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Particularized conversational implicatures and miraculous communication

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A B S T R A C T

I argue that Grice's account of particularized conversational implicatures makes successful implicatures miraculous. Successful conversational implicatures satisfy three conditions. The first is Calculability, that implicatures are able to be calculated. The second is Grasped Content, that the hearer work out the implicature as intended by the speaker. The third is Inferential Path Sameness, that the speaker and hearer work out the implicated proposition from the similar reasons. Many implicatures satisfying these conditions in the actual world fail to do so in a wide range of nearby possible worlds. Operationalizing 'miraculous communication' by the modal interpretation of lucky outcomes, communication by particularized implicatures is miraculous.

1. Introduction

Grice's account of conversational implicature, as he develops it across "Logic and Conversation", "Further Notes", and "Utterer's Meaning and Intention" among other places (collected in Grice 1989) lends itself to being unpacked in a Lockean or telementation model of language (cf. Harris 1987; Ott 2004). The speaker's intention has a reflexive structure. It's not just that the speaker wants the hearer to believe that *p* in virtue of the utterance. The speaker intends the hearer to recognize the speaker's intention to come to believe that *p* in because of that selfsame intention. Grice doesn't explicitly commit himself to a Lockean view of language as consisting of mental representations being expressed in utterances, but it's a natural fit. Distributed language (Cowley 2011; Kravchenko 2016; Steffensen 2015) or integrationist (Harris 1987) or dialogical (Linell 2009) approaches might criticize Grice's account of conversational implicatures on this score. That is, *given* that Grice's account is so friendly to Lockean accounts of the metaphysics of language, one can criticize the whole kit and caboodle.

In this paper, I take a different tack. Rather than criticize Grice's account of conversational implicatures because of its natural fit with telementation views of language, I argue that Grice's account renders successful implicatures miraculous. One needn't criticize Grice for high degrees of fit with Locke: there's enough rope for Grice to hang himself. If Grice's characterization of conversational implicatures is right, then (with some important caveats) implicatures are miraculous. But this is absurd: communication, even when nonliteral, isn't a miraculous event. So Grice's account must have gotten things wrong. The problem, I'll suggest at the paper's close, is a failure to account for the embodied, dynamic, and situated character of languaging. In "Logic and Conversation," Grice describes himself as "enough of a rationalist" to propose principles governing implicatures; but, these principles fail to ground speakers and hearers in each other and the world.

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The argument[1], at a first pass, is this:

1. If the Gricean account of successful particularized conversational implicatures is true, then successful implicatures are miracles of communication.
2. There are no miracles of communication.
3. The Gricean account of PCIs is false.

There is a lot to say about the first premise. Here is a brief sketch with details to be filled in later. Successful PCIs satisfy three conditions:

Calculability: the implicature can be calculated,
Grasped Content: the audience recognizes the speaker's communicative intention, and
Inferential Path Sameness: the speaker and audience have similar inferential paths from the utterance in context to the implicated proposition.

For nearly any PCI, at least one of the above conditions is not satisfied in a wide range of nearby possible worlds. The PCI succeeds by luck, and the outcome a miracle.

The first stage of the argument is defending **Calculability, Grasped Content, and Inferential Path Sameness** as necessary conditions for successful PCIs. This exposition will require covering familiar ground. Why? The argument is that Gricean accounts of PCIs makes successful implicatures miraculous.[2] The road to the miraculousness of PCIs goes through **Calculability, Grasped Content, and Inferential Path Sameness** because they are necessary conditions for successful PCIs. The second stage of the argument describes how PCIs succeed in the actual world but fail in nearby possible worlds.

2. Calculability, Grasped Content, and Inferential Path Sameness

Grice's account of conversational implicature suggests three necessary conditions that successful PCIs meet: **Calculability, Grasped Content, and Inferential Path Sameness**.[3] We will connect them to Grice's account one at a time.

The condition of Calculability holds that an implicature can be calculated. Put a little more carefully:

Calculability: if a speaker S successfully conversationally implicates *p* by an utterance of U to an audience A, then *p* is able to be calculated from U by means of a rational or cognitive principle (or set of principles).[4]

Grice doesn't mince words about the necessity of calculability for successful implicatures:

> The presence of a conversational implicature *must be capable of being worked out*; for even if it can in fact be intuitively grasped, unless the intuition is *replaceable by an argument*, the implicature (if present at all), will not count as a conversational implicature; it will be a conventional implicature (Grice 1989, 31, italics added).

Implicatures are calculable when there is an argument that can connect the utterance to the implicated proposition. Calculability captures this.

Next is,

Grasped Content: if a speaker S successfully conversationally implicates *p* by an utterance of U to an audience A, then A recognizes S's communicative intention

What is it to recognize a speaker's communicative intention? Grice tells us what communicative intentions are. The speaker intends:

(a) the audience to produce some response,

[1] This argument is similar to Cappelen and Lepore's (2005) argument against radical contextualism.

[2] Gricean accounts are theories of communication which follow Grice more or less closely with respect to the mechanisms by which PCIs are produced and grasped. Minimally this would include Gricean communicative intentions as well as some process by which a speaker's intentions are grasped. Neo-Griceans (e.g. Kent Bach and Jennifer Saul) are clearly in this group. Post-Griceans (e.g. Robyn Carston and Deirdre Wilson) are less clearly members of the group. They do not endorse Gricean communicative intentions nor the working out process Grice describes (Sperber and Wilson, 1995) but they endorse analogues appearing within the framework developed in cognitive science (e.g. Fodor 1975, 1983). It is outside the scope of this paper to show that post-Griceans are sufficiently Gricean to be targets of the argument.

[3] Might there be other conditions for successful implicatures? Yes, but whatever they turn out to be they cannot be inconsistent with these three. **Calculability, Grasped Content, and Inferential Path Sameness** all have good Gricean pedigree, as I'll argue in this section. More conditions don't make waves for the arguments in this paper.

[4] Compare with Blome-Tillmann (2013), Bianchi (2013), Saul (2010), and Davis (1998).

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(b) the audience to recognize that the speaker intended (a), and
(c) the audience to satisfy (a) on the basis of (b) (Grice 1989: 92).

When I utter, "The coffee is delicious," I intend to produce a response in the audience by recognition of my intention as an intention for the audience to produce *that* response. What's the response? In this case, I want the audience to believe that the coffee is delicious. Suppose instead I issued a command, like "shut the door" or "please pass the salt"' In those cases, I intend the audience to produce an action.[5] Recognizing a communicative intention, then, is to produce a response in virtue of recognizing the speaker's intention for the audience to produce the response on the basis of the intention (Schiffer, 1972).[6] And notice that recognizing a communicative intention depends on grasping the content of that intention.[7] The audience couldn't produce the response intended by the speaker without grasping the content of the communicative intention.

Grice's description of the working out process and his account of speaker-meaning ground this condition. The speaker's intention determines the content of the implicature and A works out the implicated contents of the speaker's utterance. The working-out process is over when A identifies how the speaker intends the hearer to respond. The speaker's end in implicating *p* by uttering U *just is* the hearer's responding in such-and-such a way in virtue of recognizing the communicative intention.[8] This is what Grasped Content says.

The final condition is.

Inferential Path Sameness: the speaker and audience have similar inferential paths from the utterance in context to the implicated proposition

An inferential path is a description of the process by which the audience begins with the contents of the speaker's utterance plus contextual information and infers the intended proposition.[9] "Similar" is a term of art, including those cases where the hearer's calculation process is only slightly different from the speaker's. As a rule of thumb, two inferential paths are similar if sociolinguistically competent adults say they are, i.e. if competent users of the language would assert that two paths "say the same thing." This can happen, for example, by substituting synonyms when filling in the details of two inferential paths. Suppose that S, in recommending Jones, says, "Jones has excellent handwriting." S implicates *Jones is an unqualified candidate*. H reasons, "The best thing S can say about Jones is that his handwriting is excellent; so, Jones is an unqualified candidate." A similar path would be if H's calculation mirrored S's, only replacing "praiseworthy" for "excellent." The difference between "excellent" and "praiseworthy" is insignificant: Sociolinguistically competent agents could use "excellent" or "praiseworthy" interchangeably in a wide range of cases sufficiently similar to this one. But now suppose H reasons instead: "If someone's handwriting is so good that it gets special mention in a letter of recommendation, then he must spend a lot of time on it. Jones probably neglects the work he's supposed to be doing to perfect his penmanship. Jones is an unqualified candidate." *This* does not count as similar. As with most terms of art, the devil is in the details. But since little hangs on these details, we will let them be.

We can make the notion of an inferential path more precise. It is a triple <U, P, D>, consisting of an utterance, a proposition, and a description of the inferential process. The description of the inferential process captures the steps by which a speaker can reasonably expect the hearer to infer the proposition from the utterance. This description includes any relevant contextual information, conversational maxims, and rules of inference the hearer employs when inferring the implicated proposition from the utterance.[10]

We saw Grice's outline of an inferential path in the previous section: the speaker has said that U and could not abide by the Cooperative Principle and maxims unless he meant *p*, and so on. As an example, consider a slight revision of Grice's letter of recommendation, where Jones's supervisor writes (1) and implicates (2):

1. Jones has excellent handwriting [as part of a recommendation for a job]
2. Jones is not a good candidate

[5] Grice discusses the importance of force in his "Utterer's Meaning, Sentence Meaning, and Word Meaning," (Grice 1989, ch. 6).

[6] This might seem to push the question back a step: what is it to recognize the intention mentioned in (b)? This is a much harder question, one that psychologists have been at work thinking about for decades. I don't have anything informative to say about it here and kindly ask the reader to lean on their pre-theoretical understanding of recognizing an intention.

[7] Landmines are everywhere: suppose an audience recognizes that the speaker intends them to do one thing but then the audience deliberately does another. I ask you to pass the salt and you hand me the 25-pound bag from the kitchen rather than the salt shaker near your hand. Have you recognized my communicative intention? You produced a response but not the one I intended. Nonetheless, in order to violate my expectations, you had to first recognize what I initially intended. Schiffer (1972) discusses cases like these at length.

[8] Cf. Korta and Perry (2015): "the fulfillment of communicative intentions consists precisely in being recognized by the addressee." See Neale (1992) for further debate.

[9] Why not say that the inferential path "… is the rational process …" rather than "… is a *description* of the rational process …"? The nature of the process is still up for debate. It might turn out that the calculation process is one that's knowable on rational reflection. Or, it might turn out that it is discoverable only through cognitive scientific research: that rational reflection tells us nothing about the process by which implicatures are calculated. Talking about the inferential path as a description allows us to be agnostic about the nature of the process.

[10] Compare this with the information Grice asserts audiences use in calculating implicatures (1989: 31).

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Grice gives this gloss on example:

> [Jones's supervisor] cannot be opting out, since if he wished to be uncooperative, why write at all? He cannot be unable, through ignorance, to say more, since [Jones] is his [employee]; moreover, he knows that more information than this is wanted, He must, therefore, be wishing to impart information that he is reluctant to write down. This supposition is tenable only if he thinks [Jones] is no good [for the position]. This, then, is what he is implicating (1989: 33).

The implicating statement, that the applicant has excellent handwriting, defeasibly implies that the applicant is terrible for the position. The utterance is (1), and the implicated proposition is (2). The description of the inferential process is in Grice's gloss.

Why think that **Inferential Path Sameness** is a necessary condition for successful implicatures? There are three reasons. First, Grice takes rationality and cooperation to be central to a theory about conversation (cf. 1989, p. 30). **Inferential Path Sameness** captures this. Inferential paths connect utterances and propositions by means of rational maxims. And speakers and audiences cooperate by having similar inferential paths. This beats moving the conversation forward by fortuitous stream-of-consciousness connections.

Second, **Inferential Path Sameness** is a necessary feature of repairing misunderstandings in implicature. When the hearer infers a different proposition than the speaker, communication goes awry. The hearer expresses puzzlement and confusion about the significance of the speaker's utterance. When this happens in real-time, speakers and hearers can repair the problem by figuring out what went wrong. (S: "What I meant was …" A: "Oh, I thought you meant …") When diagnosing the problem, speakers and hearers make clear how each proceeded from the utterance. They then discover why their inferential paths diverged. Fixing the problem means laying down similar inferential paths. So when communicative agents are fixing a misunderstanding—when they are attempting successful communication—they are moving towards having the same inferential paths, i.e. realizing **Inferential Path Sameness.**

Third, Inferential Path Sameness has a high degree of fit with recent experimental work on joint action.[11] Communication is described in the experimental literature as a form of joint action (e.g. Clark 1996; Tomasello 2008, Garrod and Martin, 2009).[12] Joint action involves at least three elements: shared representations, action-prediction, and integrating predicted effects of actions into future actions (Sebanz, Bekkering, and Knoblich 2006). Action-prediction is crucial. If we are to do something together, then our success requires that I grasp how you are going to do your part and how you will respond to me doing my part. This can happen in different ways. Predicting each other's actions might be explicit, when I lift the heavy couch and tell you to grab the remote underneath it. Or it might be implicit, like when my friend and I walk together without planning how we will do it. It might be the result of extensive practice—as in the case of two longtime dance partners. Or it might be spontaneous (Richardson et al., 2007; Isenhower et al., 2005). Joint perceptual common ground: what is perceived is mutually grasped.

How does this bear on Inferential Path Sameness? Successful communication is a type of successful joint action. Successful joint action requires more or less accurate prediction of the partner's actions. In cases of conversational implicature, prediction of a partner's actions is made possible by the partner's inferential path. Hearers predict where speakers are going with their utterances by having some sense of the speaker's inferential path. The inferential path consists of information about common ground (including meanings of words as well as shared background knowledge), what has come before in the conversation, and how each is contributing to the conversation. So just as successful joint action requires action prediction grounded on action observation, common perceptual ground, and knowledge of others' tasks, successful implicatures require action-prediction grounded on shared inferential paths.[13]

Though there is good reason to think that a Gricean theory of PCIs is committed to Grasped Content and Inferential Path Sameness, one might be tempted to dismiss the arguments since the resulting theory of communication is rendered overly demanding. For if the arguments are correct, communicators are not only required to entertain the same proposition but also the reasoning process from the utterance to the implicated proposition be similar. Given the heterogeneity of ways of getting a point across, one might suspect that such similarity is too stiff a requirement. This dismissal, however, would be hasty. Grasped Content asks no more than the classical view articulated by Locke and Frege and recently defended by Pagin (2008). Communication is successful on this view when the contents of the hearer's belief match those of the speaker's as a result of some communicative event. So if I say "ice cream is delicious" to communicate my belief that ice cream is delicious and my hearer now entertains the belief that ice cream is delicious as a result of my utterance, then communication has been successful. Grasped Content says the same thing, except that the utterance communicates the implicated contents rather than the semantic contents.

Inferential Path Sameness is no more demanding than other theories about reasoning in communication. For example, Davidson (2005/1986) says that developing passing theories for interpreting utterances take a little "wit, luck, and wisdom"

[11] The philosophical and scientific literature on joint action is enormous, and this isn't the place for a detailed consideration of the relevant questions. What's important for the present argument is that there are features of joint action that have an analogue in Inferential Path Sameness.

[12] While Grice does not explicitly say that communication is a form of joint action, but it seems to fit with how he thinks about communication with his emphasis on complex, iterative intentions (cf. Moore 2016).

[13] Pickering and Garrod (2004) describe this as 'interactive alignment' of linguistic representations.

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and "knowledge of the ways people get their point across" (2005, p. 107). This captures the intuitive point that communication often takes a little bit of luck to succeed. Inferential Path Sameness is consistent with Davidson's observation. To see this, imagine that a speaker employs a path P_a. Suppose further that the context whittles down the number of possible inferential paths to P_1, P_2, and P_3. If P_1 and P_2 are similar to one another, it takes a little bit of luck for the audience to avoid P_3, and this much luck is consistent with Inferential Path Sameness. This condition is no more strenuous than conditions imposed by other intuitively acceptable theories about communication (cf. Pagin 2008).

3. Miraculous PCIs

I mentioned previously that the central argument in this paper is similar to Cappelen and Lepore's (2005) argument against radical contextualism, which holds that all meaning is determined by context. Now in that argument, they don't say what a miracle of communication is, but it is easy to get a feel for it. For example, they say that radical contextualism requires audiences to possess and activate massive quantities of information in order to understand simple sentences. That might not be impossible, but it is exceptionally unlikely. Getting the right information would happen as a matter of luck. On a modal conception of epistemic luck, there is a wide range of nearby possible worlds in which hearers fail to activate the right information for figuring out what a speaker meant by "penguins are adorable." But this just is to say that the audience's figuring out what the speaker means would be a matter of luck. But Cappelen and Lepore also take figuring out what a speaker meant as a kind of miracle. So this suggests that miracles of communication are instances of communication that succeed by luck: Cappelen and Lepore's conception of 'miracle' will be operationalized using the resources of modal epistemic luck (cf. Pritchard 2005, 2006, 2010).

A PCI is miraculous when it satisfies **Calculability, Grasped Content, and Inferential Path Sameness** in the actual world but fails to satisfy at least one of these conditions in a wide range of nearby possible worlds. A possible world W is a nearby possible world for a speaker S, hearer H, a proposition *p* and an utterance U if:

(PW1) In calculating *p* from U in W, H and S use the same contextual information available to them in W as in the actual world,
(PW2) H and S have the same sociolinguistic histories in W as in the actual world, and
(PW3) if S intends H to calculate *p* by S's utterance of U in the actual world, then S also intends H to calculate *p* by S's utterance of U in W.

These conditions capture three crucial elements of implicature calculation. They are sameness of contextual information, of sociolinguistic histories for working out implicatures, and of speaker intentions. PW1 ensures that agents across the actual and nearby worlds have the same information available to them. Condition PW2 requires that agents have similar sociolinguistic dispositions across worlds. Condition PW3 ensures that the speaker's communicative intention remains the same across worlds. These qualifications ensure that successful implicatures are not due to mismatches of information or fortuitous alignments of otherwise different communicative dispositions. Any success is due to all and only the relevant information.

3.1. ***Calculability*** *and miraculous implicatures*

An implicature is calculable when there is a rational process by which a communicative agent works out the implicated content from the utterance in context. If a putative implicature is not calculable, then it is not an implicature. But what does it mean to say that an implicature is unable to be calculated? Here are two interpretations (cf. Saul 2010; Davis 1998):

- Narrowly Incalculable: the targeted hearer is unable to calculate the implicature[14], and
- Widely Incalculable: an omniscient Gricean hearer is unable to calculate the implicature[15] (more on omniscient Gricean hearers below).

It is an open question which best captures Grice's requirement. I have no plans to weigh in on the issue here.[16]

3.1.1. *Narrow Incalculability and miraculous implicatures*

If a speaker's implicature is Narrowly Incalculable, the targeted hearer with their particular doxastic profile—the sum total of the token hearer's network of beliefs and the relevant belief-credences—at the time of utterance could not work out what the speaker implicated by the utterance. Notice that since the focus is on token hearers with their doxastic profiles at a time *t*, an implicature may be weakly calculable in the actual world but weakly incalculable in nearby worlds. What are some reasons

[14] "Narrow" because the focus is on a single agent's being unable to calculate the implicature. Thanks to an anonymous reviewer for the suggestion to make this terminology easier to understand.
[15] "Wide" because the focus is on any individual who could possibly work out the implicature. The omniscient Gricean hearer represents these many different possible hearers.
[16] Saul (2010) opts for Narrow Incalculability and suggests in a footnote that Wayne Davis opts for Wide.

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for why the hearer would fail to work out the implicature? Here is one case. A hearer H might require a set of beliefs B to work out the implicature; however, at the time of utterance, B may not have been reflectively available to H, even though in other near-identical circumstances, H would have had reflective access to B. Consider this variation on Grice's letter of recommendation: S writes, "Jones's work in tutorials is among the best I've seen in the past year," thereby implicating *Jones is an excellent candidate*. In the actual world, the intended audience works out the implicature with no trouble. Among the contextual items in H's calculation is the dispositional belief that S is a Very Important Person and that belief is readily available after having just noticed that S published a paper in a Very Important Journal. As a consequence, H works out S's implicature. But in nearby worlds, H still has the dispositional belief that S is Very Important, but does not glance at the journal where S recently published. Instead, H is eating a quick lunch at his desk before reviewing letters for his department's open position. As a result, H's belief that S is Very Important is no longer readily available. H fails to put much stock in S's letter about Jones and doesn't work out the implicature. The intended audience fails to work out the implicature in the nearby world. The implicature is Narrowly Incalculable in this world. Availability of the needed beliefs hinged on glancing at the journal containing S's most recent publication.[17] The implicature succeeds in the actual world but fails to be calculated in a nearby possible world by the targeted hearer.

Here then is our first in a family of cases of lucky implicatures. S's implicature succeeds in the actual world but fails to satisfy **Calculability** in a set of nearby possible worlds, where incalculability is interpreted as Narrow Incalculability. Therefore, the PCI miraculously succeeds.

3.1.2. *Wide Incalculability*

A Widely Incalculable implicature is incalculable by an omniscient Gricean hearer. The omniscient Gricean hearer has access to all the relevant facts and rational patterns of inference by which hearers can work out speakers' implicatures. The omniscient Gricean hearer knows everything about anything that could be pertinent for calculating an implicature. It represents all possible hearers.[18]

Widely Incalculable implicatures cannot be worked out by an omniscient Gricean hearer. Are there such implicatures succeeding in the actual world and failing in nearby worlds? No. That's because there are two ways for the successful implicature to fail in nearby worlds. Either the omniscient hearer would have to use information that is not realized in both the actual and possible worlds, or would fail to abide by rational patterns of inference and interaction. The first is ruled out by how we've stipulated the relevant range of possible worlds. The second is ruled out by the rationality of communication. So there are no implicatures that fail to satisfy Calculability where that's read as Wide Incalculability.

The upshot? Implicatures satisfying Calculability in the actual world fail in nearby possible worlds only if "unable to be calculated" is interpreted as Narrow Incalculability. If inability to be calculated is interpreted as Wide Incalculability, then successes in the actual world mean success in nearby possible worlds.[19]

3.2. ***Grasped Content*** *and miraculous implicatures*

Now consider failures to satisfy Grasped Content. Examples of such failures are ubiquitous in the literature (Davis 1998 has quite a few).[20] For example, S writes a letter of recommendation for a teaching post: "Jones has excellent penmanship and is very punctual." S intends H to believe that Jones is a poor candidate for the position. Unknown to S, Jones is applying for a secretarial position and H comes to believe that Jones is an excellent candidate for the position. The content of S's implicature was *Jones is a poor candidate* but H comes to believe just the opposite (cf. Saul 2010). Consequently, S's implicature fails.

Sperber and Wilson (1995; also Wilson and Sperber 2004) observe that implicatures vary in strength. A *strong* implicature is an implicature that must be calculated in order to satisfy the hearer's expectation of the speaker's adherence to conversational maxims.[21] A *weak* implicature is an implicature whose calculation is not required for the speaker to satisfy the

[17] Recent work in social psychology has made clear just how many subtle influences there are on our mental lives. Danziger (2011), for example, found that Israeli judges granted substantially fewer requests for parole immediately before lunch (less than 1% granted) compared to after lunch (roughly 65% granted). The availability of the belief that S is a Very Important Person can hinge on similar subtle forces.

[18] It doesn't much matter much what we include in the domain quantified over by "all." Are we including superintelligent aliens? God? Even if these are included, the arguments in this section stay the same.

[19] There's a theoretical tradeoff to be made. One might avoid the lucky PCIs of Narrowly Incalculable implicatures by endorsing a view that embraces Wide Incalculability. But the number of implicatures that are calculable for a targeted hearer grows enormously. For it's not merely what the targeted audience can calculate but what anyone (or an omniscient agent) could calculate.

[20] If these kinds of failures are so common, why hasn't the skeptical implication been noticed before now? My hunch: it's a product of the interdisciplinary nature of Grice's work. Grice is claimed by both philosophers and linguists (Chapman 2005), so it seems natural that the concerns addressed by philosophers would be those that dovetail with linguists. E.g. concerns about the predictive value of Grice's theory, or on whether it captures the relevant pragmatic phenomena, or on how it helps identify the boundaries between semantics and pragmatics. So naturally philosophers will gravitate towards linguistic rather than epistemological concerns. Only in relatively recent history have epistemologists begun considering the relationship between implicatures and knowledge ascriptions. My arguments here are an outgrowth of the recent interest that epistemologists have taken in linguistic pragmatics.

[21] Wilson and Sperber argue that the hearer's expectation is for the speaker's utterance to satisfy expectations of relevance, not conversational maxims in general. Given that they are pioneers of Relevance Theory, this is to be expected.

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hearer's expectations of adherence to conversational maxims.[22] It is not required for the exchange to remain within the bounds of conversational norms because either (i) the proposition could be replaced with other propositions or (ii) the proposition is not needed. Consider the following exchange (Wilson and Sperber 2004, p. 615):

(4a). *Peter*: Did John pay you back the money he owes you?
(4b). *Mary*: No. He forgot to go to the bank.

(4b) strongly implicates.

(5) *John was unable to repay Mary the money he owes because he forgot to go to the bank.*

Mary would be in violation of the Maxim of Relevance if the implicature were absent. But (4b) weakly implicates.

(6) *John may repay Mary the money he owes when he next goes to the bank.*

(6) is clearly derivable from (4b). But John does not need to work out (6) to understand Mary as a rational and cooperative conversational partner.[23]

When an utterance U weakly implicates p, H either does not calculate p or calculates some other proposition q that is different from p. So weak implicatures will fail to satisfy Grasped Content in a range of nearby possible world. Why? Suppose S in the actual world utters, "my love is a red rose" intending H to believe *S's love is beautiful* and that H comes to hold that belief. Since the utterance weakly implicates its contents, then the hearer might reasonably work out a different implicated proposition or fail to work out the implicature at all. In nearby worlds, H can reasonably work out a different proposition or fail to work out any proposition. Weak implicatures, then, are implicatures that succeed in the actual world but fail to satisfy Grasped Content in nearby possible worlds. Successes for weak PCIs are lucky.

Now what about strong implicatures? Their contents need to be calculated, but it is unclear whether, given some token utterance, there are many propositions that could do the same job in context. The only requirement for an implicature to be strong is that its calculation is necessary for the exchange to abide by conversational norms. Therefore, it is an open question whether or not strong implicatures satisfy Grasped Content in nearby worlds.

3.3. ***Inferential Path Sameness*** *and miraculous implicatures*

Inferential Path Sameness says that if an implicature is successful, then S and H have similar inferential paths from the utterance to the implicated proposition. An inferential path, recall, is a triple $<$U, P, D$>$ consisting of an utterance, a proposition, and a description of the rational process by which a language user infers the proposition from the utterance. Suppose in the actual world, S and H have the same inferential path, $<$U, P, D$>$. D is a subset of all available information in some token exchange. Suppose a cadre of Super Social Scientists are identify all contextual information at the disposal of S and H that did *not* appear in their respective inferential paths: i.e. they identify the complement of D. Call this set of information C. The union of D and C give us all the contextually available information.

Now for a range of nearby possible worlds where C is the same as in the actual world, let us define an inferential path $<$U, P, D*$>$. U and P are the same in both the actual world and the nearby possible worlds. But D and D* do not share any information. Formally: $(D \cup D^*) \subseteq C$ and $(D \cap D^*) = \varnothing$. In the actual world, S and H employ the same inferential path to get from the initial utterance to the proposition. In a range of nearby possible worlds, S's inferential path is $<$U, P, D$>$ and H's is $<$U, P, D*$>$. In this range of nearby possible worlds, S and H both arrive at the same proposition from the same utterance but use different inferential processes: S is captured by D and H by D*. The implicature fails to satisfy Inferential Path Sameness. Success for such PCIs is miraculous.

Here is an example of a failure of Inferential Path Sameness. Consider an old Gricean chestnut (Grice 1989, p. 32): Alvin is standing by his car that is obviously incapacitated. Bridget pulls up beside him and Alvin says, "My car's broken down and my phone has died." Bridget replies, "There's a station two blocks away," implicating that Alvin should take his car to the nearby station. Alvin works out the implicature and heads in the direction that Bridget indicated.

Now consider a variation. Again, Alvin is standing beside his car when Bridget pulls up next to him. Alvin says, "My car's broken down and my phone has died." Bridget replies, "There's a station two blocks away," implicating that Alvin should take his car to the nearby station. Bridget thinks that Alvin will work out the implicated meaning by reasoning to himself, "There is likely a mechanic at the station. I can take my car there to get looked at. I should take my car to the nearby station." But

[22] In Sperber and Wilson (1995), the hearer is described as being more or less "encouraged" to work out an implicature. The encouragement comes from being more or less "forced" by the utterance and expectations of the speaker's adherence to requirements of relevance.

[23] Loose uses of expressions and metaphors are the most common sorts of weak implicatures. For example, "John has a square mind" weakly implicates that John is rigid in his thinking, that John's mind is not easily changed, or that John is a man of principle (Wilson and Sperber, 2004, p. 620). Or "my love is a red rose" weakly implicates that my love is beautiful, my love is sweet smelling, my love is expensive, or my love is valuable (Martinich 1984). These are examples of calculated propositions that are replaceable while still abiding by conversational norms.

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suppose that Alvin reasons to himself, "There is likely a phone at the station. From there, I can phone a tow truck. I should take my car to the nearby station." Alvin responds, "Thanks for the help" and pushes his car off into the distance.

The inferential path features in the original and the variation share the same utterance and proposition, but the descriptions of their respective rational inferential processes differ. That is, the inferential path in the original consists of the triple <U,P,D> while in the variation it consists of <U,P,D*>. In the variation, they have significantly different inferential paths, which is needed for a failure of **Inferential Path Sameness.**

Why think there is a superabundance of contextual information in the first place? Consider the difficulties in solving the Frame Problem in artificial intelligence. Getting an artificially intelligent system to identify all and only the contextual information required to solve a problem in a timely manner is no mean feat. Dennett's (1984) explosive story illustrates the problem. A robot has the task of retrieving its battery from a room. The battery is on a wagon and the first generation of robot, R_1, pulls the wagon out of the room. Unfortunately, the bomb is on the wagon and R_1 is no longer among the animate. R_1 is succeeded by R_1D_1, which deduces all possible entailments from the information available to it. Before R_1D_1 heads into the room it attempts complete all the possible inferences. The bomb explodes and R_1D_1 is no more. The next generation is R_2D_1, which attends to only the *relevant* entailments from contextual information. R_2D_1 busily sorts out the relevant from the irrelevant when it joins its predecessors in the here-after. The challenge, Dennett tells us, is to design a system that reliably ignores what it needs to in order to accomplish the task at hand. The task wouldn't be so daunting if there were not a gargantuan amount of information available to cognitive agents in the first place.

4. Gettier cases and Gricean miracles[24]

If the argument holds water, the Gricean has several options, which parallel the options available to the tripartite analysis of belief in light of Gettier cases (Gettier, 1963).[25] Griceans can either: (a) bite the bullet, (b) offer additional conditions, or (c) abandon Grice's account of conversational implicature.

Biting the bullet in this case is accepting the unlikely conclusion: Conversational implicatures are in fact miraculous. The strategy, then, would be to find a way to live with the miraculousness, theoretically unsatisfying as it may be. One way might be to give up the rational explanation part of Grice's project and instead focus on identifying the relevant mechanisms for calculating an implicature. What's left is a sketch of mechanisms that maps utterances to outputs, but situating that sketch into the larger constellation of normative concepts is no longer possible. We accept the miracle and have no explanation for why implicature works as well as it does. Even teleological explanations are off the table since such explanations take for granted that there the mechanism is *good* for some end.

Identifying additional principles is another route to avoiding the unlikely conclusion. If this route is adopted, then the proposal will have to identify possible-worlds-resistant principles. That's to say, those principles would have to be ones that enable implicature calculation in this world but not in nearby ones. It's not *prima facie* impossible that there might be such principles but it's outside the scope of this paper to speculate about them.

Finally, one can give up the Gricean ghost. What would this move look like? Again, much speculation is outside the scope of this paper, but here's one possibility. The explanatory function of conversational implicatures would be picked up by speech act theory. Rather than think about utterances in terms of their contents—which is the sort of explanation we get when we view utterances through the lens of implicatures—they're thought about in terms of what they do. The difference between what is said and what is meant is a nonstarter of a question. In both cases, the right question is, "what does this utterance *do* in context?"

5. Conclusion

Let us summarize the argument.

1. If Grice's account of PCIs is right, then most successful PCIs are communicative miracles.[26]
2. There are no communicative miracles.
3. So, Grice's account of PCIs is wrong.

Support for premise 1 came from cases in which implicatures succeeded in the actual world but failed in nearby possible worlds. I did not explicitly defend the second premise. It seems intuitive that a theory about communication shouldn't render the processes miraculous. It's theoretically possible but deeply unsatisfying.

A theory of implicature relying on rational maxims, as Grice's does, can benefit from recent turns in embodied, embedded, and enactive cognition. By anchoring the contents of rational maxims to particular communicative contexts, one avoids the

[24] Thanks to an anonymous reviewer for suggesting this discussion.

[25] The JTB account of knowledge says that s knows that p iff (i) s believes that p, (ii) s's belief is justified, and (iii) s is true. Gettier offered several cases satisfying (i)-(iii) and yet intuitively s didn't know that p. This literature is gigantic and can't be reviewed here, but readers interested in an overview can start with the entry on Gettier cases in the Internet Encyclopedia of Philosophy: https://iep.utm.edu/gettier/.

[26] *Pace* the caveats from the previous section.

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possibility of succeeding in the actual world but failing in nearby worlds. One potentially fruitful line of investigation might take a cue from particularism in metaethics, which holds that a moral rule that is applicable in one instance may not be relevant in another (cf. Dancy 2004). Moral reasons, says the particularist, are variable across contexts. What might be salient in one context is irrelevant in another.

Similarly, in thinking about how people talk, communicative reasons can vary across contexts.[27] What's important in one context might be irrelevant in another. Consider, for a moment, the variations to various Gricean cases that have been introduced over the years. Each time, situational factors are tweaked slightly to pump intuitions about the context-sensitivity of implicatures. For example: If it turns out for the Gricean letter-writer that, unbeknownst to them, the applicant is trying for a job as an administrative assistant where handwriting is important, then the letter ends up implicating that the applicant is highly recommended. In the variations, there's an implicit appeal to the kinds of reasons that are important (or not) to work out the implicature. Remarking on penmanship was relevant in one way but now it's relevant in another. The particularist in this case would remark that broad rules like "be relevant" aren't helpful at all—a bit like the utilitarian advising someone to maximize happiness in their actions. For the particularist, injunctions like "be relevant" would be spelled out in much greater detail. In brief, the particularist would recommend abandoning Kant as a model for communicative reasons and instead looking to Aristotle. If this means abandoning Grice's rationalist project, so it goes.[28]

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