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ATHEISM AND SCIENCE

On Einstein's "Cosmic Religious Sense"

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PANTHEISM AS ATHEISM

From the moment the term was coined by an incensed eighteenth-century commentator, the position known as “pantheism” has been equated with atheism.¹ The year was 1709, and in an incensed response to the work of the Irish natural philosopher John Toland, the French author Jacques de la Faye wrote, “Toland believes in no God aside from nature, or the workings of the world. This is Atheism, or Pantheism (*hoc est Atheismum aut Pantheismum*).”² Thus we find the first recorded use of a word that centuries of philosophers would go on to use interchangeably with absurdity, irrationality, womanishness, primitivity, and—as we see from the moment of its invention—atheism. Even before the word existed, in fact, the heresy known as “pantheism” prompted the intellectual historian Pierre Bayle to denigrate its alleged forefather Baruch Spinoza as a “Jew by birth, and afterwards a deserter from Judaism, and lastly an *atheist*.”³

For those with even a cursory knowledge of Spinoza, this accusation may seem perplexing. Against philosophical dualism on the one hand and popular theism on the other, Spinoza equated “God” with “Nature,” explaining the entire world as a perfect expression of divinity itself. Such omni-theism prompted the German poet-mystic Novalis to call Spinoza a “God-intoxicated man.”⁴ Or in the words of that other poet-mystic Goethe, “Spinoza does not have to prove the existence of God; existence *is* God.”⁵ So if *everything* is God for Spinoza, then how does this all-God become in the eyes of critics a no-God? Why is pantheism so consistently equated with atheism, then and now, by theists and atheists alike?

There are two lines of thinking that produce this equation of panthe-

ism with atheism. The first is theological, and it insists that a God who is the universe would be no God at all. A clear representative of this sort of logic is the Reverend Morgan Dix, rector of Manhattan's Trinity Episcopal Church in the mid-nineteenth century. Faced with an effervescent onslaught of transcendentalism—Emerson with his eyeball and Thoreau with his oversoul and Whitman with God in his lunchbox—Dix laments that in this bleak pantheist landscape “there is left no God. A substance, impersonal, there is; but we cannot imagine that unintelligible, unreasoning, unthinking, unloving state of impotence as our Father, our Creator, our Redeemer, our Sanctifier, our Friend. The God in whom we have believed is gone.”⁶ But what is “pantheism,” and how does it obliterate the Father-Creator-Redeemer-Sanctifier-Friend in whom “we” have believed?

Etymologically, the term means “all-God,” a patching together of the Greek words *pan* and *theos*. For pantheists, God does not just create the world; God *is* the world. But if God is the world, then God bears no greater resemblance to a father than to a forest, an elephant, or a tide pool. Hence Reverend Dix's horror in the face of the disappearance of his anthropomorphic God. The most pantheism can give us, he says, is a substance—and who on earth would pray to a substance? Or, for that matter, to an elephant or a forest? How could anyone relate meaningfully to an “impersonal,” “unintelligible, unreasoning, unthinking, unloving state of impotence”?

To be sure, a hypothetical defender of pantheism might contest a number of these adjectives. For example, insofar as the pantheist God is the universe itself, and insofar as the universe does seem to produce things, it would certainly not be impotent. And insofar as it is possible to think of such a God-world, it would certainly not be unintelligible. Finally, although its attributes would differ radically from *human* reason, thought, and love, there is no reason the pantheist divinity could not be in some way personal—even omnipersonal. But Dix's primary concern with pantheism is not actually its impersonalism; his concern is its feminized *nonanthropomorphism*. Traditional monotheism has understood God to be a singular, unchanging, disembodied (super)male. The pantheist God-world, by contrast, necessarily entails multiplicity, malleability, and materiality—traditionally feminine characteristics that interrupt nearly every traditionally theistic attribute. From Dix's perspective, then, the pantheist all-God is no God at all. To be a humanoid father-friend is what it means to be God in the first (and only) place.

The second line of thinking behind the perennial alignment of pantheism with atheism is more philosophical than theological. With Arthur Schopenhauer, it reasons that calling the world “divine” simply does not add anything to the concept of “world.”⁷ A universe-that-is-God is func-

tionally and substantially equivalent to a universe-without-God, so as Schopenhauer has quipped, pantheism is nothing but “a euphemism for atheism.”⁸ From this perspective, it would be more honest just to call the world “world” than to dress it up with divinity; in the words of the pragmatist philosopher Nancy Frankenberry, “by assimilating *God* to *Nature* . . . [pantheists] raise the suspicion that one of the two of them is semantically superfluous.”⁹ The pantheist world creates and sustains itself, and as such, it is effectively atheistic.

As we endeavor in this volume to track the contours and subspecies of atheism—and to assess their fraught interconstitution with the positions they reject—my guiding question is whether pantheism amounts to the “atheism” with which it is so often and so polemically conflated. To assess this conflation, I will turn to a little-remembered scandal in the recent annals of intellectual history—namely, the panicked accusations of atheism hurled at the physicist-philosopher Albert Einstein, who professed an overwhelming awe at the mystery, order, and, indeed, divinity of the cosmos. By reading Einstein against himself, I will ultimately suggest that a pluralistic, perspectival pantheism would constitute even more of a threat than atheism to the anthropic father-friend of classical theism, whose toxic sovereignty Devin Singh exposes as the linchpin of imperial political theology, and whose monarchical attributes tend to be retained even in those positions—including Einstein’s—that purport to kill him off.¹⁰

THE EINSTEIN CRISIS

The public outcry over “Einstein’s God” or “Einstein’s religion” flared up, and for the most part died down, in the second quarter of the twentieth century. Far from being a strictly ecclesiastical affair, this “Einstein crisis” was the hybrid product of a series of theological, political, scientific, economic, and epistemological convulsions, including the devastation of the First World War, the overturning of Newtonian physics by general and special relativity, the rupture between science and religion staged in the 1925 Scopes Trial, the rise of fascism in Europe, the crash of the US stock market, and Einstein’s decade-long debate with Niels Bohr over quantum mechanics and the nature of reality. Arising from all these factors in complex relation, the Einstein crisis can be organized into three major waves.

The first wave hit in April 1929, one week before a lavish gala at the Metropolitan Opera House in honor of Einstein’s fiftieth birthday, which would draw 3,500 people in support of the Jewish National Fund and the Zionist Organization of America.¹¹ As American Jews prepared to celebrate their most famous kinsman, Boston cardinal William Henry O’Connell

delivered an address to the New England Province of Catholic Clubs of America, urging their members to pay no attention to the Jewish pseudo-prophet. Having previously denounced Hollywood and radio technology for proliferating a monstrous cadre of “masculine women” and “effeminate men,” the cardinal charged Einstein’s theory of relativity with endorsing the categorical indistinction of the topsy-turvy era.¹² The theory, he insisted, was nothing more than “befogged speculation producing universal doubt about God and his creation, cloaking the ghastly apparition of atheism.”¹³

However camp it may sound to our ears, the word *ghastly* (from the German *geistlich*) still meant genuinely horrifying or terrifying in the early twentieth century. So Cardinal O’Connell warns us of a ghostly horror: of the apparition of an absence, namely, the absence denoted by atheism, which is less a substantive position than a refusal of substantiation. O’Connell’s ghostly absence-presence is, moreover, “cloaked” in befogged speculation. A ghost in a fog that, furthermore, compels us even as it horrifies us—after all, O’Connell tells us our specter produces “*universal* doubt about God and his creation.” According to this account, then, absolutely everyone is being drawn to the repellant account of the universe that general relativity provides.

If O’Connell’s metaphors are hard to follow, his meaning is even foggier. He is clearly saying that relativity amounts to atheism, but he does not explain how, except to say that the theory is too confusing to be true and that it makes no mention of God.¹⁴ But one can surmise from the ensuing controversies that the mere name of *relativity* connoted for O’Connell moral laxity—the sort that had in his eyes devoured law, economics, politics, and gender in the postwar era, and that he, along with nearly all his Catholic and mainline colleagues, believed could be held in check only by an unchanging, immovable, extracosmic lawgiver.¹⁵ In short, relativity’s denial of any absolute reference point for space and time seemed to O’Connell a denial of the Absolute altogether, and for that reason, it was both morally and empirically wrong.

Seeking to defend his assailed hero against the incensed cardinal, the Orthodox rabbi Herbert S. Goldstein of the Institutional Synagogue in New York sent a cable to Einstein in Berlin, asking, “Do you believe in God? Stop. Prepaid reply 50 words.”¹⁶ As it turned out, Einstein needed half as many words: “I believe in Spinoza’s God who reveals himself in the orderly harmony of all things, not in a God who concerns himself with the fates and actions of human beings.”¹⁷ In an interview a few years later, Einstein would go on to clarify that his reply to Rabbi Goldstein “was not intended for publication. No one except an American could think of sending a man a

telegram asking him: ‘Do you believe in God?’¹⁸ Nevertheless, the earnest American rabbi took Einstein’s cabled profession as proof that the physicist did, in fact, believe in God, and he went on to publish it in the *New York Times* as a rejoinder to Cardinal O’Connell. Einstein was by no means a ghastly atheist, Goldstein announced; after all, he had invoked Spinoza in a telegram. And “Spinoza, who is called ‘the God-intoxicated man’ and who saw God manifest in all of nature, certainly could not be called an atheist.”¹⁹ Of course, Goldstein’s defense of Einstein was hardly beyond dispute; as we have already seen, Spinoza himself was called an atheist, as well as a pantheist, as well as an atheist disguised as a pantheist. And in an uncanny recapitulation of these seventeenth-century accusations, Pope Pius XI (the one who collaborated with the Nazis before realizing it was a mistake²⁰) declared that Cardinal O’Connell was correct: Einstein’s theory of relativity amounted to “authentic atheism even if camouflaged as cosmic pantheism.”²¹ So once again, pantheism amounts to atheism, but now our ghostly cloaking has become more militarily coded: atheism here is “camouflaged” in pantheism, lurking in its soft underbrush to launch a sneak attack on orthodoxy.

The second wave of controversy hit just seven months later, when Einstein published a piece in the *New York Times Magazine* entitled “Religion and Science.”²² Subtly informed not only by Spinoza but also by Kant, Nietzsche, Schleiermacher, Schopenhauer, and the colonial anthropology of the long nineteenth century, Einstein suggests in this short essay that “religion” develops in three historical stages. First comes the “religion of fear,” in which so-called primitive peoples install anthropomorphic beings behind the terrifying forces of nature. As humans seek to please these beings, this first expression “develops” into a “moral religion,” whose people are united under the eternally binding command of a single lawgiver. Although this moral stage dominates the so-called civilized religions, Einstein explains that it remains immature because it still worships an “anthropomorphic” God who concerns himself primarily with humanity. The highest stage of religion, he suggests, breaks free of this anthropomorphic deity and his anthropocentric carryings-on, and revolves instead around what Einstein calls a “cosmic religious sense,” which is to say an appreciation of the astonishing, mysterious order of the cosmos. This awe-struck, humbling feeling toward “the nobility and marvelous order . . . revealed in nature” exposes by comparison “the vanity of human desires and aims.” And it is this “cosmic religious sense,” Einstein concludes, that not only suffuses “the religious geniuses of all times” but animates scientific geniuses as well, inspiring the likes of Kepler and Newton to persist in their solitary labors to “understand even a small glimpse of the reason revealed in the world.”²³

Einstein's brief theory of religion and its relationship to science hit the New York newsstands early on a Sunday morning. Just hours later, it was decried in mainline Christian pulpits throughout the city, with Methodists, Presbyterians, Episcopalians, and Roman Catholics alike denouncing Einstein's "cosmic religious sense" as amoral, overly intellectual, impersonal, and anticlerical.²⁴ Einstein's lone defender—at least according to the next day's *Times*—was Rabbi Solomon B. Freehof, of Chicago, who maintained to the Free Synagogue congregation that Einstein was in no sense an atheist, because for Einstein, as for all pious men, "the universe is essentially mysterious. He confronts it with awe and reverence."²⁵ As we might remember, however, Einstein's previous rabbinic defender praised Einstein's belief, not in the mystery, but in the order of the universe. And this tension shows up throughout what one might call Einstein's philosophy of religion: for Einstein, the universe is at once totally rational and utterly mysterious, and this has something to do with God.

The final wave of "the Einstein crisis" crashed a full ten years after the publication of "Religion and Science," in response to an academic address Einstein made called "Science and Religion" (our hero's nearly unfathomable creativity seems to have bottomed out when it came to titles). Einstein offered the lecture as part of a symposium at Jewish Theological Seminary in New York that gathered scholars from a wide range of disciplines to confront the ongoing political "disintegration" of "Western civilization," a disintegration the conference organizers attributed to the disharmony of science and religion in the wake of Darwin's discovery of evolution. To reconcile these estranged partners, Einstein argued that religion and science occupy separate but supplementary "spheres." Science, he ventured, is concerned with "what *is*," whereas religion tells us "what *should be*"; science uncovers "facts," whereas religion prescribes "human thoughts and actions."²⁶ As such, neither is sufficient on its own; in Einstein's now-iconic words, "science without religion is lame, religion without science is blind" (46).

Whence, then, comes the perceived opposition between these mutually beneficial regimes? The largest impediment to the harmony between science and religion, Einstein ventures, is in the concept of a personal God (47). Channeling Spinoza, Einstein argues that science cannot affirm the existence of an anthropomorphic power who from time to time violates the order of nature in response to human petition. In addition to being scientifically inadmissible, he explains, such a God is ethically useless, relieving human beings of responsibility for their own actions. As an illustration, one might think of Representative Tim Walberg's explanation for Donald

Trump's 2017 withdrawal from the Paris accord: "As a Christian," he told his constituents, "I believe that . . . if there's a real problem . . . God will take care of it."²⁷ For ethical and scientific reasons alike, then, Einstein insists that "*teachers of religion must have the stature to give up the doctrine of a personal God*" (48, emphasis added). Once people are free from this divine overlord, Einstein promises they will also be free from egoistic concerns (like having the largest gross domestic product or the biggest sport utility vehicle), eventually attaining that comportment his earlier essay called the cosmic religious sense: a humble feeling of reverence for the mysterious yet rational whole. And in this way, the religious person becomes affectively identical to the scientist.

Again, Einstein had thought that this lecture might help his colleagues in the natural and theological sciences repair the rift between their disciplines. As far as most of his audience was concerned, however, Einstein's attempted reconciliation with religion amounted to a full-scale attack. As the *Chicago Daily Tribune*, the *New York Times*, the front page of the *Washington Post*, a flurry of local newspapers, and a feature article in *Time* magazine all declared, Einstein's call "to give up the doctrine of a personal God" amounted to a denial of God altogether.²⁸ In the words of an anonymous Roman Catholic priest, "There *is* no other God but a personal God. Einstein does not know what he is talking about."²⁹ In short, Einstein accomplished in this lecture precisely the opposite of what he had set out to do. By proclaiming the grandeur of a God his audience considered incoherent, he intensified the divisions among the spheres he thought he was unifying. Thus the *New York Times* reported that, as far as the conference organizers were concerned, this was a lecture in which "the famous unifier of time and space expounded his own atheism, which has been . . . never before so emphatically stated."³⁰

As the physicist-philosopher Max Jammer has discovered in Einstein's personal letters, Einstein was baffled by this response and by the multidenominational excoriations that arrived by mail for months after the address was sensationally summarized in the press.³¹ For the most part, the charges were predictable—many of them familiar from the sermonic drama ten years earlier, or indeed from the centuries-long critique of Spinoza. Einstein was an atheist; he was a pantheist; he was an atheist dressed as a pantheist; he had done away with God by denying God's personalism; he had done away with "man" by denying his resemblance to God; and his cosmic religion was "absurd," "the sheerest kind of stupidity and nonsense," and "full of jellybeans."³² Although nearly all these critics were Christian, there were a few Orthodox and Conservative Jewish voices among them, includ-

ing Rabbi Hyman Cohen, of Hudson County, who reported that “Einstein is unquestionably a great scientist, but his religious views are diametrically opposed to Judaism.”³³

One unprecedented set of claims, however—and one leveled exclusively by self-professed Christians—asserted that Einstein’s atheistic pantheism was so ethically ruinous that it offered aid to the Nazi extermination of his own people. For example, Monsignor Fulton John Sheen, of Catholic University, objected that a cosmic divinity could hold no one responsible for his actions: “if God is only impersonal Space-Time,” he reasoned, “there is no moral order; then Hitler is not responsible for driving Professor Einstein out of Germany. It was only a bad collocation of space-time configurations that made him act this way.”³⁴ In fact, Einstein had made precisely the opposite claim in “Science and Religion,” arguing that if God were personal, then God would be responsible for the violent convulsions of human behavior—including, presumably, Hitler’s expulsion of the Jews. Yet Monsignor Sheen does not consider this position, taking it as given that an anthropomorphic lawgiver is necessary to securing moral conduct on earth (the obvious objection being, of course, that he doesn’t seem to have done so).

Other incensed Christians pushed Einstein’s alleged excusing of Hitler’s behavior into a full-fledged justification of it. As one Roman Catholic attorney and self-described interfaith activist dared to assert, Einstein’s denial of a personal God made a case for the “exp[ulsion of] the Jews from Germany” by making “Jewish theology” seem downright diabolical.³⁵ Masquerading as a defense of Judaism, this unsubtle anti-Jewishness is perhaps most clearly displayed in the missive by a Christian Zionist from Oklahoma, who writes:

I have done everything in my power to be a blessing to Israel, and then you come along and with one statement from your blasphemous tongue do more to hurt the case of your people than all of the efforts of the Christians who love Israel can do to stamp out anti-Semitism in our Land. Professor Einstein, every Christian in America will immediately reply to you, “Take back your crazy, fallacious theory of evolution and go back to Germany where you came from, or stop trying to break down the faith of a people who gave you a welcome when you were forced to flee your native land.”³⁶

Perhaps needless to say, Einstein’s major contributions to science had very little to do with any “theory of evolution.” By associating Einstein with a teaching that twentieth-century “Fundamentalists” had determined to be anti-Christian, however, the author charges Einstein not only with aiding

the destruction of Einstein's own people but also with refusing to assimilate himself into mainstream Christian culture—a refusal that amounted in the author's eyes to an act of aggression against it. Over the course of the letter, then, this critic's stated effort to “stamp out anti-Semitism” ends up reduplicating it.

FAITH IN REASON

Viscera and vitriol aside, what did Einstein mean when he professed adherence to “Spinoza's God”? On the most elementary level, he meant, as he insists in countless letters, that he was certainly not an atheist.³⁷ Depending on the day and context, he also meant either that he was a pantheist or that he was perhaps not a pantheist.³⁸ Regardless of whether he accepted this label, however, Einstein certainly used the word *God* interchangeably with *Nature*, an equation that has constituted the simplest formulation of pantheism since Spinoza equated the two. This identity of God and the natural world becomes clear in a conversation with a colleague who asked Einstein to explain what he had meant when he said, “Subtle is the Lord, but malicious He is not.” Einstein replied that he meant, “Nature hides her secret because of her essential loftiness, but not by means of ruse.”³⁹ If this second adage is indeed a translation of the first, then God and Nature are equivalent for Einstein, *and* this God-Nature is not deceiving us so long as we are thinking rationally. Indeed, what the heretical physicist means above all when he says “I believe in Spinoza's God” is that the world is so rationally structured that we can think of it as divine. Unlike Spinoza, however, Einstein admits that his unflagging faith in “the rationality or intelligibility of the world” is, precisely, a matter of faith.⁴⁰ As such, he falls far short of Nietzsche's madman, who as Ryan Coyne has demonstrated, loses faith not only in “God” but also in faith itself, which is theologically structured.⁴¹ “The basis of all scientific work is the conviction that the world is an ordered and comprehensive entity,” Einstein writes, “which is a religious sentiment.”⁴²

Insofar as the universe is fully rational, Einstein goes on to conclude that it must be fully determined. Again appealing to a supernatural source of this conviction, Einstein explains that “the scientist is possessed by the sense of universal causation. The future, to him, is every whit as determined as the past.” And if the future and the past are both determined and rational, then neither humans nor God can be said to have free will. In response to a query from eleven-year-old Phyllis Wright, of the Riverside Church in New York, Einstein therefore asserts that scientists do not, in fact, pray, because nothing can be otherwise than it is. That having been

said, he writes, “Our actual knowledge of these laws is only an incomplete piece of work, so that ultimately the belief in the existence of fundamental all-embracing laws also rests on a sort of faith.”⁴³

So faith grounds the reason that asserts the determinism of the nonetheless mysterious cosmos. Faith-reason, determinism-mystery—one might say that Einstein’s cosmic religious sense amounts to reason at its limits: the more ardently it attempts to grasp the order of the universe, the more it understands how feebly it grasps it. And yet this constant falling short inspires the devout scientist only to intensify his effort to comprehend as much as he can. Einstein’s universe is thus fully rational and persistently mysterious; as he famously encapsulates the matter: “The eternal mystery of the world is its comprehensibility. . . . The fact that it is comprehensible is itself a miracle.”⁴⁴ Again, however, this commonly cited aphorism does not mean that the universe is fully comprehensible—at least not to the hopelessly insufficient human mind. Rather, it means that the universe is rationally structured and that the human mind participates to a limited extent in that universal reason. It is this dance between the comprehensible and the incomprehensible that constitutes for Einstein the essence of religion and science alike. Both practices aim to grasp in some way the rationally mysterious order of things called Nature or God, and both depend on what he calls faith in the ultimate rationality of existence—an admittedly indemonstrable faith in the perfect, unchanging, deterministic reason of the world.

At this point, we might want to assess the coherence of Einstein’s cosmic religion. Regardless of whether or not it amounts to atheism, what does it mean for his unflagging reason to find its ultimate grounding in faith? To what extent can something as indeterminate as faith secure universal determinism? How can Einstein say that God is both impersonal and intelligent in the same breath? And above all, is Einstein really giving us a consistent pantheism? An alignment of God and world? If so, then how can his cosmic divinity be unchanging and absolute if the space-time it amounts to is dynamic and relative?

EINSTEIN VERSUS EINSTEIN

Relativity

In his universal theory of gravitation, Isaac Newton asserted the “absolute” nature of space and time.⁴⁵ To say that space and time are absolute is to say that they are independent of any particular perspective on them. Newtonian measurements therefore hold for all observers: regardless of the dif-

ferent vantage points of person A and person B, each will measure a mile as a mile and ten minutes as ten minutes. Moreover, to say that space and time are absolute is to say that they are independent of the objects within them, forming an inert grid across which beings move. Even if the universe were totally empty, space, according to Newton, would still be extended, and time would still pass from the past through the present to the future.

With his early twentieth-century papers on special and general relativity, however, Einstein demonstrated against Newton that space and time are not by any means independent of perspective, their inhabitants, or one another.⁴⁶ Rather, space is curved from one perspective and straight from another;⁴⁷ time passes differently depending on the velocity of the observer;⁴⁸ and space and time form a four-dimensional fabric that bends and warps according to the matter and energy “within” it. And this bending and warping of space-time is nothing other than “gravity” itself: the mass of the sun, for example, creates paths within which planets travel, while the mass of planets determines the path of the moons and comets that in turn exert their own gravitational force, all of them composing the dynamic shape of the solar system. Bound up as it is with space, time likewise does not progress uniformly throughout the cosmos; rather, it passes more slowly for bodies near massive, gravitationally powerful objects than it does for bodies far from them.

Therefore, as Niels Bohr summarizes it, Einstein’s theory of relativity shatters the Newtonian clockwork, calling into question even the most elementary concepts of space and time, cause and effect. If it is the case that two bolts of lightning can hit a train sequentially from the perspective of the train, but simultaneously from the perspective of the embankment that runs alongside it, then there is an “element of subjectivity” built into everything we might try to say about the universe.⁴⁹ Einsteinian space-time therefore not only appears different; it *is* different from one constituent-observer to the next. Anything that takes place takes place differently, depending on your perspective.⁵⁰

Now for Newton, the absolute nature of time and space reflected and reaffirmed the absolute nature of God. Space and time were effectively God’s omnipresence and eternity, enacted as the material universe.⁵¹ Insofar as Einstein revolutionizes our understanding of space and time, one might therefore imagine he would revolutionize our understanding of God, as well. Especially if Einstein’s God is the order of the cosmos, one might imagine his divinity would be at least as manifold as trains and embankments and at least as relative as matter and space-time. And yet as we have already seen, Einstein does not come close to a theology of relativity. Rather, he asserts a theology of the absolute—of a single, unified, deter-

ministic, cosmic divinity in which effect always follows cause, subject is separate from object, and God retains the sturdy invariance (and even the anthropomorphic rationality) “he” had enjoyed under the regime of classical and scholastic physics and theology alike.⁵² What I am trying to suggest here is this: *Einstein’s theology looks almost nothing like his cosmology*. And if he were setting forth a consistent pantheism, they would be effectively equivalent.

Quantum Disturbances

Granted, Einstein’s absolutist theology is not the only instance of his recoiling from his own insights: he infamously couldn’t stand the big-bang hypothesis his own equations produced, inventing a force out of thin air to assure himself that the universe wasn’t expanding. But the conflict between Einstein’s science and his metaphysics comes into clearest relief in his protracted debate with Niels Bohr over the nature of quantum mechanics.

Like relativity, quantum mechanics confronts us with irreducible perspectivalism; as both Bohr and Einstein realized, light can be fully described as a particle or as a wave, depending on the experimental arrangement one uses to observe it. So if a beam of light is sent through two slits, it will produce a wavelike pattern on the screen the light hits. But if one slit is closed, the same beam will produce a particle pattern. If photons are fired individually through two slits, they will collectively land in a wave. But if a “which-path” detector is added to determine how this is possible, the photons will behave as particles.⁵³ Niels Bohr’s name for such mutually incompatible outcomes is *complementarity*: different experimental arrangements produce different realities. And just as special relativity proclaims it equally correct to say that the embankment is moving as that the train is moving, quantum mechanics proclaims it equally correct to say that light is a particle as it is to say that light is a wave.

As Bohr himself remarked, the “notion of complementarity” therefore “exhibits a certain resemblance [to] the principle of relativity.”⁵⁴ In each case, the object of observation is inescapably bound up with the subject of observation, such that any accurate description of the phenomenon in question must specify the conditions that produce it in the first place. Given that Einstein himself had produced the insight that objectivity is perspectival, it is therefore surprising that he reacted as viscerally as he did against quantum mechanics. But as it turned out, he hated it.

Considering Einstein’s faith in the rational, determinate nature of the universe, he couldn’t stand the thought that tiny particles of matter might have no properties of their own—that these objects might gain properties

only in relation to the subjects measuring them. Conversely, he couldn't quite bear the notion that such particles—such tiny little objects—might also behave as subjects: “it is quite intolerable,” he wrote, “to think that an electron exposed to radiation should choose *of its own free will*, not only its moment to jump off, but also its direction.”⁵⁵ Recall that Einstein's “Spinozism” had led him to deny free will to human beings and even God, so he found the notion that subatomic particles might have it intellectually inadmissible and, frankly, emotionally unbearable. “In that case,” he confessed to Max and Hedwig Born, “I would rather be a cobbler or even an employee in a gaming-house, than a physicist.”⁵⁶

Far from serving as simple escape fantasy, however, Einstein's gaming house simultaneously encapsulates and ridicules the indeterminate universe of quantum mechanics. If physics can no more predict an effect from a cause than a gambler can foresee a roll of the dice, then what good is it? After all, if a physicist could calculate all the forces at work in a single roll (e.g., mass, velocity, torque, air resistance, distance to table, friction of surface), then she could, in fact, predict its outcome. There must, then, be some way to subject the quantum dice to a similar calculation—to do better than probability by getting at the determinate, determined reality of things. But as Einstein repeatedly admitted, this conviction stemmed from an instinct that was as theological as it was scientific. Thus, as he wrote in a constantly cited letter to Max Born: “Quantum mechanics is certainly imposing. But an inner voice tells me that it is not yet the real thing. The theory tells us a lot, but does not really bring us any closer to the secret of the ‘old one.’ I, at any rate, am convinced that *He* is not playing at dice.”⁵⁷ *We* might be, but he's not. The quantum might look dicey to us here and now, but probability cannot possibly be the final answer to the mysteries of the universe.

Reality and Difference

Until the day he died, Einstein was convinced that there was something deeply wrong with what the quantum seemed to be saying about the nature of nature. And to return to the main thread of our inquiry, this conviction can be said to be the product of Einstein's theology, which asserted at once the mystery of the divine cosmos and its comprehensibility—a theology that, despite its “humility,” nevertheless claimed to know the ways of the unknowable. This tension mirrors the tension between Einstein's relativistic physics and his absolutist metaphysics—a conflict that seems to have baffled Niels Bohr in particular. As Carl Sagan narrates one of their famous encounters, “Einstein said, ‘God does not play dice with the cosmos.’ And

on another occasion he asserted, ‘God is subtle but he is not malicious.’ In fact Einstein was so fond of such aphorisms that the Danish physicist Niels Bohr turned to him on one occasion and with some exasperation said, ‘Stop telling God what to do.’⁵⁸ According to the historian of science and molecular biologist Gunther Stent, Bohr’s irritation with Einstein’s faith in a deterministic cosmos reveals that the “actual subject” of the famed “Great Debate” between Einstein and Bohr “not physical theory, but God.”⁵⁹ What they were actually arguing about, Stent suggests, was whether or not there was a superrational power stabilizing the quantum-dicey universe, with Einstein holding onto “the traditional monotheistic viewpoint of modern science” and Bohr breaking through to a genuine, postmodern “atheism.”⁶⁰ In this light, the Great Debate between Einstein and Bohr can be seen as enacting the final growing pains of an increasingly secular Western science, struggling to do away once and for all with its theological past.

It is striking, however, that Bohr’s rebuke does not contest the existence of God so much as it contests Einstein’s claim to know how God must behave—even to dictate how God should behave. Bohr was baffled not by Einstein’s appeal to God, but by his presumption that God was a single, immutable order of things beyond the multitude of worldly phenomena.

PERSPECTIVAL PANTHEOLOGY

During his lifetime, Einstein was demonized as an atheist and a pantheist. Far from being atheistic, however, Einstein’s cosmic religion held onto many of the characteristics of the God of classical theism; in particular, his singularity, omnipotence, eternity, impassivity, and his unchanging providential order. So one way to answer Einstein’s critics is to simply say that his “pantheism” is really just theism in a more impersonal key. But in that case, it thereby ceases to be pantheism, preserving the abstract characteristics of the purportedly dead sovereign.⁶¹ What, then, would a more consistent pantheism look like? From the foregoing discussion of the Einstein-Bohr debate, I would like to suggest that such a pantheism would need to align Einstein’s perspectively recoded “world” with the “God” that that world allegedly *is*. In that spirit, we might decide to read Bohr’s critique of Einstein’s theology not as a call to atheism, but as an invitation to a more pantheistic pantheism. A more Einsteinian pantheism, even—one whose God genuinely sheds the absolutism of determinism and the anthropocentrism of “reason” and assumes instead the complex perspectivalism of the universe itself.

Insofar as the quantum-relative universe is immanent, relational, mutable, and multiply perspectival, its divinity would share these attributes—to

such an extent that pantheism thus construed collides with a certain kind of polytheism.⁶² As D. H. Lawrence suggests, “All the gods that men ever discovered are still God, and they contradict one another and fly down one another’s throats, marvelously. Yet they are *all* God: the incalculable Pan.”⁶³ To affirm the divinity of such manifold, contradictory, and incalculable things would be to affirm endless, particular loci of divinity, or a kind of pancarnation: divinity’s inability not to express itself in and as the endlessly untotalized run of all that is.

This is not, of course, to say that everything is divine to every perceiving agent. Far less is it to say that everything is the same. Rather, it is to acknowledge that what looks like an inert rock from one perspective is a sacred ancestor from another; that the catfish one person serves for dinner could be kin to her partner and a god to both of them; and that what looks in one light like the image of God is in another a blight on the planet, and in another still the billion-year product of bacterial collaboration. To borrow a distinction from the anthropologist Eduardo Viveiros de Castro, such a pancarnation would amount not to relativism (which is different from relativity), but to perspectivism. If relativism asserts that there are many ways to interpret the same world (or God), then perspectivism would assert that worlds-as-gods take shape differently, depending on the points of view and manifold agents who construct, destroy, and remake them.⁶⁴ This is what a consistent Einsteinian pantheism would look like—a theocosmology of relativity, dynamism, emergence, and perspective. And I suppose that, from some of those points of view, such pantheology would indeed amount to atheism. And from others, I think, it would not.

NOTES

Parts of this chapter are adaptations of material in Mary-Jane Rubenstein, *Pantheologies: Gods, Worlds, Monsters* (New York: Columbia University Press, 2018). Reprinted with permission of Columbia University Press.

1. The term *pantheist* first appears in a treatise by the Irish philosopher John Toland, who professes to be among their number without quite elucidating their doctrine: John Toland, *Socinianism Truly Stated; Being an Example of Fair Dealing in All Theological Controversys. To Which Is Prefixt, Indifference in Disputes: Recommended by a Pantheist to an Orthodox Friend* (London, 1705), 7. The noun *pantheism*, however, is initially attributable not to Toland, but to Jacques de la Faye.
2. Jacques de la Faye, *Defensio Religionis, Nec Non Mosis Et Gentis Judaicae, Contra Duas Dissertationes Joh. Tolandi, Quarum Una Inscribitur Adeisidaemon, Altera Vera Antiquitates Judaicae* (Ultrajecti: Apud Guilielmum Broedelet, 1709), 19, 23; with gratitude to Andrew Szegedy-Maszak for the translation. The work to which de la Faye is responding directly is John Toland, *Adeisidaemon, Sive Titus Livius. A Superstitione Vindicatus* (Hagae-Comitis: Apud Thomam Johnson, 1709).

3. Pierre Bayle, *Historical and Critical Dictionary: Selections* (Indianapolis, IN: Hackett, 1991), 288, emphasis added.
4. David W. Wood, *Novalis: Notes for a Romantic Encyclopedia/Das Allgemeine Brouillon* (Albany: State University of New York Press, 2007), xxv.
5. Goethe, letter to Jacobi (June 9, 1785) cited in Detley Pätzold, "Deus Sive Natura. J. G. Herder's Romanticized Reading of Spinoza's Physico-Theology," in *The Book of Nature in Early Modern and Modern History*, ed. Klaas van Berkel and Arjo Vanderjagt (Leuven, Belgium: Peeters, 2006), 161.
6. Reverend Morgan Dix, *Lectures on the Pantheistic Idea of an Impersonal Deity, as Contrasted with the Christian Faith Concerning Almighty God* (New York: Hurd and Houghton, 1864), 56.
7. "Against pantheism I have mainly the objection that it states nothing. To call the world God is not to explain it, but only to enrich the language with a superfluous synonym for the word world. It comes to the same thing whether we say 'the world is God' or 'the world is the world.'" Arthur Schopenhauer, *Parerga and Paralipomena*, trans. E. F. J. Payne, 2 vols. (Oxford, UK: Clarendon Press, 2000), 2:99.
8. Schopenhauer, 1:114.
9. See Nancy Frankenberry, "Classical Theism, Panentheism, and Pantheism: On the Relation between God Construction and Gender Construction," *Zygon* 28, no. 1 (March, 1993): 44.
10. Devin Singh, "Fragile Belief and the Empty Throne: Theology and Politics after Ascension," in this volume.
11. "Thousands Attend Einstein Jubilee Celebration in New York City," *Jewish Daily Bulletin*, April 18, 1929.
12. "Death of a Cardinal," *Time*, May 1, 1944.
13. "Einstein Believes in 'Spinoza's God,'" *New York Times*, April 25, 1929.
14. J. D. B. Mail, "Cardinal O'Connell's Full Statement against Professor Einstein's Theories," *Jewish Daily Bulletin*, April 18, 1929.
15. "Is there any standard that has not been challenged in our post-war world? Is there any absolute system of ethics, of economics or of law, whose stability and permanence is not assailed somewhere?" George Sylvester Viereck, *Glimpses of the Great* (New York: Macauley, 1930), 356. On the connection between this creeping moral relativism, the theory of relativity, and a generalized waning belief in God as the moral lawgiver, see "Dr. Ward Attacks Einstein Theories," *New York Times*, November 10, 1930.
16. Cited in Max Jammer, *Einstein and Religion: Physics and Theology* (Princeton, NJ: Princeton University Press, 1999), 49.
17. "Ich glaube an Spinozas Gott der sich in gesetzlicher Harmonie des Seienden offenbart, nicht an Gott der Sich mit Schicksalen und Handlungen der Menschen abgibt," qtd. in "Einstein Believes in 'Spinoza's God,'" translation altered slightly.
18. Viereck, *Glimpses of the Great*, 372, 375.
19. "Einstein Believes in 'Spinoza's God.'"
 20. See David Kertzer, *The Pope and Mussolini: The Secret History of Pius XI and the Rise of Fascism in Europe* (New York: Random House, 2014).
 21. "Vatican Finds Professor Einstein Is an Atheist," *Jewish Daily Bulletin*, May 26, 1929.

22. Albert Einstein, "Religion and Science," *New York Times Magazine*, November 9, 1930.
23. Einstein, "Religion and Science."
24. See "Dr. Ward Attacks Einstein Theories"; "Dr. Coffin Praises Child's Simplicity," *New York Times*, November 10, 1930; "'Intellectual' View of God Is Assailed," *New York Times*, November 10, 1930; "Urges Faith in Leaders: Dean Gates Deplores Followers Who Are Critical," *New York Times*, November 10, 1930.
25. By contrast, "the anti-religious view of the universe looks upon the world as a clearly understood machine in which every 'riddle' is either solved or on the way to solution." "Einstein's Faith Defended," *New York Times*, November 10, 1930.
26. Albert Einstein, "Science and Religion" (1940), in *Ideas and Opinions*, ed. Cal Seelig and Sonja Bargmann (New York: Three Rivers Press, 1982), 45. Subsequent page references will be cited internally.
27. Walberg cited in Jacob J. Erickson, "I Worship Jesus, Not Mother Earth': Exceptionalism and the Paris Withdrawal," *Religion Dispatches*, June 2, 2017.
28. "Give Up Idea of Personal God, Einstein Urges," *Chicago Daily Tribune*, September 11, 1940; "Religion of Good Urged by Einstein," *New York Times*, September 11, 1940; "Einstein Urges Abandonment of Personal God Doctrine," *Washington Post*, September 11, 1940; Einstein, "Science and Religion." For a summary of the local news pieces, see Jammer, *Einstein and Religion*, 98–103.
29. Cited in Jammer, *Einstein and Religion*, 98.
30. "Religion of Good Urged by Einstein," 27.
31. See Jammer, *Einstein and Religion*, 103–7.
32. See Jammer, 98–101.
33. Jammer, 99.
34. Cited in Jammer, 102.
35. Jammer, 104–5.
36. Jammer, 106.
37. "There are yet people who say there is no God. But what really makes me angry is that they quote me for support of such views." Einstein cited in Jammer, *Einstein and Religion*, 97.
38. In his nearest avowal of pantheism, Einstein explains, "this firm belief . . . in a superior mind that reveals itself in the world of experience, represents my conception of God. In common parlance, this may be described as 'pantheistic' (Spinoza)." Albert Einstein, "On Scientific Truth" (1929), in *Ideas and Opinions*, ed. Cal Seelig and Sonja Bargmann (New York: Three Rivers Press, 1984), 262. In his nearest disavowal of pantheism, Einstein writes: "I am not an Atheist. I do not know if I can describe myself as a Pantheist." Viereck, *Glimpses of the Great*, 372–3. Either way, he did not seem particularly attached to or repelled by the label; it simply was not his focus. As he explained to Viereck, "I am fascinated by Spinoza's Pantheism. I admire even more his . . . deal[ing] with the soul and body as one, and not two separate things" (373). Insofar as Spinoza's unification of mind and body are predicated upon his unification of God and Nature, however, an acceptance of the former would logically require an acceptance of the latter. If it is the case that Spinoza can be called a pantheist (and if he cannot, it is not clear who can), then it is also the case that Einstein can be called a pantheist.
39. Einstein cited in Abraham Pais, *Subtle Is the Lord: The Science and the Life of Albert Einstein* (1982; Oxford: Oxford University Press, 2005), vi.

40. Einstein, "On Scientific Truth," 262.
41. Ryan Coyne, "The Death of God and the New Contemplative Life," in this volume.
42. Albert Einstein, "On Science," in *Cosmic Religion with Other Opinions and Aphorisms, with an Appreciation by George Bernard Shaw* (New York: Covici-Friede, 1931), 98.
43. Einstein cited in Jammer, *Einstein and Religion*, 92.
44. Einstein cited in Yehuda Elkana, "Einstein and God," in *Einstein for the 21st Century: His Legacy in Science, Art, and Modern Culture*, ed. Peter L. Galison, Gerald Holton, and Silvan Schweber (Princeton, NJ: Princeton University Press, 2008), 36.
45. Isaac Newton, *The Principia* (1687), trans. Andrew Motte, Great Minds Series (Amherst, NY: Prometheus Books, 1995), 13.
46. Albert Einstein, "On the Electrodynamics of Moving Bodies (1905)," in *The Collected Papers of Albert Einstein, Volume 2: The Swiss Years: Writings, 1900–1909* (Princeton, NJ: Princeton University Press, 1989); Albert Einstein, "The Field Equations of Gravitation (1915)," in *The Collected Papers of Albert Einstein, Volume 6: The Berlin Years: Writings, 1914–1917* (Princeton, NJ: Princeton University Press, 1997).
47. "I stand at the window of a railway carriage which is travelling uniformly, and drop a stone on the embankment, without throwing it. . . . I see the stone descend in a straight line. A pedestrian who observes the misdeed from the footpath notices that the stone falls to earth in a parabolic curve. . . . The stone traverses a straight line relative to a system of co-ordinates rigidly attached to the carriage, but relative to a system of co-ordinates rigidly attached to the ground (embankment) it describes a parabola." Albert Einstein, *Relativity: The Special and the General Theory*, trans. Robert W. Lawson (New York: Three Rivers Press, 1961), 10–11.
48. Einstein's most famous example in this regard concerns a train struck by lightning in two places, A (toward the back of the train) and B (toward the front). From the perspective of the embankment, the two bolts strike simultaneously, whereas from the perspective of the train, bolt B hits before bolt A. Neither of these is more correct than the other; rather, the measure of correctness depends upon the specification of the vantage point. In short, "events which are simultaneous with reference to the embankment are not simultaneous with respect to the train and *vice versa*. . . . Every reference body . . . has its own particular time." Einstein, 30–31.
49. Niels Bohr, "Physical Science and the Study of Religion," in *Studia Orientalia Ioanni Pedersen Septuagenario A. D. VII Id. Nov. Anno MCMLIII a Collegis Discipulis Amicis Dicata* (Copenhagen: Munksgaard, 1953), 387.
50. We should note that such full-fledged perspectivism did not emerge until Einstein developed the theory of general relativity, and even at that point, Einstein himself was notoriously allergic to declarations like "everything in life is relative and we have the right to turn the whole world mischievously topsy-turvy." Einstein cited in Viereck, *Glimpses of the Great*, 356–57. In fact, he had initially wanted to call his special theory of relativity "invariance theory" by virtue of the inalterable—indeed, absolute—nature, neither of space nor of time, but of their totality. For although "constantly moving observers will disagree about the difference in time (Δt) or the difference in space (Δx) separately," they must agree about the differ-

- ence in space-time itself. Technically speaking, then, “the ‘space-time distance squared’ $[(\Delta x)^2 - (\Delta y)^2]$ does *not* depend on the inertial reference frame.” Lorraine Daston and Peter L. Galison, *Objectivity* (New York: Zone Books, 2007), 303. As Einstein came to realize, however, this referential independence holds only for bodies in “uniform rectilinear and non-rotary motion”; in other words, it leaves out gravity. Einstein, *Relativity*, 69. Once the consideration of gravity pushes Einstein from special to general relativity, spacetime loses its invariance because “space and time become players in the evolving cosmos. They come alive. Matter here causes space to warp there, which causes matter over there to move, which causes space way over there to warp even more, and so on. General relativity provides the choreography for an entwined cosmic dance of space, time, matter, and energy.” Brian Greene, *The Fabric of the Cosmos: Space, Time, and the Texture of Reality* (New York: Vintage, 2005), 73.
51. Stephen Snobelen, “‘The True Frame of Nature’: Isaac Newton, Heresy, and the Reformation of Natural Philosophy,” in *Heterodoxy in Early Modern Science and Religion*, ed. John Hedley Brooke and Ian Maclean (Oxford: Oxford University Press, 2005), 254.
 52. The Protestant theologian Dean Fowler makes a similar argument, asserting that “Einstein’s cosmic religion develops in a direction opposite [to] that of the implications of his thought.” Fowler, “Einstein’s Cosmic Religion,” 277. In the context of the rest of Fowler’s work, however, it seems that he sets forth this argument to lay the groundwork for a specifically Christian process theology rather than to push Einstein’s theory of relativity into the pantheism his espousal of Spinoza seems to promise. See Dean R. Fowler, “A Process Theology of Interdependence,” *Theological Studies* 40, no. 1 (March 1, 1979): 44–58.
 53. For a diagrammed explanation of these experiments, see Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Durham, NC: Duke University Press, 2007), 97–106.
 54. Bohr, “Physical Science,” 388.
 55. Albert Einstein to Max and Hedwig Born, April 29, 1924, in Albert Einstein, Max Born, and Hedwig Born, *The Born-Einstein Letters: Correspondence between Albert Einstein and Max and Hedwig Born from 1916 to 1955*, trans. Irene Born (New York: Walker & Co., 1971), 82.
 56. Einstein to Max and Hedwig Born.
 57. Albert Einstein to Max Born, December 4, 1926, in Einstein, Born, and Born, *Born-Einstein Letters*, 91.
 58. Carl Sagan, “The Other World That Beckons: A Profile of Albert Einstein,” *New Republic*, September 16, 1978, <https://newrepublic.com/article/117028/world-beckons>.
 59. Gunther Stent, “Does God Play Dice?” *The Sciences* (March 1979), 21–22.
 60. Stent, 22.
 61. On the long history of such denials, see Devin Singh’s chapter “Fragile Belief,” in this volume.
 62. See Ryan Coyne’s Nietzschean retrieval of a “pagan faith in temporal becoming” in his chapter “Death of God,” in this volume.
 63. D. H. Lawrence, “The Novel” (1925), in *Selected Critical Writings*, ed. Michael Herbert, *Oxford World Classics* (Oxford: Oxford University Press, 1998).
 64. Viveiros de Castro, “Exchanging Perspectives,” 471.

REFERENCES

- Barad, Karen. *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Durham, NC: Duke University Press, 2007.
- Bohr, Niels. "Physical Science and the Study of Religion." In *Studia Orientalia Ioanni Pedersen Septuagenario A. D. VII Id. Nov. Anno MCMLIII a Collegis Discipulis Amicis Dicata*, 385–90. Copenhagen: Munksgaard, 1953.
- Daston, Lorraine, and Peter L. Galison. *Objectivity*. New York: Zone Books, 2007.
- "Death of a Cardinal." *Time*, May 1, 1944, 54.
- Einstein, Albert. "The Field Equations of Gravitation (1915)." Translated by Alfred Engel. In *The Collected Papers of Albert Einstein, Volume 6: The Berlin Years: Writings, 1914–1917*, 117–20. Princeton, NJ: Princeton University Press, 1997.
- . "On Science." In *Cosmic Religion with Other Opinions and Aphorisms, with an Appreciation by George Bernard Shaw*, 97–103. New York: Covici-Friede, 1931.
- . "On Scientific Truth." 1929. In *Ideas and Opinions*, edited by Cal Seelig and Sonja Bargmann, 261–62. New York: Three Rivers Press, 1984.
- . "On the Electrodynamics of Moving Bodies (1905)." Translated by Anna Beck. In *The Collected Papers of Albert Einstein*, vol. 2, *The Swiss Years: Writings, 1900–1909*, 140–71. Princeton, NJ: Princeton University Press, 1989.
- . *Relativity: The Special and the General Theory*. Translated by Robert W. Lawson. New York: Three Rivers Press, 1961.
- . "Religion and Science." *New York Times Magazine*, November 9, 1930, 1.
- . "Science and Religion." 1940. In *Ideas and Opinions*, edited by Cal Seelig and Sonja Bargmann, 41–49. New York: Three Rivers Press, 1982.
- Einstein, Albert, Max Born, and Hedwig Born. *The Born-Einstein Letters: Correspondence between Albert Einstein and Max and Hedwig Born from 1916 to 1955*. Translated by Irene Born. New York: Walker & Co., 1971.
- Elkana, Yehuda. "Einstein and God." In *Einstein for the 21st Century: His Legacy in Science, Art, and Modern Culture*, edited by Peter L. Galison, Gerald Holton, and Silvan Schweber, 35–47. Princeton, NJ: Princeton University Press, 2008.
- Faye, Jacques de la. *Defensio Religionis, Nec Non Mosis Et Gentis Judaicae, Contra Duae Dissertationes Joh. Tolandi, Quarum Una Inscritur Adeisidaemon, Altera Vera Antiquitates Judaicae*. Ultrajecti: Apud Guilielmum Broedelet, 1709.
- Fowler, Dean R. "Einstein's Cosmic Religion." *Zygon* 14, no. 3 (September 1979): 267–78.
- . "A Process Theology of Interdependence." *Theological Studies* 40, no. 1 (March 1, 1979): 44–58.
- Frankenberry, Nancy. "Classical Theism, Panentheism, and Pantheism: On the Relation between God Construction and Gender Construction." *Zygon* 28, no. 1 (March 1993): 29–46.
- Greene, Brian. *The Fabric of the Cosmos: Space, Time, and the Texture of Reality*. New York: Vintage, 2005.

- Jammer, Max. *Einstein and Religion: Physics and Theology*. Princeton, NJ: Princeton University Press, 1999.
- Lawrence, D. H. "The Novel." 1925. In *Selected Critical Writings*, edited by Michael Herbert, 179–90. Oxford World Classics. Oxford: Oxford University Press, 1998.
- Newton, Isaac. *The Principia*. 1687. Translated by Andrew Motte. Great Minds Series. Amherst, NY: Prometheus Books, 1995.
- Pais, Abraham. *Subtle Is the Lord: The Science and the Life of Albert Einstein*. 1982; Oxford: Oxford University Press, 2005.
- Pätzold, Detley. "Deus Sive Natura: J. G. Herder's Romanticized Reading of Spinoza's Physico-Theology." In *The Book of Nature in Early Modern and Modern History*, edited by Klaas van Berkel and Arjo Vanderjagt, 155–66. Leuven, Belgium: Peeters, 2006.
- Sagan, Carl. "The Other World That Beckons: A Profile of Albert Einstein." *New Republic*, September 16, 1978. <https://newrepublic.com/article/117028/world-beckons>.
- Schopenhauer, Arthur. *Parerga and Paralipomena*. Translated by E. F. J. Payne. 2 vols. Vol. 1. Oxford, UK: Clarendon Press, 2000.
- . *Parerga and Paralipomena*. Translated by E. F. J. Payne. 2 vols. Vol. 2. Oxford, UK: Clarendon Press, 2000.
- "Science and Religion." *Time*, September 23, 1940, 52–53.
- Snobelen, Stephen. "'The True Frame of Nature': Isaac Newton, Heresy, and the Reformation of Natural Philosophy." In *Heterodoxy in Early Modern Science and Religion*, edited by John Hedley Brooke and Ian Maclean, 223–62. Oxford: Oxford University Press, 2005.
- Stent, Gunther S. "Does God Play Dice?" *The Sciences* (March 1979): 18–23.
- Toland, John. *Adeisidaemon, Sive Titus Livius: A Superstitione Vindicatus*. Hagae-Comitis: Apud Thomam Johnson, 1709.
- . *Socinianism Truly Stated; Being an Example of Fair Dealing in All Theological Controversys. To Which Is Prefixed, Indifference in Disputes: Recommended by a Pantheist to an Orthodox Friend*. London, 1705.
- Viereck, George Sylvester. *Glimpses of the Great*. New York: Macauley, 1930.
- Viveiros de Castro, Eduardo. "Exchanging Perspectives: The Transformation of Objects into Subjects in Amerindian Ontologies." *Common Knowledge* 10, no. 3 (2004): 463–84.

