

What’s wrong with the counterfactual-based objection to CORNEA?

Pedro Merluzzi (PUC-Rio) and Sérgio Miranda (UFOP)

Forthcoming in *Synthese*

Abstract

One important objection to the Condition Of ReasonNable Epistemic Access (CORNEA) is that it is incompatible with inductive evidence. This objection, however, relies on a counterfactual interpretation of CORNEA, and Wykstra and Perrine have shown that CORNEA need not be interpreted in that way, but rather in terms of conditional probability. Here, we show that there is an important gap in this recent response to the counterfactual-based criticism of CORNEA. We argue that the main response to this criticism ultimately depends on a specific semantics for counterfactual conditionals. More specifically, it ultimately depends on the denial of the conditional excluded middle principle. We then investigate and suggest a hitherto unknown defense of CORNEA’s counterfactual interpretation.

1 Introduction

The extensively debated Condition Of ReasonNable Epistemic Access (CORNEA) is central to Stephen Wykstra’s (1984) version of skeptical theism:

CORNEA: On the basis of cognized situation s , human H is entitled to claim “It appears that p ” only if it is reasonable for H to believe that, given her cognitive faculties and the use she has made of them, if p were not the case, s would likely be different than it is in some way discernible by her (Wykstra 1984, 85).¹

CORNEA has long been used to counter one of the most powerful arguments against the existence of God, namely William Rowe’s (1979) evidential argument

¹Faced with Rowe’s second formulation of the evidential argument from evil, Wykstra introduces a version of CORNEA that dispenses with the “appears” idiom. Later, he and Perrine place emphasis on the actual role of evidence for the acceptance of a hypothesis in a new principle they call CORE. However, we will not deal here extensively with these developments of Wykstra’s skeptical theism, since the main focus of our discussion is the *crux* of CORNEA and CORE, namely the subjunctive conditional “If A were not the case, then B would not be the case” (see Wykstra 1996; Wykstra & Perrine 2012).

from evil. Rowe’s argument is based on an inductive inference from instances of evil that appear to have no purpose or reason to the conclusion that gratuitous evils probably exist. Wykstra’s response is that Rowe, like anybody else, is not in a position to claim that he has inductive evidence for the existence of gratuitous evil. The reasoning behind this assessment is straightforward. Let A be the proposition that there are instances of gratuitous evil and then apply CORNEA. What if A were false? Would things (likely) be different in some way discernible by us? Not according to Wykstra, as we are too ignorant to understand the reasons of a perfect being like God. “A modest proposal”, he says, “might be that his wisdom is to ours, roughly as an adult human’s is to a one-month old infant” (Wykstra 1984, 88). Thus, in keeping with CORNEA and the parent-child analogy, we are not in a position to claim that some instances of evil appear gratuitous, and the evidential argument from evil cannot get off the ground.

This response to Rowe’s argument is one the most popular versions of skeptical theism. Many philosophers, however, have interpreted Wykstra’s condition as a logical counterfactual conditional (Howard-Snyder 1992, McBrayer 2009, Almedia 2014), and McBrayer provided an important criticism based on this interpretation. Wykstra and Perrine (2012) later clarified that CORNEA should not be interpreted as a logical counterfactual conditional, but rather as a conditional probability. This clarification was a good defensive move, yet we argue that it remains to be seen whether or not it ultimately resolves the counterfactual-based objection.

In this paper, we show that there is a gap in the most recent response to the counterfactual-based criticism of CORNEA, particularly McBrayer’s objection that CORNEA is incompatible with inductive evidence. We argue that the main response (Wykstra & Perrine 2012, Perrine 2021) to this criticism ultimately depends on a specific semantics for counterfactual conditionals. More specifically, it ultimately depends on the denial of the conditional excluded middle principle. This is bad news for skeptical theists because many theists working on the problem of evil support Alvin Plantinga’s Free Will Defense, which seems to rely on the Law of Excluded Middle.² As a result, they will not be

²The validity of the Law of Excluded Middle (LEM) is presupposed in Plantinga’s proof of Leibniz’s Lapse. It is worth noting that the proof assumes at the outset that “If God strongly actualizes a state of affairs in which Curley is offered a bribe and Curley is free to accept it, then he will accept it” (proposition (16): $GC \rightarrow A$) or its contradictory (proposition (17): $GC \rightarrow \bar{A}$) is true. Plantinga himself considers this assumption to be *fairly innocent, but also dispensable*. However, he does not completely set it aside. In the sequence, he states that the conditional proposition that has as its antecedent the largest state of affairs that God strongly actualizes in W not containing the state of *Curley accepting the bribe* (GT) and as its consequent *Curley accepting the bribe* (A) is true or false. Bivalence classically entails LEM. Thus, in asserting the bivalence of (24): $GT \rightarrow A$, Plantinga seems to be introducing LEM in his Free Will Defense. Be that as it may, he presumes the validity of LEM for the membership relation in proving the falsity of proposition (27) on the assumption that (24) is false (Plantinga 1974, 180-184). These observations should not be seen as a criticism of Plantinga’s Free Will Defense. Our intention is not to create controversy, but merely to highlight the fact that the Law of Excluded Middle plays a fundamental role in many discussions within the philosophy of religion. For two other interesting examples, consider how Beall & Cotnoir (2017) solve the

able to uphold the Wykstra-Perrine variant of skeptical theism. In the light of this conundrum, we investigate a hitherto unknown defense of CORNEA's counterfactual interpretation, which is supported by epistemological literature on the sensitivity condition for knowledge (Wallbridge 2017).

2 The counterfactual-based objection and Wykstra and Perrine's response

Since Wykstra first formulated his condition in terms of a grammatical subjunctive, many philosophers interpreted CORNEA in terms of a counterfactual conditional. So understood, CORNEA is similar to the well-known sensitivity constraint on evidence (Nozick 1981, Dretske 1970, Goldman 1976), which is subject to a host of objections. Only one of them is relevant for the argument of this article, namely that sensitivity is incompatible with the possibility of inductive knowledge.³ The problem with the counterfactual interpretation is that, like the sensitivity condition, CORNEA seems incompatible with the possibility of inductive knowledge because the beliefs in cases of inductive knowledge are insensitive, as in Vogel (2007, 2012), Sosa (1999) and Pritchard (2012).

McBrayer (2009) provides several cases where CORNEA appears to have this sort of skeptical consequence. We cite two of them:

CASE 1: Though I hold a ticket, I believe that I will lose the lottery. I have inductive evidence for this claim. I know that the odds of winning are one in a million. Is my evidence sensitive to the fact that I will lose the lottery? No. Go to the closest world in which I win. I just get lucky and pull the right ticket. Is it reasonable for me to believe that my cognitive situation in the actual world would be discernibly different from my cognitive situation in the possible world in which I win? No—things would look just the same to me. So, according to CORNEA, my cognized situation in this case is not evidence for the claim that I will lose the lottery.

CASE 2: I believe that my son Patrick is asleep. I have inductive evidence for this claim. I know that it is now 3:00 and that my son almost always naps from 2:00-4:00. Is my evidence sensitive to the fact that my son is asleep? No. Go to the closest world in which my son is not asleep. Perhaps he ate spicy food for lunch, or perhaps my wife took him out on a last-minute errand, or perhaps he's just not sleepy. Is my cognitive situation in the actual world discernibly different from my cognitive situation in the possible world in which

stone paradox by abandoning the Law of Excluded Middle, and how Craig (2000) and many others vehemently reject the idea that contingent propositions about the future are neither true nor false.

³The other well-known objection is that sensitivity is at odds with plausible epistemic closure principles. For responses to this objection, see Nozick (1981), Dretske (2005), and Adams, Barker, and Figurelli (2011).

Patrick is not asleep? No—things would look just the same to me. So, according to CORNEA, I have no evidence for the claim that my son is asleep.

Other counterexamples are easy to find. The upshot is always that if we interpret CORNEA in terms of counterfactual conditionals where truth-values depend on a similarity relation between possible worlds, the skeptical theist will be in a bad spot. Wykstra seems to impose an overly stringent criterion on what constitutes inductive evidence as many of our inductive beliefs will be devoid of evidence.

In response, Wykstra & Perrine (2012) argue that we should interpret CORNEA not as a logical counterfactual conditional, but rather as a conditional used to express conditional probabilities. On the probabilistic interpretation, a conditional with A as antecedent and B as consequent should be understood as the conditional probability of the second given the first, which we represent as $P(B|A)$. As a result, they suggest the following interpretation of the crux of CORNEA, namely the sentence “If A were false, then B would be different”:

(P): The probability of B , given not- A , is less than 0.5.

In other words, according to Wykstra and Perrine, (P) is the way we should understand the grammatical subjunctive in CORNEA. This means that we should not interpret it as the counterfactual conditional:

(C): not- A counterfactually implies not- B .

Relying on Bayes’ Theorem, they argue that the probabilistic variant withstands McBrayer’s proposed counterexamples. In order to present this argument, we choose case 2 instead of the complicated reconstruction of case 1 that appears in Wykstra and Perrine’s original article.

First, suppose that B is levering evidence for A . Evidence that is levering can be understood as evidence that is adequate to shift an agent’s cognitive state from indifference (suspension of judgement) or disbelief (total refusal) in a proposition to belief (full acceptance) in that proposition. Suppose then that $P(A|B) \approx 1$. We represent this situation backwards in Bayes’ Theorem:

$$0.99 = \frac{P(A) \times P(B|A)}{[P(B) \times P(B|A)] + [P(\neg B) \times (B|\neg A)]} \quad (1)$$

Let A be the hypothesis that Patrick is taking a nap and B be McBrayer’s inductive evidence. Now suppose that McBrayer, on his first day as Patrick’s father, has no clues whether his son will acquire the habit of napping after lunch or not. After a while, he gets evidence of Patrick’s post-lunch napping habits, evidence he absolutely wouldn’t have if Patrick were always up at that time. We then set the prior probabilities of Patrick taking a nap and McBrayer getting evidence of his son taking a nap after lunch equals 0.5 and the Likelihood (that is, $P(B|A)$) to be 0.99. So we have:

$$0.99 = \frac{0.5 \times 0.99}{[0.5 \times 0.99] + [0.5 \times P(B|\neg A)]} \quad (2)$$

If $P(B|\neg A) > 0.5$, say 0.6, we contradict our supposition that B is levering evidence for A . In order to maintain consistency, we have to assume a low probability of B given $\neg A$, in fact $P(B|\neg A) \approx 0$, as was expected.

So the probabilistic version seems to survive McBrayer’s counterexamples. After all, the subjunctive clause of CORNEA, namely “if Patrick were not taking a nap, then McBrayer’s cognised situation would likely be different than it is” means that the probability that he would have the inductive evidence that he actually had given the hypothesis that his son is not taking a nap is approximately 0, which is indeed true.

All seems well and good. But even if the probabilistic interpretation yields the correct verdict, does this mean that the probabilistic interpretation is immune to the counterfactual-based interpretation’s criticisms? Not at all. As Perrine in a later paper points out:

I think this interpretation is plausible. But in and of itself, it does not undermine criticisms that turn on a counterfactual reading of CORNEA. What is needed is the further claim that statements like [(P)] can be true while [(C)] is false; i.e., [(P)] does not imply [(C)]. After all, if [(P)] entails [(C)], then criticisms of CORNEA based on [(C)] may very well apply to ones based on [(P)] (Perrine 2022, 9).

Perrine is right. If the probabilistic interpretation does imply the counterfactual one, then of course criticisms of CORNEA based on (C) might very well apply to those based on (P). So it is absolutely crucial for the skeptical theist to show that (P) does not entail (C).

Fortunately for the theist, Perrine goes on to argue that it is not generally the case that (P) implies (C). However, as we shall see it, that argument explicitly relies on the rejection of the counterfactual excluded middle.

3 Does the probabilistic interpretation entail the counterfactual one?

Before delving into whether the probabilistic interpretation of CORNEA implies the logical counterfactual interpretation, it’s essential to briefly discuss how to assign truth values to conditional counterfactuals. We believe that the most elegant semantics for counterfactuals is provided by Stalnaker in “A Theory of Conditionals” (1968). The central idea is that a conditional statement is true if and only if its consequent holds true in the closest possible world where the antecedent is true. It’s important to note the assumption of uniqueness: there exists only one closest possible world that determines the truth value of the conditional. In line with this, Stalnaker’s formal system C2 supports the principle of Conditional Excluded Middle (CEM).

Later, Stalnaker (1979) acknowledges cases where the truth value of sentences may be indeterminate, yet his logical system persists in validating CEM within a supervaluation framework. This feature of Stalnaker’s semantics poses an obstacle to Perrine’s contention that the counterfactual interpretation of CORNEA does not follow from the probabilistic interpretation. This brief presentation is enough to move forward without losing the flow of the argument. In any case, we offer Stalnaker’s semantics in some detail in the appendix of this article.

3.1 Perrine’s counterexample to the entailment

The skeptical theist needs to show that

(P): The probability of B , given not- A , is less than 0.5,

does not entail

(C): not- A counterfactually implies not- B .

As we mentioned above, Perrine (2022) thinks that (P) does not imply (C) in general. Why? He puts forward the following counterexample:

URN: Assume an urn contains four balls: one crimson, one scarlet, one cream, and one blue. Let A stand for ‘Moe pulled the crimson ball,’ and B stand for ‘Moe pulled a red ball.’ $P(B) = 0.5$. Given that Moe didn’t pull the crimson ball, there is a 0.33 chance he pulled the scarlet ball, the only remaining red ball. As a result, $P(B \mid \neg A)$ is less than 0.5.

Now, if (P) entails (C), then it must be the case that not- A counterfactually implies not- B , that is, “if Moe were not to pull the crimson ball, then he would not have pulled a red ball”. But Perrine points out that this is false, for Moe *might* have pulled a non-red ball if he hadn’t pulled the crimson ball. But he also *might* have pulled a red ball, specifically the scarlet one. We have a particular interpretation in which an instance of (C) is false while an instance of (P) is true, so (P) does not in general imply (C).

The main idea is that there is a tie between worlds in which Moe pulls a red ball and worlds in which he pulls a non-red one. On the one hand, the prior probability of pulling a red ball is the same as the probability of pulling a non-red one in the above scenario, but things change when we get to know that Moe didn’t pull the crimson ball. The probability that Moe pulls a red ball drops below 0.5. On the other hand, it seems there is not a unique world closest to w at which we evaluate the counterfactual. The proposition expressed by “if Moe were not to draw the crimson ball, then he would not have drawn a red ball” is true at w_1 and its negation “if Moe were not to pull the crimson ball, then he would have pulled a red ball” is true at w_2 , but w_1 and w_2 seem equally close enough for our evaluation of the counterfactual we want to assert

at w . This means that “not- A counterfactually implies not- B ” is false and that URN is a counterexample showing that (P) doesn’t entail (C).

Perrine’s objection presupposes Lewis’s objection (1973) to Stalnaker’s uniqueness assumption. Lewis defines the “might” counterfactual in terms of the “would” counterfactual: “If A were the case, then B might be the case” is defined as “It is not the case that if A were the case, B would not be the case”. So, back to our example, if we accept this definition, then Perrine is right: “If Moe hadn’t pulled the crimson ball, he might have pulled a non-red ball” and “If Moe hadn’t pulled the crimson ball, he might have pulled the red ball” are both true, which implies that the corresponding would conditionals are false, since some worlds make Moe pulling a red ball true yet others make Moe pulling a non-red ball true. (C) is false and (P) is true in this situation.

Unsurprisingly, the counterexample only works as long as we deny Stalnaker’s uniqueness assumption, since this assumption prevents ties between worlds from occurring. In fact, if we adopt the logical counterfactual interpretation à la Stalnaker, then either “if Moe were not to pull the crimson ball, then he would not have pulled a red ball” is true *or* “if Moe were not to pull the crimson ball, then he would have pulled a red ball” is true.

Many philosophers are persuaded by Lewis’s objection to the uniqueness assumption (and consequently the Conditional Excluded Middle (CEM)), and for all these people it will not be the case that the probabilistic interpretation entails the counterfactual one.

This assessment, however, is far from unanimous. In his response to Lewis, Stalnaker points out that, in practice, selecting a single possible world in order to evaluate counterfactuals can face problems of vagueness. There will be conditionals that are indeterminate, i.e. neither true nor false, as seems to be the case with the counterfactuals mentioned above, since it would be a case of genuine indeterminacy. And whether or not Moe will pull a red ball depends on a complete specification of the scenario. That is, it depends on whether Moe will pull it in a certain direction d_1 , with velocity v_1 , spin action s_1 , and so on until the situation is fully specified or precisified, which we shall call here a *resolution*. In this way, the conditional “if Moe were not to draw the crimson ball, then he would not have drawn a red ball” will be true according to one resolution but not according to other, and its negation will be true according to the second but not according to the first.

The validity of CEM can be retained by using van Fraassen’s supervaluation approach. Let v be an interpretation that assigns one of the values $\{1, 0, i\}$ (respectively: truth, false and indeterminate) to propositions expressed by sentences of a language \mathcal{L} . Now let v' be the resolution of v . It assigns 1 to A when $v(A) = 1$ and 0 to A when $v(A) = 0$, but it assigns 1 or 0 (not both) to those propositions that receive in v the value i . A proposition A is supertruth iff it receives 1 at all resolutions of v ; it is superfalse iff it receives 0 at all resolutions of v ; and it gets the value i if it receives 1 in some resolutions and 0 in others. It is clear that every instance of CEM is true at all resolutions of v .

If we accept Stalnaker’s semantics, we have reasons to interpret the relevant conditionals in Perrine’s alleged counterexample as neither true nor false. They

will be indeterminate. Thus, we do not have a situation in which (P) is true and (C) is false. Rather, we have a situation in which (P) is true and (C) is indeterminate, that is, (C) is false under resolution v' , but true under resolution v'' . Thus, if we accept Stalnaker's semantics, Perrine has not shown that (P) does not entail (C).

But does (P) entail (C)? That will depend crucially on how we understand the notion of entailment in such a framework. According to the supervaluationist, a demonstration that a statement is not true does not guarantee that the statement is false. We might then ask whether the truth of (P) entails *the non-falsity* of (C) (Keefe 2000, Varzi 2007) in order to *avoid error* in accepting (C). In such a framework, the truth of (P) would lead to the non-falsity of (C), since Perrine's scenario only shows a situation in which the truth-value of (C) is indeterminate. So this particular inference from (P) to (C) will be valid in a certain sense, that in which the non-falsity of (C) is preserved.

What we are suggesting is that the logical framework introduced by Stalnaker has important consequences for the notion of validity and that such consequences should be observed. There are at least two different ways of stating the condition of validity of arguments:

1. An argument is valid iff it is not possible for its premises to be true and its conclusion false.
2. An argument is valid iff necessarily the truth of the premises is preserved in the conclusion.

In classical contexts, these two statements are equivalent. Since classical logic is bivalent, that is, all sentences of a classical logic system receive one of the values from the set $\{1, 0\}$ (true, false), and that classical negation inverts these values, that is, the negation of the truth of A is equivalent to asserting the falsity of A , saying that an argument is invalid if the conclusion A is false while its premises true is the same as saying that it is not truth-preserving because its conclusion is not true. However, things work differently for the framework introduced so far. Since the logic is trivalent, that is, the sentences of this framework receive one of the values $\{1, 0, i\}$ (true, false, indeterminate), it is possible to have valid arguments according to 1 but invalid according to 2. This occurs when the premises in Γ are true and the conclusion A is indeterminate, and so $\Gamma \models_1 A$, but $\Gamma \not\models_2 A$.

There are still other ways of understanding validity in supervalued logics, as shown by Keefe (2000) and Varzi (2007). There are also serious discussions about the correct conception of validity. But one recommended attitude is pluralism:

To summarize: the assumption that there is a univocal notion of validity should be questioned. A pluralist position could accept the various different definitions of validity considered above, with their different features, regarding them as appropriate in different contexts or simply denying that either of them is determinately the right notion to the exclusion of the other. (Keefe 2000, 103-104)

How to be a pluralist in practice? To resolve questions about choosing which conception of validity to apply in which contexts, appeal to the interests involved in the theories within which inferences are made. We can use the distinction between drawing inferences to prove facts and making inferences to prevent error as an example. In the first case, defining validity as the preservation of truth would suffice; in the second case, statement 1 would suffice.

Let us think about the inference from (P) to (C). What should we think about inferences from probabilities to counterfactuals? For starters, the inference is perfectly intuitive in standard cases. We want to know if Moe is drinking beer at home. Suppose that the probability of Moe having a beer given that he has not finished his work is less than 0.5. So we should not believe, given that Moe has not finished his work, that he will have a beer. We can conclude that if he had not finished his work, he would not have had a beer. In this case the inference preserves the truth of (P).

Now suppose that Larry has a habit of drinking while working and has ten different kinds of beer at home. We want to know if he drinks a Bud Light. The probability of Larry having a Bud Light, given that he has not finished his work, is less than 0.5. So we should not believe, given that Larry has not finished his work, that he will have a Bud Light. We can conclude that even if he had not finished his work yet, he would not have had a Bud Light. In this case, however, the counterfactual is neither true nor false, but given our main interest the inference is acceptable since it preserves the non-falsity of (P). In worst cases like that (as well as in cases like that presented by Perrine), (C)'s truth value will be indeterminate. We just try to avoid error and the conditional probability points in the right direction.

Is there an argument to the effect that the inference from (P) to (C) is invalid? The most obvious argument is to claim that the truth of (C) is not preserved. And if so, given conception 2 of validity, it will be invalid. But, of course, the question now is why we should favor 2 over 1 in this circumstance. It cannot be *only* to defend skeptical theism against the counterfactual objection, as this would be manifestly question-begging. What is needed is an independent, non-question-begging argument to show that we should strive for truth in cases from probabilities to conditionals. Without such an argument, there will be an important gap in the probabilistic response for anyone keen on accepting the Stalnakerian semantics for counterfactuals.

Furthermore, the fact that the inference from (P) to (C) is not erroneous or that the truth of (P) preserves the non-falsity of (C) is enough to cast doubt on the response that a probabilistic interpretation of CORNEA avoids the problems that the counterfactual interpretation of CORNEA is alleged to have. The inference from (P) to (C) is not erroneous on a Stalnakerian view of counterfactuals, which means that given the truth of (P) we cannot erroneously conclude that (C) is false. So, if we follow Wykstra and Perrine, given the truth of the probabilistic interpretation of CORNEA in McBrayer's cases, we should conclude that the counterfactual formulation is not false, which means that the counterfactual is, if not true, at least indeterminate. But that is not what McBrayer thinks; he thinks that the counterfactuals of CORNEA in the inductive cases are false.

This is enough to show that we cannot hold at the same time the truth of the probabilistic interpretation and the falsity of the counterfactual interpretation if the truth of (P) preserves the non-falsity of (C) according to the Stalnakerian approach.

Wrapping up, given that the counterexample presupposes the cogency of the Lewisian objection to CEM, the probabilistic interpretation is dialectically irrelevant for anyone who accepts such a principle. This is why it is absolutely crucial how we interpret counterfactual conditionals, for there is a particular line of objection against CORNEA on Stalnaker's view of counterfactuals that does not affect it on the Lewisian one, even if CORNEA is understood in terms of conditional probability.

4 Defending the counterfactual interpretation?

Is there anything that could be said in defense of the skeptical theist with respect to the objection that CORNEA, *understood as a logical counterfactual*, is incompatible with inductive evidence? If we can say something in response, we will have a certain version of skeptical theism that fills in the gap of the probabilistic response. This is what we aim to do in this section. It is important to point out that we do not aim to provide a full answer and defense of CORNEA, since that might very well require a whole new paper. Our aim is more modest. We indicate two possible answers on behalf of the skeptical theist.

Let us go back to the cases where CORNEA seems at odds with inductive evidence. We will start with the second case, since there is an interesting aspect of the debate on counterfactuals to learn from it, but we will come back to the first one later.

CASE 2: I believe that my son Patrick is asleep. I have inductive evidence for this claim. I know that it is now 3:00 and that my son almost always naps from 2:00-4:00. Is my evidence sensitive to the fact that my son is asleep? No. Go to the closest world in which my son is not asleep. Perhaps he ate spicy food for lunch, or perhaps my wife took him out on a last-minute errand, or perhaps he's just not sleepy. Is my cognitive situation in the actual world discernibly different from my cognitive situation in the possible world in which Patrick is not asleep? No—things would look just the same to me. So, according to CORNEA, I have no evidence for the claim that my son is asleep.

In order for the counterexample to work, it must be the case that the closest possible world at which Patrick is not sleeping is a world at which McBrayer's cognitive situation is the same as that of the actual world. However, we argue that this claim is far from convincing, and it is for this reason that case 2 does not show that CORNEA is at odds with inductive evidence. Much of the argument below springs from Wallbridge's (2017) defense of the sensitivity condition.

Let us first consider another example from the actual world, the extinction of mammoths. We have plenty of inductive evidence for the claim that all mammoths are extinct and nothing against it. But what if mammoths were not extinct? Would things look just the same to us? Perhaps a single mammoth managed to survive in a place that was never seen or visited by human beings? Or perhaps aliens managed to deceive us? We do not object that these are genuine possibilities. What we object to is that a possible m-world in which a few mammoths have managed to hide from humans is the world in which mammoths have not gone extinct that is the *closest* world to our own world. We think that m-world is a world where our cognitive situation would look very different to us. Surely we would not classify mammoths as extinct. The plausibility of the counterfactual “if some mammoths were not extinct, they would not be listed as extinct in Wikipedia” is in line with the idea that our cognitive situation would likely be different. We think that CORNEA gets it right in the case of the claim that mammoths *appear* to be extinct.

Now, something very similar goes with case 2. McBrayer thinks that the closest p-worlds to ours where Patrick is not sleeping are worlds where he eats spicy food for lunch, or his wife takes him out for a walk, etc. Then again, we do not object that these are genuine possibilities. What we object is the *conjunction* of the claim that these p-worlds are the closest worlds to ours and the claim that McBrayer has *very strong* inductive evidence; following Wykstra and Perrine, since the case at hand is a case of levering evidence, the inductive evidence for the hypothesis that Patrick is sleeping is such that it is close to 1! If the evidence is *that* strong, then it is very unlikely that Patrick ever eats spicy food for lunch, or that he is just not sleepy from 2:00 to 4:00. Again, this must be so unlikely that the probability that he is not sleeping given McBrayer’s evidence is almost 0. So this evidence is plausibly as strong as our evidence for the extinction of mammoths. We should then be consistent and maintain our verdict in the first case, claiming that the closest p-worlds where Patrick wakes up are *not* worlds where McBrayer’s cognitive situation is the same as that of the actual world.

The intuition that McBrayer’s cognitive situation would likely be the same comes from the intuition that Patrick might very well eat spicy food or simply wake up. Certainly, when it comes to sleeping habits, these possibilities happen very often: indeed, they are very likely to happen. But if they are very likely to happen in McBrayer’s case, then he cannot have such a strong inductive evidence after all. Because we are assuming that he *has* very strong inductive evidence, then the closest worlds are not worlds where, by some miracle, Patrick suddenly wakes up. Like in the case of the mammoths, the cognitive situation would likely be different. Thus, we also think that CORNEA gets it right.

The question here is whether we should evaluate CORNEA in case 2 by *backtracking* (see Bennett 2003, chap. 16) instead of evaluating it in relation to a *miracle* occurring (Lewis 1973). What does it mean to say that we should evaluate CORNEA in case 2 by backtracking? Backtracking in this context means changing things that happened before the point in question. It means re-imagining or modifying the events in the past leading up to the moment we are

considering. McBrayer seems to favour the Lewisian theory of counterfactuals, according to which the closest possible worlds to actuality are not worlds where we modify all the events in the past, but rather the worlds that are just like the actual up to the moment in question and that diverge from it because of a violation of the actual laws (a “divergence miracle”). We, however, do not think that this view is in line with common sense in this context. We think that the most plausible way is to re-imagine the past, holding the laws fixed. In fact, as we said, this sort of response is inspired by a recent defense of the sensitivity condition for knowledge (Wallbridge 2017). Even if the reader does not agree with the intuition that McBrayer’s cognitive situation would be different in case 2, the backtracking response will nevertheless be an independent way to defend skeptical theism.

Here is another line of response worth investigating. Let us go back to the first case, since the backtracking response we just outlined does not seem to work here:

CASE 1: Though I hold a ticket, I believe that I will lose the lottery. I have inductive evidence for this claim. I know that the odds of winning are one in a million. Is my evidence sensitive to the fact that I will lose the lottery? No. Go to the closest world in which I win. I just get lucky and pull the right ticket. Is it reasonable for me to believe that my cognitive situation in the actual world would be discernibly different from my cognitive situation in the possible world in which I win? No — things would look just the same to me. So, according to CORNEA, my cognized situation in this case is not evidence for the claim that I will lose the lottery.

The previous response seems not to work here because the relevant counterfactual is not semantically evaluated using a semantics that appeals to backtracking. Still, we believe that case 1 may be solved with some simple time-indexing and a slightly different formulation of CORNEA.

Let A be the proposition that Curly does not win the lottery at time t_1 . Now, at t_0 , it makes all the sense that Curly’s cognitive situation is such that he does not believe that he wins the lottery at t_1 , where t_1 is later than t_0 . But CORNEA need not be understood as stating that if Curly had won the lottery at t_1 , then his cognitive situation would be discernibly different than it is at t_0 . CORNEA can be simply stated as saying that, if Curly had won the lottery at t_1 , then his cognitive situation would (likely) be discernibly different at some time t_n such that t_n is later than (or identical to) t_1 . Notice that this is a legitimate manoeuvre for the skeptical theist, because, if there were no gratuitous evils at t_1 , then anyone’s cognitive situation would (likely) be the same at *any time* later than t_1 . The problem with case 1 is to assume that one’s cognitive situation should be different at a time *earlier* than the time at which the antecedent of the counterfactual is true.

One could object to this reply by slightly changing the scenario in question. We can imagine a situation in which Curly never realises that he wins the lottery

ticket. Even if A were true at t_1 , Curly’s cognitive situation would still be the same at any time later than t_1 . However, in that case, we deny that Curly’s cognitive situation would be the same. This is because the truth of A at t_1 is now *accessible* to Curly at t_1 or any time later, which wasn’t before that. Once A is true, there is an epistemic route so that the agent now *can* be aware of the fact that A is true. This does not happen in the case of Rowe’s argument. Even if there were no gratuitous evil, the agent in question would never have access to the truth of this proposition, given that we would never understand the reasons of a perfect being like God.

This is precisely what happens in the case of the probabilistic interpretation. Clearly, the inductive evidence, given the negation of the hypothesis, is less than 0.5 because the information about the negation of the hypothesis is now *available* to the agent. We are just making this assumption now explicit in the counterfactual interpretation of CORNEA. And, of course, by a parallel reasoning, we can reply to case 2 without any backtracking. The suggestion is that the following formulation of CORNEA would be immune to McBrayer’s counterexamples:

CORNEA*: H is entitled to claim, on the basis of cognised situation s , that “it appears that p ” only if it is reasonable for H to believe that, given her cognitive faculties, and the use she has made of them, if p were not the case, s would likely be different than it is in some way discernible by her at (or shortly after) the time *at which she is in cognitive situation s* .

Naturally, given that a new defense may require a new investigation into the matter, it is possible that this proposal contains problems that we are unaware of. However, as previously suggested, the formulation that follows seems worth exploring, as it does seem to solve the problem in question.

5 Conclusion

The skeptical theists’ rebuttal of McBrayer’s criticism of CORNEA has a significant gap. The argument to prove that the counterfactual interpretation of CORNEA is not entailed by the probabilistic interpretation was found wanting. That argument relies on a certain theory of counterfactual conditionals, generally rejected by theists.

However, it was argued that skeptical theism can be defended against counterfactual objections securing sensitivity clauses through appeal to backtracking conditionals (as we have done in case 2) and through a slightly different formulation of CORNEA.

Both defenses of skeptical theism have costs. Wykstra and Perrine’s answer is dialectically deficient with regard to theists who accept the counterfactual excluded middle. The answers outlined in this paper have the problem of committing to (something very similar to) the sensitivity clause, which is not widely accepted in the epistemological literature. But would that be a problem

for skeptical theism in general? Not necessarily. As we see it, one solution is to keep both the counterfactual and probabilistic interpretations, as they are formulated for different purposes. That is, the different answers available may simply serve different purposes in different contexts of discussion, and perhaps there is no need to have just one official version of the defense of CORNEA’s skeptical theism. We would nevertheless welcome further work on counterfactual interpretations of CORNEA: do the responses outlined here work against the objections presented by McBrayer? Should the counterfactual version of CORNEA be compatible with epistemic closure principles? What are the implications of the response presented here for such a debate? All in all, it seems the original counterfactual-based discussion of CORNEA need not be abandoned just yet.⁴

References

- Adams, F., J. A. Barker, and J. Figurelli 2011. “Towards Closure on Closure”. *Synthese* 188(2), 179–96.
- Almedia, M. J. 2014. Skeptical theism and undercutting defeat. In *Skeptical Theism: New Essays*. Oxford University Press.
- Beall, Jc.; Cotnoir, A. 2017 “God of the gaps: a neglected reply to God’s stone problem”, *Analysis*, 1–11, doi:10.1093/analys/anx069
- Bennett, J. 2003. *A Philosophical Guide to Conditionals*. Oxford: Oxford University Press.
- Craig, W.L. 2000. *The Only Wise God*, Wipf & Stock Publishers.
- Dretske, F.I. 1970. “Epistemic Operators”. *Journal of Philosophy* 67(24), 1007–23.
- Dretske, F.I. 2005. “Is Knowledge Closed Under Known Entailment? The Case Against Closure”. in *Contemporary Debates in Epistemology*, ed. M. Steup and E. Sosa, Oxford: Blackwell: 13–26.
- Goldman, A.I. 1976. “Discrimination and Perceptual Knowledge”. *The Journal of Philosophy* 73(20), 771–91.
- Harper, W., Stalnaker, R., Pearce, G. (eds) 1981. *Ifs: Conditionals, Belief, Decision, Chance, and Time*, Dordrecht: D. Reidel Publishing Company.
- Howard-Snyder, D. 1992. “Seeing through CORNEA”. *International Journal for Philosophy of Religion*. 32(1), 25–49.
- Keefe, R. 2000. “Supervaluationism and Validity”. *Philosophical Topics* 28, 93–105.

⁴Conflict of Interest: The authors declare that they have no conflict of interest.

- Lewis, D. 1973. *Counterfactuals*, Blackwell Publishing.
- McBryer, J. 2009. “Cornea and Inductive Evidence”, *Faith and Philosophy* 26, 77-86.
- Nozick, R. 1981. *Philosophical Explanations*, Cambridge: Harvard University Press.
- Plantinga, A. 1974. *The Nature of Necessity*, Oxford: Oxford University Press.
- Plantinga, A. 1977. *God, Freedom, and Evil*. Grand Rapids, MI: Eerdmans.
- Perrine, T. 2022 “On An Epistemic Cornerstone of Skeptical Theism: In Defense of CORNEA”, *Sophia* 61, 533-555.
- Priest, G. 2008. *An Introduction to Non-Classical Logic: From If to Is*, Cambridge: Cambridge University Press.
- Pritchard, D. 2012. “In Defence of Modest Anti-Luck Epistemology”. in *The Sensitivity Principle in Epistemology*, ed. K. Becker and T. Black, Cambridge: Cambridge University Press: 173–92.
- Rowe, W. 1979. “The Problem of Evil and Some Varieties of Atheism”, *American Philosophical Quarterly* 16 (4), 335-341.
- Sosa, E. 1999. “How to Defeat Opposition to Moore”. *Philosophical Perspectives* 13, 141–53.
- Stalnaker, R. 1968. “A Theory of Conditionals”, *Studies in Logical Theory*, American Philosophical Quarterly Monograph Series, Blackwell, Oxford; in Harper, W., Stalnaker, R., Pearce, G. (eds) 1981, 41-55.
- Stalnaker, R. 1979. “A Defense of Conditional Excluded Middle”, in Harper, W., Stalnaker, R., Pearce, G. (eds) 1981, 87-104.
- Suppes, P. 1972. *Axiomatic Set Theory*, New York: Dover Publications.
- Varzi, A. 2007. “Supervaluationism and its Logic”, *Mind*, 116, 633-675.
- Vogel, J. 1987. “Tracking, Closure, and Inductive Knowledge”, in *The Possibility of Knowledge: Nozick and His Critics*, ed. S. Luper-Foy, Totowa, NJ: Rowman and Littlefield: 197–215.
- Vogel, J. 2007. “Subjunctivitis”. *Philosophical Studies* 134(1): 73–88.
- Wallbridge, K. 2017. “Sensitivity, Induction and Miracles”, *Australasian Journal of Philosophy*, DOI: 10.1080/00048402.2017.1328697

Wykstra, S. 1984. "The Humean Obstacle to Evidential Arguments from Suffering: On Avoiding the Evils of "Appearance", *International Journal for Philosophy of Religion* 16 (2), 73-93.

Wykstra, S. "Rowe's Noseeum Arguments from Evil", in Howard-Snyder, D. (ed.) 1996. *The Evidential Argument from Evil*, Indiana University Press: 126-150.

Wykstra, S. and Perrine, T. 2012 "Foundations of Skeptical Theism: Cornea, Core and Conditional Probabilities, *Faith and Philosophy* 29, 375-399.