

**A Proof of Miracles:
What Hume and the History of Science can tell us about Open-Mindedness**

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Abstract

Hume's argument against miracles is regarded by many as a devastating attack on the credulity of miracle reports. However, I claim that Hume's argument has two main defects. First, it employs a questionable definition of a miracle as a violation of a law of nature. Second, it commits a fallacy in ignoring a broader set of relevant evidence. More specifically, this evidence concerns episodes in the history of science which have radically violated our views about the world, including our views about the laws of nature. Furthermore, I argue this history furnishes us with a "proof" of miracles—in Hume's weaker sense of the term "proof". Importantly, though, the proven "miracles" are not necessarily religious in nature, but I refer to such phenomena as "miracles" for several reasons: they are extremely improbable to many, like religious miracles; they drastically violate our conceptions of reality and—at times—its laws of nature, like religious miracles; they are in tension with our experience, like religious miracles; they elicit strong psychological reactions such as marvel, repugnance or ridicule, like religious miracles; and, lastly, their existence is relevant to the probability of religious miracles. In this sense, the proof of miracles is one which even a confident atheist could accept. However, it is far from trivial, for it has implications for how open-minded we should be about the occurrence of "miracles"—regardless of whether they are interpreted to be religious in nature. Such open-mindedness, I claim, is important, so much so that it can and literally has made the difference between life and death.

Introduction

Hume levels an argument against the rationality of belief in miracles on the basis of testimony, and there is a sense in which this topic is important for us all. After all, a given religion is either true, or it is not, and we either believe in it, or we do not. If we believe that it is true when it is false, then there may be severe consequences: we might, for example, waste our time observing strict religious teachings or laws, or we may live life recklessly by relying on the omnipotent hand of a non-existent God. In contrast, if we *do not believe* that a given religion is true when it is *in fact true*, then there may also be severe consequences: we might deprive ourselves of God's love and guidance, or insufficiently prepare our souls for an afterlife, for instance.

So either you believe, or you do not, but either way, there may be severe consequences. What this means, at the very least, is that we would ideally make sure our belief or lack thereof is underpinned by good reasons.

Hume's argument, then, is important, since it purports to provide one reason bearing on the rationality of non-belief. Historically, miracle reports have often been the weapon of choice in arguments for theism or religion.¹ But do arguments from miracle reports justify belief in miracles, let alone in the religions which they putatively support? Hume answers with an emphatic "No", articulating one of the most influential—and controversial—arguments against belief in testimony to miracles.²

In this paper, I critique Hume's argument, proceeding in the following manner. In part I, I set out Hume's argument from miracles. In part II, I criticize Hume's conception of a miracle as a violation of a law nature, claiming that miracles are not violations of laws *as a matter of definition*, even if they are violations of laws *as a matter of fact*. In part III, I critically analyse the rationale of Hume's argument in a way so that it can be understood without reference to his contestable definition of miracles. There, I shall claim that his argument commits an inferential sin: it neglects a range of relevant phenomena that suggest the existence of other miracles—conceived of as phenomena that bear important similarities to religious miracles in epistemic, experiential and psychological respects. In part IV, I explain why the argument matters. At this point, I shall argue that the existence of such miracles should make us more open-minded to the possibility of religious miracles, even though it fails to justify belief in any particular miracle. More importantly, though, the significance of the argument is a more general one: it calls for a kind of open-mindedness that, I would hope, makes us more likely to embrace the miraculous when it does indeed rear its head. In part V, I lastly respond to various objections.

¹ Timothy McGrew, "Miracles," *The Stanford Encyclopedia of Philosophy* (Winter 2016 Edition), Edward N. Zalta (ed.), <https://plato.stanford.edu/archives/win2016/entries/miracles/>.

² McGrew, "Miracles."

Part I Hume's Case against the Miraculous

Hume's argument is ambitious, hoping to undermine belief in miracles for all time. He states:

I flatter myself, that I have discovered an argument... which, if just, will with the wise and learned, be an everlasting check to all kinds of superstitions delusion, and consequently, will be useful as long as the world endures.³

In particular, his argument is that “no human testimony can have such force as to prove a miracle, and make it a just foundation for any such system of religion”.⁴

His case against miracles comes in two parts.

In part I, Hume starts by discussing general epistemological principles before coming to the subject of testimony. Hume praises testimonial reasoning, claiming that there is no reasoning more “common”, “useful” and “necessary to human life” than the reasoning “derived from the testimony of men”.⁵ In accordance with his general epistemological outlook, he states that the reliability of testimony is founded on none other than the observed conjunction between testimonies on the one hand and their conformity to facts on the other. However, our confidence in a testimony can vary according to a variety of factors. These include, for example, whether the testimony conflicts with other testimonies, whether the testimony is one among a collection of supportive testimonies or whether the testifier has “an interest in what they affirm”.⁶

Aside from these factors, one crucial indicator of the credibility of a testimony is the content of the testimony itself. This, then, sets the stage for his argument against the veracity of miracle reports. Hume claims that:

A miracle is a violation of the laws of nature, and as a firm and unalterable experience has established these laws, the proof against a miracle, from the very nature of the fact, is as entire as any argument from experience can possibly be imagined.⁷

Let us unpack this statement from Hume, since it does a lot of philosophical work in his argument.

Hume sees a miracle as a “violation of the laws of nature”, although he also carefully defines a miracle as “*a transgression of a law of nature by a particular volition of the Deity, or by the interposition of some invisible agent*” (emphasis original).⁸ Hume gives us examples of regularities observed in the world, regularities whose prevention would require “a violation

³ David Hume, “An Enquiry Concerning Human Understanding,” in *Enquiries Concerning the Human Understanding and Concerning the Principles of Morals* by David Hume, ed. L. A. Selby-Bigge (Oxford: Clarendon Press, 1902), 110. Accessible at <http://oll.libertyfund.org/titles/hume-enquiries-concerning-the-human-understanding-and-concerning-the-principles-of-morals>.

⁴ Hume, “An Enquiry,” 127.

⁵ Hume, “An Enquiry,” 111.

⁶ Hume, “An Enquiry,” 112-3.

⁷ Hume, “An Enquiry,” 114.

⁸ Hume, “An Enquiry,” 115, fn. 1.

of these laws or, in other words, a miracle”.⁹ Such regularities include that “lead cannot, of itself, remain suspended in the air”, that “fire consumes wood”, that fire “is extinguished by water” and that “all men must die”.¹⁰

Unpacking the rest of the above quotation, Hume states that the evidence against these miracles comes from “a uniform experience” of their non-occurrence, an experience which furnishes “a direct and full *proof*” against their existence (emphasis original).¹¹ In this sense, he claims that “it is a miracle, that a dead man should come to life; because that has never been observed, in any age or country.”¹² Every miraculous event has such a proof—such a uniform experience—against its existence, “otherwise the event would not merit that appellation”.¹³

Arguably, the logic of Hume’s argument reflects an endorsement of Newtonian principles of reasoning. In the *Principia*, Newton’s rules III and IV prescribe inferring that regularities which have so far been observed also obtain *universally* without exception, with this inference being valid until counter-phenomena have been observed.¹⁴ Philosopher Graciela de Pierris has made the case that Hume accepts such rules. As evidence, she cites the consonance between Hume’s epistemological principles and Newton’s principles, as well as Hume’s explicit endorsement of “Newton’s chief rule of philosophizing” in a section of the *Enquiry*, there citing the Newton’s *Principia*.¹⁵ In this sense, the logic of Hume’s reasoning is to infer universal laws of nature from a uniform experience, and such an inference undercuts belief in miracle reports since such reports affirm the existence of phenomena which violate those laws.

Hume’s concludes part I of his discussion of miracles with the following maxim:

That no testimony is sufficient to establish a miracle, unless the testimony be of such a kind, that its falsehood would be more miraculous, than the fact, which it endeavors to establish: And even in that case, there is a mutual destruction of arguments, and the superior only gives an assurance suitable to that degree of force, which remains after deducting the inferior.¹⁶

⁹ Hume, “An Enquiry,” 115.

¹⁰ Hume, “An Enquiry,” 114.

¹¹ Hume, “An Enquiry,” 115.

¹² Hume, “An Enquiry,” 115.

¹³ Hume, “An Enquiry,” 115.

¹⁴ Isaac Newton, *Newton’s Principia: The Mathematical Principles of Natural philosophy*, trans. Andrew Motte, 1st ed. (New York: D. Adee, 1848), 384-385. “RULE III. The qualities of bodies, which admit neither intension nor remission of degrees, and which are found to belong to all bodies within the reach of our experiments, are to be esteemed the universal qualities of all bodies whatsoever.... RULE IV. In experimental philosophy we are to look upon propositions collected by general induction from, phenomena as accurately or very nearly true, notwithstanding any contrary hypotheses that may be imagined, till such time as other phenomena occur, by which they may either be made more accurate, or liable to exceptions.”

¹⁵ In that section, Hume is reasoning from the role that considerations of “usefulness” play in appraising the value of one social virtue—justice—to the role they play in appraising the value of others—such as “humanity, benevolence” and others. The pattern of reasoning clearly involves some inductive inference from the qualities of some instance to the qualities of “all similar instances”—much like Newton’s inference from the gravitational features of observed bodies to the properties of all others. Hume, “An Enquiry Concerning the Principles of Morals,” in *Enquiries Concerning the Human Understanding and Concerning the Principles of Morals by David Hume*, ed. Selby-Bigge, 203-4.

¹⁶ Hume, “An Enquiry Concerning Human Understanding,” 115-6.

Fogelin has interpreted this maxim as a conditional claim, one which establishes an evidential standard looking something like this: if a testimony to a miracle does not yield a stronger proof of the miracle than the uniform experience against the miracle itself, then “no testimony is sufficient to establish a miracle”.¹⁷

Read as such, part II then completes Hume’s case against miracles, arguing that, as a matter of empirical fact, no testimony to a miracle does meet such a standard of being a stronger proof. In this respect, Hume cites various factors undermining testimony to the miraculous:

- i. that history lacks testimonies to miracles which satisfy various indicators of credibility, such as testimonies coming from a sufficient number of witnesses who are well educated, have integrity and so forth;
- ii. that humans have a “strong propensity to the extraordinary and the marvelous” which irrationally impels them to believe miracle reports;¹⁸
- iii. that such reports “abound among ignorant and barbarous nations” or among people who are the descendants of such nations;¹⁹ and
- iv. that every miracle report for one religion is an argument against the miracles reports of other religions, since the religions contradict each other, thus creating a tension between miracle reports across religions.

The conclusion of Hume’s argument, then, is that “no human testimony can have such force as to prove a miracle, and make it a just foundation for any such system of religion”.²⁰

So that is Hume’s argument, but it is important to avoid two mistakes one might make when interpreting it.

One of these is to read Hume as giving an *a priori* argument against miracles—to define them out of existence, as it were.²¹ That his argument is *empirical* in nature is demonstrated by his claim that “there may possibly be miracles, or violations of the usual course of nature, of such a kind as to admit proof from human testimony; though, perhaps, it will be impossible to find any such in all the records of history.”²² He gives a specific example of this, claiming that it would be justifiable to believe that whole earth was enveloped in darkness for eight days in 1600 *if* it was reported by “all authors” in “all languages”.²³

On this note, the second mistake to avoid is interpreting Hume as offering a “proof” of absolute and permanent certainty against the existence of miracles. It is true that Hume does say that proofs “leave no room for doubt or opposition”, but he prefaces that statement by saying that he is aiming to “conform our language more to common use”.²⁴ Fogelin thus argues that Hume uses the terminology and strong language that he does as a way of communicating the strength of his argument to the audience, avoiding the language of probability to remove the implication that some—as Fogelin says—“genuine, though perhaps small, doubt remains”

¹⁷ Hume, “An Enquiry,” 116.

¹⁸ Hume, “An Enquiry,” 118.

¹⁹ Hume, “An Enquiry,” 119.

²⁰ Hume, “An Enquiry,” 127.

²¹ Robert Fogelin, *A Defense of Hume on Miracles* (Princeton: Princeton University Press, 2003), 32.

²² Hume, “An Enquiry,” 36.

²³ Hume, “An Enquiry,” 128.

²⁴ Hume, “An Enquiry,” 56, fn. 1.

about the non-occurrence of a miracle.²⁵ In contrast, Hume claims that “there are degrees of this species [of proof], and when a weaker proof is opposed to a stronger, it is overcome”.²⁶ So we might interpret Hume as offering a proof in this weaker sense of a very strong—but still defeasible—argument against the occurrence of miracles, one which is communicated from the standpoint of the mitigated skeptic who uses induction, but with caution.

This interpretation also coheres with Hume’s general epistemological stance which allows for the possibility of miracles, or indeed anything which is conceivable:

Whatever can be conceiv’d by a clear and distinct idea necessarily implies the possibility of existence...²⁷

That, so far as I can tell, is at least one coherent and charitable reading of Hume. I shall now move on to assess his argument.

²⁵ Hume, “An Enquiry,” 46.

²⁶ David Hume, *Letters of David Hume*, ed. J.Y.T. Grieg, vol. 2 (Oxford: Oxford University Press), 350. Quoted in John Earman, *Hume’s Abject Failure* (New York: Oxford University Press, 2000), 32.

²⁷ David Hume, *A Treatise of Human Nature*, edited by David Fate Norton and Mary J. Norton, vol. 1 (Oxford: Oxford University Press, 2007), 33.

Part II

Conceptual Critique: Miracles and Laws of Nature

In his discussion of miracles, Hume first claims that *by definition* a “miracle is a violation of a law of nature”; and his problems begin there.

Hume’s definition is contestable, but before explaining why this is so, we need to distinguish two senses in which a miracle may be a violation of a law of nature. The first sense is Hume’s sense, the *definitional* one. When Hume claims that a miracle is a violation of a law of nature, he means this in the same sense as the claim that all bachelors are unmarried men. The claims hold true *by virtue of the meaning* of the relevant terms. However, the second sense in which a miracle may be a violation of a law is not Hume’s sense; instead, it is an *empirical* one. To illustrate this sense, suppose we conducted a study which—somewhat unrealistically—found that all bachelors are depressed. Then, we might claim both that bachelors are unmarried men and that bachelors are depressed. However, the latter claim is true *by virtue of empirical facts* and *not* the meaning of the term “bachelor”. In a similar sense, one might claim that putative miracles—such as, say, the resurrection of Christ—are violations of laws of nature, not because this follows from the definition of a miracle, but rather because such miracles, as a matter of empirical fact, would violate the laws of nature which we believe obtain in our universe.

Now Hume makes a definitional claim that miracles are violations of the laws of nature, but this is contestable for two reasons

The first is that many believers of miracles—past or present, prominent or otherwise—have arguably understood miracles *without* reference to laws of nature or violations of them. As philosopher Aviezer Tucker states:

[T]he ancient Hebrews who introduced the concept of miracles had no idea of universal laws of nature or even exceptionless natural regularities. Nor did ancient Greek philosophy, the other source of Christianity, have such ideas. The Hebrew and Greek words for law, *chok* and *nomos* respectively, had exclusively social and normative meanings and connotations. Such laws, unlike natural-descriptive laws, do have exceptions and can be broken.²⁸

Augustine likewise discusses a reported “celestial portent”, which may be regarded as a miracle. More specifically, he discusses a report of an extraordinary change in the colour, size, form and course of a particular “star”. Augustine mentions an author named Varro who, Augustine claims, “would certainly not have called this a portent had it not seemed to be contrary to nature.”²⁹ However, he criticizes the view that portents are actually contrary to nature:

²⁸ Aviezer Tucker, “Miracles, historical testimonies, and probabilities,” *History and Theory* 44, no. 3 (2005): 376.

²⁹ Aurelius Augustine, *The City of God, Volumes I & II*, vol. 1, edited by Anthony Uyl and Rev. Marcus Dods, (Woodstock, Ontario: Devoted Publishing, 2017), 410.

For we say that all portents are contrary to nature; but they are not so. For how is that contrary to nature which happens by the will of God, since the will of so mighty a Creator is certainly the nature of each created thing? A portent, therefore, happens not contrary to nature, but contrary to what we know as nature.³⁰

Although Augustine does not mention laws of nature here, he does claim that portents are not “contrary to nature”, as a violation of a law of nature would be; rather, he claims a portent is only “contrary to what we know as nature.” More recently, theologian and physicist John Polkinghorne understood miracles similarly. He claims that the evaporation of water might seem like a violation of a law of nature to someone who had not experienced it before. Such a person would observe the temperature of water boiling in a kettle, seeing it steadily rise until it reaches 100°C, at which point “something totally unexpected happens: a small quantity of liquid then changes into a large quantity of steam.”³¹ From this example, he takes away the following message:

The point is this: the laws of physics don't change at 100 degrees C; they are exactly the same all the time. But the consequences of the laws of physics change quite radically as we enter, as physicists say, a new regime, the change from a liquid phase into a gaseous phase.

I try to understand God's action that we call miraculous in the same sort of way. There is an underlying consistency of God's relationship to the world but the existence of a new regime may mean that consistency expresses itself in totally unprecedented, totally unexpected consequences.³²

Of course, this only establishes that Hume's definition is controversial and is perhaps unnecessary for understanding miracles, but there is another argument that miracles need not be understood as violations of laws by definition, one somewhat following a similar argument from Tucker.³³ Take the resurrection of Christ, this probably being the most well-known example of a religious miracle. Now suppose that the resurrection did occur. It would surely be a violation of what many people *take to be* laws of nature.³⁴ But we could also suppose that it is not a violation of actual laws of nature: we could imagine that God created the laws of nature so as to permit resurrections in exceptional circumstances, just as the laws possibly permit other exceptional events like dinosaur extinctions caused by meteorites. Supposing that such an event did occur, I would still regard it as a religious miracle, especially since—*by supposition*—it is extraordinary, religiously meaningful and ultimately caused by God. But I need not regard it as a violation of an actual law of nature in doing so. Here, then, we have an event which, by hypothesis, is not a violation of a law of nature, but is still plausibly a religious

³⁰ Augustine, *The City of God*, 410.

³¹ John Polkinghorne, “God's Action in the World,” (J.K. Russell Fellowship Lecture, Pacific School of Religion Chapel in Berkeley, USA, April 6, 1990). Accessed April 10, 2018., at <http://www.starcourse.org/jcp/action.html>.

³² Polkinghorne, “God's Action in the World.”

³³ Tucker, “Miracles, historical testimonies.”

³⁴ I do not believe that Christ was physically resurrected, but this is not because I believe such a resurrection violates laws of nature: I simply do not know of any specific laws of nature which prohibit resurrections. Regardless, the frequency with which people die and stay dead seems sufficient to me to outweigh any evidence suggesting that Christ was resurrected.

miracle. This is then a counter-example to the claim that miracles are violations of laws of nature *by definition*. The reason for this is that if miracles are violations of laws of nature by definition, then we could not even imagine a miracle which was not a violation of a law of nature, just as we could not even imagine a bachelor that was also married.

Yet again, however, I stress that any putative miracle might be a violation of an actual law of nature, but this would be true *only as an empirical claim*, not as a definitional claim about what a miracle necessarily is.

One might still object to my resurrection argument, claiming that such an event would not be a miracle unless it violated an actual law of nature—even if it was extraordinary and caused by a God.

I fail to share whatever intuitions underlie this objection, but, in any case, my response to the objection is more to evade its force than to undercut it. *Even if* we grant the objection that miracles are violations of laws by definition, we can just change the topic and make basically the same criticism. Here is how. Take the class of extraordinary, divinely ordained events which people call “miracles”: resurrections, parting seas, faith healings, and the like. Now even if “miracles” are violations of laws by definition, it is *not* true that these events are violations of laws of nature *by virtue of their meaning*. In other words, then, these events need to not be understood as miracles qua violations of laws of nature. The reason for this is that we can understand what these events are in principle perfectly well without even understanding what a law of nature is, and, furthermore, we can imagine worlds in which they occur without violations of laws of nature. The problem with Hume’s argument, then, is that it presupposes that such events—which are ultimately the targets of his argument—should be understood as violations of laws of nature *as a matter of definition* when they certainly should not be.

Either way, contra Hume, the things which we label as “miracles” need not be understood as violations of laws of nature *by definition*. The implication is that, in principle, religious miracles could be the sort of things which conform to laws of nature, irrespective of whether we are able to precisely understand or describe those laws or not.

Part III

Empirical Critique: History's Case for the Miraculous

So I have argued that, contra Hume, miracles need not be understood as violations of laws of nature *as a matter of definition*, even if we understand any particular miracle to violate a law of nature *as a matter of empirical fact*.

However, Hume's main interest is largely empirical in nature and not conceptual: his purpose is largely to provide a "proof" against the occurrence of particular events which we regard as miracles, and he employs a particular definition or conception of those events only in service of this end.

But Hume's proof does not require such conceptual baggage in order to have force, for it ultimately rests on the evidence of experience. Hume says "a uniform experience amounts a proof", and this experience gives us a proof against the occurrence of miracles which is "as entire as any argument from experience can possibly be imagined."³⁵ He states, for example, that the ultimate reason why we disbelieve in a resurrection, then, is "because that has never been observed, in any age or country."³⁶ Technically, one could disbelieve in miracles on the basis of their uniform experience, even while not committing to Hume's view that such miracles contradict natural laws, either by definition or otherwise.

So Hume ultimately wields the cudgel of "uniform experience" against miracle reports, and this is where more problems arise. I believe that Hume's argument has some force, but not as much force as he suggests. It has a defect which, when recognized and addressed, actually furnishes a proof *for* the existence of a particular kind of miracles.

At the outset, however, I should make a strong disclaimer, followed by a strong claim. The disclaimer: the proof for the existence of miracles does not necessarily establish the existence of *religious* miracles, even though—as I shall explain later—it does bear some relevance to religious miracles. In that sense, I am not arguing for miracles in the sense that Hume or others may have in mind, and the argument is one which even a confident atheist could accept.

However, I call it a proof of "miracles" precisely because—and here is my strong claim—the phenomena whose existence it establishes are so similar to religious miracles in several respects that they might as well be regarded as religious miracles.

The first respect is an *epistemic* one: the phenomena are *extremely improbable*, at least relative to some people's interpretation of their evidence. In this sense, the phenomena drastically conflict with some people's conceptions of the world and its laws, just as religious miracles do for many.

And this is related to the second respect, an *experiential* one: the phenomena are in tension with people's uniform experience, at least as they interpret it.

However, proof of such phenomena is not remarkable in itself. After all, extremely improbable things happen all the time; take the particular outcome of a large lottery, or the Cavaliers beating the Warriors against a 3-1 deficit during the 2016 NBA championship.

Importantly, then, the phenomena I seek to establish resemble religious miracles in a third respect, a *psychological* one: reports of the phenomena—or even the idea of them—can elicit

³⁵ Hume, "An Enquiry," 114.

³⁶ Hume, "An Enquiry," 115.

strong reactive attitudes. Some of these reactions may be positive: marvel, wonder and awe, for example. Others may be negative, including befuddlement, shock, ridicule and repugnance. This, I claim, characterizes the attitude that many would have toward religious miracles today.

For this reason, then, I am not arguing merely for “improbable” or “extraordinary events”. I wish to argue for things that virtually are “miracles” in these respects.

To do this, however, let us reconsider the logic of Hume’s argument against miracles. Hume’s proof rests on uniform experiences. We uniformly experience fire to consume wood, lead to fall when not supported, humans to die, and the like. From this, we have as good a proof as possible that these regularities hold beyond the realm of our experience: that *all* fires consume wood, that *all* lead falls when not supported, that *all* humans die—even in the cases which we have not observed. Somewhat more formally, then, the inference schema might look something like this, for example:

Bob died
Susan died
Jeff died
...
n number of people died
Therefore, everyone is going to die

That kind of inference is at least part of Hume’s argument against miracles, but it has a problem—one which is important to recognize, and one which is discussed by Hans Reichenbach. Consider the similarity between the above schema and an analogous inference concerning the whiteness of swans:

Bob, the swan, is white
Susan, the swan, is white
Jeff, the swan, is white
...
n number of swans are white
Therefore, every swan is white

Reichenbach said this kind of inference was a “bad inference” which should not have been made, and the reason for this is that it neglected the fact that “color is not a constant characteristic within a species”, even though there is a uniform experience of the whiteness of swans.³⁷ To remedy this kind of inferential error, Reichenbach proposes his account of *cross-induction*, a means by which inferences to universal generalisations are undercut by considering broader evidence that bears on the generalisations under consideration. He formalizes this account in a complex schema involving matrices and the like. The details of his

³⁷ Hans Reichenbach, *Theory of probability: an Inquiry into the Logical and Mathematical Foundations of the Calculus of Probability*, 2nd ed., (Berkeley: University of California Press, 1949), 430.

proposal are complex, debatable and less relevant, but what is especially relevant is the spirit of his proposal.

Reichenbach's idea is relevant, precisely because a broader set of evidence—I claim—weakens the strength of evidence against religious miracles. (To some, this might seem to be an ironic criticism given that others—notably John Earman—criticise Hume's argument for resembling another idea of Reichenbach's, namely, the *straight rule*.)³⁸

Hume thinks that we have a proof against miracles because they are in tension with our uniform experience and our conceptions of the world, specifically the laws of nature we take to hold in the universe.

Like the inference to the whiteness of all swans, however, this proof ignores a relevant fact: the history of science is largely one of unveiling truths which are also in tension with our uniform experience and with our conceptions of the world. In this sense, these truths were regarded as extremely improbable, at least to many. Furthermore, they elicited strong psychological reactions, positive and negative. These truths, then, qualify as miracles in the three respects which I discussed earlier: the epistemic, the experiential and the psychological. In other words, then, the history of science is a history of miracles.

In this sense, at every time in human history, there have been miracles waiting to be discovered, and this uniform experience is as good as any Humean "proof" that there are more that are waiting to be found.

I will now substantiate this historical claim in the remainder of this part, and then I will turn to consider the significance of this proof of miracles in the next.

Case 1: Quantum physics

Quantum physics purports to deliver a scientific picture of the world at the atomic and sub-atomic levels, and while there are different interpretations of quantum mechanics, I will present the picture as it is painted by the standard interpretation: the Copenhagen interpretation.

According to the standard interpretation, quantum phenomena exhibit wave-particle duality. At some times, electrons, atoms, molecules and other physical phenomena are actually waves which do not possess particle-like properties, such as spin, definite location, and others. At other times, however, such phenomena are particles which do possess those properties. In the Copenhagen interpretation, what causes a quantum entity to transition from a wave to a

³⁸ Earman claims that the problem with Hume's argument is that it resembles Hans Reichenbach's straight rule. This, on Earman's rendition, is the rule that: "If n As have been examined and m have been found to be Bs, then the probability that the next A examined will be a B is m/n ." Earman, *Hume's Abject Failure*, 22. We can see how, if Hume did endorse the straight rule, we would get conclusions in conformity with some aspects of Hume's argument. After all, if, say, 10,000 humans have been examined, and 10,000 of them were found to be mortal, then the probability that the next human examined human will be a mortal is $10,000/10,000$, that is, a probability of 1—according to the straight rule. Consequently, a uniform experience of the mortality of humans would yield a proof with probability 1 that the next observed human is mortal. This then resembles Hume's argument insofar as Hume does think a uniform experience amounts to a proof which is free from doubt or opposition. But Fogelin argues Hume's logic is not so straightforward. As mentioned in Part I, he interprets Hume's language to be tailored to the audience, whereas he actually thinks Hume sees proofs as defeasible arguments which come in *degrees*. Thus, he thinks Hume would not endorse a principle advocating irrevocable probabilities of 1 on the basis of uniform experiences.

particle is the act of measurement, and such a transition is called *the collapse of the wavefunction*.

To some, this picture of the world is already pretty strange, but it gets even stranger. The stranger aspect of quantum physics was initially discussed in a paper from 1935, one authored by Albert Einstein, Boris Podolsky, and Nathan Rosen.³⁹ Their paper is complicated, but the basic gist of their argument is as follows. According to quantum mechanics, when two electrons interact, they become—as we would now say—“entangled”. This means that some properties of the one electron will be correlated with properties of the other, even after the electrons are separated and isolated at great distances from each other. For example, suppose you separated two entangled electrons by 150 kilometres, and then you measured the spin of one electron. In accordance with entanglement, you could *predict without measurement* that the other electron at that moment is spinning in the *opposite* direction. On the Copenhagen interpretation, the measurement of one electron instantly causes the collapse of both electrons so that they are spinning in opposite directions—even if the electrons are miles apart with no known chain of intermediary influence between the electrons.

The Einstein-Podolsky-Rosen paper aimed to highlight that such bizarre correlations are implied by quantum theory, and to argue that quantum theory was incomplete on that basis, that more was needed to somehow avoid this consequence. Einstein himself displayed a particular incredulity and repugnance to such a correlation, referring to it as “spooky action at a distance”. In a letter to a physicist at Caltech, Einstein says that action at a distance “is of course logically possible, but it is so very repugnant to my physical instinct that I am not in a position to take it seriously—entirely apart from the fact that we cannot form any clear idea of the structure of such a process.”⁴⁰ In another letter to Max Born, he also claims that quantum theory “cannot be reconciled with the idea that physics should represent a reality in time and space, free from spooky action at a distance”.⁴¹

Here, then, we have a clear case where one of history’s greatest minds evinces a reaction to a phenomenon which is characteristic of many reactions to miracles, religious or otherwise. Einstein treats such correlation with incredulity as well as “repugnance”. Undoubtedly the notion of action at a distance contradicted his conception of nature, one formulated in accordance with special relativity where no object can travel faster than the speed of light, let alone have *instantaneous* causal influence on another object separated by any arbitrary distance.

Despite this, however, standard quantum physics—with its picture of action at a distance—prevailed. A flurry of experiments over the past few decades have tested quantum entanglement, each delivering a verdict in its favour.⁴²

³⁹ Einstein, Albert, Boris Podolsky, and Nathan Rosen. "Can quantum-mechanical description of physical reality be considered complete?." *Physical review* 47, no. 10 (1935): 777-780.

⁴⁰ Einstein, letter to Paul Epstein, November 5, 1945. Quoted in Thomas Ryckman, *Einstein* (New York: Routledge, 2017), 144.

⁴¹ Einstein, letter to Max Born, 1947. Quoted in Ryckman, *Einstein*, 145.

⁴² See, for example, Marissa Giustina, Marijn AM Versteegh, Sören Wengerowsky, Johannes Handsteiner, Armin Hochrainer, Kevin Phelan, Fabian Steinlechner et al., "Significant-loophole-free test of Bell's theorem with entangled photons," *Physical review letters* 115, no. 25 (2015): 250401 and Bas, Hannes Bernien, Anaïs E. Dréau, Andreas Reiserer, Norbert Kalb, Machiel S. Blok, Just Ruitenber, R. F. L. Vermeulen, R. N. Schouten, C. Abellán, W. Amaya, V. Pruneri, M. W. Mitchell, M. Markham, D. J. Twitchen, D. Elkouss, S. Wehner, T. H.

Hence, physics tells a story of a world that was drastically different from the one which Einstein had envisaged, and many physicists simply believe this was one rare moment where Einstein got things wrong. As physicists Bruce Rosenblum and Fred Kuttner state:

In the last twenty years of his life, Einstein's continued challenging of quantum theory was often dismissed as his being out of touch with modern physics. He was indeed wrong in denying the reality of the "spooky action" he discovered to lurk in quantum theory. Its existence, now called "entanglement," has been demonstrated.⁴³

So quantum physics tells the story of one miracle—quantum entanglement.

Yet other stories abound.

Case 2: The Causes of Puerperal Fever

Another interesting case is that of German-Hungarian physician Ignaz Semmelweis. In the mid-19th century, puerperal infections afflicted maternity hospitals throughout Europe. Such infections were responsible for birth mortality rates in hospitals that were as high as 20 to 30%. Semmelweis investigated the phenomenon, despite being strongly opposed by his chief who thought that the infections were unpreventable. Semmelweis observed that the rate of mortality increased when babies were delivered by students who had come from dissecting rooms where there had been mothers who died from puerperal infection. He then ordered the students in a particular division of his hospital to wash their hands with chlorinated lime prior to examining the pregnant women. After this, the mortality rates in that division dropped from 18.27% to 1.27%. This led him to infer that some invisible objects were transmitted via the hands and that these objects were responsible for the infections.

Although many younger medics and Hungarians sympathized with Semmelweis' discovery, his ideas were also met with fierce opposition by others. His superior was critical. His ideas were also generally opposed strongly by others in the medical community, including the professors of medicine in many countries, a German conference of scientists and physicians and the editor of the *Wiener Medizinische Wochenschrift* who told him that he needed to stop his nonsense about washing hands with chlorine solutions. The germ theory of disease was not accepted at the time, and Semmelweis was unable to explain in a convincing manner precisely what was going on and why. Semmelweis then met an unfortunate end. As professor Imre Zoltán recently put it:

The years of controversy gradually undermined his [Semmelweis'] spirit. In 1865 he suffered a breakdown and was taken to a mental hospital, where he died. Ironically, his illness and death were caused by the infection of a wound on his right hand, apparently the

Taminiau and R. Hanson, "Loophole-free Bell inequality violation using electron spins separated by 1.3 kilometres," *Nature* 526, no. 7575 (2015): 682-686.

⁴³ Bruce Rosenblum and Fred Kuttner, *Quantum Enigma: Physics Encounters Consciousness* (Oxford; New York: Oxford University Press, 2011), 10.

result of an operation he had performed before being taken ill. He died of the same disease against which he had struggled all his professional life.⁴⁴

Decades later, with the advance of science, his views were eventually accepted, and he has since been hailed as a hero of his time.

Case 3: Newton and gravity

A third case is Newton's theory of gravitation. His theory explained the motions of bodies in a novel way which Aristotelian mechanics could not. However, some philosophers and prominent thinkers, such as Huygens and Leibniz, saw Newtonian mechanics as involving strange, supernatural and occult forces because it involved action at a distance.⁴⁵ For instance, in Newton's theory, the sun would influence the movement of the earth through a force of gravitation without any chain of material bodies pushing on other bodies which in turn influences the earth's motion. At the time, this was quite unintuitive for the prevalent "mechanical" philosophy where action is mediated via causal chains connecting causes to effects. Although Newton was aware of the strange nature of gravitation which he postulated, historian William Harper states that Newton's "genius was not that he did not share their metaphysical qualms, but rather that he did not let failure to give a mechanical explanation undercut his inferences from phenomena to universal gravity."⁴⁶ Despite this, his ideas were fiercely resisted by some of his colleagues. Now, however, his theory is regarded as a major milestone in scientific progress—a significant advancement closer to the truth—even though it has largely been superseded by general relativity.

Case 4: Continental drift theory

A fourth case is continental drift theory. As the name implies, the theory held that the continents drifted. British broadcaster David Attenborough speaks of what might be considered a hyper-sceptical attitude held in the 1940s toward continental drift theory. He states:

At university I once asked one of my lecturers why he was not talking to us about continental drift and I was told, sneeringly, that if I could I prove there was a force that could move continents, then he might think about it. The idea was moonshine, I was informed.⁴⁷

Of course, the idea that the continents moved is now widely accepted in science, and it is now a core component of modern plate tectonics theory, but it was far from accepted at the time

⁴⁴ Imre Zoltán, "Ignaz Semmelweis," *Encyclopædia Britannica, Inc.*, accessed April 10, 2018, <https://www.britannica.com/biography/Ignaz-Semmelweis>.

⁴⁵ William L. Harper, *Isaac Newton's Scientific Method: Turning Data into Evidence about Gravity and Cosmology* (Oxford; New York: Oxford University Press, 2011), 44 and 215.

⁴⁶ Harper, *Isaac Newton's Scientific Method*, 215.

⁴⁷ Quoted in Robin McKie, "David Attenborough: Force of Nature," *Guardian News and Media Limited*, accessed November 18, 2013, <http://www.theguardian.com/tv-and-radio/2012/oct/26/richard-attenborough-climate-global-arctic-environment>.

which Attenborough describes. Continental drift theory, then, is another case where science vindicated conceptions of the world that were considered remarkably strange or improbable at the time.

Concluding Comments

So we have reviewed four cases from the history of science. Let me now summarise what I think unites them, and how this relates to the discussion at hand.

Clearly, the controversial phenomena in each case were regarded as improbable, even by educated contemporaries at the time. Einstein struggled to even take seriously the possibility of quantum entanglement; numerous medical professors outright rejected Semmelweis' theory; scientists derided continental drift theory, so much so that they often refused to teach it; and such great thinkers as Leibniz and Huygens rejected Newton's theory of gravitation because it postulated the notion of action at a distance without mechanical interactions between material intermediary bodies. In this sense, each one of these phenomena radically contradicted people's conceptions of reality. In some of these cases, these phenomena more specifically contradicted what people would have regarded as laws or regularities of nature, such as the law that no objects can interact faster than the speed of light or that no object can interact without direct contact or without the mediation of other material bodies which were in direct contact.

In each case, the phenomenon were in tension with the experience of the sceptics, at least as they interpreted it. Einstein had only experienced interactions between physical objects which had physical intermediaries, none of which travelled faster than the speed of light. The medical professors had not experienced invisible objects which could somehow transmit diseases from, say, dissecting rooms to examination tables. The skeptical academics had not experienced the movement of continents in a way which they thought favoured continental drift theory. And Leibniz and Huygens had not experienced objects influencing others without intermediary chains of material bodies acting on each other.⁴⁸ Put differently, suppose these critics *had* experienced the phenomena they opposed, and that they *did* interpret their experiences as such. It is then doubtful that they then would have so strongly opposed the very things which they regarded themselves to have experienced.

Furthermore, in each of these cases, there were or—at the very least, probably were—strong psychological reactions that are analogous to reactions to miracle reports. Einstein indicated that he found the notion of action at a distance to be “very repugnant” and “spooky”; Newton's ideas were regarded as invoking supernatural or occult forces; Attenborough was told that the idea of continental drift was “moonshine” in a sneering or ridiculing manner; and while the evidence for similar psychological reactions to Semmelweis' ideas are less direct, it is probable that, out of the many critics, at least some would have regarded his invisible transmitters of disease as strange, mysterious or altogether ridiculous.

⁴⁸ The critic might point out that the opponents of Newton's theory resisted action at a distance on the basis of an *a priori* assumption that causal action occurs only by impact. Be that as it may, it is still the case that Newton's theory was closer to the truth, even though it was in tension with the experience of his opponents who presumably only experienced what they thought was causal action by impact.

In this sense, then, I claim that these are four cases of what, in my main respects, are “miracles” unearthed in the history of science.

And while I have discussed only these four cases, I suspect many more could be given, including the heliocentric nature of the solar system, the roundness of the earth, and even Darwinian evolutionary theory which one scientist derided, saying that its invocation of chance relied on the ‘law of higgledy-piggledy’.⁴⁹

In every age, then, there were phenomena which some effectively regarded as miraculous, which grossly violated human conceptions of the world. Do we really think, then, that there are no more miracles waiting to be discovered—that we are, for the first time in human history, at the apex of understanding where we can see reality as it is through the lens of our uniform experience?

To my mind, the history of science shows that the question is not *whether* such undiscovered miracles exist, but rather *what* undiscovered miracles do exist. What, then, are the undiscovered truths of our time which are as whacky to us as moving continents, action at a distance or invisible killers were to those before us?

Unlike Hume, then, who merely *allows* for the possibility of miracles on the basis of their *conceivability*, I advocate the *expectation* of miracles on the basis of their *historical demonstrations*.

In this regard, another important question arises: *will* we have the ability to recognize these miracles when they rear their head—or will we instead reject them as many of our predecessors have before us?

This question in turn leads me to a discussion of why the proof of miracles matters, the topic of the next part.

⁴⁹ John Henry, *A Short History of Scientific Thought* (Houndmills; New York: Palgrave Macmillan, 2012), 236.

Part IV

Why it all matters

So I have argued that the history of science, far from undermining the existence of miracles, actually leaves no room for genuine doubt that undiscovered miracles *do* exist. This, then, furnishes a “proof” of miracles, in Hume’s sense of the word “proof”, but not in Hume’s sense of the word “miracles” qua violations of laws by a Deity or other invisible agents.

Yet one might object that the preceding discussion lacks any significance, particularly if it only establishes the existence of miracles which are not necessarily religious.

To the contrary, there are two reasons why one might think it is significant.

First, the history of miracles—in my sense of the term—*does* have implications for what attitudes we should take toward religious miracles. Now I have argued that such miracles need not be interpreted as violations of laws of nature *by definition*; at most, they would violate what we regard as laws of nature *as a matter of empirical fact*. Regardless, Hume rails against such miracles as they are in tension with our uniform experience and our conceptions of reality, including laws of nature. In a Reichenbachian spirit, I have criticized Hume’s argument by claiming that it ignores a broader set of evidence which should lead us to expect phenomena which are in tension with our uniform experience and with our conceptions of reality, including laws of nature.

Such phenomena are not necessarily religious, but religious miracles, if they existed, would be an *instance* of such phenomena. Religious miracles often are regarded as improbable, are in tension with our experience, and elicit strong psychological reactions—and they are often disbelieved in for these reasons. But if the history of science is anything to go by, we can be confident that there are some unknown phenomena for which these reasons also hold. So we should be more open-minded about such miracles than we would have been otherwise, even if we can be highly confident that no particular religious miracle has occurred unless evidence is presented to the contrary.

This, then, is the sense in which even a confident atheist could accept the proof of miracles: the atheist can be confident that religious miracles do not exist, but since they should expect that miracles *of some unknown kind* do exist, they cannot be *too* confident, for it might so happen that such miracles are religious in nature. For example, one might think that it is improbable that Christ was resurrected—as I do—but the history of science’s miracles may nevertheless makes them more open-minded than they would have been otherwise—as I would like to think I am. To semi-formalize this idea, we might say that the proof should adjust our subjective probability of religious miracles, even if it only raises our confidence from, say, a probability of 0.00001% to 0.001%.

However, the critic might object that such an adjustment of confidence is so small that it is inconsequential, and one would still effectively disbelieve in the religious miracles.

This, then, brings me to the second and more general reason why the proof of miracles matters. There is a decent chance that the expectation of miracles will make us more open to believing in miracles—whether or not they are religious in nature—when they do occur and present us with evidence of their existence. Consider the critics of entanglement, Semmelweis’ theory, continental drift or Newtonian mechanics. If these critics had a proof of miracles—if they were cognizant of the fact that nature has often run contrary to our firm expectations in

deeply shocking, repugnant or spooky ways—would they have been more likely to fairly or correctly assess the evidence for the miraculous ideas which they mistakenly rejected? I suspect that the answer is “Yes”. And if that is the case, then the proof is significant. At least in the Semmelweiss’ story, perhaps the lives of many children could literally have been saved.

For these reasons, then, I claim that the proof of miracles is significant.

Part V Objections

So I have presented Hume's argument and criticised both its conception of miracles as well as its neglect of a broader set of evidence which should lead us to expect miracles of some description. I have also argued that such evidence is significant, for it has implications for how open-minded we should be to the occurrence of miracles—irrespective of whether they are religious in nature.

Yet my argument is open to various objections which I shall now attempt to address.

Objection 1: You conflate something being conformable to experience vs. something being contrary to experience

Hume draws the distinction between something *failing to conform* to our experience versus something *being contrary* to our experience, as in the case of the Indian prince who disbelieved that water freezes because he had never experienced it.

The critic might object that the proof of miracles conflates these two things: it takes some phenomena which had *not conformed* to our experience—such as quantum entanglement between electrons—and uses such experiences to call for an open-mindedness about things which *genuinely conflict* with our experience—such as the resurrection of Christ.

The problem with this objection, however, is that whether a hypothesis of interest is contrary to or is merely not conformable to our experience is arguably a matter of how we describe the experience. For example, if we describe the Prince's experiences as being the experience of *water* not freezing, as it surely was, then the hypothesis that some water froze is surely contrary to his experience. However, if we describe the Prince's experiences as being the experience of *water in India* not freezing, as it surely was, then the hypothesis that some water *elsewhere* froze is surely *not* contrary to his experience.

The problem, then, is that whether a putative miracle—religious or otherwise—is contrary to our experience is likewise dependent on how we describe the experience. If we describe Einstein's experiences as being the experience of *physical objects not moving faster than the speed of light*, as it surely was, then the hypothesis that physical objects had interactions faster than the speed of light was surely contrary to his experience. However, if we instead describe Einstein's experiences as being the experience of *macroscopic physical objects* not moving faster than they speed of light, as it surely was, then the hypothesis that *quantum* objects had interactions faster than the speed of light was *not* contrary to his experience. Likewise, if we describe our experience as being of *people* who do not rise from the dead, then the hypothesis that Christ was resurrected surely is contrary to our experience. But if we describe our experience as being of *particular people* who do not rise from the dead, then the hypothesis that *some other person*—Christ—was resurrected surely is not contrary to our experience. For example, we might say that, unlike with Christ, the people we experience not rising from the dead are people who are not in a time of messianic expectations, or we may appeal to any one of a number of other differences between what have experienced and what we have not.

This problem arises because, in general, anything we want to make an inference about is not something we have directly experienced, otherwise we would not need to make an inference about it; and there consequently is always some difference between the objects of our inferences on the one hand and the objects of our experience on the other. Consequently, if we omit the differences in our descriptions of our experiences, then our experiences as described will be contrary to the hypotheses of interest; otherwise, they merely will not be conformable to them.

The point is not that our experience cannot furnish reasons to disbelieve in miracles, reasons are stronger or weaker according to the particular similarities and dissimilarities between our experiences and the hypotheses of interest. Indeed, I disbelieve in the physical resurrection of Christ precisely for that reason.

The point is that whatever such reasons are, they do not rest on a description dependent contrast between things which are contrary to our experience and things which are merely not conformable to it. The upshot is that one cannot then use this distinction to resist the conclusion that we should be more open-minded about religious miracles than we would have been without the history of scientific miracles.

Objection 2: The supernatural and the miraculous vs. the natural and the marvelous

One might object to my argument on the basis that the miracles in the history of science are importantly different from religious miracles in two respects: The first is that the former sort of miracles are *natural* whereas the latter sort of miracles are *supernatural*. The second is that the former sort of miracles are merely *marvelous* whereas the latter sort of miracles are really *miraculous*.

There are two problems facing this objection.

The first is that it is not clear that there is a principled distinction between these concepts which can help the objector. For example, we might say that natural objects are distinct from supernatural objects because the former cohere with our view of the natural world whereas the latter do not. However, by this account, some opponents of science's miracles—such as quantum entanglement and Newtonian gravity—would have surely seen these phenomena as supernatural *qua* violating their conception of the natural world. Indeed, disbelievers of Newtonian gravitation thought precisely that it was such an occult or supernatural phenomenon. In this case, this distinction does not help the objector's case; the history of science's miracles *is relevant* to religious miracles because it suggests we should be more open-minded about things that we would regard as supernatural than we would have been otherwise. It is similarly doubtful that there is a principled distinction between the marvelous and the miraculous which could help the objector.

In any case, the second problem with the objection is that even if there is a principled distinction between the history of science's miracles and religious miracles, this is neither surprising nor problematic for the case of open-mindedness. After all, there is bound to be *some* difference between the miracles we have uncovered and the miracles that are yet to be discovered. Indeed, there have been dramatic differences between science's miracles; moving continents, invisible disease-causing objects, and “spooky” instantaneous action at a distance

all bear important dissimilarities from each other. Any difference, then, between religious miracles and such discovered miracles cannot be taken to undermine the case for open-mindedness, especially if that difference is supposedly that religious miracles are improbable, contrary to our view of nature or elicit psychological reactions like ridicule—just like all of the previously discovered miracles.

Objection 3: Hume's expectation of miracles

I have claimed that Hume does not adequately accommodate what the history of science's miracles can tell us about the probability of religious miracles. More specifically, I claim that we should expect miracles of some unknown description, and that this should make us more open-minded about the possibility of religious miracles than we would have been otherwise.

The critic might object that my argument sets up a strawman of Hume, further objecting that Hume *does* think there will be miracles as such.

The critic might claim this for three reasons.

The first is that Hume acknowledges that anything which is conceivable is possible.⁵⁰ However, the fact that something is conceivable does not lead us to expect that thing. It might be conceivable that it will rain tomorrow, but this would not lead me to expect that it will rain tomorrow, at least not in the same way that I would if I knew it had frequently rained in the recent past. Likewise, it might be conceivable that there are miracles of some description, but this would not necessarily lead me to expect that there are such miracles to be discovered, at least not in the same way that I would if I knew that science often revealed miracles in the past. Yet this expectation is precisely what I argue for and is what Hume does not.

The second reason one might think that Hume expects miracles comes from his discussion of the eight days of darkness. There, Hume claims that it would be justifiable to believe that the whole earth was enveloped in darkness for eight days in 1600 *if* it was reported by “all authors” in “all languages”.⁵¹ Hume's rationale for this claim is as follows: because the “decay, corruption, and dissolution of nature, is an event rendered probable by so many analogies”, any event which “seems to have a tendency towards that catastrophe, comes with the reach of human testimony, if that testimony be very extensive and uniform.”⁵²

However, Hume here is only allowing that some *catastrophic* events can be supported by testimony in virtue of their similarity to other catastrophic events in nature. Despite this, he does not acknowledge that we should expect things which are in tension with our experience and contradict our conceptions of the world. He also does not say that such things can be supported by testimony in virtue of their similarity to other things which have likewise been in tension with our experience and which contradict our conceptions. And yet religious miracles are often precisely the kind of things that are in tension with our experience and contradict our conceptions of the world. Therefore, Hume does not acknowledge what I think are the

⁵⁰ Hume, *A Treatise*, 33.

⁵¹ Hume, “An Enquiry,” 127.

⁵² Hume, “An Enquiry,” 128.

implications of the history of miracles—that we should be more open-minded to their existence than we would have been otherwise if we did not expect further miracles to be discovered.

A third reason is that Hume acknowledges that we can experience things which disappoint our expectations when he outlines his rules of reasoning about causation. There, Hume states that when we see two causes with different effects, and this contradicts our expectations, “we must conclude that this irregularity proceeds from some difference in the causes.”⁵³ In this sense, then, the critic may claim that Hume appears to allow for the possibility that there will be events or irregularities which contradict our experience. Even if this is the case, however, it does not follow that Hume *expects* there to be truths about the world which we regard as improbable, which contradict our views of the world, and which elicit strong psychological reactions—and he does not spell out the implications of this for our open-mindedness to religious miracles. My criticism, however, is that this should be done if we want to assess the relevant evidence bearing on miracle reports.

⁵³ Hume, *A Treatise*, 117.

Conclusion

In summary, then, Hume's argument against miracles has some merit to it, but it is mistaken on two grounds. The first is conceptual: miracles need not be violations of laws of nature *by definition*, even if they would be violations of laws as a matter of fact. The second is empirical: the history of science's miracles is relevant to the probability of religious miracles, yet its history and its implications are overlooked in Hume's discussion. In this sense, we can have the confidence bestowed by a Humean proof that there are miracles waiting to be discovered—that there are phenomena which are extremely improbable to many, which violate our conceptions of reality or its laws, which are in tension with our experience and which elicit strong psychological reactions such as repugnance, shock, marvel or ridicule.

The proof of miracles does not lead us to expect particular miracles, like quantum entanglement, moving continents or any religious phenomena. But it is still significant, for it would help us to more open-mindedly and correctly assess the evidence for actual miracles when it is presented to us—as it inevitably will be.

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