but* **Y** to provide 'a straightforward way to reject **X** (on any grounds) and to offer **Y** as its appropriate rectification' since negation in the first conjunct is METALINGUISTIC. This metalinguistic negation, he states (p. 377), 'can be glossed "I object to **U**", where **U** is crucially a linguistic utterance or utterance type rather than a proposition.' So, for instance, a speaker could object to a previous utterance on the grounds of its phonetic form, morphology, presuppositions, conversational implicatures, register, or style.

While it is certainly true that *but* can function metalinguistically in this way, it frequently does not, as McCawley (1991: 191) observes. In (13), for instance, B is not objecting to any previous utterance. She is simply conveying, relative to some conversational issue, that Peter is not French and that he is Belgian. The negation that shows up with *but* can, like other operators, have either its normal truth-functional use or a metalinguistic use. The question of how these uses are related is not one I will try to answer here.

with the first conjunct, which entails that Liz does not dance. Then, she provides a rectification with the second conjunct, which entails that Liz sings.

The presence of negation in the first conjunct of B's utterance is obligatory in this discourse:

(12) A: Liz dances.
B: #Liz dances, but sings.
Intended: 'Liz dances; she sings.'

Crucially, this judgment is given relative to an interpretation lacking an expectation that is denied. The *but* sentence in (12) is well formed with a direct counterexpectational interpretation. Say that we are auditioning students for parts in a high school musical. We are desperate for someone to sing the lead, since we have only heard students so far who, if they are able to dance, are incredibly tone deaf. The last student is Liz, who you see dancing. You ask me: *What about Liz? Is she tone deaf?* I could felicitously answer by saying *Liz dances, but sings*, thereby denying the expectation that, because Liz dances, she is tone deaf (that is, she cannot sing).

But a previous assertion that is rejected by the first conjunct is neither a necessary nor a sufficient condition for the corrective use of *but*. It is not a necessary condition since, as Anscombre & Ducrot themselves note, the corrective use is frequently found outside of rejection-rectification discourse structures. They give a couple of examples where there simply is no previous assertion in the context:

(13) A: Is Peter French?
B1: No, he isn't French, but Belgian. (Anscombre & Ducrot 1977: 26f.)
B2: #(Yes,) he is French, but Belgian.

(14) A: I promise you to try.
B1: I'm not asking you to try but to succeed.
(Anscombre & Ducrot 1977: 26f.)
B2: #I'm asking you to try but to succeed.

In (13), A does not make an assertion that can be rejected — she simply asks whether Peter is French or not. Nonetheless, B can reply by saying that he is not French.[7] In (14), A makes a performative utterance — a promise to try — to which B responds by saying that B did not ask for A to try. This is not a rejection of A's promise since

7 David Beaver (p.c.) suggests that (13) might not be so mysterious if the polar question is speaker biased. The speaker conversationally implicates or invites hearers to infer that the speaker believes Peter to be French. It is this implicature or invited inference that the *but* sentence rejects. This is an empirical question. My intuition is that the polar question in (13) can truly be informative, with no speaker bias. Hence, there is still no assertion in this example for the corrective use of *but* to reject.

it does not contradict it (if that is even possible with performative utterances to begin with). Negation cannot be omitted in the first conjuncts of these sentences, as shown in the B2 examples I have added.

To Anscombre & Ducrot's examples, we might also add the following one, offered by David Beaver (p.c.), which makes the point even more clearly:

(15) A: I'm absolutely certain that Peter is not French.
B1: No, (you're right,) he's not French, but Belgian.
B2: # No, (you're right,) he's French, but Belgian.

In her first answer, B is clearly not rejecting A's assertion. It is possible for B to add *you're right* — an explicit signal of agreement — before the *but* sentence. Again, as with other instances of the corrective use, the negation in the first conjunct is obligatory, as shown by the infelicity of B's second answer.

Nor is the presence of a previous assertion that can be rejected and rectified a sufficient condition for the corrective use. Compare the discourse in (16) to the one in (11).

(16) A: Liz dances.
B: Liz doesn't dance. She sings.

B rejects A's assertion and rectifies it. But she does so without using *but*. A sequence of sentences with the same content as the *but* sentence in (11) suffices. Therefore, it must be, because the first conjunct contains negation in the corrective use, that it can appear in rejection-rectification discourses (see also Kasimir 2006: 110–113).

The corrective use is characterized by negation in the first conjunct that cannot be omitted. There is no expectation that is denied. While the corrective use is frequently found in rejection-rectification discourse structures, this arises independently and is not a condition on its use.

2.3 The semantic opposition use

In Lakoff's (1971: 131–142) original characterization, the semantic opposition use lacks an expectation that is denied, and each conjunct contains one member of a contrasting pair. Two additional examples of this use are included below, along with (7), which is repeated as (17a).

(17) a. John is tall, but Bill is short.
b. John hates ice cream, but I like it. (Lakoff 1971: 133)
c. John is quick, but Bill is slow. (Winter & Rimon 1994: 373)

The pairs of antonyms are *tall* and *short* in (17a), *hate* and *like* in (17b), and *quick* and *slow* in (17c). They must be predicated of different individuals, since they obviously cannot hold of the same individual without resulting in a contradiction.

While the sentences in (17a–c) might have a counterexpectational interpretation in certain contexts, there are scenarios where they clearly lack a direct expectation that is denied. Imagine that I am the contestant on a (rather silly) game show where I have to guess the height of two men concealed behind curtains solely by asking them questions about themselves. They could both be tall, both be short, or one be short and the other tall. After interrogating them, I could utter (17a) without conveying the expectation that, because John is tall, Bill is also tall (not short).

So, in the semantic opposition use, each conjunct contains one member of an antonymic pair. There is no expectation that is denied. This characterization is rather narrow, but as we will see in the next section, many accounts of the meaning of *but* take the semantic opposition use to be its most basic use.

3 Previous accounts of the meaning of *but*

Broadly speaking, as Jasinskaja (2011) observes, research on the semantics of *but* and other expressions of contrast takes one of two approaches: either an INFERENTIALIST approach or a FORMALIST one. The two differ in which use of *but* they take to represent its meaning most transparently.[8] In the inferentialist tradition, the counterexpectational use of *but* is basic (Anscombre & Ducrot 1977, Lang 1984: 169–175, Foolen 1991, Winter & Rimon 1994). while in the formalist tradition, the semantic opposition use is (Sæbø 2003, Umbach 2004, 2005, Jasinskaja & Zeevat 2008, 2009, Jasinskaja 2010, 2011, Winterstein 2010a,b). The challenge for both approaches is to extend this meaning to the other uses of *but* (or, alternately, to find some reason to exclude them).

I outline these two traditions below, concentrating on the most precise and general account in each. In §3.1, I describe the inferentialist account of Winter & Rimon (1994), who give a meaning for *but* that easily derives its counterexpectational use. I argue that they are not able to extend it to the semantic opposition use. They do not even attempt to deal with the corrective use, which they take to arise from a distinct lexical item with a separate meaning. In §3.2, I describe the formalist account of Jasinskaja & Zeevat (2008, 2009), who give a meaning for the semantic opposition use, which they are successfully able to extend to the corrective use since neither involves an expectation that is denied. I show, however, that their semantics cannot derive the counterexpectational use. Since neither approach accounts for all three uses of *but* in a unified way, I propose a new semantics for *but* in §3.3, drawing

8 There are a couple of other approaches, which I will not discuss for reasons of space: e.g. Spenader & Maier's (2009) dynamic account and Blakemore's (1989, 2000) account based on Relevance Theory.

on the insights of both traditions.

3.1 The inferentialist tradition

3.1.1 An inferentialist account of the counterexpectational use

The inferentialist tradition originates in the work of Anscombre & Ducrot (1977), who give a meaning for *but* that accounts for its counterexpectational use (see also Lang 1984: 169–175 and Foolen 1991, among others). They propose that *but* establishes an implicational relation between each of its two conjuncts and some contextually salient proposition:

> For two sentences p and q, to express p [*but*] q is:
>
> (1) to present p as a possible argument for an eventual conclusion r.
>
> (2) to present q as an argument against this conclusion; i.e. within the framework of Argumentation Theory presented in Ducrot 1973, it is an argument for $\neg r$.
>
> (3) to attribute more argumentative force to q in favor of $\neg r$ than to p in favor of r.
>
> (Anscombre & Ducrot 1977: 28)

Anscombre & Ducrot frame their description within Ducrot's (1973) Argumentation Theory. The being-an-argument-for relation corresponds to something like the intuitive notion of implication I have been using so far. With this modification, it is easy to see how their description characterizes the indirect expectation cases in (9a–c). The first conjunct implies some proposition that the second conjunct implies the negation of. It also extends to the direct expectations in (8a–c), if we allow, as Anscombre & Ducrot do (p. 29), for '[the] particularly frequent case… where $r = \neg q$.' If the two conjuncts must each stand in an implicational relationship to some third proposition, this proposition can be the negation of the second conjunct itself, since the second conjunct necessarily implies the negation of its own negation.

Building on Anscombre & Ducrot's work, Winter & Rimon (1994) give a more precise semantics for *but*, in which it presupposes that there is a proposition that the first conjunct *possibly* implies and that the second conjunct implies the negation of:[9]

9 Actually, Winter & Rimon assume (p. 370) that the proposition that is presupposed is always a negative one. The first conjunct thus possibly implies its negation, and the second conjunct implies it without negating it. This seems intuitively wrong, since it is infelicitous for a counterexpectational

(18) $[\![\phi \text{ but } \psi]\!] =$
At-issue: $[\![\phi]\!] \wedge [\![\psi]\!]$
Presupposition: $\exists p(\Diamond([\![\phi]\!] \Rightarrow p) \wedge ([\![\psi]\!] \Rightarrow \neg p))$

The implication from the first conjunct must, in some sense, be weaker than that from the second conjunct, since its consequent is denied by the consequent of the second implication. If both implications were of equal strength, every *but* sentence would be a contradiction. 'Contrast,' they write (p. 388), 'is then understood to be a transition in implications. This agrees with the intuition that in a contrastive conjunction there is some "cancelation" effect of what p might have implicated, if not for the presence of q.' So, while the implication from the second conjunct is part of our knowledge state after the utterance of a counterexpectational *but* sentence, its use is only felicitous if, before it was uttered, the implication from the first conjunct *could* have been part of our knowledge state.

3.1.2 Failure to extend to the semantic opposition use

Under Winter & Rimon's account, *but* presupposes that its two conjuncts each stand in an implicational relation to a third proposition. They predict consequently that every *but* sentence should give rise to an expectation that is denied. But the semantic opposition use is defined by the very absence of such a expectation. I showed this for direct expectations in §2.3, but not for indirect expectations. This is because Winter & Rimon argue (p. 373f.) that the semantic opposition use is nothing more a special subclass of the counterexpectational use when there is an indirect expectation.

They suggest that, once we put examples like (17a–c) into context, the indirect expectation emerges (see also Abraham 1979: 106f., Lang 1984: 172f., Foolen 1991: 84f.). They offer the following dialogue for (17c):

(19) A: Everyone on the team is quick.
B: John is quick, but Bill is slow.

According to Winter & Rimon, the proposition that both conjuncts stand in an implicational relationship to is introduced explicitly by A — that John and Bill are

but sentence like (34) to answer a negative wh-question:

(i) A: What is the player not like?
B: # The player is tall, but she is agile.

There certainly is a proposition — that the player is not clumsy — that the first conjunct possibly implies the negation of and the second conjunct implies, but this exchange is simply ill-formed. When discussing Winter & Rimon's account in the text, I flip the polarity of the implications so their proposal is more easily compared to my own.

both quick. It is certainly true that the second conjunct implies that this proposition is false — if Bill is slow, John and Bill cannot both be quick — but I am skeptical that the first conjunct implies that this proposition is true.[10] The first conjunct is certainly compatible with everyone on the team being quick, but there is nothing in world knowledge or the context that would lead us to make this inference. Naturally occurring examples illustrate Winter & Rimon's argument more convincingly:

(20) Both Frost's Bolete (*Boletus frostii*, p. 106) and Goldstalk (*B. ornatipes*, p. 107) also have stalks with coarse, raised, net-like patterns, but they are more robust and are colored differently — see Pl. 13. **Goldstalk is edible, but Frost's Bolete is not recommended** [original emphasis omitted].[11]

In (20), the author starts by discussing a number of similarities between two mushrooms, Frost's Bolete and Goldstalk. Their physical similarities lead us to expect that they are perhaps similar in other less superficial ways. In particular, from the first conjunct of the *but* sentence, we might infer that, since Goldstock is edible, both types of mushroom are edible. This proposition is denied by the second conjunct of the *but* sentence, which conveys that Frost's Bolete is, in fact, inedible.

But the question is not whether it is *possible* to interpret examples like (17a–c) as conveying an indirect expectation, but rather whether it is *necessary* to interpret them in this way. (After all, a *but* sentence can have different uses in different contexts.) If (18) is the only lexical entry for *but*, then the presupposition can be satisfied only if there is always an expectation that is denied. This is certainly not the case:

(21) a. Protective levels of antibody are not formed until some time after birth, and to compensate for this there is passive transfer of antibody across the placenta. Alternatively, in some animals antibody is transferred in the first milk (colostrum). Antibody may also be passively transferred artificially, for example, with a concentrated preparation of human serum gamma globulin containing antibodies against hepatitis. Protection is temporary. Horse serum is used for passive protection against snake venom. **Serum from the same (homologous) species is tolerated, but heterologous serum is rapidly eliminated and may produce serum sickness.**[12]

b. If a girl in 1985 or 1975 came to school wearing fishnet pantyhose with a miniskirt and a midriff-baring top she probably would have

10 Though, as David Beaver (p.c.) points out, the truth of the first conjunct certainly does make the proposition that both John and Bill are quick more likely.

11 Kent H. McKnight and Vera B. McKnight. 1987. *A field guide to mushrooms of North America.* New York: Houghton Mifflin, p. 101.

12 John Trowsdale. 2008. 'Immunity.' *AccessScience*. New York: McGraw-Hill. Accessed from http://accessscience.com/content/Immunity/338100.

> been told to go home and change into something decent. But girls today are bombarded with the notion that revealing your body is a valid means of self-expression, even a manifestation of 'girl power.' As parents, we must reject the notion that girls have to reveal their bodies in order to empower themselves. Boys don't have to take off their clothes to empower themselves. Girls shouldn't either. **Sexuality is good, but sexualization is bad** [original emphasis omitted].[13]

In (21a), the *but* sentence comes with no expectation that, if homologous serum is tolerated, all serum, including heterologous serum, should be tolerated. And, in (21b), there is no expectation that, if sexuality is good, both it and sexualization should be good. (In fact, the author spends the entire preceding paragraph arguing that sexualization is bad.)[14]

I conclude that the semantic opposition use simply cannot be assimilated to the counterexpectational use — and thereby be subsumed in the lexical entry in (18) — since there does not have to be an expectation that is denied.

3.1.3 Failure to extend to the corrective use

There has been no effort in the inferentialist tradition to extend a semantics for *but* like (18) to the corrective use. It is difficult to imagine what such an extension would even look like, since the corrective use very clearly lacks an expectation that is denied.

For this reason, Anscombre & Ducrot propose that the corrective use arises from a separate homophonous lexical item. Their primary argument is that some languages do have a phonologically distinct lexical item for the corrective use. German famously has *sondern* for the corrective function and *aber* for the counterexpectational function, as shown in (22) (Pusch 1975, Abraham 1979, Lang 1984: 238–262). The same distinction exists in Hebrew (Dascal & Katriel 1977) between *ela* and *aval* (23),[15] in Spanish (Schwenter 2000, Vicente 2010) between *sino* and *pero* (24), as well as in Persian (Toosarvandani 2010: 36–39) between *balke* and *vali* or *amma* (25).

13 Leonard Sax. 2010. *Girls on the edge: The four factors driving the new crisis for girls.* New York: Basic Books, p. 12.

14 A reviewer suggests that a counterexpectational interpretation could still be maintained for these examples, if the things that are tolerated or not in (21a) and the things that are good or bad in (21b) are members of a group, and by a default cognitive process, we expect them to share some of their properties. The explanatory value of this argument rests, it seems to me, on what it means to be in a group.

15 Yaron McNabb (p.c.) kindly provided the interlinear glosses for the Hebrew examples.

(22) a. Maria ist nicht dumm, **sondern** hässlich.
Maria be.3SG NEG stupid but ugly
'Mary is not stupid, but (instead) ugly.'

b. Maria ist nicht dumm, **aber** sie ist hässlich.
Maria be.3SG NEG stupid but she be.3SG ugly.
'Mary is not stupid, but (nevertheless) she is ugly.'
(Kasimir 2006: 108f.)

(23) a. Hu lo kalkelan **ela** ish asakim.
he no economist but man business
'He is not an economist but a businessman.'

b. Hu lo kalkelan, **aval** hu ish asakim.
he no economist, but he man business
'He is not an economist, but he is a businessman.'
(Dascal & Katriel 1977: 144)

(24) a. Julia no es alta **sino** baja.
Julia NEG be.3SG tall but short
'Julia is not tall but short.'

b. Mario es bajo **pero** fuerte.
Mario be.3SG short but strong
'Mario is short but strong.' (Schwenter 2000: 295)

(25) a. majid farānsavi ne-midune **balke** ālmāni midune.
Majid French NEG-know.3SG but German know.3SG
'Majid does not know French; he knows German.'

b. majid farānsavi ne-midune **vali/amma** ālmāni midune.
Majid French NEG-know.3SG but German know.3SG
'Majid does not know French; though he should not know German, he does.' (Toosarvandani 2010: 26f.)

Subsequent authors have adopted Anscombre & Ducrot's position without question (see Winter & Rimon 1994: 372f.), which a reviewer observes is likely due to Chomskian assumptions about the uniformity of language. But if not constrained, this type of argument quickly leads to absurdity. Persian has two words for uncle — *amu* and *dâyi* — the former referring to one's paternal uncle and the latter to one's maternal uncle. Obviously, we would not want to say that English must also have two homophonous lexical items — $uncle_1$ and $uncle_2$ — one for each of the meanings. We should only accept homophonous lexical entries for *but* in English if there is good evidence supporting such a distinction, which to my knowledge nobody has attempted to give.

What would such evidence look like? Homophony is ambiguity in lexical meaning that is accidental, arising through language contact or as a side effect of changes in phonology or orthography (Weinreich 1964, Pustejovsky 1995: 27f.). Since their relationship is arbitrary, synchronic studies treat homophonous meanings as distinct lexical entries. For example, *bank* means either the institution that holds monetary deposits or the bordering slope of a river. The former was borrowed into Early Modern English from French (*banque*),[16] while the latter, which is securely attested as far back as Middle English, is likely of Scandinavian origin (cf. Old Norse **banke*).[17] Polysemy, in contrast, is a systematic ambiguity between senses that are the manifestations of a single lexical entry in different contexts. An example would be the use of *bank* to refer either to the institution itself (e.g. *The bank will be rescued by the FDIC*) or, by metonymy, the physical building housing the institution (e.g. *The bank collapsed in the earthquake*).

To posit different lexical entries for *but*, we would want historical evidence that the different uses arose accidentally through some process of language change that was not semantic in nature. This is not, however, what happened. The counterexpectational and corrective uses, according to the Oxford English Dictionary (second edition), both descend from an Old English preposition *bútan* 'outside' and are both found at least as early as Middle English.[18] If their relationship is not accidental, they should not be analyzed as distinct, homophonous lexical items. But is their relationship actually systematic, as it would be if *but* were polysemous? Since that is exactly what I aim to show in this paper — that the various uses of *but* arise from regular modal polysemy — the proof of that pudding will be in the reading.

In sum, Winter & Rimon's inferentialist account derives the counterexpectational use by presupposing that the two conjuncts stand in implicational relations to a third proposition. In combination with the propositions expressed by the conjuncts themselves, this gives rise to the expectation that is denied. This does not account for either the semantic opposition or corrective uses of *but*, because they do not convey an expectation that is denied.

16 bank, *n.*[3] Oxford English Dictionary, second edition, 1989. http://www.oed.com/view/Entry/15237, September 2, 2012.

17 bank, *n.*[1] Oxford English Dictionary, second edition, 1989. http://www.oed.com/view/Entry/15235, September 2, 2012.

18 but, *prep.*, *adv.*, *conj.*, *n.*[2], *adj.*, and *pron.* Oxford English Dictionary, second edition, 1989. http://www.oed.com/view/Entry/25316, September 3, 2012.

3.2 The formalist tradition

3.2.1 A formalist account of the semantic opposition use

The formalist tradition, which takes the semantic opposition use of *but* as basic, partly traces its origins to work in discourse coherence theory (Halliday & Hasan 1976, Hobbs 1979, Longacre 1983, Mann & Thompson 1988, Kehler 2002, Asher & Lascarides 2003). In Kehler's (2002) neo-Hobbsian inventory of coherence relations, for instance, the semantic opposition use of *but* corresponds to the following Contrast relation:

> **Contrast.** Infer $p(a_1, a_2, \ldots)$ from the assertion of S_1 and $\neg p(b_1, b_2, \ldots)$ from the assertion of S_2 where for some vector sets of properties $\overrightarrow{q}$, $q_i(a_i)$ and $q_i(b_i)$ for some i (Kehler 2002: 16).

This coherence relation holds between the two conjuncts of a *but* sentence when they differ just in the polarity of their predicates and in the identity of the entities they are being predicated of. This definition is satisfied by the two conjuncts of the semantic opposition use of *but* in (17c) — *John is quick, but Bill is slow* — since *quick* and *slow* are antonyms and *John* and *Bill* refer to distinct individuals.

Since research in discourse coherence theory is generally more interested in understanding how *but* functions to signal coherence relations (Knott & Dale 1994, Knott & Sanders 1998), there is no attempt to unify its various uses. There are, however, semantic accounts of *but* that build on the same general idea and that do attempt to state a single lexical entry for all of its uses. Jasinskaja & Zeevat (2008, 2009), for instance, give a semantics for *but* that relates its two conjuncts to the conversational topic — much like the significantly less general proposals of Sæbø (2003), Umbach (2004, 2005), Kasimir (2006), and Winterstein (2010a,b).

Jasinskaja & Zeevat represent the conversational topic as a question with Hamblin's (1973) semantics — that is, a set of alternative propositions corresponding to the question's mention-some (or nonexhaustive) answers. The idea that questions can be used to model the structure of discourse is not a new one. In Roberts' (1996, 2004) question-under-discussion framework, the discourse is structured by QUDs representing the conversational goals of participants. The QUD is sometimes explicitly mentioned, though often it is left implicit. QUDs that have been accepted by discourse participants as answerable are added to a QUD stack, where they remain until they have been answered or are no longer considered answerable. The questions in the QUD stack are, as Roberts (1996: 100) writes, 'semantic entities, the information expressed by the utterances in the discourse, and not structural analyses of those utterances,' which means that they are constrained by context. No QUD contains every possible answer, but only those that are contextually salient.

According to Jasinskaja & Zeevat, *but* imposes two conditions on the QUD:

(i) The QUD must contain propositions that vary both in their polarity (like a polar question) and one or more positions in the sentence (like a wh-question).

(ii) The conjuncts must each entail a 'doubly distinct' member of the QUD — that is, the two alternative propositions must differ both in their polarity and in the identity of the element in the position of the wh-phrase.[19]

To illustrate how these two conditions are satisfied in the semantic opposition use, consider again the example in (17c). According to Jasinskaja & Zeevat, it answers a wh-polar question, which cannot actually be uttered in English, though they say that it might be paraphrased as *Who 'whether' is quick?*:

(26) $[\![\text{Who 'whether' is quick?}]\!] = \left\{ \begin{array}{c} \textbf{quick}(\textbf{john}), \\ \neg\textbf{quick}(\textbf{john}), \\ \textbf{quick}(\textbf{bill}), \\ \neg\textbf{quick}(\textbf{bill}) \end{array} \right\}$

$[\![\text{John is quick, but Bill is slow}]\!] = \textbf{quick}(\textbf{john}) \wedge \textbf{slow}(\textbf{bill})$

The first of *but*'s two conditions is satisfied by this question, since it describes a set of propositions — minimally, the ones shown in (26) — that vary both in their polarity and in the identity of the subject. And, its second condition is satisfied because each conjunct entails a different proposition in this set, such that the two propositions are 'doubly distinct' from the other — that is, they differ both in their polarity and in what the subject is. The first conjunct of the *but* sentence in (26) entails the proposition $\textbf{quick}(\textbf{john})$, while the second conjunct entails the proposition $\neg\textbf{quick}(\textbf{bill})$.

One might wonder about the first condition that Jasinskaja & Zeevat impose on *but*, which requires somewhat abstract questions for the QUD. In §5, I will argue that *but* in its counterexpectational use cannot answer questions of this kind. For now, though, I only want to show that Jasinskaja & Zeevat's proposal extends quite well to the corrective use of *but*.

3.2.2 Successful extension to the corrective use

Consider again the *but* sentence with the corrective use in (6), which is infelicitous when the negation in the first conjunct is removed. According to Jasinskaja & Zeevat,

19 Jasinskaja & Zeevat (2009: 236) write that the conjuncts must be doubly distinct 'answers' to the QUD. Interpreted as set membership, this relationship is obviously too strong. In (26), for instance, the conjuncts are not, strictly speaking, in the set of propositions denoted by the question. Instead, I assume that the conjuncts must *entail* doubly distinct members of this set.

both sentences would answer the question *What 'whether' does Liz do?*:

(27) $$[\![\text{What 'whether' does Liz do?}]\!] = \left\{ \begin{array}{c} \textbf{dance}(\textbf{liz}), \\ \neg\textbf{dance}(\textbf{liz}), \\ \textbf{sing}(\textbf{liz}), \\ \neg\textbf{sing}(\textbf{liz}) \end{array} \right\}$$

A: Liz dances.

B1: $[\![\text{Liz doesn't dance, but sing}]\!] = \neg\textbf{dance}(\textbf{liz}) \wedge \textbf{sing}(\textbf{liz})$

B2: # $[\![\text{Liz dances, but sings}]\!] = \textbf{dance}(\textbf{liz}) \wedge \textbf{sing}(\textbf{liz})$

The question contains propositions that vary in both their polarity and the identity of the predicate. B1 is felicitous in this context since both conjuncts entail doubly distinct members of this set. Without negation, though, the *but* sentence violates the second of Jasinskaja & Zeevat's two conditions. B2 is infelicitous because the two conjuncts only entail propositions in the QUD that vary in what the predicate is — not in their polarity.

So, Jasinskaja & Zeevat succeed in extending their formalist account to the corrective use. They can derive the obligatory presence of negation in the first conjunct.

3.2.3 Failure to extend to the counterexpectational use

Where Jasinskaja & Zeevat have a problem is with the counterexpectational use. They propose that this use arises when the QUD is a '*why*-polar' question — a set of implicational statements that vary in the polarity of the consequent and the identity of the antecedent. To illustrate, take the counterexpectational use of *but* in (9b) — *We were hungry but the restaurants were closed* — which in the right context gives rise to the indirect expectation that the speaker's party ate. The QUD would thus be the *why*-polar question *Why 'whether' did we eat?* (the causal relation between propositions introduced by *why* is represented with $\Rightarrow$):[20]

(28) $[\![\text{Why 'whether' did we eat?}]\!] =$

$$\left\{ \begin{array}{c} \textbf{hungry}(\textbf{we}) \Rightarrow \textbf{eat}(\textbf{we}), \\ \textbf{hungry}(\textbf{we}) \Rightarrow \neg\textbf{eat}(\textbf{we}), \\ \textbf{closed}(\textbf{the-restaurants}) \Rightarrow \textbf{eat}(\textbf{we}), \\ \textbf{closed}(\textbf{the restaurants}) \Rightarrow \neg\textbf{eat}(\textbf{we}) \end{array} \right\}$$

$[\![\text{We were hungry, but the restaurants were closed}]\!] =$
$\textbf{hungry}(\textbf{we}) \wedge \textbf{closed}(\textbf{the-restaurants})$

20 This causal relation must, as Jasinskaja & Zeevat (2008: 68) write, be '…a causal relation in a broad sense including causality at the level of events, relations between a statement and a supporting argument, as well as between a speech act and a justification for performing it.'

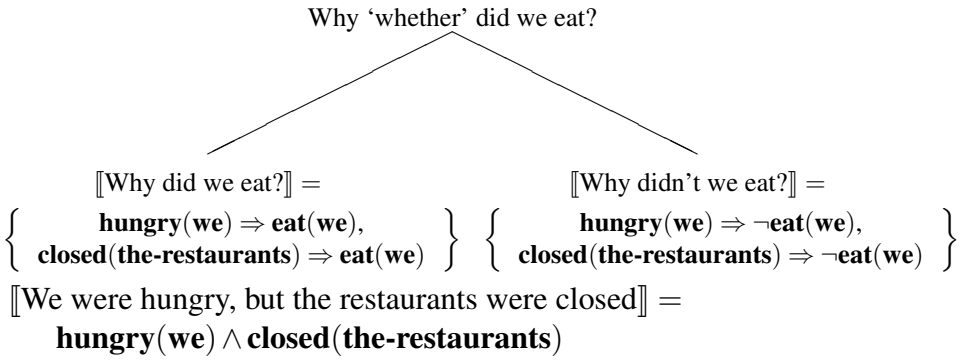
Assuming that *why* takes scope over *'whether'*, the question in (28) asks which propositions stand in a causal relation to the proposition that the speaker's party did or did not eat. It can contain alternatives like $\textbf{hungry}(\textbf{we}) \Rightarrow \textbf{eat}(\textbf{we})$, as well as ones like $\textbf{hungry}(\textbf{we}) \Rightarrow \neg\textbf{eat}(\textbf{we})$.

There are three problems with Jasinskaja & Zeevat's attempt to extend their account of the semantic opposition and corrective uses to the counterexpectational use, which I describe below.

Problem 1 While the question in (28) might be of the right kind — it denotes a set of propositions that vary both in their polarity and some other position — *but*'s two conjuncts do not entail doubly distinct members of this set. In fact, neither conjunct entails *any* of the propositions in the question. If ϕ is true, $\phi \Rightarrow \psi$ is not necessarily true.

A reviewer suggests that this problem is solved in the more articulated version of Jasinskaja & Zeevat's basic account offered by Jasinskaja (2011: 16f.). She would break down the *why*-polar question in (28) into two *why*-questions with opposing polarities:

(29)



Each of the conjunct must then entail an answer in one of these *why*-questions. Even so, I still fail to see how this is the case. Take the first conjunct, it does not entail either of the answers in the question *Why did we eat?* It does not necessarily follow from the fact that the speaker's party was hungry that the *reason* they ate was that they were hungry.

Intuitively, the problem is that, when the counterexpectational sentence in (29) is uttered, the conversational issue being addressed is not what the possible reasons for the speaker's party not eating are. Rather, it is *whether* the speaker's party ate. The possible reasons for why this state of affairs does or does not come about — they were hungry, for instance, or the restaurants were closed — are taken for granted by the speaker. That is how, by simply asserting that they were hungry, the speaker can give rise to the expectation that they ate.

Problem 2 The second problem is related to the first one. The formalist account, in which counterexpectational *but* answers a *why*-polar question, does not obviously produce the expectation that is denied. What Jasinskaja & Zeevat say about how the expectation arises is the following:

> It is easy to see that the [counterexpectational use] in turn can be derived from the assumption that the conjuncts give doubly distinct answers to a *why*-y/n-question... The double distinctness requirement makes sure that the conjuncts of *but* give distinct reasons (thus excluding statements like *it is beautiful but it is beautiful*), as well as distinct answers to the yes/no part of the question, thus giving one reason for a positive and one reason for a negative answer (Jasinskaja & Zeevat 2008: 80).

I am not sure it is that easy. For a question to be felicitous, it must be unresolved — that is, none of the propositions in the QUD can already be contained in the common ground. Consequently, since Jasinskaja & Zeevat locate the implications from the first and second conjuncts in the QUD, as discussed above, they cannot already be common ground knowledge. Therefore, to give rise to the expectation that is denied, the speaker must convey them herself. But if all the *but* sentence in (28) entails is the conjunction of two propositions, as the formalists assume, there are no implications, and hence there can be no expectation that is denied. Compare this to Winter & Rimon's inferentialist account, where the implications from the two conjuncts are introduced in a presupposition by *but* itself. Along with the two conjuncts, this leads to the expectation that is denied.

A reviewer suggests that what Jasinskaja & Zeevat have in mind is that the implications from the first and second conjuncts are conversational implicatures. Consider the following exchange, which comprises the first *why*-question in (29) and the first conjunct of the *but* sentence as an answer:

(30) A: Why did we eat?
B: We were hungry.

Even though all B says, strictly speaking, is that her party was hungry, B answers A's question, conveying that the *reason* that her party ate was because they were hungry. This meaning enrichment — from just ϕ to $\phi \Rightarrow \psi$ — is no doubt the product of a conversational implicature generated by the maxim of Relevance. This implicature is cancelable. B could felicitously follow up her utterance in (30) with *In fact, being hungry is not the reason we ate*.

But the implication or implications in a counterexpectational *but* sentence are simply not conversational implicatures. They have the properties of an *entailment*,

which is what led Grice and others to classify them originally as *conventional* implicatures. A speaker is, for instance, committed to the truth of the implications that give rise to the expectation that is denied just as much as she is committed to the truth of the at-issue entailment. She cannot cancel the implication, as Grice (1961: 128ff.) observed:

(31) We were hungry, but the restaurants were closed. #In fact, being hungry is not the reason we would have eaten.

The implication in the counterexpectational use is not a conversational implicature. Since the implication is not conveyed by *but* itself, as it is in the inferentialist account, the formalist account cannot derive the expectation that is denied.

Problem 3 Jasinskaja & Zeevat have no way of deriving the difference in the strength of the implications from the first and second conjuncts. They themselves admit that, 'the second conjunct decides the issue, in the sense that the speaker indicates that the second argument is better than the first (Anscombre & Ducrot 1977)... This observation is not a consequence of the theory presented in this paper...' (Jasinskaja & Zeevat 2009: 242). Indeed, it actually seems impossible under their account to even talk about any difference in strength, since the implicational relation encoded by the question will be identical across all the alternatives in its denotation.[21]

In sum, Jasinskaja & Zeevat's formalist account requires the two conjuncts of a *but* sentence to entail doubly-distinct members of a set of propositional alternatives. This derives the semantic opposition and corrective uses, which do not have an expectation that is denied. But they fail to account for the counterexpectational use. Among other problems, they have no way of generating the expectation that is denied.

3.3 A unified semantics for *but*

Neither Winter & Rimon's inferentialist account nor Jasinskaja & Zeevat's formalist one can account for all three of *but*'s uses. Even so, the traditions that both represent build on important analytical insights. The inferentialists want to characterize *but*'s meaning by relating its two conjuncts by weak implicational relations to a third

21 A reviewer points out that Jasinskaja's (2011) more elaborated account — where the *why*-polar question is split into two *why*-questions with opposing polarities — does open the door for dealing with this problem. One *why*-question could encode a weaker implicational relation than the other. Still, one would have to figure out how they both relate to the same *why*-polar question.

proposition, while the formalists want to relate its two conjuncts by a stronger relation — entailment — to distinct members in a set of propositional alternatives.

We do not have to choose between the two approaches. I propose that *but* has the semantics in (32), a lexical entry that draws on the insights of both.

(32) $[\![\phi \text{ but } \psi]\!] =$
At-issue: $[\![\phi]\!] \wedge [\![\psi]\!]$
Presupposition: $\exists p\colon\ p \in QUD([\![\phi]\!] \Rightarrow p) \wedge \exists p\colon\ p \in QUD([\![\psi]\!] \Rightarrow \neg p)$

The at-issue entailment is simply the conjunction of two propositions. The presupposition relates the two conjuncts to propositions in the context — specifically, to propositions in the QUD. The first conjunct implies a proposition in the QUD, while the second conjunct implies the negation of a proposition in the QUD.

Importantly, the two conjuncts do not have to stand in an implicational relation to the same proposition in the QUD. I assume these implications have Kratzer's (1981, 1986, 1991) modal semantics for indicative conditionals, which allows for both strong and weak inferences. Depending on how strong the implications in the presupposition are, the two conjuncts might imply the same proposition or they might imply distinct ones:

(33) a. QUD $= \{\sigma\}$
$[\![\phi \text{ but } \psi]\!] =$ At-issue: $\phi \wedge \psi$
Presupposition: $\phi \Rightarrow \sigma$
$\psi \Rightarrow \neg\sigma$

b. QUD $= \{\sigma, \tau\}$
$[\![\phi \text{ but } \psi]\!] =$ At-issue: $\phi \wedge \psi$
Presupposition: $\phi \Rightarrow \sigma$
$\psi \Rightarrow \neg\tau$

The situation in (33a) corresponds to the counterexpectational use, and only arises when the implications in the presupposition are weak. The first conjunct (ϕ) can imply a third proposition (σ) and the second conjunct (ψ) its negation, only if these implications do not hold necessarily, or else they would produce a contradiction. On the other hand, the situation in (33b), where the first and second conjuncts stand in implicational relations to distinct propositions (σ and τ), allows them to be either strong or weak. When these relations are strong, *but* has its semantic opposition and corrective uses. When it is weak, it corresponds to a use of *but* that does not fall into the traditional three-way classification.

4 When the implications are weak

When the implications in the presupposition are weak, both conjuncts can be related to the same proposition in the QUD. This gives rise to the counterexpectational use. A direct expectation that is denied arises, as I show in §4.1, when the QUD contains a proposition whose negation follows necessarily from the second conjunct. An indirect expectation arises, as I show in §4.2, when the QUD contains some third proposition both conjuncts stand in a weak implicational relation to. While my proposal is partly inspired by the inferentialist account of Winter & Rimon (1994), it has a couple advantages, which I explore in §4.3. Finally, as I show in §4.4, it correctly predicts a use of *but* that does not fit into the usual three-way classification — which arises when the implicational relations in the presupposition are weak and relate the first and second conjuncts to *distinct* propositions in the QUD.

4.1 Direct expectations

The *but* sentence in (5) with a direct expectation that is denied could be used in the following discourse:

(34) A: What is the player like? Is she clumsy?
B: The player is tall, but agile.

I take the wh-question posed by A to explicitly represent the QUD, whose extension is given in (35a). Since the property of being clumsy was previously made salient by A, the QUD contains at least the proposition that the player is clumsy. The question's domain can, of course, accommodate additional members if they are made relevant.

(35) a. $[\![(34\text{A})]\!] = \{\textbf{clumsy}(\textbf{the-player})\}$
b. $[\![(34\text{B})]\!] =$ At-issue: $\textbf{tall}(\textbf{the-player}) \wedge \textbf{agile}(\textbf{the-player})$
Presupposition: $\exists p\colon\ p \in QUD\,(\textbf{tall}(\textbf{the-player}) \Rightarrow p) \wedge$
$\exists p\colon\ p \in QUD\,(\textbf{agile}(\textbf{the-player}) \Rightarrow \neg p)$

According to the lexical entry in (32), the *but* sentence presupposes that each conjunct stands in an implicational relation to an answer in the QUD. The QUD does, in fact, contain one proposition that is implied by the first conjunct and whose negation is implied by the second conjunct — that the player is clumsy. The presupposition in (35b) is satisfied, in other words, when the following two implications hold:

(36) a. The player is tall. ⇒ She is clumsy.
b. The player is agile. ⇒ She isn't clumsy.

Recall that the implication from the first conjunct in (36a) must be relatively weak, since uttering this counterexpectational *but* sentence does not result in a contradiction. It seems reasonable to infer that, if the player is tall, she is also clumsy — but, it is not necessary to do so.

I formalize the weakness of the implicational relation using Kratzer's (1981, 1986, 1991) doubly relativized modal semantics for indicative conditionals. If we treat the two implications in (36a–b) as indicative conditionals with Kratzer's semantics, they both contain an implicit necessity modal expressing universal quantification over possible worlds:

(37) a. $\lambda w \forall w'(R(w)(w') \wedge \textbf{tall}_{w'}(\textbf{the-player}) \rightarrow \textbf{clumsy}_{w'}(\textbf{the-player}))$

b. $\lambda w \forall w'(R(w)(w') \wedge \textbf{agile}_{w'}(\textbf{the-player}) \rightarrow \neg\textbf{clumsy}_{w'}(\textbf{the-player}))$

The antecedents serve to restrict the domain of the quantifier, while the consequents are in the quantifier's nuclear scope. The weakness of the first implication in (37a) follows from additional restrictions on the domain of quantification by a modal base — e.g. epistemic, circumstantial — and ordering source — e.g. stereotypical, bouletic, deontic. For simplicity, I represent both restrictions as an accessibility relation R. In (37a), the implicit necessity modal is relativized to an epistemic modal base and a stereotypical ordering source. It is true just in case, in all the epistemically accessible worlds where the player is tall that best correspond to the normal course of events, the player is clumsy. The epistemic modal base is realistic, since it includes the actual world, but the stereotypical ordering source further restricts the domain, so that quantification is only over those worlds that are most normal, in some sense.

This gives rise to the expectation that is denied. If both the implication in (37a) and its antecedent, which is entailed by the first conjunct of the *but* sentence, are true at the actual world, then in all the worlds that are most normal, the player is clumsy. It might seem reasonable to think that the actual world is one of these stereotypical worlds, but it does not have to be.[22] Thus, the second conjunct, which entails that the player is agile, does not end up being contradictory. It does, however, remove the possibility that the actual world is a world in which, if the player is tall, she is clumsy. The weakness of the first implication arises for the same reason that epistemic necessity modals unexpectedly fail to validate the inference from $\Box\phi$ to ϕ. Both weak epistemic necessity modals like *ought* (von Fintel & Iatridou 2008: 119) and strong epistemic necessity modals like *must* (Kratzer 1991: 645) involve an epistemic modal base and stereotypical ordering source.[23]

22 In other words, Kratzer's doubly relativized semantics for the indicative conditional invalidates modus ponens. See Charlow, to appear, §3.1 for relevant discussion.

23 Though, von Fintel & Gillies (2010) argue that strong epistemic necessity modals do indeed validate this inference, and that the seeming weakness of epistemic *must* arises because it signals that the speaker has made an indirect inference.

Before moving on, let's take a look at a few more examples to see how they work with the proposed meaning for *but*. Consider the counterexpectational *but* sentences in (38a–c), repeated from (8a–c) above, each of which can be used to address the wh-question shown. I take this question to correspond to the QUD and the ensuing polar question to introduce one of its possible answers — in particular, the answer to the QUD that satisfies the presupposition and is the source of the expectation that is denied.

(38) a. A: What is John like? Is he good at basketball?
B: John is tall, but he is no good at basketball.
b. A: What is he like? Is he a crook?
B: He is a Republican, but he is honest.
c. A: What happened? Did you eat the cake?
B: The cake was low calorie, but I didn't eat it.

In (38a), there is a proposition in the QUD — that John is good at basketball — that follows from the first conjunct when we take into account our knowledge about basketball and that, normally, being tall conveys an advantage in the game. Since, in the actual world, John need not be so stereotypically good at the game, the second conjunct can hold without leading to a contradiction. Similarly, in (38b), we can infer from the fact that he is a Republican that he is a crook, if we are reasoning from our knowledge about politics and (admittedly negative) stereotypes about politicians. In (38c), that the speaker ate the cake could follow from the proposition that the cake was low calories, if we take into the circumstances (a circumstantial modal base) — e.g. that the speaker is watching their weight, that there is low-calorie cake to eat — and the speaker's desires (a bouletic ordering source) — e.g. that the speaker wants to eat cake. In all the worlds that match the circumstances and that best satisfy the speaker's desires, the speaker eats cake. Since the actual world is not necessarily in this set, the second conjunct — that the speaker did not eat cake — can be true without resulting in a contradiction.

4.2 Indirect expectations

Consider the sentence with the counterexpectational use in (39), repeated from (9b) above, which has an indirect expectation that is denied.

(39) A: What did you do after the party? Did you eat?
B: We were hungry, but the restaurants were closed.

The expectation here is indirect since, while the first conjunct leads one to expect that the speaker's party did not eat, it is denied by the second conjunct through an

additional inference. If the restaurants were closed, then it is reasonable to expect that they did not eat. The lexical entry for *but* in (32) straightforwardly derives this use:

(40) a. $[\![(39A)]\!] =$
$\{\textbf{eat}(\textbf{you})\}$

b. $[\![(39B)]\!] =$
At-issue: $\textbf{hungry}(\textbf{we}) \wedge \textbf{closed}(\textbf{the-restaurants})$
Presupposition: $\exists p\colon\ p \in QUD\,(\textbf{hungry}(\textbf{we}) \Rightarrow p) \wedge$
$\exists p\colon\ p \in QUD\,(\textbf{closed}(\textbf{the-restaurants}) \Rightarrow \neg p)$

The QUD contains at least one proposition — that the speaker's party ate — that can serve as the witness for the implications in the presupposition. Both implications are relativized to an epistemic modal base and a stereotypical ordering source. In all the worlds that correspond to what we know in which the speaker's party is hungry and are most normal, they eat. And, in all the worlds that correspond to what we know in which the restaurants were closed and are most normal, they did not eat.

Let's go through another example with an indirect expectation, (9c) from above:

(41) A: What is going to happen? Are you going to get wet?
B: It's raining, but I'm going to take an umbrella.

In (41), there is a proposition in the QUD — that the speaker is going to get wet — that is implied by the first conjunct and whose negation is implied by the second conjunct, if we again take the modal base to be epistemic and the ordering source to be a stereotypical one. In all the worlds that correspond to what we know in which it is raining and that are most normal, the speaker gets wet; and, in all the worlds that correspond to what we know in which the speaker takes an umbrella and that are most normal, she does not get wet.

4.3 Two advantages over an inferentialist account

The current proposal has two advantages over Winter & Rimon's (1994) inferentialist account. To see this, we need a more technical understanding of their proposal, which is stated in Veltman's (1986) data logic.

In Veltman's data logic, sentences are interpreted in an information model that uses information states — possibly partial representations of speakers' knowledge — as its basic entities. Given a set of atomic sentences, there is a valuation function in an information model that, for any information state, says whether an atomic sentence is true or false based on the evidence available at that state. Importantly, the valuation function is partial, since it is undefined for an atomic sentence at

an information state where there is not enough evidence to determine its truth. Information states are partially ordered by how complete they are (how many sentences have a truth value). For information states s and s', s is less or equally complete than s' ($s \leqslant s'$) just in case, when an atomic sentence is true at s, it is also true at s' and, when an atomic sentence is false at s, it is false at s'. The growth of one information state into a more complete one represents the growth in speakers' knowledge. Say we are at information state s: If we acquire a new piece of evidence, our knowledge now corresponds to an information state s' such that $s \leqslant s'$. The maximal element in the partial order of information states is the complete information state — the valuation function assigns a truth value to every atomic sentence — in which speakers have complete, and hence correct, knowledge about the actual world.

Turning now to Winter & Rimon's semantics, the *but* sentence with an indirect expectation in (39) would have the following logical form:

(42) $[\![$We were hungry, but the restaurants were closed.$]\!] =$
At-issue: $\textbf{hungry}(\textbf{we}) \wedge \textbf{closed}(\textbf{the-restaurants})$
Presupposition: $\exists p(\Diamond(\textbf{hungry}(\textbf{we}) \Rightarrow p) \wedge$
$(\textbf{closed}(\textbf{the-restaurants}) \Rightarrow \neg p))$

Winter & Rimon adopt Veltman's semantics for the modal operator $\Diamond$ and sentence connective $\rightarrow$, but they offer (p. 388) a 'dynamic' interpretation for counterexpectational *but*'s presupposition. The presupposition in (42) is true at an information state s' iff there is a proposition p such that the proposition that the restaurants were closed implies $\neg p$ at s' and s' grew from an information state s that can grow into an information state s'' at which the proposition that the speaker's party was hungry implies p.[24]

The first advantage of my proposal over Winter & Rimon's involves the implication from the second conjunct. It can clearly be weaker than entailment since, for the example in (42), it is easy to imagine a state-of-affairs where the speaker's party gets to eat even if all the restaurants are closed. Moreover, the consequent of this weak implication can be contradicted by a subsequent utterance, without resulting in infelicity, as shown for the three examples in (9a–c):

(43) a. He is intelligent, but he doesn't work. Nonetheless, I have to hire him because no one else applied.

b. We were hungry, but the restaurants were closed. The grocery store was open, so we ended up getting something to eat there.

24 More precisely, the presupposition is true in an information model M and information state s' iff there is a proposition p such that there is no information state s'', where $s' \leqslant s''$, such that the restaurants are closed at s'' but p is false at s'', and there is some information state s, where $s \leqslant s'$, such that there is an information state s''', where $s \leqslant s'''$, such that the speaker's party is hungry at s''' and p is true at s'''.

c. It's raining, but I'm going to take an umbrella. I am still going to get wet, though, because my umbrella has a hole in it.

This follows from my account since the quantificational domain of the implication from the second conjunct can be restricted to just the most stereotypical worlds. For (43c), it can be paraphrased as follows: In every world that corresponds to what we know in which the speaker takes an umbrella that is most normal, the speaker does not get wet. Given this implication and the second conjunct itself, this *but* sentence would lead you to believe that the speaker does not get wet. While the actual world need not be amongst the worlds that are most normal, if the topic of conversation is what happens to the speaker — and, specifically, whether or not she gets wet — it would be relevant for the actual world to be included in the domain of quantification. This is a pragmatic inference that can be canceled, as when the speaker in (43c) adds the information that the umbrella has a hole in it, so that in the end she gets wet.

Winter & Rimon make the wrong prediction for (43c), since under their account the implication from the second conjunct — $\textbf{take}(\textbf{an-umbrella})(\textbf{I}) \Rightarrow \neg p$ — is as strong as entailment. If it is true at a given information state, it is true at every information state that it grows into. This property, which Veltman calls T-stability, follows from the interpretation of the sentence connective itself. Once the second conjunct is accepted as part of speakers' knowledge, the proposition that both conjuncts stand in an implicational relation to should be *false*. If both $\textbf{take}(\textbf{an-umbrella})(\textbf{I}) \Rightarrow \neg p$ and $\textbf{take}(\textbf{an-umbrella})(\textbf{I})$ hold at an information state s, then there is no information state s', where $s \leqslant s'$, in which $\neg p$ is not true.

The second advantage of my proposal is that it can account for the indirect expectation that is denied in examples like (44), repeated from (9a) above.

(44) A: Who should I hire? Should I hire him?
B: He is intelligent, but he doesn't work.

For Kratzer (1991: 648), when the consequent of an indicative conditional contains a modal, the antecedent is interpreted in the modal's restriction. Since I give the implications in the presupposition of *but* Kratzer's semantics for indicative conditionals, when the QUD contains a modal it should provide the modal force for the implications. This is exactly what we find in (44). The QUD asks about who the speaker *should* hire. Consequently, the implications in *but*'s presupposition are true if the following two conditionals are true:

(45) a. $\lambda w \forall w'(R(w)(w') \wedge \textbf{intelligent}_{w'}(\textbf{him}) \rightarrow \textbf{hire}_{w'}(\textbf{him})(\textbf{I}))$
b. $\lambda w(\neg\forall w'(R(w)(w') \wedge \neg\textbf{work}_{w'}(\textbf{him}) \rightarrow \textbf{hire}_{w'}(\textbf{him})(\textbf{I})))$

The modals here are relativized to a circumstantial modal base and bouletic ordering source. In other words, in (45a), in every world that matches the circumstances — e.g.

that the company is hiring, that he has applied for a job — that best conforms to the company's needs, and where he is intelligent, the speaker hires him. And, in (45b), there is a world that matches the circumstances that best conforms to the company's needs, where he does not work, and where the speaker does not hire him.[25]

I see no way that Winter & Rimon could account for the interpretation of (44). Since they interpret *but* sentences in Veltman's data logic, which is defined over knowledge states, they are able to accommodate inferences involving speakers' epistemic states but not speakers' desires. Reasoning about how the world *ought* to be is easily accommodated in Kratzer's semantics for conditionals, where the difference between epistemic and deontic modality resides in the restriction on the domain of quantification.

4.4 Another use of *but*

The counterexpectational use of *but* arises when the implications in the presupposition are weak and they relate both conjuncts to a single proposition in the QUD. What if they instead related the two conjuncts to two different propositions? The resulting sentence would have two expectations, neither of which was denied. Such a use of *but* does indeed exist, though it does not fall into the the traditional three-way classification outlined in §2.

Jasinskaja (2011: 15) identifies the *but* sentence in (46) as problematic for Jasinskaja & Zeevat's (2008) formalist account. It does not fall under either the counterexpectational, corrective, or semantic opposition uses. To her example, I add the parallel one in (47).

(46) A: Who joined the football team?
B: John likes football, but Bill likes basketball. (Jasinskaja 2011: 15)

(47) A: Who did their chores?
B: John cleaned up his room, but Bill skipped the washing up.

In (46), while there is an expectation that, because John likes football, John joined the football team, this expectation is not denied as in the counterexpectational use.

25 There is also a neg-raised interpretation for the second implication in (45), where negation takes scope inside the necessity modal. We can use the *therefore* test that Winter & Rimon (1994: 370f.) propose for identifying indirect expectations (see §2.1) to show this:

(i) He is intelligent, but he doesn't work. Therefore, it is not the case that you should hire him.

(ii) He is intelligent, but he doesn't work. Therefore, it is necessary that you not hire him.

The *but* sentence in (44B) can be continued, as in (i), with a *therefore* sentence where negation takes wide scope over the modal. Or, it can be continued, as in (ii), with the neg-raised version where negation take narrow scope.

Instead, the second conjunct gives rise to another expectation that, because Bill likes basketball, Bill did not join the football team. Similarly, in (47), there are two expectations: namely, that, because John cleaned his room, John did his chores, and that, because Bill skipped the washing up, Bill did not do his chores.

It is equally hard to identify (46–47) with the corrective use as it is with the counterexpectational use. There is no negation present in either conjunct. If anything, these examples are most similar to the semantic opposition use, since they involve distinct predicates applied to different individuals. But the predicates are not antonyms as in the semantic opposition use, e.g. in (17a) — *John is tall, but Bill is short*. The predicates *likes football* and *likes basketball* — or *cleaned up his room* and *skipped the washing up* — could hold of the same individual. They do, however, imply different things about whether John or Bill joined the football team.

This use is predicted to exist under my proposal for the semantics of *but*. The question-answer exchange in (46) would have the following interpretation:

(48) a. $[\![(46\text{A})]\!] =$
$\{\textbf{join}(\textbf{the-football-team})(\textbf{john}), \textbf{join}(\textbf{the-football-team})(\textbf{bill})\}$

b. $[\![(46\text{B})]\!] =$
At-issue: $\textbf{like}(\textbf{football})(\textbf{john}) \wedge \textbf{like}(\textbf{basketball})(\textbf{bill})$
Presupposition: $\exists p\colon\ p \in \mathit{QUD}\,(\textbf{like}(\textbf{football})(\textbf{john}) \Rightarrow p) \wedge$
$\exists p\colon\ p \in \mathit{QUD}\,(\textbf{like}(\textbf{basketball})(\textbf{bill}) \Rightarrow \neg p)$

Even though the implications in the presupposition are weak, they relate the first and second conjuncts to different propositions in the QUD. Given how the world usually works, if John likes football, it is reasonable to infer that John joined the football team, and if Bill likes basketball instead, it is reasonable to infer that Bill did *not* join the football team.

To account for this less studied use of *but*, as well as the counterexpectational use, the two conjuncts must be able to stand in an implicational relation to either a single proposition in the QUD or to different propositions. This is permitted by the lexical entry in (32) that I propose, since the presupposition comprises two separate existential statements that can be satisfied by either the same or two different witness propositions. As a reviewer observes, however, this will overgenerate unless the propositional alternatives in the QUD are constrained in some way. The reviewer illustrates the issue with the example in (49), where the QUD ranges over the properties of being clumsy and not being clumsy.

(49) A: $[\![\text{What is the player like?}]\!] =$
$\{\textbf{clumsy}(\textbf{the-player}), \neg\textbf{clumsy}(\textbf{the-player})\}$

B: # The player is tall, but fat.

If the QUD contains two alternative propositions — that the player is clumsy and that the player is not clumsy — it seems as if B's answer should be felicitous. The player's being tall weakly implies the first proposition in the QUD, that she is clumsy, and the player's being fat weakly implies that she is not not clumsy. But it does not seem as if B's utterance in (49) is, in fact, felicitous.

While the two conjuncts stand in weak implicational relations to distinct propositions in the QUD in (46–47), why is this not possible with the propositions in the QUD in (49)? We know that, in several empirical domains including focus and scalar implicatures as well as questions, the set of alternatives must be radically constrained. Contextual restriction, based partly on considerations of relevance, must play some role. But a rapidly developing line of research is identifying other factors — lexical, syntactic, and semantic in nature — that serve to constrain the alternative set (von Fintel 1997, Blok & Eberle 1999, Fox 1999, 2007, Katzir 2007, 2008, Fox & Katzir 2012). I am not able to give a final solution to the problem posed by (49), but drawing on the aforementioned literature I sketch two possible solutions below.

The problem with the QUD in (49) is that it contains both a proposition and its negation. As a brute-force solution, it might be possible to simply rule out one of these alternatives semantically, either as part of the lexical entry for *but* or, as I show below, as an independent constraint. This constraint would prevent the QUD from containing a propositional alternative that is equal to the negation of another propositional alternative:

(50) $\forall p\colon\ p \in QUD\ \forall q\colon\ q \in QUD\ (p \neq \neg q)$

This would remove one of the two propositions in the QUD in (49), since they are negations of one another. There is some evidence that such a constraint is independently needed to account for the meaning of *only*. Assuming that *only* quantifies over an alternative set, as in the work of Rooth (1985, 1992) — which might even be the set of propositions denoted by the QUD (von Fintel 1994: 70–74, Roberts 1996: 115–121, Beaver & Clark 2008, Toosarvandani 2010: 81–108) — this set cannot contain both an element and its negation. Otherwise, a sentence like *John is only* TALL would be necessarily false. For instance, besides conveying that John is tall, it would entail both that John does not have the property of being fat and that he does not have the property of being *not* fat — a contradiction.

Alternately, there has been some attention to the same problem in the domain of scalar implicatures. A sentence containing an indefinite like *John ate some of the cake* conversationally implicates, by the maxim of Quantity, that the stronger universal statement *John ate all of the cake* is false. As Kai von Fintel and Sabine Iatridou point out in class lectures, however, there is another stronger statement that cannot also be false at the same time — namely, *John ate (some but) not all*

of the cake — which is simply the negation of the universally-quantified sentence above. To solve this 'symmetry problem', Katzir (2007, 2008) and Fox & Katzir (2012) develop the notion of STRUCTURAL ALTERNATIVES — the expressions of a language that are equally or less complex — to exclude undesirable alternatives when generating scalar implicatures. The negated sentence above is more structurally complex than the original universally-quantified sentence, and hence it is removed from the set of alternatives. The propositions in the QUD in (49) could similarly be restricted structurally, so that the undesirable alternative — *The player is not clumsy* — is eliminated.

With this, I leave off the issue of how to define the alternative propositions in the QUD that *but* makes reference to. What is clear is that an inferentialist account like Winter & Rimon's requires that both conjuncts stand in an implicational relation to the *same* proposition. But in (46–47) each conjunct implies a *different* proposition in the QUD. While the three-way classification that dominates the literature is useful, it does not exhaust the range of possible interpretations for *but*. There is, for instance, this use of *but*, which follows from the semantics for *but* that I propose.

5 When the implications are strong

Modals are notoriously variable in their meaning. In Kratzer's (1981, 1991) doubly relativized semantics for modals, this variability is treated as polysemy. The quantificational force of modals — existential or universal — is fixed, but their modal base and ordering source varies with context (though, see Matthewson et al. 2007 for evidence that modal force in some languages, too, can be underspecified). I propose that the difference between the counterexpectational use, on the one hand, and the corrective and semantic opposition uses, on the other hand, is the result of precisely this kind of polysemy.

The locus of polysemy in the lexical entry for *but* is the presupposition, which establishes implicational relations between the two conjuncts and propositions in the QUD:

(51) $[\![\phi \text{ but } \psi]\!] =$
At-issue: $[\![\phi]\!] \wedge [\![\psi]\!]$
Presupposition: $\exists p\colon\ p \in QUD\,([\![\phi]\!] \Rightarrow p) \wedge \exists p\colon\ p \in QUD\,([\![\psi]\!] \Rightarrow \neg p)$

As we have seen, the counterexpectational use arises when these implications are weak. They convey universal quantification over possible worlds that is relativized either to an epistemic or a circumstantial modal base, and importantly also to an ordering source — such as a stereotypical ordering source — which might remove the actual world from the domain of quantification. In contrast, the corrective and semantic opposition uses of *but* arise when the implications in the presupposition

are strong. In Kratzer's system, they convey universal quantification over worlds that is relativized to a realistic modal base and an ordering source that is *empty*, so that the domain of quantification always includes the world of evaluation.

I am arguing that, rather than being homophonous, *but* is polysemous in the same way that modals are. Their quantificational force might be fixed, but their modal base and ordering source vary with context. Of course, not all modals permit the same combinations of force, modal base, and ordering source. German *müssen*, for instance, allows for any modal base and any ordering source, just like English *must*, but German *dürften* is restricted to an epistemic modal base and stereotypical ordering source (Kratzer 1991: 650). In English, *but* expresses universal quantificational force, though its modal base and ordering source are specified by context, producing a range of uses. In the languages we saw in §3.1.3 that have more than one lexical item for *but*, this modal domain has been lexicalized differently. German, for instance, has one lexical item *aber* corresponding to the counterexpectational use that requires something like a stereotypical or bouletic ordering source and therefore conveys weak implications; and, it has another lexical item *sondern*, corresponding to the corrective use, that requires an empty ordering source and therefore conveys strong implications.

When the implications in the presupposition are strong, there is no expectation that is denied because both implications cannot hold of the same proposition in the QUD without resulting in a contradiction. More specifically, as I argue in §5.1, the corrective use arises when the QUD is a negative wh-question, so that the presupposition can only be satisfied if the first conjunct contains a negative element. In §5.2, I show that this can be either sentence negation or another negative element. By contrast, as I show in §5.3, the semantic opposition use arises when the QUD is a positive wh-question. By distinguishing the corrective and semantic opposition uses in this way, my proposal has an advantage over the formalist account of Jasinskaja & Zeevat (2008, 2009).

5.1 The corrective use

Recall that the corrective use often occurs in rejection-rectification discourses like (52). I assume that B answers an implicit QUD — specifically, the negative wh-question *What doesn't Liz do?* (represented in parentheses).

(52) A: Liz dances.
(What doesn't Liz do?)
B: Liz doesn't dance, but sing.

Admittedly, it is difficult in this example to make the QUD explicit, but this might just be because negative questions are generally pragmatically marked. The negative

answers in a negative wh-question are generally less informative than the positive answers in a positive wh-question (Horn 2001: 60).[26] (See §5.4 for additional discussion of this issue.)

This negative QUD can be explicit when a negative answer is the most informative thing that conversational participants are willing to commit themselves to. Imagine that A and B are organizing a talent show. They are interested in asking Liz to participate, but they cannot remember what talent she has. So, they decide to work backwards from what they know Liz does not do:

(53) A: We still need someone for the dancing, singing, hula hooping, and baton twirling acts of the talent show.
B: Liz might be interested, but I can't remember what her talent is.
A: Well, what doesn't she do? I know she doesn't dance.
B: Now I remember! Liz doesn't dance, but sing.

Note that even though the discourse in (53) does not have a rejection-rectification structure, B's use of *but* is the corrective use. There is no expectation that, because Liz does not dance, she does not sing. B simply conveys that Liz does not dance and that instead she sings. Moreover, omitting negation from the first conjunct is infelicitous in this context: *#Liz dances, but sings.*

Going back to (52), the implicit negative QUD can contain two negative propositions, one corresponding to the first conjunct of the *but* sentence and another corresponding to the negation of the second conjunct, as shown in (54). The property of dancing is introduced by A's preceding sentence, and I assume that the property of singing can be accommodated into the domain of the negative wh-question:

(54) a. $[\![\text{What doesn't Liz do?}]\!] = \{\neg\textbf{dance}(\textbf{liz}), \neg\textbf{sing}(\textbf{liz})\}$
b. $[\![(52\text{B})]\!] = \text{At-issue: } \neg\textbf{dance}(\textbf{liz}) \wedge \textbf{sing}(\textbf{liz})$
$\text{Presupposition: } \exists p\colon\ p \in QUD\,(\neg\textbf{dance}(\textbf{liz}) \Rightarrow p) \wedge$
$\exists p\colon\ p \in QUD\,(\textbf{sing}(\textbf{liz}) \Rightarrow \neg p)$

26 Of course, I have to assume that the alternatives in positive and negative wh-questions are distinct. But with Hamblin's semantics, positive and negative wh-questions whose domain's type ends in t are not necessarily distinct. Unlike the domain of individuals, which forms a join semilattice (Link 1983), these domains are boolean algebras closed under negation and conjunction. So, while the positive wh-question *What does Liz do?* and the negative wh-question *What doesn't Liz do?* have distinct logical forms, their model-theoretic interpretations are identical, since they both range over the same set of properties and their negations. As I discussed in §4.1, the problem of how to define alternatives is a long-standing one, both for questions and a number of other empirical domains, including focus interpretation and the generation of conversational implicatures. The solutions offered there will, I imagine, be able to help out here. See also recent discussion of this issue by Biezma & Rawlins (2011) and Farkas & Roelofsen (2012).

There is no single proposition that verifies both implications in the presupposition. Since they are relativized to a realistic modal base and an empty ordering source, both implications cannot be true of the same consequent along with their antecedents.[27] That is, if the at-issue component in (54b) holds at the actual world — Liz does not dance and she does sing — there can be no proposition ϕ such that: i) in every world where Liz does not dance ϕ is true; and, ii) in every world where the player sings ϕ is not true.

The implications in the presupposition are consistent only if there are two distinct propositions to serve as witnesses. In the QUD in (54a), there are. In any model, the inference from the first conjunct is verified by the first conjunct itself, and the inference from the second conjunct is verified by the negation of the second conjunct:

(55) a. $\lambda w \forall w'(R(w)(w') \wedge \neg \mathbf{dance}_{w'}(\mathbf{liz}) \rightarrow \neg \mathbf{dance}_{w'}(\mathbf{liz}))$
b. $\lambda w \forall w'(R(w)(w') \wedge \mathbf{sing}_{w'}(\mathbf{liz}) \rightarrow \neg\neg \mathbf{sing}_{w'}(\mathbf{liz}))$

It is clear, then, why there is no expectation that is denied with corrective *but*. Both conjuncts stand in an implicational relationship to a proposition in the QUD. But since their ordering sources are empty, they must hold at all the worlds in the realistic modal base — which includes the actual one. Thus, neither can be denied.

Removing the negation from the first conjunct, as in (56), is infelicitous since there is no QUD that would be able to satisfy the implications from both the first and second conjuncts:

(56) A: Liz dances.
B: # Liz dances, but she sings.

The negative wh-question *What doesn't Liz do?*, which serves as the QUD in (52), cannot do so here since it only contains negative propositions. The first conjunct of the *but* sentence in (56) — that Liz dances — does not strongly imply either that the Liz does not dance or that Liz does not sing. It does strongly imply a proposition in the wh-question *What does Liz do?*:

(57) a. $[\![(56\text{A})]\!] = \{\mathbf{dance}(\mathbf{liz}), \mathbf{sing}(\mathbf{liz})\}$
b. $[\![(56\text{B})]\!] =$ At-issue: $\mathbf{dance}(\mathbf{liz}) \wedge \mathbf{sing}(\mathbf{liz})$
Presupposition: $\exists p\colon\ p \in QUD\,(\mathbf{dance}(\mathbf{lize}) \Rightarrow p) \wedge$
$\exists p\colon\ p \in QUD\,(\mathbf{sing}(\mathbf{liz}) \Rightarrow \neg p)$

27 A realistic modal base is one that contains the world of evaluation (Kratzer 1981: 44f.). Since an epistemic modal base is realistic, it would be a candidate for restricting the quantificational domain of the implications in the corrective use of *but*. Another possibility is that their domain is restricted by a totally realistic modal base containing just the world of evaluation. This would make the implications in the presupposition equivalent to the material implication. It is not clear to me how to choose between these two possibilities.

While this QUD contains a proposition that can serve as the witness for the implication from the first conjunct — every world where Liz dances is a world where she dances — there is no proposition that verifies the implication from the second conjunct. If we take it to be the proposition that Liz sings, the implication is necessarily false when the antecedent holds. There is no world in which Liz both sings and does not sing.

The *but* sentence in (56) is thus infelicitous because the QUD cannot verify the presupposition's two implications and as a consequence it is false. This does not result in a classic presupposition failure since the evaluation of the at-issue component, which after all is nothing more than conjunction, does not depend on the presupposition in any way. The hearer of the *but* sentence in (56) would certainly be able to gather that Liz both dances and sings. But she would think it odd that the speaker had said something false — in other words, that the speaker had violated Grice's (1975) second maxim of Quality (Do not say what you believe to be false!). Of course, violations of Quality do not always result in this type of infelicity. If a speaker said something false that the hearer is unable to ascertain the truth of independently, the hearer would not find it odd. In the case of *but*, though, the truth or falsity of the presupposition — because it is a constraint on the QUD — is accessible independently to both the speaker and hearer. Consequently, in (56), we are left puzzled as to why B uttered that *but* sentence in that context, since the entailment about the contents of the QUD conveyed by the presupposition does not hold. In sum, B's answer in (56) is infelicitous for pragmatic reasons.

5.2 A prediction about other negative elements

So far, in its corrective use, *but* has always contained sentence negation in the first conjunct, e.g. (52). But it is possible to substitute it for other negative elements, including various negative determiners (58–60), the negative correlative coordinator *neither… nor…* (61), and negative adverbs (62–63).

(58) Because **it has almost no petroleum reserves but an abundant biomass (primarily sugar cane)**, Brazil has been employing ethanol for its cars for almost a decade.[28]

(59) With which **we hope the customer buys a 33 1/3 phonograph and a flock of records, a 45 phonograph and an equally large supply of records, or neither one but a pile of his favorite artists on 78 r.p.m.**, pays the dealer in cash, and walks out humming gaily.[29]

28 Mike Knepper. 1989. Fuels in your future. *Popular Mechanics* 166(11): 56.

29 Joe Caida. 'Let's not get dizzy on new record speeds; they're here.' *The Billboard*, January 15, 1949, p. 3.

(60) First of all, a 'sinker' is a sinking fastball, and it is thrown with two seams. As with most two-seamed fastballs, it will veer and often go down when low or 'sink'. It is an extremely effective pitch and doesn't require great amounts of velocity, although a 'power' sinker, which is a version of the conventional sinker, does have a lot of velocity to it. **Few can throw a potent 'power' sinker, but many can throw an effective typical sinker with a lot of success**.[30]

(61) Most of these moves were admittedly stopgap; e.g., **it is entirely possible that neither Jupiter nor Thor but the Navy's solid-fuel Polaris is the IRBM of the near future**.[31]

(62) Her idea of a meal was saltines and tea, for all of them. **She never got hungry like ordinary mortals or realized that others could be hungry, but simply took in sustenance when the clock reminded her.**[32]

(63) **Now the original intensifier or reinforcer is no longer perceived as emphatic, but reinterpreted as a simple mark of negation**, and the vestigial proclitic is doomed to extinction.[33]

These are all instances of the corrective use since there is no expectation that is denied in any of them. In (58), there is no expectation that, because Brazil does not have petroleum reserves, it does not have an abundant biomass; in (59), there is no expectation that, because customers do not buy 33 1/3 or 45 r.p.m. records, they will not buy 78 r.p.m. records; in (60), there is no expectation that, because only a few people can throw a power sinker, not many must be able to throw a basic sinker; in (61), there is no expectation that, because Jupiter and Thor are not the IRBMs of the future, then the Polaris must not be; in (62), there is no expectation that, because she never gets hungry, then she does not take in sustenance when the clock reminds her; and, in (63), there is no expectation that, because the original intensifier is not perceived as emphatic, it must not have been reinterpreted as a simple mark of negation.

This range of negative elements in the first conjunct is predicted under my account, since they are all able to satisfy the presupposition of *but*. To see why, consider the simplified version of (58) below, which has the quantificational determiner *no* as the negative element in the first conjunct:

30 http://pitchingprofessor.com/home.html, August 12, 2011.

31 'Defense: The organization man.' *Time Magazine*, January 13, 1958. Accessed from http://www.time.com/time/magazine/article/0,9171,862823.html.

32 Anne Tyler. 2005. *Breathing lessons.* New York: Ballantine Books, p. 159.

33 Laurence R. Horn. 2001. Flaubert triggers, squatitive negation, and other quirks of grammar. In Jack Hoeksema, Hotze Rullmann, Victor Sánchez-Valencia, and Ton van der Wouden, eds. *Perspective on negation and polarity items.* Amsterdam: John Benjamins, p. 190.

(64) Brazil has no petroleum reserve but an abundant biomass.

There is a QUD that would satisfy *but*'s presupposition — the negative wh-question *What does Brazil not have?* It ranges over the resources that Brazil does not possess:

(65) a. $[\![\text{What does Brazil not have?}]\!] =$
$$\left\{ \begin{array}{l} \neg(\textbf{have}(\textbf{a-petroleum-reserve})(\textbf{brazil})), \\ \neg(\textbf{have}(\textbf{an-abundant-biomass})(\textbf{brazil})) \end{array} \right\}$$

b. $[\![(64)]\!] =$
At-issue:
$\neg(\textbf{have}(\textbf{a-petroleum-reserve})(\textbf{brazil})) \wedge$
$\textbf{have}(\textbf{an-abundant-biomass})(\textbf{brazil})$
Presupposition:
$\exists p\colon\ p \in QUD(\neg(\textbf{have}(\textbf{a-petroleum-reserve})(\textbf{brazil})) \Rightarrow p) \wedge$
$\exists p\colon\ p \in QUD(\textbf{have}(\textbf{an-abundant-biomass})(\textbf{brazil}) \Rightarrow \neg p)$

Since the negative determiner *no* is equivalent to the negation of the positive determiner *a*, the first conjunct necessarily entails at least one proposition in the QUD, the proposition that Brazil does not have a petroleum reserve. And, the second conjunct, too, entails the negation of a proposition in the QUD, that it does not have an abundant biomass.

There are, however, some negative elements that cannot appear in the first conjunct in the corrective use. Horn (2001: 392) observes that incorporated negation, such as the negative derivational prefix *ir-*, is infelicitous:

(66) Einstein's approach was $\left\{ \begin{array}{c} \text{not religious} \\ \text{\#irreligious} \end{array} \right\}$, but rational.

Kasimir (2006: 136f.) hypothesizes that this is because the adjective *irreligious* is a contrary of *religious*. That is, it does not obey the Law of the Excluded Middle, since there are some individuals who are neither religious nor irreligious. This is not right, though, since even incorporated negation that is contradictory — that does obey the Law of the Excluded Middle — does not allow *but* in its corrective use:

(67) A: Space travel is possible.
B1: Space travel is not possible, but a dream.
B2: # Space travel is impossible, but a dream.

Things are either possible or impossible. Nonetheless, while B's second answer is truth-conditionally equivalent to her first answer, the second answer is infelici-

tous — when there is no expectation that is denied — because the negative element is incorporated negation.[34]

This restriction on incorporated negation follows from the current account with an additional constraint on incorporated negation. The QUD required by both B's first and second answers in (67) is: *What is space travel not?* B's second answer with incorporated negation in the first conjunct is simply not a well-formed response, because of an independent ban on using incorporated negation to answer a negative question. To see this, consider just the first conjuncts of the *but* sentences above as answers to a negative wh-question:

(68) A: Space travel might be possible, or it might be a dream. What is space travel not?
B1: It's not possible.
B2: # It's impossible.

The domain of the negative question contains the properties of being possible and being crazy. B's first answer is, of course, perfectly fine. But even though the second answer with incorporated negation is truth-conditionally equivalent to the first answer, it is ruled out. Whatever constraint this is — I will not attempt to formalize here it — it will rule out B's second answer in (67) as well.[35]

While the formalist account of Jasinskaja & Zeevat can account for the corrective use in general, it does not provide an obvious way to explain the infelicity of incorporated negation in the first conjunct. The wh-polar question that would be the QUD in (68) would be *What 'whether' is space travel?*. Since this question cannot actually be uttered, it is difficult to see how the contrast in (68) might be related to the contrast in (67). Moreover, as we will see next, Jasinskaja & Zeevat fail to account for certain differences between the corrective and semantic opposition uses, since under their proposal they are completely assimilated. In the semantic opposition use, the presupposition can be satisfied by incorporated negation.

5.3 The semantic opposition use

The corrective use lacks an expectation that is denied because the implications between the two conjuncts and the QUD are strong. When the QUD is a negative wh-question, a negative element is present in the first conjunct to satisfy these implications. Since the semantic opposition use also lacks an expectation, it must

34 One could think that, if something is impossible, then it cannot be a dream. This expectation could arise from, and be denied by, B's second answer in (67). We are not interested in this counterexpectational interpretation, which is derived in the way described in §4.

35 A reviewer suggests that it may have to do with focus or accent placement. Incorporated negation does not allow the speaker to focus only the positive component of the adjective.

arise when the implications from the two conjuncts are strong. It differs from the corrective use, though, in that the QUD is a positive wh-question.

Consider again the semantic opposition use in (19a), which might occur felicitously in the following discourse:

(69) A: Who is tall?
B: John is tall, but Bill is short.

The QUD is a position wh-question that asks about the individuals who are tall. The presupposition of the *but* sentence is satisfied, since it contains a proposition that follows necessarily from the first conjunct and it contains another proposition whose negation follows from the second conjunct:

(70) a. $[\![(69\text{A})]\!] = \{\textbf{tall}(\textbf{john}), \textbf{tall}(\textbf{bill})\}$
b. $[\![(69\text{B})]\!] =$ At-issue: $\textbf{tall}(\textbf{john}) \wedge \textbf{short}(\textbf{bill})$
Presupposition: $\exists p\colon\ p \in QUD\,(\textbf{tall}(\textbf{john}) \Rightarrow p) \wedge$
$\exists p\colon\ p \in QUD\,(\textbf{short}(\textbf{bill}) \Rightarrow \neg p)$

Assuming that John and Bill are in the domain of the question, it necessarily follows from the proposition that John is tall that he is tall. And, it necessarily follows from the proposition that Bill is short that he is not tall. To satisfy the strong implications in the presupposition, the two conjuncts contain members of an antonymic pair. Since antonyms cannot be predicated of the same individual without resulting in a contradiction, the positive QUD must ask about the individuals the antonymic predicates hold of.

It should be clear now that the semantic opposition use, as originally defined, does not exhaust the range of *but* sentences that can satisfy the presupposition when the implications relating the two conjuncts to a positive QUD are strong. In particular, it is not necessary for the conjuncts to contain antonyms as predicates or for those predicates to hold of different individuals. Under this broader definition of the semantic opposition use, we might include examples like the following:

(71) A: Who is tall? Is John tall? Is Bill tall?
B: John is tall, but Bill is not tall.

(72) A: What is the player like? Is she tall? Is she rich?
B: She is tall but poor.

(73) A: Where is John going? Is John going to Berlin? Is John going to Paris?
B: John is going to Berlin, but not to Paris. (Jasinskaja 2011: 4)

In none of these examples does the *but* sentence convey an expectation. The QUD is a positive wh-question, and the first and second conjuncts are related to it by

strong implications. But, instead of a pair of antonymic predicates, the second conjunct in (71) simply contains the negated form of the same predicate that is in the first conjunct. In (72–73), the predicates of the first and second conjuncts are not antonyms, or even contradictory, and hence they can hold of the same individual. (72) involves two morphological simplex predicates — *tall* and *rich* — while (73) contains sentence negation in the second conjunct. Along with the canonical example of the semantic opposition use in (69), the sentences in (71–73) form a natural class: the first conjunct necessarily implies one proposition in the QUD, and the second conjunct necessarily implies the negation of another proposition in the QUD.

Jasinskaja & Zeevat (2008) are able to derive all of these uses, just as I am, because the two conjuncts in each sentence in (71–73) each entails a doubly distinct member of the QUD. But there is one advantage of my proposal over theirs. The *but* sentence in (73) bears an obvious resemblance to the corrective use, except that there is a negative element in the second conjunct as opposed to the first one. Since the QUD in (73) is a positive wh-question and the constraint that rules out B's second answers in (67–68) does not apply, incorporated negation should be possible in the second conjunct, as indeed it is:

(74) (What is space travel?)
A: I'm starting to think that space travel might be possible.
B1: Space travel is imaginable, but not possible.
B2: Space travel is imaginable, but impossible.

The QUD here is *What is space travel?* One possible answer it contains is *Space travel is possible* — whose negation follows from the second conjuncts of both B's answers in (67). Crucially, neither sentence has an expectation that is denied — there is no reason to expect that, because space travel is imaginable, it is possible.

As far as I can tell, Jasinskaja & Zeevat (2008) have no way of accounting for this difference between the corrective and semantic opposition uses. Recall that for them the corrective sentences in (67) and the semantic opposition sentences in (74) would all answer the same wh-polar question: *What 'whether' is space travel?* Therefore, if incorporated negation is not possible in the first conjunct in the corrective use, it should similarly not be possible in the second conjunct in the semantic opposition. This asymmetry falls out from my proposal, since the semantic opposition use arises when the QUD is a positive wh-question.

5.4 Are wh-questions enough?

Before concluding, I want to address a final concern. Throughout I have made the simplifying assumption that *but* sentences answer a QUD that is a wh-question. This

has led to some somewhat unexpected outcomes. In particular, we might wonder whether the corrective use of *but* really does answer a QUD that is a negative wh-question, since discourses like (53) are certainly not run of the mill. As I discuss below, *but* might in fact require a more articulated discourse structure, one that in the end may eliminate the need for negative wh-questions altogether.

I start with the worry that a reviewer has. My account would appear to over-generate in out-of-the-blue contexts. B's utterance in (75) appears to have only a counterexpectational interpretation — if John drank a lot, Mary danced — which the sentence is infelicitous without:

(75) A: What happened at the party?
B: # John drank a lot, but Mary didn't dance.

But under my proposal a semantic opposition interpretation should be possible in (75). For B's sentence to lack an expectation that is denied, the two conjuncts must be related to separate propositions in the QUD by strong implications. That is, the QUD must contain the propositions *John drank a lot* and *Mary danced*. This should be possible since the same discourse with *and* is felicitous:

(76) A: What happened at the party?
B: John drank a lot, and Mary danced.

If the QUD can contain the propositions *John drank a lot* and *Mary danced* in (76), it should be able to do so in (75) as well.

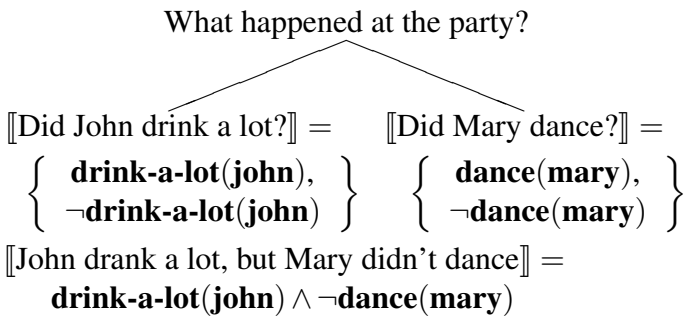
The reviewer suggests a solution. Perhaps *but* requires a more articulated discourse structure than a simple wh-question as QUD. In particular, what if *but* requires that each of its conjuncts answer a different polar question? The *but* sentence from (75) becomes felicitous without any expectation that is denied in a discourse where the polar questions *Did John drink a lot?* and *Did Mary dance?* are explicitly uttered:

(77) A: What happened at the party? Did John drink a lot? Did Mary dance?
B: John drank a lot, but Mary didn't dance.

The two polar QUDs form a more fine-grained strategy for answering the wh-question *What happened at the party?* The first conjunct strongly implies a positive answer to the first question, and the second conjunct a negative answer to the second one.

As a technical matter, in Roberts's (1996, 2004) question-under-discussion framework, these polar question cannot both be contained on the same QUD stack. The questions in a QUD stack must be ordered by informativity; yet, neither of these polar questions answers the other. Instead, they form a STRATEGY OF INQUIRY (Roberts 1996: 102) to answer the overarching wh-question *What happened at the party?*:

(78)



These polar questions form a strategy of inquiry to answer the wh-question since answering either polar question partially answers the wh-question.

Adopting the reviewer's insight, the lexical entry for *but* that I propose in (32) can be informally elaborated, so that the presupposition is replaced by the following conditions on the use of a *but* sentence:

(79) For an assertion A of the form ϕ *but* ψ, A must answer the QUD using a strategy of inquiry that:

(i) contains one or more polar questions; and

(ii) one of the two conjuncts (ϕ or ψ) implies ($\Rightarrow$) a negative answer to a polar question, while the other conjunct implies a positive answer to a polar question.

The discourse in (75) is infelicitous, then, because the strategy of inquiry does not contain *any* polar questions. When two polar questions are explicitly uttered, as in (77), the first condition in (79) is satisfied. The second condition in (79) is also satisfied, since the first conjunct strongly implies a positive answer to *Did John drink a lot?* and the second conjunct implies a negative answer to *Did Mary dance?* The discourse is consequently felicitous.

This elaboration of my basic account maintains the same empirical coverage, sometimes with desirable side effects. In particular, by adopting the strategy-of-inquiry approach, negative wh-questions are no longer needed to account for the corrective use. The corrective sentence in (52) can occur in the following discourse, which satisfies the two conditions in (79):

(80) A: What does Liz do? Does Liz dance? Does she sing?

B: Liz doesn't dance, but sing.

The strategy of inquiry for answering the *positive* wh-question *What does Liz do?* contains two polar questions, both of which stand in the correct relationship to the two conjuncts. Since the second condition in (79) does not specify an order, the first conjunct strongly implies a negative answer to the polar question *Does Liz dance?*,

while the second conjunct strongly implies a positive answer to the polar question *Does she sing?*

This elaboration, in addition, preserves the core intuition of my proposal — that modal polysemy produces the various uses of *but*. While the corrective use arises when the implications between the two conjuncts and the polar question QUDs are strong, as in (80), the counterexpectational use arises when they are weak. Recall that, in (34), a polar question introduced the denied expectation:

(81) A: What is the player? Is she clumsy?
B: The player is tall, but agile.

This discourse satisfies the first condition in (79) since there is a polar question that forms a strategy of inquiry to answer the wh-question *What is the player?* And the second condition is also satisfied because the first conjunct weakly implies a positive answer to the polar question *Is she clumsy?*, to which the second conjunct weakly implies a negative answer.

There is clearly more work to be done along these line. But it promises to be a fruitful path for resolving the overgeneration problem described above, as well as other outstanding issues raised by my basic account.

6 Conclusion

Much work on *but* in the formal semantic tradition has focused on the status of the implication in the counterexpectational use. Is it an entailment or a conversational implicature — or, perhaps, neither? The main problem with treating the implication as part of the conventional meaning of *but* is that it is variable. Sometimes it is even completely absent, as in the corrective and semantic opposition uses, where there is no expectation that is denied. I proposed that the implication is indeed part of the conventional meaning of *but*, though it is a presupposition that makes reference to the QUD. This accounts for the range of interpretations that *but* can have, including the counterexpectational, corrective, and semantic opposition uses, as well as other uses that are not usually discussed in the literature.

In the counterexpectational use, both direct and indirect expectations arise from the presupposition, which requires that the two conjuncts each stand in an implicational relation to a proposition in the QUD. If these implications are weak, there can be a single proposition that is implied by the first conjunct and whose negation is implied by the second conjunct. A proposition whose negation follows necessarily from the second conjunct gives rise to a direct expectation that is denied, while a proposition whose negation is only weakly implied by the second conjunct gives rise to an indirect expectation that is denied. This account correctly predicts the existence of another, closely related use that is not included in the traditional three-way

classification, which arises when the implications in the presupposition are weak and relate the conjuncts to distinct propositions in the QUD.

In the corrective and semantic opposition uses of *but*, there is no expectation that is denied. For the corrective use, this correlates with the presence of a negative element in the first conjunct — a concurrence of properties that arises from the same lexical entry for *but* in §3.3. If the implications in the presupposition can be strong, then they will not be able to hold of the same proposition in the QUD without leading to a contradiction. Consequently, the QUD must contain two propositions that can be related to the two conjuncts independently. A negative QUD forces the presence of a negative element in the first conjunct, since the presupposition would not otherwise be satisfied. A positive QUD gives rise to the semantic opposition use, since the presence of antonyms in each of *but*'s conjuncts suffices to satisfy the presupposition.

Crucially, the presupposition *is* an entailment, so that a speaker is committed to its truth just as much as she is committed to the truth of the at-issue entailment. The speaker cannot, for instance, cancel the implication that leads to an expectation that is denied (Grice 1961: 128ff.):

(82) # The player is tall but agile. In fact, her being tall does not imply that she is clumsy.

It would be contradictory to follow up the *but* sentence in (82), repeated from (31) above, with a denial of the implication. But the presupposition of *but*, which makes references to the QUD, resembles a conversational implicature in one important way, which originally motivated Grice to call it a conventional implicature (Bach 1999: 331). Its falsity is compatible with the truth of the at-issue entailment:

(83) A: The player is tall but agile.
B: While I accept that the player is both tall and agile, there is no reason to think that, if she is tall, she is not agile.

Even though, in (83), B disputes that there is any relationship between being tall and agile, she accepts that the player has both properties. This follows from the present account because the presupposition functions to constrain the QUD, and the at-issue entailment — which simply expresses logical conjunction — is independent of it. Thus, unlike the presupposition introduced by a definite description, its falsity does not result in a classic presupposition failure — see Roberts et al.'s (2009) discussion of backgrounded projective meanings. Because it makes conventional reference to the QUD, *but* has the properties that originally led Grice and others to say that it conveyed a conventional implicature.

There are other expressions that have been claimed to give rise to a conventional implicature. Bach (1999: 333) provides a representative list of these ACIDs (alleged conventional implicature devices):

ACIDs

1. adverbs: *already, also, barely, either, only, scarcely, still, too, yet*
2. connectives: *but, nevertheless, so, therefore, yet*
3. implicative verbs: *bother, condescend, continue, deign, fail, manage, stop*
4. subordinating conjunctions: *although, despite (the fact that), even though*

What I find striking about this list is that a sizable number of ACIDs are expressions of contrast. While *although*, *despite the fact that*, *even though*, *nevertheless*, and *yet* may not have all the syntactic or semantic properties of *but*, they are closely related (Webber et al. 1998). For instance, they all have a counterexpectational use:

(84) a. The player is agile, { although / despite the fact that / even though } she is tall.

b. The player is tall; { nevertheless / yet } she is agile.

The sentences in (84) all convey the expectation that, because the player is tall, she is agile, which is denied by the at-issue entailment. If my proposal is on the right track, then these expressions of contrast probably also refer to the QUD in their lexical entry in the same way that *but* does.

Expressions of contrast are not alone in making conventional reference to the QUD. Another ACID on the list above, the focus particle *only*, has also been argued to constrain the QUD in much the same way that I have argued *but* does. Beaver & Clark (2008: 248–279) propose that exclusives like *only* have a mirative discourse function, entailing that the true answer to the QUD is weaker (less informative) than expected. This accounts for the unique interpretive properties of the exclusives — namely, that their meaning varies with the position of focus, or in Jackendoff's (1972: 247–254) terms, their 'association with focus'. If Beaver & Clark are right, then other expressions that associate with focus — such as the additive particles *too* and *also*, as well as *even* — might also make conventional reference to the QUD.

Between the expressions of contrast and the expressions that associate with focus, this practically exhausts the list of ACIDs, leaving just the proximate adverbs, such as *barely* and *scarcely*, and the so-called implicative verbs. Whether or not it will ultimately be possible to treat all ACIDs as making conventional reference to the QUD, at least for some of them — namely, expressions of contrast such as *but* — it is.

References

Abraham, Werner. 1979. But. *Studia Linguistica* 33(2). 89–119. http://dx.doi.org/10.1111/j.1467-9582.1979.tb00678.x.

Anscombre, J. C. & O. Ducrot. 1977. Deux *mais* en français? *Lingua* 43(1). 23–40. http://dx.doi.org/10.1016/0024-3841(77)90046-8.

Asher, Nicholas & Alex Lascarides. 2003. *Logics of conversation*. Cambridge: Cambridge University Press.

Bach, Kent. 1999. The myth of conventional implicature. *Linguistics and Philosophy* 22(4). 367–421. http://dx.doi.org/10.1023/A:1005466020243.

Beaver, David I. & Brady Z. Clark. 2008. *Sense and sensitivity: How focus determines meaning*. Oxford: Wiley-Blackwell. http://dx.doi.org/10.1002/9781444304176.

Biezma, María & Kyle Rawlins. 2011. Responding to alternative and polar questions. University of Massachusetts, Amherst and Johns Hopkins University. http://semanticsarchive.net/Archive/2JmZGE5N/.

Blakemore, Diane. 1989. Denial and contrast: A Relevance Theoretic analysis of *but*. *Linguistics and Philosophy* 12(1). 15–37. http://dx.doi.org/10.1007/BF00627397.

Blakemore, Diane. 2000. Indicators and procedures: *nevertheless* and *but*. *Journal of Linguistics* 36(3). 463–486.

Blok, Peter I. & Kurt Eberle. 1999. What is the alternative? The computation of focus alternatives from lexical and sortal information. In Peter Bosch & Rob van der Sandt (eds.), *Focus: Linguistic, cognitive, and computational perspectives*, 105–120. Cambridge: Cambridge University Press.

Charlow, Nate. To appear. What we know and what we do. *Synthese* .

Dascal, Marcelo & Tamar Katriel. 1977. Between semantics and pragmatics: The two types of 'but'—Hebrew 'aval' and 'ela'. *Theoretical Linguistics* 4(1–3). 143–172. http://dx.doi.org/10.1515/thli.1977.4.1-3.143.

Ducrot, Oswald. 1973. *La preuve et le dire*. Paris: Mame.

Farkas, Donka F. & Floris Roelofsen. 2012. Polar initiatives and polarity particle responses in an inquisitive discourse model. University of California, Santa Cruz and University of Amsterdam.

von Fintel, Kai. 1993. Exceptive constructions. *Natural Language Semantics* 1(2). 123–148. http://dx.doi.org/10.1007/BF00372560.

von Fintel, Kai. 1994. *Restrictions on quantifier domains*: University of Massachusetts, Amherst dissertation.

von Fintel, Kai. 1997. Bare plurals, bare conditionals, and *only*. *Journal of Semantics* 14(1). 1–56. http://dx.doi.org/10.1093/jos/14.1.1.

von Fintel, Kai & Anthony S. Gillies. 2010. Must…stay…strong! *Natural Lan-*

guage Semantics 18(4). 351–383. http://dx.doi.org/10.1007/s11050-010-9058-2.

von Fintel, Kai & Sabine Iatridou. 2008. How to say *ought* in foreign: The composition of weak necessity modals. In Jacqueline Guéron & Jacqueline Lecarne (eds.), *Time and modality*, 115–141. New York: Springer.

Foolen, Ad. 1991. Polyfunctionality and the semantics of adversative conjunctions. *Multilingua* 10. 79–92.

Fox, Danny. 1999. Focus, parallelism, and accommodation. *Semantics and Linguistic Theory (SALT)* 9. 70–90.

Fox, Danny. 2007. Too many alternatives: Density, symmetry, and other predicaments. *Semantics and Linguistic Theory (SALT)* 17. 89–111.

Fox, Danny & Roni Katzir. 2012. On the characterization of alternatives. *Natural Language Semantics* 19(1). 87–107. http://dx.doi.org/10.1007/s11050-010-9065-3.

Frege, Gottlob. 1993. On sense and reference. In A. W. Moore (ed.), *Meaning and reference*, 23–42. Oxford: Oxford University Press.

Grice, Herbert Paul. 1961. The causal theory of perception. *Proceedings of the Aristotelian Society* 35. 121–153.

Grice, Herbert Paul. 1975. Logic and conversation. In Peter Cole & Jerry L. Morgan (eds.), *Speech acts*, vol. 3 Syntax and Semantics, 41–58. New York: Academic Press.

Halliday, Michael Alexander Kirkwood & Ruqaiya Hasan. 1976. *Cohesion in English*. London: Longman.

Hamblin, Charles Leonard. 1973. Questions in Montague English. *Foundations of Language* 10(1). 41–53.

Hobbs, Jerry R. 1979. Coherence and coreference. *Cognitive Science* 3(1). 67–90.

Horn, Laurence R. 2001. *A natural history of negation*. Stanford, CA: CSLI 2nd edn.

Jackendoff, Ray S. 1972. *Semantic interpretation in generative grammar*. Cambridge, MA: MIT Press.

Jasinskaja, Katja. 2010. Corrective contrast in Russian, in contrast. *Oslo Studies in Language* 2(2). 433–466.

Jasinskaja, Katja. 2011. Correction by adversative and additive markers. Zentrum für allgemeine Sprachwissenschaft. http://www.ims.uni-stuttgart.de/~jasinsk/Papers/jasinskaja_correction.pdf.

Jasinskaja, Katja & Henk Zeevat. 2008. Explaining additive, adversative, and contrast marking in Russian and English. *Revue de Sémantique et Pragmatique* 24. 65–91.

Jasinskaja, Katja & Henk Zeevat. 2009. Explaining conjunction systems in Russian, English, and German. *Sinn und Bedeutung* 13. 231–245.

Kasimir, Elke. 2006. On 'nicht…sondern…' (contrastive 'not…but…'). In

Shinichiro Ishihara, Michaela Schmitz & Anne Schwarz (eds.), *Interdisciplinary studies on information structure*, vol. 5 Working Papers of the SFB632, 107–151. Potsdam: Universitätsverlag Potsdam.

Katzir, Roni. 2007. Structurally-defined alternatives. *Linguistics and Philosophy* 30(6). 669–690. http://dx.doi.org/10.1007/s10988-008-9029-y.

Katzir, Roni. 2008. *Structural competition in grammar*: Massachusetts Institute of Technology dissertation.

Kehler, Andrew. 2002. *Coherence, reference, and the theory of grammar*. Stanford, CA: CSLI.

Knott, Alistair & Robert Dale. 1994. Using linguistic phenomena to motivate a set of coherence relations. *Discourse Processes* 18(1). 35–62. http://dx.doi.org/10.1080/01638539409544883.

Knott, Alistair & Ted Sanders. 1998. The classification of coherence relations and their linguistic markers: An exploration of two languages. *Journal of Pragmatics* 30(2). 135–175. http://dx.doi.org/10.1016/S0378-2166(98)00023-X.

Kratzer, Angelika. 1981. The notional category of modality. In H.-J. Eikmeyer & H. Rieser (eds.), *Words, worlds, and contexts: New approaches to word semantics*, 38–74. Berlin: Walter de Gruyter.

Kratzer, Angelika. 1986. Conditionals. In Anne M. Farley, Peter T. Farley & Karl-Erik McCullough (eds.), *Papers from the Twenty-Second Regional Meeting of the Chicago Linguistic Society, part 2*, 1–15. Chicago: Chicago Linguistic Society.

Kratzer, Angelika. 1991. Modality. In Arnim von Stechow & Dieter Wunderlich (eds.), *Semantik: Ein internationales Handbuch der zeitgenössischen Forschung*, 639–650. Berlin: Walter de Gruyter.

Lagerwerf, Luuk. 1998. *Causal connectives have presuppositions: Effects on coherence and discourse structure*. The Hague: Holland Academic Graphics.

Lakoff, Robin. 1971. If's, and's, and but's about conjunction. In Charles J. Fillmore & D. Terence Langendoen (eds.), *Studies in linguistic semantics*, 114–149. New York: Holt, Rinehart, and Winston.

Lang, Edwald. 1984. *The semantics of coordination*. Amsterdam: John Benjamins.

Link, Godehard. 1983. The logical analysis of plurals and mass terms: A lattice-theoretical approach. In Rainer Bäuerle, Christoph Schwarze & Arnim von Stechow (eds.), *Meaning, use, and interpretation of language*, 302–323. Berlin: de Gruyter.

Longacre, Robert E. 1983. *The grammar of discourse*. New York: Plenum Press.

Mann, William C. & Sandra A. Thompson. 1988. Rhetorical Structure Theory: Towards a functional theory of text organization. *Text* 8(3). 243–281. http://dx.doi.org/10.1515/text.1.1988.8.3.243.

Matthewson, Lisa, Hotze Rullmann & Henry Davis. 2007. Evidentials as epistemic modals. In Jeroen van Craenenbroeck (ed.), *Linguistic variation yearbook*, vol. 7,

201–254. Amsterdam: John Benjamins.
McCawley, James D. 1991. Contrastive negation and metalinguistic negation. In Lise Dobrin, Lynn Nichols & Rosa M. Rodriguez (eds.), *Papers from the Twenty-Seventh Regional Meeting of the Chicago Linguistic Society, The parasession on negation*, vol. 2, 189–206. Chicago: Chicago Linguistic Society.
Potts, Christopher. 2005. *The logic of conventional implicatures*. Oxford: Oxford University Press.
Pusch, Luise. 1975. Über den Unterschied zwischen *aber* und *sondern* oder die Kunst des Widersprechens. In Istán Bátori, Luise Pusch & Jurij Levin (eds.), *Syntaktische und semantische Studien zur Koordination*, 45–62. Tübingen: Gunter Narr.
Pustejovsky, James. 1995. *The generative lexicon*. Cambridge, MA: MIT Press.
Roberts, Craige. 1996. Information structure in discourse: Towards an integrated formal theory of pragmatics. *OSU Working Papers in Linguistics* 49. 91–136.
Roberts, Craige. 2004. Context in dynamic interpretation. In Laurence R. Horn & Gregory Ward (eds.), *The handbook of pragmatics*, 197–220. Oxford: Blackwell.
Roberts, Craige, Mandy Simons, David Beaver & Judith Tonhauser. 2009. Presupposition, conventional implicature, and beyond: A unified account of projection. In N. Klinedinst & D. Rothschild (eds.), *Proceedings of new directions in the theory of presupposition*, Toulouse: ESSLLI.
Rooth, Mats. 1985. *Association with focus*: University of Massachusetts, Amherst dissertation.
Rooth, Mats. 1992. A theory of focus interpretation. *Natural Language Semantics* 1(1). 75–116. http://dx.doi.org/10.1007/BF02342617.
Sæbø, Kjell Johan. 2003. Presupposition and contrast: German *aber* as a topic particle. In Matthias Weisgerber (ed.), *Proceedings of the conference "sub7–Sinn und Bedeutung"*, vol. 114 Arbeitspapier, 257–271. Konstanz: Fachbereichs Sprachwissenschaft, Universität Konstanz.
Schwenter, Scott A. 2000. Spanish connectives and pragmatic implicatures. In Héctor Campos, Elena Herburger, Alfonso Morales-Front & Thomas J. Walsh (eds.), *Hispanic linguistics at the turn of the millennium: Papers from the 3rd Hispanic Linguistics Symposium*, 292–307. Somerville, MA: Cascadilla Press.
Sgall, Petr, Eva Hajičová & Eva Benešová. 1973. *Topic, focus, and generative semantics*. Kronberg: Scriptor Verlag.
Spenader, Jennifer & Emar Maier. 2009. Constrast as denial in multi-dimensional semantics. *Journal of Pragmatics* 41(9). 1707–1726. http://dx.doi.org/10.1016/j.pragma.2008.10.005.
Toosarvandani, Maziar. 2010. *Association with foci*: University of California, Berkeley dissertation.
Toosarvandani, Maziar. To appear. Corrective *but* coordinates clauses not always

but sometimes. *Natural Language and Linguistic Theory* http://ling.auf.net/lingBuzz/001561.

Umbach, Carla. 2004. On the notion of contrast in information structure and discourse structure. *Journal of Semantics* 21(2). 155–175. http://dx.doi.org/10.1093/jos/21.2.155.

Umbach, Carla. 2005. Contrast and information structure: A focus-based analysis of *but*. *Linguistics* 43(1). 207–232. http://dx.doi.org/10.1515/ling.2005.43.1.207.

Veltman, Franck. 1986. Data Semantics and the pragmatics of indicative conditionals. In Elizabeth Closs Traugott, Alice ter Meulen, Judy Snitzer Reilly & Charles A. Ferguson (eds.), *On conditionals*, 147–168. Cambridge: Cambridge University Press.

Vicente, Luis. 2010. On the syntax of adversative coordination. *Natural Language and Linguistic Theory* 28(2). 381–415. http://dx.doi.org/10.1007/s11049-010-9094-0.

Webber, Bonnie, Matthew Stone, Aravind Joshi & Alistair Knott. 1998. Anaphora and discourse structure. *Computational Linguistics* 29(4). 545–587. http://dx.doi.org/10.1162/089120103322753347.

Weinreich, Uriel. 1964. Webster's third: A critique of its semantics. *International Journal of American Linguistics* 30(4). 405–409.

Winter, Yoad & Mori Rimon. 1994. Contrast and implication in natural language. *Journal of Semantics* 11(4). 365–406. http://dx.doi.org/10.1093/jos/11.4.365.

Winterstein, Grégoire. 2010a. *La dimension probabiliste des marqueurs de discours: Nouvelles perspectives sur l'argumentation dans la langue*: Université Paris Diderot dissertation.

Winterstein, Grégoire. 2010b. Linking argumentativity and information structure in adversatives. *Sinn und Bedeutung* 14. 421–437.

Maziar Toosarvandani
Department of Linguistics and Philosophy
Massachusetts Institute of Technology
32-D808
Cambridge, MA 02139
USA
toosarva@mit.edu