

Theory Comparison in Science and Religion

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Introduction

As epistemic agents we often have occasion to compare belief-systems or theories, and decide which ones we should hold. In science, multiple theories for some phenomena may be available, and we are all aware of different religious beliefs vying for our acceptance. In this paper I would like to investigate some methodological issues involved in using evidence to assess these belief systems or theories. I will argue that certain methodological assumptions that are commonly made in philosophy of religion are not made when we assess scientific theories, and that these assumptions should be rejected.

In assessing evidence I will make use of a probabilistic framework, and will think of evidence initially in the incremental sense. When I speak of E being evidence for hypothesis H, I mean that E raises the probability of H: $P(H/E) > P(H)$. The incremental sense of confirmation is fairly intuitive; it would be odd to think of evidence for a hypothesis as lowering or not raising the probability of the hypothesis. There is another probabilistic sense of confirmation, absolute confirmation, but we will not discuss that in this paper.

In philosophy of religion we find many different arguments claiming that certain evidence supports religious belief, or naturalism, but these arguments usually share two basic methodological assumptions. One assumption is that in looking at the bearing of evidence upon religious belief, we should look at the bearing of the evidence upon a certain core of religious belief, instead of the religious beliefs as a whole. This means that in looking at how some evidence affects a religion such as Christianity, we can look at how the evidence affects the existence of an omnipotent, omniscient, all good God, instead of how the evidence affects Christianity. Let us call this the Core Assumption, since we look at the supposed core of a theory or system of beliefs. Following Plantinga, let us call the core of Christianity that is normally discussed Austere Theism; this is simply that there

is an omniscient, omnipotent, all-good being. The second common assumption is that assessing the probability of beliefs or theories is an objective matter, and there is a close connection between these probabilities and what we should believe. We are not interested in an individual's personal probabilities or degrees of belief; instead we are interested in logical probabilities conditional on a description of some evidence. These probabilities are accessible by reason alone, and they do not depend on our heart, affections, will, or individual experience. I will call this the Probabilistic Assumption. It is generally held that the rationality of holding a belief is highly dependent upon the results of the Core Assumption and the Probabilistic Assumption. Together the Core and Probabilistic Assumptions make up what I call the Standard View. The Standard View is generally unquestioned in the philosophy of religion literature, but I will argue that it should be rejected.

I will argue that adopting the Core Assumption and the Probabilistic Assumption together results in very unintuitive consequences. I will begin by looking at the Core Assumption while granting the Probabilistic Assumption's claim that probabilities are logical probabilities conditional upon agreed upon evidence. Both of these assumptions are commonly made in philosophy of religion, but they are seldom made in philosophy of science. In philosophy of religion, arguments about the rationality of religious belief almost always focus on Austere Theism instead of the beliefs religious people normally hold, such as Christianity, Islam, or Judaism.¹ Interestingly, Plantinga's early work tended to focus on the core of theism, Austere Theism, but in his more recent work we find him dealing with the rationality of Christian belief instead of the rationality of Austere Theism. I heartily approve of this shift in Plantinga's thinking, and in what follows I will argue in support of this. After discussing the Core and Probabilistic Assumptions I will briefly look at the evidential problem of evil by first assuming the Standard View, and then while rejecting the Standard View. It turns out that it becomes very difficult to formulate a convincing problem of evil once we reject the Standard View.

The Core Assumption

The Core Assumption tells us that when we are assessing the bearing of some evidence e on some hypothesis H , we should not look at probabilities such as $P(e/H)$ or $P(H/e)$. Instead, we should look at some central propositions that are entailed by H ,

¹ One notable exception is Marilyn Adams, who proposes to use the resources within Christianity to answer the problem of evil. She believes that Christian doctrine is relevant to the problem of evil, and it does us no good to discuss the problem of evil using a concept of God that the Christian does not hold. According to Adams, a Christian does not solve the problem of evil by showing the compatibility of a god, or Austere Theism, with evil, but the Christian must take seriously the Christian doctrine of God. And going beyond Austere Theism may provide more opportunities to respond to the problem of evil. See Marilyn McCord Adams, "Horrendous Evils and the Goodness of God" in, *The Problem of Evil*, ed. Marilyn McCord Adams and Robert Merrihew Adams (New York: Oxford University Press, 1990), 209–21.

and look at the relevance of the evidence to them. Let us call the central or core beliefs of the hypothesis H_{core} , and we will intentionally leave how this is determined vague. The idea is that we should look at probabilities such as $P(H_{\text{core}}/e)$ instead of $P(H/e)$.

One reason the Core Assumption is so appealing is that it provides a way to reject all variants of a theory instead of just one specific version. As Kuhn, Duhem, Lakatos, and others noticed, problems in specific versions of a theory do not transfer to the core ideas of the theory; the core ideas survive and new versions of the theory based on that core are often formulated. If one is arguing against a theory or research program it would be nice to have an argument against the very core; this would prevent future versions of the theory from arising. Showing a problem with one specific version of a theory does little to affect the overall theory, since it is often easy to formulate new versions that avoid this problem. For example, if one could show the core was logically inconsistent, then any version including that core would also be inconsistent. The potential for an argument against all versions of the theory based on the core may be one reason the Core Assumption has held appeal.

CONVERSE CONSEQUENCE DISCONFIRMATION PRINCIPLE

One attempt to support the Core Assumption would be an appeal to the following principle, which I will call the Converse Consequence Disconfirmation Principle:²

If E disconfirms H^* and H implies H^* , then E disconfirms H.

If the Converse Consequence Disconfirmation Principle were correct, we would have a justification for the Core Assumption. The Core Assumption focuses on how evidence bears on some core that is implied by a theory or some beliefs, but the problem is how to transfer any disconfirmation of the core by the evidence to the full-blown theory. The Converse Consequence Disconfirmation Principle would justify this transference of disconfirmation. Applied to philosophy of religion, since the beliefs of a typical theist imply Austere Theism, if it can be shown that some evidence disconfirms Austere Theism, the Converse Consequence Disconfirmation Principle would imply that evidence disconfirms the beliefs of a typical theist.

Unfortunately the Converse Consequence Disconfirmation Principle has the unintuitive result that any hypothesis H is disconfirmed by any contingent fact E that is independent of H.³ So, for example, that Al Plantinga has climbed several

²This is similar to Hempel's Converse Consequence Condition, which he discussed in "Studies in the Logic of Confirmation":

Converse consequence condition: If E confirms H and H' implies H, then E confirms H' .

See Carl Hempel, "Studies in the Logic of Confirmation I & II," *Mind* 54 (1945):11–26, and 97–121.

³Let H^* be $(H \vee \neg E)$, which is implied by H. $P(H \vee \neg E/E) = P(H/E)$, and since E is independent of H, this equals $P(H)$, which is less than $P(H \vee \neg E)$ because E is contingent and independent of H. Thus E lowers the probability of $(H \vee \neg E)$. By the Converse Consequence Disconfirmation Principle, it follows that E disconfirms H.

5.10 rock climbs (which I have witnessed) is disconfirmed by his having Frisian ancestors. Thus, the Converse Consequence Disconfirmation Principle must be rejected, and we cannot use it to justify looking at some core implied by a set of beliefs; with regard to philosophy of religion, we cannot formulate a problem of evil for religious belief by looking at whether some evidence disconfirms Austere Theism. Furthermore, it is easy to give examples where evidence e lowers the probability of H_1 , lowers the probability of H_2 , and yet raises the probability of the conjunction of H_1 and H_2 .⁴ Applied to philosophy of religion, evidence e could disconfirm Austere Theism and even disconfirm some individual Christian doctrines, but confirm Christianity. No implications for the effect of some evidence on a religion such as Christianity can be drawn from its effect on Austere Theism; the Core Assumption must be rejected. Even if some argument could successfully show that evil is evidence against Austere Theism, it might be the case that evil raises the probability of Christianity.⁵

NOT USED IN SCIENCE

Another argument against the Core Assumption is that it would give very unintuitive results if we were to apply it in science. Since at least Duhem we've been aware that theories rely on various assumptions in order to make empirical predictions. We generally put the theory plus these assumptions to an empirical test, and failure to pass the test does not cast doubt on the theory but only on the theory plus the assumptions. Now, suppose that we adopt the Core Assumption and propose that in comparing scientific theories, we look only at how the cores do with regard to the empirical evidence. I propose that we may end up rejecting the theories we currently hold.

Suppose we compare quantum mechanics, which is our modern version of atomism, with the view that there are no unobservable particles, or even some theory that the world is a plenum with no particles. Let some of our evidence be that if there are particles, they often don't act as we'd expect particles to act: sometimes they act as particles, sometimes as waves. This evidence is all handled quite well by our modern theory, but that is not what the Core Assumption directs us to look at. Instead, we are to look at how well the evidence is accounted for by the core, which might be simple atomism. So how likely is this evidence on simple atomism, on the hypothesis that there are no unobservable atomic particles, and on the hypothesis of the plenum? Although I am unsure of these probabilities, it is plausible that the strange empirical phenomena would be less likely on simple

⁴ See Rudolf Carnap, *Logical Foundations of Probability* (Chicago: University of Chicago Press, 1950), and Richard Otte, "Evidential Arguments from Evil," *International Journal for Philosophy of Religion* 48 (2000):1-10.

⁵ For example, it could lower the probability of other elements in the partition and raise the probability of Christianity.

atomism and more likely if there were no atoms or on the plenum. In fact, I think this is just the sort of evidence that someone like Zeno would have liked. If Zeno had known about this evidence, I can easily imagine him using this to argue that there are no small particles and Parmenides was basically right. But this is clearly the wrong result; we do not think the strange behavior of subatomic particles disconfirms quantum mechanics, simply because the evidence is more likely if atoms do not exist than on atomism. What is important is that the evidence is handled well by our modern theory.

EASY CONFIRMATION AND DISCONFIRMATION

One final argument against the Core Assumption is that it becomes too easy to find evidence that disconfirms a theory, and the evidence disconfirming a theory is often irrelevant to rational belief. In general, if we have competing theories T_1 and T_2 , to give evidence that supports T_1 over T_2 , all you need to do is find some evidence e that is true and is more likely on $T_{1_{\text{core}}}$ than $T_{2_{\text{core}}}$ or find some evidence e that is false and more likely on $T_{2_{\text{core}}}$ than $T_{1_{\text{core}}}$. For example, to confirm creationism, let the evidence be that species evolve very quickly, right before our eyes. This is more likely on the core of evolutionary theory than on the core of creationism, but is false, so it confirms creationism more than evolutionary theory. Or let the evidence be that we don't see God creating new species. This evidence is true, and more likely on the core of evolutionary theory, so it confirms evolutionary theory more than creationism. We can easily find evidence to support any theory that we pick, but it is difficult to see the relevance of this for rational belief. Theories are developed in order to account for evidence, and the developed theory will usually handle evidence that the core had problems with. The core of a theory is basically irrelevant to the rationality of believing the theory; what is important are the qualities of the best fully developed theory.

The Probabilistic Assumption

I have been arguing that the Core Assumption is mistaken; it has unintuitive consequences and does not provide a good basis for discussing issues like the problem of evil. Let us now discuss the second major assumption in the Standard View, which is the Probabilistic Assumption: the probabilities we should use in philosophy of religion are not personal probabilities, but some sort of objective probabilities, conditional on some agreed upon public evidence. Often these are called epistemic probabilities. Furthermore, rational belief is closely connected to these probabilities, and these probabilities are accessible by reason alone. One immediate problem with an appeal to objective probabilities is that it is not clear that any such probabilities exist; no detailed account of them has survived scrutiny. But let us

suppose these probabilities exist and can be adequately explicated; problems with using these probabilities in philosophy still remain.

REJECTING THE PROBABILISTIC ASSUMPTION

The Probabilistic Assumption claims that the probabilities we should use in comparing theories and managing our beliefs are objective probabilities conditional on a description of our experience that are accessed by reason alone. One way to reject this assumption would be to view probabilities as personal degrees of belief instead of as objective logical relations. Another way to reject the Probabilistic Assumption would be to reject the Probabilistic Assumption's account of the origin of our probability judgments and deny that reason alone provides these probabilities. On this view the heart, the will, the affections, and our individual experiences have an affect on our probability judgments. There are at least two ways we could develop this position. One way would be to claim that the Probabilistic Assumption is correct that the relevant probabilities are objective, but to claim that a certain type of heart or will is needed to access these objective probabilities. Reason alone is unable to access the objective probabilities; without the heart, we would have to suspend judgment on many issues. One might even say a rightly directed heart is needed to form the correct probability judgments. For example, William Wainwright appears to read Jonathan Edwards as claiming that the heart is needed to help us adopt the correct probability assignment.⁶

A different way, the way I prefer, would be to deny that the objective probabilities are relevant to rational judgment. On this view our probability judgments are not judged by correspondence to some objective probabilities; even if these objective probabilities exist, they are not important to our rational judgments. Instead, probability is the logic of partial belief and acts as a consistency requirement on our judgments. Our judgments are not based on reason alone, but our hearts, wills, affections, and experience affect our judgments about what is likely to be true. On either of these views, when the heart affects a probability judgment, it provides a basic picture of the way the world is. We can view this as a commitment to the world being a certain way; in van Fraassen's terminology, the heart adopts a stance. Reason alone does not always supply a picture of the basic way the world is; this is what the will or heart provides. Once we recognize that the heart is the ultimate source of many of our basic probability judgments, the Probabilistic Assumption loses its appeal.

An example may illustrate how our hearts and experience affect our probability judgments in a way the Probabilistic Assumption does not allow. According to Plantinga's Aquinas/Calvin model of religious belief, God has imbued us with

⁶ William J. Wainwright, *Reason and the Heart: A Prolegomenon to a Critique of Passional Reason* (Ithaca, NY: Cornell University Press, 1995).

a faculty that, in appropriate circumstances, is designed to produce various beliefs about God. In certain situations, such as looking at the starry sky, seeing a magnificent mountain range, or viewing the Grand Canyon, this faculty produces beliefs such as God exists and should be worshiped. This faculty, which following Calvin he calls the "*Sensus Divinitatis*," works to various degrees in different people, and in some it may not be effective at all. Whether it operates or not may partially depend on one's heart or affections. Having the appropriate affections is connected with an operative *Sensus Divinitatis*. Because of this, people may form very different beliefs in situations in which the *Sensus Divinitatis* is designed to operate. As a result of the *Sensus Divinitatis*, people experience the world differently. These experiences may affect one's heart or affections, and one's heart and affections may also affect what one experiences. The relation between the heart and experience is subtle and complex, and beyond the scope of this paper.⁷

So suppose we consider two climbers looking down the East side of Denali at the Traleika Glacier, which I think is spectacular even when compared to other mountain scenes. A climber in whom the *Sensus Divinitatis* is operative may form very different beliefs from a climber in whom the *Sensus Divinitatis* is not operating correctly. An operating *Sensus Divinitatis* may cause a climber to experience and believe differently than one in which the *Sensus Divinitatis* is not working well. These two climbers will have very different views about how likely it is that God exists or is worthy of worship.

But according to the Probabilistic Assumption, there is only one rational belief in this situation. The Probabilistic Assumption would direct us to look at probabilities, such as the probability of God existing, conditional on a description of looking down the Traleika Glacier. Both naturalists and theists can agree to a description of the evidence, and presumably there would then be a unique probability of God existing conditional on that evidence. The heart plays no role in this picture.

On my proposal we reject the Probabilistic Assumption by not looking at the objective probability of God existing, conditional on a description of the experience. Even if this objective probability exists, it is not important for our epistemic project. Instead, we look at the climbers' judgments, which have been affected by experience, by the operation or nonoperation of the *Sensus Divinitatis*, and by their hearts, will, and affections.

In our epistemic lives we often make judgments about probability. We are no better off by postulating some objective probabilities that ground our philosophical reasoning than we are by viewing probabilities as personal judgments restricted by logic. Any reason one could give to convince someone that some objective

⁷ See Alvin Plantinga, *Warranted Christian Belief* (New York: Oxford University Press, 2000), chap. 9.

probability has some value that results in some rational degree of belief could be given to convince the person to hold certain beliefs. Nothing is gained by postulating objective probabilities in this process.

However, one need not deny objective probabilities exist to reject the Probabilistic Assumption. Some theists may agree with Plantinga's Aquinas/Calvin model yet also agree with the Probabilistic Assumption that the relevant probabilities are objective. These philosophers can either say their experience leads them to a better view of what the objective probabilities are or say there is no close connection between these objective probabilities and what it is rational to believe. For example, Plantinga argued that the epistemic import of a description of the evidence might be very different from the import of the evidence itself. Thus, conditionalizing on a description of looking down the Traleika will not capture the epistemic effect of actually looking down the Traleika. Although Plantinga appears to believe logical probabilities exist, he would reject the Probabilistic Assumption because nonpropositional evidence is important to what it is rational to believe, but this is not accounted for in the probability statements used by the Probabilistic Assumption. On either of these ways of rejecting the Probabilistic Assumption, we see that what we should believe depends on more than objective probabilities based on a description of the evidence. Of course, instead of belief in God, we could have chosen other examples to illustrate this, such as belief in an external world, belief in other minds, and so on.

Wesley C. Salmon proposed that any acceptable interpretation of probability must both allow us to ascertain the relevant probability values and be useful in managing our beliefs and guiding our actions.⁸ The Probabilistic Assumption faces a problem with Salmon's criteria because there are no objective probabilities of the sort it requires that are epistemically relevant to what we should believe. One problem is that we have no means of determining what the probability values are. The most widely known theory of objective logical probability is due to Carnap, and one virtue of his theory is that the values of probabilities are ascertainable, because they can be calculated from certain facts about language. However, there were serious problems with Carnap's theory, and few philosophers of religion accept a theory like his.⁹ Instead, the objective probabilities are not thought to be generated from language as in Carnap's theory, but are still considered to be an objective logical fact. I have no argument that these probabilities do not exist; there may be some objective confirmation relation out there. But if there is, we do not have access to it in any principled way; we have no algorithm that will help us determine these objective probabilities. We are not required to know these probabilities in order to be rational.

⁸ Wesley C. Salmon, *Foundations of Scientific Inference* (Pittsburgh, PA: University of Pittsburgh Press, 1967).

⁹ Tooley is an exception. See Alvin Plantinga, and Michael Tooley, *Knowledge of God* (London: Blackwell Publishing, 2008).

But even if we could determine the relevant probabilities, they would not be useful for managing our beliefs in the way the Probabilistic Assumption requires. According to the Probabilistic Assumption, the objective probability values should be closely connected to what it is rational to believe, but knowing the values of the relevant objective probabilities has no implications for rational belief.¹⁰ The problem is that there are many things we rationally believe that are not likely according to any objective theory of probability. We all believe it is rational to believe in the external world, and yet this will not be likely given the acceptable evidence. Plantinga emphasizes the importance of nonpropositional evidence and how it affects what it is rational to believe, but the objective probabilities do not accommodate nonpropositional evidence. Without a principle linking the objective probabilities with rational belief, these probabilities will be of no use in the Probability Assumption. It would be nice if we had a guaranteed method of getting everyone to agree on what certain epistemically relevant probabilities are, but no such method exists. Given that the heart and our individual experience plays a role in our probability judgments, we should not expect agreement on probabilities. Fortunately we do agree on many judgments, because the heart is not arbitrary. But there are areas where our hearts and affections differ, and we should not expect agreement in those areas. On many topics our different probability assignments are not due to a lack of rationality, but to different hearts, affections, or experiences.

Application to the Problem of Evil

I now would like to illustrate how different the problem of evil will look if we reject the Standard View. For purposes of comparison I will begin by briefly looking at the problem of evil with respect to Austere Theism, which is what the Core Assumption directs us to look at and is the normal framework for discussion of the problem. We will then see that the problem of evil looks very different once we reject that assumption and instead look at evil with respect to Christianity. Since it

¹⁰ It would be nice for the defender of the Probabilistic Assumption if something like David Lewis's Principal Principle was true. [See David Lewis, "A Subjectivist's Guide to Objective Chance," in *Philosophical Papers Volume II* (Oxford, UK: Oxford University Press, 1987), 83–133.] The Principal Principle gives a simple relation between objective chance and rational belief, but the objective probabilities in the Probabilistic Assumption are generally thought to be different from objective chance; thus the Principal Principle does not help the Probabilistic Assumption. But some principle that relates objective probabilities to rational belief is needed if the Probabilistic Assumption is to be relevant, and one might propose something like the following:

$$\text{DORB}_t(*) = P(* / \text{AE}_t)$$

where DORB_t is degree of rational belief at time t , P is the objective logical probability relation, and AE_t is all of the available acceptable evidence until t . Unfortunately, this principle will not work, because many of our ordinary beliefs would need to be rejected.

is commonly claimed that evil is evidence against religious belief, in what follows we will use a modern theory of evidence to look at this issue. We will be interested in whether a rational religious believer is committed to believing that evil and related facts are evidence against God having a good reason to permit evil, and thus against religious belief. I will argue that it is very difficult to formulate a philosophical problem of evil once we reject the Standard View; instead of evil being a problem for religious beliefs, rational religious believers may hold that it is irrelevant or even a problem for naturalism.

LIKELIHOODISM

Likelihoodism is a major account of evidence in the philosophy of science literature, and claims what is important in assessing evidential strength is the probability of the evidence given various hypotheses. This position is called "Likelihoodism" because of the prominence given to probabilities such as $P(e/H)$, which are known as likelihoods. According to Likelihoodism, we can compare the effect of evidence on two or more theories by looking at how likely the evidence is on the different theories. Several Likelihoodists have endorsed the following principle:

Evidence E is stronger evidence for hypothesis J over K iff $P(E/J) > P(E/K)$ ¹¹ Although some aspects of Likelihoodism are controversial, an advantage of Likelihoodism over Bayesian accounts is that it does not require any knowledge of the prior probabilities of the hypotheses. With regard to the problem of evil, this means we do not need to assign probabilities to God existing and God not existing. Although we will focus on Likelihoodism, it turns out that most Bayesian measures of evidential strength give the same results about the problem of evil.¹²

THE PROBLEM OF EVIL AND THE STANDARD VIEW

Let us first assume the Standard View and investigate how Likelihoodism would apply to the problem of evil, where our two competing beliefs are those of a typical Christian, C , and those of a typical naturalist, N . According to the Core Assumption, instead of looking at the belief systems C and N , we should look at the core of those beliefs, which might be that God exists, G , and God does not exist, $\neg G$. Our evidence E will be that evil exists. The Standard View would then direct us to look at $P(E/G)$ and $P(E/\neg G)$, where these probabilities are not personal degrees of belief, but are some sort of objective probabilities conditional on agreed upon

¹¹ See Branden Fitelson, "Likelihoodism, Bayesianism, and Relational Confirmation," *Synthese* 156 (2007): 473–89.

¹² See Richard Otte, "Comparative Confirmation and the Problem of Evil," in *Probability in the Philosophy of Religion*. Edited by Jake Chandler and Victoria S. Harrison (Oxford: OUP, forthcoming).

evidence. For the sake of argument, we will simply assume that $P(E/\neg G)$ is fairly high.¹³ Although Sobel appears to think there should be no debate that $P(E/G)$ is low, this probability is difficult to assess.¹⁴ However, suppose we grant that $P(E/G)$ is less than $P(E/\neg G)$; according to Likelihoodism that means that E is stronger evidence for $\neg G$ than for G . The Standard View would then tell us that E is stronger evidence for naturalism than Christianity. This is one way the problem of evil might be construed while holding the Standard View.

THE PROBLEM OF EVIL WITHOUT THE STANDARD VIEW

Now suppose we reject both the Core Assumption and the Probabilistic Assumption of the Standard View. Instead of abstracting from the Christian's and Naturalist's beliefs, let us look at a fuller expression of what they believe. Traditional theists have held there is an epistemic distance between God and humans, and, given the vast difference between God's mind and our minds, we should not expect to be able to understand God's reasons for permitting evil. On this view, God has a good reason for permitting the evil in the world, but it is incomprehensible to us. For

¹³ This is controversial. Perhaps if $\neg G$ a world is unlikely to exist, which would make it unlikely that evil would exist.

¹⁴ In his discussion of Hume, Sobel writes:

It is debated whether there are considerations unnoticed or unappreciated that would, if known and appreciated, justify believing that a perfectly good omnipotent and omniscient everlasting being would have allowed particular sufferings of innocents. There should be no debating, however, whether a person would have predicted beforehand such suffering, any of it, were he certain then of the existence of such a being: There should be no debating the question whether "the world considered in general and as it appears to us in this life, [is such as] a man... would, *beforehand* expect from a very powerful, wise, and benevolent Deity" (Part II, p. 163). "Certainly not," Hume would say, and he would be right without a doubt. The evidence of suffering and evil rather *obviously* tells against traditional theisms.... (Jordan Howard Sobel, *Logic and Theism* [Cambridge, UK: Cambridge University Press, 2004], section 4.2, 407)

This may not be as obvious as Sobel thinks. First, note that the major theistic religions, Christianity, Islam, and Judaism, all imply that evil exists. If there had never been evil in the world, Christianity, Islam, and Judaism, would all be false. For example, looking at the Nicene Creed we find talk of salvation, crucifixion, suffering, sin, and judgment; it is difficult to see how this would make sense if there were no evil in the world. Because of this, $P(E/C) = 1$, and similar reasoning holds for Islam and Judaism. By the theorem of total probability, we know that G is a weighted average of a partition that includes Christianity (C), Islam (I), and Judaism (J):

$$P(E/G) = P(E/C)P(C) + P(E/I)P(I) + P(E/J)P(J) + P(E/\text{Remainder})P(\text{Remainder})$$

From this, we see that, if Christianity, Islam, and Judaism together are fairly likely, then $P(E/G)$ will also be fairly high. The only way $P(E/G)$ could be low would be if $P(C)$, $P(I)$, and $P(J)$ were each low. Since C , I , and J , make very specific claims, perhaps the objective probabilities of C , I , and J , conditional on whatever is deemed appropriate, are low and $P(E/\text{Remainder})$ is also low; if so, $P(E/G)$ would also be low.

ease of exposition, we will abbreviate this typical theistic position as THEISM, and will abbreviate naturalism by NATURAL. If we were to take our evidence to be E, we get the immediate result that E confirms Christianity more than naturalism. Christianity, Islam, and Judaism logically imply that evil exists; thus the probability of this evidence on Christianity or any of these religions will be 1. According to Likelihoodism, since naturalism does not imply that evil exists, evil is stronger evidence for Christianity than naturalism. We will thus look at a more explicit description of the relevant evidence, UNAWARE, which is that evil exists and we are unaware of a good reason for God to permit evil. It does not matter for this argument if UNAWARE includes only that evil exists or includes information about specific evils. Likelihoodism would have us compare $P(\text{UNAWARE}/\text{THEISM})$ and $P(\text{UNAWARE}/\text{NATURAL})$. Specifically, we are interested in whether a typical theist should hold that $P(\text{UNAWARE}/\text{NATURAL})$ is greater than $P(\text{UNAWARE}/\text{THEISM})$.

One immediate problem for someone wanting to use these probabilities in a problem of evil is that it is very reasonable to withhold judgment on these probabilities, and on whether $P(\text{UNAWARE}/\text{NATURAL})$ is greater than $P(\text{UNAWARE}/\text{THEISM})$. Rationality certainly does not require us to hold precise views about these probabilities, and many typical theists may simply withhold judgment here. If so, no problem of evil using these probabilities can be generated to show those typical theists should hold that UNAWARE is evidence against their religious beliefs.

But suppose we only consider typical theists who hold fairly precise views about these two probabilities. Are these theists committed to thinking $P(\text{UNAWARE}/\text{NATURAL})$ is greater than $P(\text{UNAWARE}/\text{THEISM})$? Many typical theists hold that $P(\text{UNAWARE}/\text{THEISM})$ is high, because they think it is unlikely they'd mistakenly think they knew of a good reason for God to permit evil. With regard to $P(\text{UNAWARE}/\text{NATURAL})$, these theists can rationally hold that it is less than $P(\text{UNAWARE}/\text{THEISM})$. Given naturalism, there is no strong reason to think that we would be unaware of a good reason to permit evil. One can rationally hold that, given naturalism, it is unlikely that our minds would be reliable on religious issues, such as theodicy, and humans have a tendency to come up with all sorts of false beliefs about religious issues. Of course, much more needs to be said about this, but a rational theist could easily hold that, given naturalism, it is not likely that we'd be unaware of a good reason for God to permit evil. On the contrary, a rational theist could hold that $P(\text{UNAWARE}/\text{THEISM})$ is greater than $P(\text{UNAWARE}/\text{NATURAL})$, and thus, our ignorance of a good reason for God to permit evil would be stronger evidence for THEISM than for NATURAL. If so, these theists should hold that the problem of evil is a problem for naturalists, not for typical religious believers.

One might object to my rejection of the Core Assumption and my focusing on THEISM by claiming that any theory can be saved by building the evidence into the theory, but in doing so, the gain is illusory. One might object that by looking at

a specific theory instead of the core beliefs that predictive power is gained at the expense of lowering of the prior probability. So H may account for the evidence better than H_{core} , but H is much less probable than H_{core} . I looked at how Christianity, or THEISM, could account for UNAWARE, but THEISM is less probable than Austere Theism. Thus, one might argue that nothing is gained by looking at H instead of H_{core} , because both predictive power and prior probabilities play a role in rational belief.

I think this objection is mistaken and could lead us to reject many of our currently accepted scientific theories. In science, we often have a theory that contains a constant, but the theory itself does not provide the value of the constant. Many specific versions of the theory exist, corresponding to the range of possible values of the constant. If we think there are infinite possible values for the constant, all equally probable, we would have to assign each of these specific theories zero probability. In science, as a result of experimentation we regularly pick the value of the constant that will allow the theory to be empirically adequate; van Fraassen refers to this writing of theory by experiment when he talks about how experimentation fills in the blanks of a developing theory.¹⁵ This is not ad hoc; the low probability of the theory with specific constant is not a reason to withhold acceptance. Similarly, even though religions such as Christianity may be less probable than Austere Theism, the fuller account may be worth the decrease in prior probability.

For the sake of argument, we granted that $P(E/\neg G)$ is greater than $P(E/G)$, and thus, according to Likelihoodism E , would be greater evidence for $\neg G$ than it is for G . But even if we were to grant that, we see that it does not follow from Likelihoodism that UNAWARE is greater evidence for NATURAL than THEISM. A theist might readily admit that there is some evidence against a logical consequence of his beliefs; but that was almost certainly true beforehand and we did not need to investigate the problem of evil to know that. The theist could then point out that if we take a more complete description of typical religious beliefs and the evidence concerning evil, the evidence may actually support religious beliefs over naturalism. Most philosophical problems of evil assume the framework of the Core Assumption, but once we reject that, we find little reason to think that the facts about evil are evidence against religious belief; a theist could even rationally hold that evil is evidence against naturalism. The probabilities used in the Standard View are irrelevant to whether religious belief is actually confirmed or disconfirmed by what we know about evil. The result is that we cannot use the Core Assumption to formulate a convincing evidential problem of evil. This result is not limited to using Likelihoodism to characterize evidence; the same results would follow if we were to use most Bayesian accounts of evidence instead of Likelihoodism.

¹⁵ Bas C. van Fraassen, *The Scientific Image* (Oxford, UK: Clarendon Press, 1980), 73–74.

Conclusion

We have been looking at the effect the problem of evil has on the rationality of a typical theist's beliefs. We identified two common assumptions underlying most discussions of this issue, and I argued that these assumptions were problematic and should be rejected. Assumptions of this sort are not commonly made when assessing scientific theories, or even when looking at ordinary beliefs we may hold. One mistake is to judge the rationality of some beliefs by looking at a small subset of those beliefs, or by looking at a small set of beliefs they entail. Another mistake is to ignore the role that our experiences, hearts, and affections may have in the formation of rational belief. Once we avoid these mistakes, we find that the evidential argument from evil becomes difficult to formulate and defend. We looked at Likelihoodism to show that a rational religious person need not think facts about evil are evidence against religious belief; on the contrary, a typical theist might even hold that it provides evidence against naturalism. But even though it is very difficult to formulate any convincing philosophical problem of evil, evil is, and should be, a problem for religious believers. If contact with or awareness of evil does not affect us deeply, something is wrong with us. There is terrible evil in the world, and we should be shocked, angry, and depressed, at times. Otherwise we do not appreciate the magnitude of evil in the world. It is not admirable to flippantly brush off evil. But this is not a philosophical problem that affects the rationality of religious belief. To answer the problems that arise from evil, a philosophical approach in which we try to use reason alone to assess the evidence is not what is called for. I think here the approach we find in Job is much more appropriate. We can trust God and believe that God has a good reason while being horrified by evil. We can hope for the day in which good will overcome evil, and evil will be no more.

Otte on Hypotheses in Science and Religion

Bas C. van Fraassen

Since I am so much in agreement with Otte's critique of the arguments he targets, what I say will be more supportive than critical.¹ However, I do want to pose some questions for him concerning the *Sensus Divinitatis*. These will be questions equally, I think, for Alvin Plantinga.

Let me begin by briefly summarizing Otte's target, the "Standard View" that he sees as central to the subject of his critique.

¹ Richard Otte, "Theory Comparison in Science and Religion," this volume; see further his "Evidential Arguments from Evil," *International Journal for Philosophy of Religion* 48 (2000): 1-10.