DO YOU BELIEVE?
A BOOK SERIES FROM RATIO CHRISTI

HAS CHRISTIANITY OPPOSED SCIENCE?

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RATIO CHRISTI

FAITH & REASON are at odds in our culture. For many, faith has come to mean little more than wishful thinking and blind belief. Such a concept is completely foreign to the pages of Scripture and historical Christianity. As Edward Feser notes, "In short, reason tells us that there is a God and that he has revealed such-and-such a truth; faith is then a matter of believing what reason has shown God to have revealed. In that sense faith is not only not at odds with reason but is grounded in reason."

WHAT IS RATIO CHRISTI?

Ratio Christi, Latin for "the reason of Christ," wants to help reverse this trend of anti-intellectual Christianity. We organize apologetics clubs at colleges, universities, and even for high school groups in order to strengthen the faith of Christian students and faculty and challenge the rampant atheism and secularism on most campuses. Our mission is to fill the intellectual gap, to make Christianity something worth thinking about, both personally and in the public square.

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"The idea of a ceaseless conflict between" science and religion "seems to be an integral part of the public consciousness."

FERN ELSDON-BAKER & BERNARD V. LIGHTMAN

So observe two historians in a recent academic anthology about science and religion. The historians go on to argue that this "conflict thesis" is largely faulty, while at the same time noting that it is "more ingrained in the scholarship than previously imagined."[1]

Curiously, proponents of the conflict thesis have focused most of their criticism on Christianity. The impression that Christianity is typically at war with science has been perpetuated by many specific myths about the history of science. I will debunk six of these myths.

1. **The Dark Myth:** Christianity produced 1000 years of anti-science "Dark Ages."
2. **The Flat Myth:** Church-induced ignorance caused European intellectuals to believe in a flat earth.
3. **The Big Myth:** A big universe became a problem for Christianity.
4. **The Demotion Myth:** Copernicus demoted us from the cosmic center and this destroyed confidence in a divine plan for humanity.
5. **The Galileo Myth:** Galileo's clash with the Catholic Church shows how Christianity opposed science.
6. **The Skeptic Myth:** The main heroes of early modern science were skeptics, not believers in God.

I will also explore how these six myths support scientism. Scientism is the view that *only* the sciences generate knowledge or rational belief. Reliable belief about divinity (theological realism) is impossible, scientism typically assumes. I will argue that Christianity has opposed scientism, not science. This is good news for Christians because (generally) science is reasonable, while scientism is not (as I will show).[2]

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1 Fern Elsdon-Baker and Bernard V. Lightman, *Identity in a Secular Age: Science, Religion, and Public Perceptions* (Pittsburgh: University of Pittsburgh Press, 2020), 3.

2 Science biased by naturalistic assumptions, such as in much of contemporary Darwinism, falls short of the high rational standards that science otherwise generally exhibits. Such cases do not show a conflict between Christianity and science, but a conflict between Christianity and (faulty) naturalistic philosophy.

THE DARK MYTH

CHRISTIANITY PRODUCED 1000 YEARS OF ANTI-SCIENCE "DARK AGES"

Atheist biologist Jerry Coyne once wrote: "Had there been no Christianity, if after the fall of Rome atheism had pervaded the Western world, science would have developed earlier and be far more advanced than it is now."[3] Theological realism infused in culture inhibits the growth of science, Coyne believes. Coyne admits he "can't prove this," but he "maintains" it nonetheless. Coyne's assertion about the history of science is weaker than he admits. There is no way to directly test his statement by the methods of historical scholarship or any other discipline.[4]

At first glance, scientism and Coyne's historical-sounding assertion seem to reinforce each other. If you want to be on the right side of history, then distance yourself from traditional religions that corrode responsible thinking. This scientistic message appears to be advanced by appeal to the history of science. Coyne's claim is ironic because scientism claims to reserve the word "knowledge" for what can be "scientifically" supported. This includes passing rigorous tests. And yet Coyne's scientism-motivated pseudo-historical statement is untestable. I will evaluate scientism later. For now, let us stick with testable historical inquiry.

Here is what we can objectively test: Is there evidence that Christianity pushed the West into anti-scientific "Dark Ages," a period stretching from 400 to 1450 AD? Historical scholarship gives us reliable tools to evaluate this question. The vignettes that follow show where recent scholarship points.[5]

Early Middle Ages: 400–1100

Contrary to scientistic expectations, early medieval church figures were highly influential in the development of science. For example, the great Church Father Saint Augustine (354–430) laid some of the foundations for science. He contributed to Aristotelian physics in his *Literal Commentary on Genesis*.[6] More broadly, Augustine expressed

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3 https://whyevolutionistrue.wordpress.com/2013/10/18/did-christianity-and-other-religions-promote-the-rise-of-science.

4 "The Dark Myth" section of my essay was adapted by permission from chapter 2 of my book *Unbelievable*.

5 Michael Newton Keas, *Unbelievable: 7 Myths About the History and Future of Science and Religion* (Wilmington: ISI Books, 2019), 27-40.

6 Bruce S. Eastwood, "Early-Medieval Cosmology, Astronomy, and Mathematics," in *Cambridge History of Science: Volume 2, Medieval Science*, ed. David C. Lindberg and Michael H. Shank (Cambridge: Cambridge University Press, 2013), 305.

confidence in our ability to read the "book of nature" because it is the "production of the Creator."[7] He insisted we should proceed "by most certain reasoning or experience" to discern the most likely way God established "the natures of things." This phrase became a popular medieval book title for works following Augustine's investigative approach.[8]

Another example would be the English monk Bede (673–735), who studied and wrote about astronomy in the tradition of Augustine and Ptolemy. Historian Bruce Eastwood called Bede's book *The Nature of Things* (ca. 701) "a model for a purely physical description of the results of divine creation, devoid of allegorical interpretation, and using the accumulated teachings of the past, both Christian and pagan."[9] Note how Bede's Christian worldview was compatible with analysis of the natural world as a coherent system of natural causes and effects.

Late Middle Ages: 1100–1450

Around 1100, European intellectuals graduated from limited translations and commentaries on Aristotle to a more extensive recovery and further development of Aristotelian logic. As refined within a Christian worldview, this advance included a reasoning method well suited to natural science.

Scholars called this form of argument "*ratio*" (reason), contrasting it with mathematical demonstration. Mathematics begins with first principles thought to be certain, and from those principles it deduces conclusions that retain the same certainty. *Ratio*, in contrast, uses premises inferred as likely true from sensory experience, and then reasons from there to probable conclusions.[10] As such, *ratio* is a logic appropriate to observational science (and much of Christian apologetics), enriching the medieval study of motion and change in the natural world. Historian Walter Laird writes, "The study of motion in the Middle Ages, then, was not a slavish and sterile commentary on the words of Aristotle…. Part of the measure of their success … is that some of these insights and results had to be rediscovered later by Galileo and others in the course of the Scientific Revolution."[11]

The institution in which most scholars investigated natural motion is also note worthy—the university. This Christian invention began with the University of Bologna in 1088, followed by Paris and Oxford before 1200 and more than fifty others by 1450. The papacy supported this unprecedented intellectual ferment. Universities provided additional stimulus to the medieval translation movement already under way, in which

7 St. Augustine, *Contra Faustum Manichaeum* 32.20, as cited in Peter Harrison, "The Bible and the Emergence of Modern Science," *Science and Christian Belief* 18, no. 2 (2006): 118.
8 Eastwood, "Early-Medieval Cosmology," 305.
9 Ibid., 307.
10 Charles Burnett, "The Twelfth-Century Renaissance," in *Cambridge History of Science: Volume 2*, 379–81.
11 Walter Roy Laird, "Change and Motion," in *Cambridge History of Science: Volume 2*, 435. There were some notable deficiencies in scholastic (medieval) methodology, but there is insufficient space here to cover this. For example, scholasticism often focused on logical abstractions that did not lead to rigorous knowledge of nature.

Greek and Arabic texts were rendered in the common European intellectual tongue of Latin. This movement greatly outperformed the comparative trickle of imperial Roman translations. If European Christians had been closed-minded to the earlier work of pagans, as the Dark Ages myth alleges, then it would be difficult to explain this huge appetite for translations.

The Franciscan cleric and university scholar Roger Bacon (ca. 1220–1292) read much of the newly translated work of earlier Greek and Islamic investigators, including Euclid, Ptolemy, and Ibn al-Haytham (ca. 965–1040). By evaluating them and introducing controlled observations (now called experiments), Bacon substantially advanced the science of light.[12] Subsequent authors summarized and reevaluated Bacon's work, transmitting it through books used in university instruction. That is how it came to the attention of Johannes Kepler (1571–1630), whose account "helped spur the shift in analytic focus that eventually led to modern optics."[13]

By one estimate, 30 percent of the medieval university liberal arts curriculum addressed roughly what we call science (including mathematics).[14] Between 1200 and 1450, hundreds of thousands of university students studied science, medicine, and mathematics. This knowledge was continuously improved by many generations of European university faculty.

Contrary to the Dark Ages myth, medieval European Christians cultivated the idea of "laws of nature," a logic friendly to science, the science of motion, human dissection, vision-light theories, mathematical analysis of nature, and the superiority of reason and observational experience (sometimes even experiment) over authority in the task of explaining nature.

Medieval trailblazers also invented self-governing universities, eyeglasses, towering cathedrals with stained glass, and much, much more. Although identifying *any* age with a single descriptive label is difficult, the so-called Dark Ages would be far better labeled an "Age of Illumination," or even an "Age of Reason."

12 David C. Lindberg and Katherine H. Tachau, "The Science of Light and Color, Seeing and Knowing," in *Cambridge History of Science: Volume 2*, 503–4.
13 A. Mark Smith, *From Sight to Light: The Passage from Ancient to Modern Optics* (Chicago: University Of Chicago Press, 2014), inside jacket synopsis.
14 Edward Grant, "Science and the Medieval University," in *Rebirth, Reform, and Resilience: Universities in Transition 1300–1700*, ed. James M. Kittelson and Pamela J. Transue (Columbus: Ohio State University Press, 1984).

THE FLAT MYTH

CHURCH-INDUCED IGNORANCE CAUSED EUROPEAN INTELLECTUALS TO BELIEVE IN A FLAT EARTH

In 2016, celebrity astrophysicist Neil deGrasse Tyson responded to rapper B.o.B., a flat-earth promoter, with a tweet. Tyson wrote, "Duude—to be clear: Being five centuries regressed in your reasoning doesn't mean we all can't still like your music." Tyson follower Andy Teal responded: "Five centuries? I believe the knowledge of Earth's shape goes back a bit farther than that." Tyson tweeted back: "Yes. Ancient Greece inferred from Earth's shadow during Lunar Eclipses. But it was lost to the Dark Ages."[15] This modern perception of widespread medieval flat-earth belief has been common in textbooks and popular literature since the nineteenth century.[16]

Church-induced Ignorance?

Is it true that people stopped believing in a spherical earth during the Middle Ages? No. Medieval intellectuals had many reasons for grasping that the earth is round. Those reasons included the curved shadow of the earth projected on the moon during a lunar eclipse. To deny medieval belief in a round earth is to be guilty of what I call the *flat myth*. This is the most enduring component of the larger myth of the "Dark Ages." The allegedly anti-science "Christian Dark Ages" never happened as typically claimed, as I argued above.

Tyson is obviously right about how ridiculous contemporary flat-earth belief is. Some "believers" such as Shaquille O'Neal and Kyrie Irving of NBA fame have said they were only joking. And who can tell what the small number of people behind today's flat-earth societies *actually* think? If most of them are joking, it would come as little surprise. But the fact remains that Tyson, probably the world's most influential voice for science, is spreading misinformation about medieval views.

Tyson's false ideas trace back to the 1800s. For example, the chemist-historian John William Draper claimed that medieval Christians believed "the Scriptures contain the sum of all knowledge." They therefore "discouraged any investigation of Nature, including the study of the earth's shape.[17] Supposedly this ignorance continued until the time

15 https://twitter.com/neiltyson/status/692939759593865216.
16 "The Flat Myth" section of my essay was adapted by permission from chapter 3 of my book *Unbelievable*.
17 John William Draper, *History of the Conflict Between Religion and Science* (New York: D. Appleton, 1874), 157–59.

of Christopher Columbus.

Draper and Tyson are not alone in their ignorance. Consider the 1200 American college students I have taught astronomy. As indicated by a show of hands each semester, the vast majority learned from their precollege teachers that Europeans in the Middle Ages were ignorant of the earth's roundness until Columbus proved it in 1492. Now they better understand how this fake history often perpetuates the myth of warfare between science and Christianity.

Medieval Round-Earth Arguments

Imagine the year is 1300. You are a student at the University of Salamanca, Spain's oldest university. In class you have studied Aristotle's argument for a round earth based on the changing positions of the stars as one travels north or south, as was standard in the medieval curriculum.[18] You wish to demonstrate it for yourself. How will you do so? First you note that the apparently motionless North Star is located about 40 degrees above your horizon in Salamanca. Then you travel to the southernmost point of Europe. There you find that this star appears only about 35 degrees above the horizon. Why the change of angle? Most medieval university students learned a simple explanation: the earth is round. This and other reasonable arguments combined to present a very strong case.

Back Around to Today

Here is a surprise: my students have typically been *less* able to defend the earth's roundness by such scientific arguments than the average medieval student. Upon completing my astronomy course, they finally caught up to the Middle Ages![19]

Most students today accept the roundness of earth as a mere fact. But they are unable to reason from observations to this conclusion. This is not an isolated observation, unfortunately. Science today is, more often than not, taught this way: as something to be accepted (for example contemporary Darwinism), not understood through arguments for and against particular theories. That is a loss for students. Things were, in this respect, brighter in the so-called Dark Ages.

I have debunked the anti-Christian myth about earth's *shape*. Let us now examine a popular myth about its *size*—its utter smallness in relation to a really big universe.

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18 Lesley B. Cormack, "That Medieval Christians Taught That the Earth Was Flat," in *Galileo Goes to Jail: And Other Myths about Science and Religion*, ed. Ronald L. Numbers (Cambridge: Harvard University Press, 2009), p. 31.

19 I learned this by interactions with my students in a laboratory setting in which they reenacted historical dialogues and observations concerning the science of earth's shape.

THE BIG MYTH
A BIG UNIVERSE BECAME A PROBLEM FOR CHRISTIANITY

Self-appointed spokesmen for science often use the enormous size of the cosmos, with its billions of galaxies, as a club to beat up on Christianity. They say people in the Western tradition had to wait till modern science to grasp that the universe was huge, and had to shed historic Judeo-Christian views to do so. Such claims are simply false.[20]

Ancient and medieval thinkers in the Western tradition already had good reasons to believe in a vast cosmos. Ptolemy, in his famous book *Almagest* (ca. AD 150), wrote: "The earth has, to the senses, the ratio of a point to the distance of the sphere of the so-called fixed stars." He established that earth was merely "a point," virtually dimensionless, compared to the vast distance to the stars. The arguments he used to support this thesis of cosmic immensity were studied in medieval universities. So the "big myth" gets this part of premodern history wrong.

Although early modern estimates of cosmic size did increase, scientists such as Nicolaus Copernicus (1473–1543) and Blaise Pascal (1623–1662) saw in this no contradiction with their Christian faith.[21]

Bill Nye, The Scientism Guy

Yet celebrity TV science educator Bill Nye, the "Science Guy," is among those who suggest that the sheer scale of the cosmos means humans are insignificant in any religious sense. In the last part of his 2010 "Humanist of the Year" acceptance speech, Nye delighted the American Humanist Association by saying:

> *I'm insignificant…. I am just another speck of sand. And the earth really in the cosmic scheme of things is another speck. And the sun an unremarkable star.... And the galaxy is a speck. I'm a speck on a speck orbiting a speck among other specks among still other specks in the middle of specklessness. I suck.*[22]

By saying "I suck" Nye really meant that the religious basis for human significance is worthless. This interpretation is consistent with an assertion Nye made later in his speech. He assured his audience that humans *are* significant on *non-religious* grounds

20 "The Big Myth" section of my essay was adapted by permission from chapter 1 of my book *Unbelievable*.
21 Keas, *Unbelievable*, 13-24.
22 https://www.youtube.com/watch?v=S4dZWbFs8T0.

because we have learned wonderful truths about nature through science. Our ability to do science saves us from insignificance!

So Bill Nye is not so much *the science guy* as he is *the scientism guy* (as is Tyson). Scientism is the view that only the sciences (broadly or narrowly defined) generate rational belief.[23] Reliable belief about divinity (theological realism) is impossible, scientism usually assumes. But as typically framed, scientism undermines itself because scientism itself is a non-scientific (philosophical) belief. In other words, scientism is a philosophical theory that declares all philosophical theories "unreliable." Hence, scientism does not meet its own standard for what counts as a reliable form of inquiry. Some scientism advocates classify philosophy as a kind of science to avoid this internal inconsistency. But then other problems surface when these advocates use atheistic assumptions to rule out theological knowledge from being a legitimate subject of philosophical inquiry. This begs the God question, which means that it assumes the very thing that it wishes to prove (atheism). But that is what a recent study of scientism does, and this question-begging approach has some sympathizers.[24]

Johan Hietanen and his five "Helsinki Circle" colleagues have proposed that the "sciences" *include* certain philosophical ideas, including scientism itself. They make this move to avoid the internal incoherence of scientism as typically framed. But they also *exclude* the truth claims of revealed religion from the domain of respectable academia (their broad idea of "the sciences"). How so? "Divine revelations" are "non-evaluable" sources because their alleged "divine nature" is "inscrutable," they assert.[25]

This assertion is demonstrably false. For example, there are extensive arguments for the resurrection of Jesus, which help support acceptance of his teaching as divine revelation. Scholars such as William Lane Craig have framed such arguments.[26] In defending the resurrection hypothesis, Craig appeals to some of the same theoretical virtues used in the sciences, including evidential accuracy, internal coherence, universal coherence, and unification.[27] Craig's analysis thus uses four out of twelve major theoretical virtues widely recognized by philosophers of science. Even Hietanen and his colleagues (and many other scholars) recognize that seeking the best explanations of

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23 Some weaken this claim to say that the sciences are the *best* source of knowledge. This grants some legitimacy to non-scientific fields, but with a weaker epistemic standing.

24 The best anthology including scientism's proponents and critics is J. de Ridder, Rik Peels, and René van Woudenberg, eds., *Scientism: Prospects and Problems* (New York: Oxford University Press, 2018). See also Maarten Boudry and Massimo Pigliucci, eds., *Science Unlimited? The Challenges of Scientism* (Chicago: University of Chicago Press, 2018).

25 Johan Hietanen, Petri Turunen, Ilmari Hirvonen, Janne Karisto, Ilkka Pättiniemi, and Henrik Saarinen, "How Not to Criticise Scientism," *Metaphilosophy* 51, no. 4 (2020): 522-47.

26 William Lane Craig, *Reasonable Faith: Christian Truth and Apologetics* (Wheaton: Crossway Books, 2008); Gary R. Habermas, Antony Flew, and David Baggett. *Did the Resurrection Happen? A Conversation with Gary Habermas and Antony Flew* (Downers Grove: InterVarsity Press, 2009); Michael R. Licona, *Resurrection of Jesus: A New Historiographical Approach* (Downers Grove: IVP Academic, 2010); Andrew Loke, *Investigating the Resurrection of Jesus Christ: A New Transdisciplinary Approach* (London: Routledge, 2020).

27 This transposes Craig's terms into the more standard terminology in Michael N. Keas, "Systematizing the Theoretical Virtues," *Synthese* 195, no. 6 (2018): 2761-93.

human history is rigorous "human science."[28] That is what Craig does in his historical argument for Jesus' resurrection.

So it *is* possible to evaluate some of the central truth claims of Christianity by some of the criteria (theoretical virtues) used in the natural and human sciences. Those theoretical virtues include evidential accuracy, causal adequacy, explanatory depth, internal consistency, internal coherence, universal coherence, beauty, simplicity, unification, durability, fruitfulness, and applicability.[29] These are the major criteria for what is the *best* explanation of the relevant data for a question at hand (with room for modification appropriate to specific disciplines). Of course, scholars have various opinions about the outcome of this evaluation of Christianity. But the fact that such an evaluation is possible shows that scientistic attempts to disparage this academic work as "non-evaluable" (as my Helsinki philosophical colleagues express it) are unconvincing. Who is guilty of groundless dogma in this case?

C. S. Lewis on Dogma and the Universe

The British philosopher and literary scholar C. S. Lewis in his 1943 essay "Dogma and the Universe" demolished Nye's scientistic way of thinking about cosmic immensity. Lewis begins with an analogy. Imagine how a doctor determines whether someone has been poisoned to death. The doctor can conclude this reasonably if "he has a clear idea of that opposite state in which the organs would have been found if no poison were present." Similarly, if we try to disprove God by pointing out how small we are in a huge cosmos, we should clearly identify the kind of universe that is expected if God did exist.

But Lewis argues that such a project fails. "Whatever space may be in itself ... we certainly perceive it as three-dimensional, and to three-dimensional space we can conceive no boundaries," he writes. So we naturally feel that the cosmos is huge. What if we discovered nothing but our own sun and moon in such seemingly infinite space? "This vast emptiness would certainly be used as a strong argument against the existence of God," Lewis notes. In that case, atheists would argue that no God would create such vast amounts of wasted empty space.

Lewis runs through the other options: "If we discover other bodies, they must be habitable or uninhabitable: and the odd thing is that both these hypotheses are used as grounds for rejecting Christianity." If there are billions of habitable planets, then the skeptic would likely say that this means humans are not special. We would be lost in a crowd of aliens, or so the story goes.

Lewis continues: "If, on the other hand, the earth is really unique, then that proves that life is only an accidental by-product in the universe, and so again disproves our religion."[30] Atheists in that case might further complain that no God would create trillions

28 Hietanen et al., 538.
29 Keas, "Theoretical Virtues," 2761.
30 C. S. Lewis, "Dogma and the Universe," in *God in the Dock: Essays on Theology and Ethics*, ed. Walter

of sterile planets—what a lousy design.

Do you see the problem? No matter how God might have made the universe and life, skeptics would surely complain about something to the point of disbelief. What we have here isn't truth-seeking. It's scientistic game rigging. Atheists would find ways to spin a story that ridicules belief in God no matter what the size or contents of the cosmos. Bill Nye's God-bashing cosmic storytelling fails the credibility test. Keep all this in mind next time you hear this popular myth used to mock religious believers.

For Jews and Christians, here is the situation: It is reasonable to believe in an omnipotent omniscient God who created humans capable of discovering the fingerprints of God in the cosmos. Astronomers have confirmed that we inhabit an enormous and finely tuned universe befitting just such a creator.[31] The Psalmist expressed a similar thought about 3000 years ago:

> *When I look at your heavens, the work of your fingers, the moon and the stars, which you have set in place, what is man that you are mindful of him and the son of man that you care for him? Yet you have made him a little lower than the heavenly beings and crowned him with glory and honor.* [32]

Indeed, Psalm 8 is one of the most often quoted biblical passages in astronomy textbooks up to the nineteenth century (it affirms human significance in the face of cosmic immensity).

But what about our position within this enormous universe? Has modern science shown it to be mediocre? Our next myth gets the wrong answer.

Hooper (Grand Rapids: Eerdmans, 1970), 39-42.
31 https://evolutionnews.org/?s=fine+tuned
32 Psalm 8:3-5, ESV.

THE DEMOTION MYTH

COPERNICUS DEMOTED HUMANS FROM THE COSMIC CENTER AND THIS DESTROYED CONFIDENCE IN A DIVINE PLAN FOR HUMANITY

In episode eight of the 2020 *Cosmos* season, "Possible Worlds," host Neil deGrasse Tyson delivered a favorite bit of wrong revisionist history. He claimed that astronomer Nicolaus Copernicus (1473–1543) demoted humans from the privileged center of the universe. This supposedly challenged the religious idea of human importance. "Demoting the earth from the center of the universe was a severe blow to human self-esteem," Tyson claimed on this TV documentary episode.[33]

The Real Copernicus

It is true that Copernicus argued against earth-centered astronomy, but he didn't think this challenged Christianity. He even once said that God had "framed" the cosmos "for our sake."[34] Copernicus was not alone in this opinion. Most other early supporters of sun-centered astronomy thought the Bible and science are in complete harmony.

The myth that Copernicus demoted humans makes a false assumption: it assumes that earlier earth-centered astronomy exalted humans. But according to the earth-centered astronomy of the ancient Greeks—widely accepted well into the seventeenth century—earth was at the bottom of the universe. "Up" pointed to the perfect cosmic heaven. Earth was in the "dead center" of corruption, they thought.

This makes sense of what Galileo wrote in the century after Copernicus. He said: "I will prove that the Earth does have motion … and that it is not the sump where the universe's" filthy things "collect."[35] He framed his argument as a promotion, not a demotion, for earth and its inhabitants.

Distorting Copernicus

In fact, the idea that Copernicus demoted humans was invented in the mid-1600s

33 "The Demotion Myth" section of my essay was adapted by permission from chapter 6 of my book *Unbelievable*.
34 Dennis Danielson, *The Book of the Cosmos* (New York: Basic Books, 2001), 106.
35 Ibid., 150.

to bash Christianity. By the mid-1800s the myth had entered astronomy textbooks, and by the 1960s it had become textbook orthodoxy.[36]

The latest version of this story in a college textbook might surprise you. It is built on the view that exotic dark matter is more common than ordinary matter. "It is interesting to consider how far we have moved from our Earth-centered view," write Stephen Schneider and Thomas Arny. They claim that our cosmic location is not special, despite recent evidence otherwise that they ignore.[37] They continue: "And now we are realizing that the kind of matter that makes up everything we know is just a minor kind of matter in the universe. This is the Copernican revolution taken to extremes!"[38]

Such statements are subjective storytelling, not science. One could just as easily have declared humans unimportant because our bodies are mostly common, ordinary hydrogen, oxygen, and carbon. "See, there's nothing special about the material me!" Thus, one could make use of either the commonness or rarity of our material parts as grounds for our unimportance. Humans in any conventionally religious sense are losers either way: heads or tails. It's a rigged game, not a serious argument for a godless view of life and the cosmos.

Spiritual Atheism

Some atheists attempt to salvage some meaning and specialness from the Copernican "demotion." Consider a recent astronomy textbook foreword by Tyson. He argues that despite a series of scientific discoveries humiliating humanity, there is hope without God. We can still find meaning and purpose. How? Because "the cosmic perspective is spiritual—even redemptive—but not religious."[39] Science is our savior, not religion! Science alone delivers rational conclusions. Such statements express the scientistic metanarrative of this leading college astronomy textbook.

Tyson insists that the Copernican demotion story redeems us from religious ignorance. He writes: "The cosmic perspective opens our eyes to the universe, not as a benevolent cradle designed to nurture life but as a cold, lonely, hazardous place." In other words, life is extremely rare in the cosmos. Agreed. But notice how he spins this toward atheism. However, if Tyson had discovered that our solar system hosts dozens of smart extraterrestrial species (and many other kinds of intelligent life "out there" further), he surely would have used this as an excuse to remove humanity from any special place within a divine plan. Because of never-ending godless stunts like this regardless of the evidence, C. S. Lewis (as cited above in myth #3) identifies such maneuvers as hopelessly subjective. But such arguments seem reasonable when one's plausibility

36 Keas, Unbelievable, 102.
37 https://evolutionnews.org/2019/04/gonzalez-worlds-like-this-are-hard-to-come-by.
38 Stephen E. Schneider and Thomas T. Arny, Pathways to Astronomy, 5th ed. (New York: McGraw-Hill, 2018), 629.
39 Neil deGrasse Tyson, foreword to Jeffrey O. Bennett et al., *The Cosmic Perspective*, 8th ed. (Boston: Pearson, 2017), xxviii.

structures have been shaped by scientism. Lewis was a pioneering critic of such subjective scientistic storytelling.

Tyson's *Cosmos* series broadcasts this spiritual atheism to popular culture. How so? Darwin is said to be the "greatest spiritual teacher of the last 1000 years." He "worshiped nature," Tyson proclaims approvingly. "Life is an emergent property of chemistry. Science is an emergent property of life. Life can begin to know itself." In *Cosmos* episode seven Tyson shares his strange belief that bees and trees can think much like us. But, of course, they can't do science! So humans are special after all in the spirituality of the new cosmic atheism. Bill Nye makes the same move as noted above in myth #3.

Many atheists want it both ways. On the one hand, they claim humans are insignificant—provided we conflate significance with size and geometric centrality. On the other hand, the process of "scientific discovery" that allegedly undermines God renders us significant because we are smart and brave enough to reach this conclusion. This is confused atheist wishful thinking parading as though it were science.

Atheists and agnostics, such as the makers of the *Cosmos* TV series, do not inspire confidence today. But what about skeptics at the time of the scientific revolution? Were they primarily responsible for creating modern science? Galileo is often depicted as such a pioneering skeptic. However, we will see that he was a Catholic who believed in the harmony of the Bible with science. After debunking the Galileo myth, we will look at an alleged scientific innovator during Galileo's time who actually was a prominent skeptic, but who contributed very little to science.

THE GALILEO MYTH

GALILEO'S CLASH WITH THE CATHOLIC CHURCH SHOWS HOW CHRISTIANITY OPPOSED SCIENCE

For many people, Galileo Galilei (1564–1642) represents unbiased scientific objectivity and the Catholic Church stands for ignorant Christian superstition that has hindered science. According to this storyline, Catholic officials rejected Galileo's telescopic observations and his rational arguments that had allegedly proven the Copernican system. The real story is more complex and shows how both science and theology are rational disciplines in conversation with each other.[40]

Galileo's Telescope

In 1609 Galileo constructed a telescope that magnified objects twenty times. He observed that Venus goes through phases analogous to those of the moon: from virtually full, to half, to crescent, and back to half and virtually full. The phases of Venus could be explained if the planet revolved around the sun. So this finding refuted the ancient geocentric Ptolemaic system of astronomy, which had Venus going around a motionless earth, not around the sun.

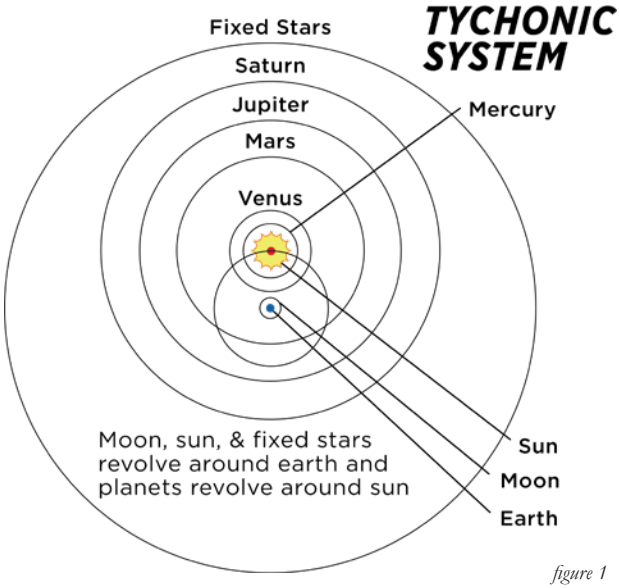

figure 1

But the discovery did not prove the Copernican system. Copernicus had argued that Venus revolves around the sun in a path closer to the sun than earth's annual revolution, and so it was consistent with Galileo's discovery. But Tycho Brahe (1546-1601) had proposed a third system that also was consistent with the phases of Venus. In the

40 "The Galileo Myth" section of my essay was adapted by permission from chapter 5 of my book *Unbelievable*.

Tychonic system (Figure 1), the planets revolve around the sun, which in turn revolves around a motionless earth.

Galileo also discovered that Jupiter has moons. So as Jupiter moves, it carries along its moons for the ride. This supported the Tychonic system's contention that the sun could revolve around a central point (earth) while carrying with it other celestial objects (planets) that revolve around it. Galileo had emphasized only the support Jupiter's moons lent to the Copernican system. He suggested that earth was not alone as a planet that carried with it a revolving moon.

The astronomers at the Roman College, the flagship Jesuit educational institution, embraced the Tychonic geoheliocentric system. This system fit common sense: earth seems to be at rest rather than moving thousands of miles per hour. Furthermore, a central stationary earth fit the prevailing Aristotelian scientific theory of how ordinary material objects with weight behave. Heavy (earthy and moist) things fall downward, toward the cosmic center, naturally making the roughly spherical object on which we live: earth and its surface water. No wonder that after Galileo's telescopic discoveries, most university scientists embraced Tychonic cosmology.

There also appeared to be theological advantages to a geocentric cosmology—Tychonic or Ptolemaic. At least this is how most Catholic and Protestant leaders assessed the situation at the time. The Bible seemed to affirm a stationary earth around which the sun moves. However, opposition to Galileo first came from Aristotelian professors. Only later did theologians enter the affair by arguing that there was no reason to reinterpret the Bible in the face of Galileo's unsettled scientific ideas.

Galileo and the Grand Inquisitor

Even if church officials typically embraced geocentric cosmology, that did not mean they disregarded Galileo. On the contrary, Galileo traveled to Rome in 1611 to celebrate his telescopic discoveries with Pope Paul V and many cardinals. The Roman College even granted him the equivalent of a modern honorary doctorate.[41] The respect for Galileo among Catholic leaders continued through Galileo's lifetime, though the number of his supporters dwindled. As we shall see, the pride and vanity of both Galileo and Pope Urban VIII were contributing factors to this reduction of support.

Galileo thought he had to answer theological objections to Copernicanism. So he wrote a letter to the Tuscan Grand Duchess Christina in 1615. In the letter he evaluated the principles of biblical interpretation specified by the Catholic response to the Protestant Reformation. The principle especially at issue declared that the Bible should be interpreted as most earlier church theologians had done. Galileo, however, argued that this principle applied only to cases in which these theologians explicitly examined a specific question with appropriate intellectual tools. Such was not the case regarding

41 William R. Shea and Mariano Artigas, *Galileo in Rome: The Rise and Fall of a Troublesome Genius* (Oxford: Oxford University Press, 2003), 30–43.

whether the sun revolved around a stationary earth. Most previous commentators merely assumed that the Bible reflected a commonsense understanding of a motionless earth. They did not adequately address this question, and so their consensus about the sun's revolving around earth did not present a binding biblical interpretation, he insisted.[42]

Galileo also championed the respected theological tradition of understanding biblical descriptions of nature as reflecting how things appear to a human observer. The Bible was not intend to teach cosmology.[43] He quoted Cardinal Cesare Baronio to make the lesson stick: "The intention of the Holy Spirit is to teach us how one goes to heaven, not how the heaven goes." [44] Galileo noted how Copernicus himself had taken this approach in his book *On the Revolutions of the Heavenly Spheres* (1543). Copernicus used common expressions like sunrise and sunset, even though he argued that such appearances actually resulted from the earth's rotating rather than from the sun's revolving.[45]

So Galileo argued that the Bible was` not intended to teach *any* view of cosmology. God expected us to discover cosmological truth by using the rationality he gave us. Galileo put down his pen hoping that his letter would convince the leaders of his own Catholic Church.

The main Catholic doctrinal umpire (inquisitor) Cardinal Robert Bellarmine (1542–1621) dialogued with Galileo about the Bible and science. In a 1615 letter Bellarmine argued that if a "true demonstration" were to firmly establish Copernicanism, then "one would have to proceed with great care in explaining the Scriptures that appear contrary." [46] He said he had "very great doubts" that such a demonstration of heliocentrism would ever be accomplished. "In the case of doubt one must not abandon the Holy Scripture as interpreted by" most earlier church theologians.[47]

But what if scientists were to remove reasonable doubt about the Copernican system? In this case, it appears Bellarmine said that theologians would need to reinterpret the Bible in a sun-centered manner. The cardinal correctly understood that the Copernican system had not yet been supported beyond reasonable doubt. Even in 1633, during Galileo's trial, most scientists had very good reasons to reject the Copernican system. Only much later did this system advance to a position beyond reasonable doubt.[48]

The 1616 Condemnation of Copernicanism

In December 1615 Galileo traveled the two hundred miles from Florence to Rome to defend himself against the recent accusations of a few Catholic clerics. Although

42 Galileo Galilei, *Selected Writings: Galileo Galilei*, trans. William R. Shea and Mark Davie (Oxford: Oxford University Press, 2012), 82–83.
43 Ibid., 80–81.
44 Ibid., 70.
45 Ibid., 82.
46 Maurice A. Finocchiaro, *The Essential Galileo* (Indianapolis: Hackett Publishing, 2008), 147.
47 Ibid.
48 Christopher M. Graney, *Setting Aside All Authority: Giovanni Battista Riccioli and the Science Against Copernicus in the Age of Galileo* (Notre Dame: University of Notre Dame Press, 2015).

many influential Church officials received him well, the Inquisition soon gave Galileo a private warning to abandon Copernicanism. Bellarmine delivered the message and later reported that Galileo had promised to obey.

In March 1616 the Catholic Church issued a decree declaring the idea of a moving earth false, "altogether contrary to Holy Scripture," and a source of "prejudice" against Catholicism. The Church temporarily banned Copernicus's famous 1543 book, pending corrections. The decree did not mention Galileo.

Although this condemnation was clearly wrong and ill-advised, did the decree and later trial of Galileo reveal a war between science and Christianity? The complicated "no" answer is justified by the story below.

A May 2, 1633, entry in the diary of Galileo's friend Gianfrancesco Buonamici gives an important detail about the 1616 Copernican condemnation. Two of the participating cardinals successfully argued for a weaker censure than the "heretical" label that the Inquisition qualifiers had recommended. So the Inquisition chose the milder phrase "altogether contrary to Holy Scripture" for the decree.[49] One of these moderate cardinals was Maffeo Barberini, who was to become Pope Urban VIII during the latter part of Galileo's life. In 1630, Urban VIII would tell his adviser Tommaso Campanella that "it was never our intention [to prohibit Copernicus]; and if it had been left to us, that decree would not have been made."[50]

The 1633 Trial of Galileo

Why, then, did Pope Urban VIII take a hard line on Galileo's 1632 book *Dialogue Concerning the Two Chief World Systems*?

It became clear to the majority of the Inquisition that Galileo had violated at least the spirit of Bellarmine's 1615 warning and the 1616 decree. For example, Galileo vastly overstated the support for his leading moving-earth argument: his theory of tides. He observed that water sloshes around within a container as the container moves. The earth was essentially a big moving container for the oceans. His theory specified one high tide and one low tide per day. Shortly before he finished his book, however, Galileo's theory collided with the fact that each day brings two high tides and low tides. Galileo bandaged up his bleeding theory and retained it in his book manuscript. Perhaps the odd shapes and the varying depth of the ocean floor could account for the gap between his initial theory and what sailors reported.

Inquisition officials were concerned with Galileo's unbalanced treatment of the competing views of cosmology. So he was summoned to Rome for trial.

The early 1630s were politically complicated for Urban VIII. Europe was in the middle of the Thirty Years' War (1618–1648), which had begun along Catholic-Protestant

49 Annibale Fantoli, *Galileo: For Copernicanism and for the Church* (Vatican City: Vatican Observatory Publications, 2003), 454.
50 Ibid.

fault lines. Ecclesiastical politics within the Vatican were also burdensome, driving the pope to questionable legal actions.[51] This was not a good time to deal with the controversial cosmology of a troublesome genius.

Even worse, the Galileo affair became very personal for Urban VIII. Galileo had put the pope's favorite argument for doubting Copernicanism in the mouth of the *Dialogue's* character Simplicio, which sounds like simpleton in Italian. Simplicio is persistently ill informed and less than politely reasonable. Galileo had thus betrayed his most powerful friend (the pope), by portraying him as a simpleton! The pope felt mocked. Regional and local politics, Galileo's insensitivity, the pope's overreaction, and other peculiar factors flung the Galileo affair into turbulent waters.

figure 2

Galileo did not spend months in jail, as is often claimed. In fact, when he arrived in Rome in February 1633 he enjoyed pleasant lodging at the large residence of the Tuscan embassy. Roman officials had spared him the usual procedure of waiting for trial in the Inquisition prison.

At most, he might have stayed in a prison cell for just a few days around the time of his condemnation. Even if true, this is nothing close to the exaggerations of the Galileo myth. After his condemnation he lived at several palatial residences before returning to Florence for the remainder of his life under house arrest. House arrest, although restrictive, meant that Galileo lived at his own comfortable country residence. I enjoyed an hour at that beautiful residence in 2019 (see photograph).

At the first hearing of the 1633 trial, Galileo claimed that the *Dialogue* did not defend the earth's motion but rather surveyed the arguments for and against it. Later in the trial he even claimed that his book was aimed at refuting the Copernican theory.[52] That was an obvious lie.

The trial verdict declared Galileo guilty not of heresy but of a lesser offense,

51 Thomas F. Mayer and Project Muse, *The Roman Inquisition: Trying Galileo* (Philadelphia: University of Pennsylvania Press, 2015), 217–18.
52 Shea and Artigas, *Galileo in Rome*, 186.

"vehement suspicion of heresy."[53] He had to retract his Copernican beliefs by reciting a statement prepared for him. Galileo's *Dialogue* was also banned.

Galileo's Legacy

The Galileo affair, although embarrassing for the Catholic Church, does not support the common belief that Christianity typically suppresses science. Like his fellow Christian contemporary Kepler, Galileo was guided in his scientific work by the belief that God composed his book of the cosmos "in mathematical language." God's cosmic book "is constantly open before our eyes," Galileo assured his readers in his book *The Assayer* (1623).[54]

The Galileo affair was not an episode of science versus Christianity; rather, it was an episode of the dominant scientific view versus the minority scientific view. The majority of Church leaders had allied themselves with the majority Aristotelian scientific viewpoint of the day. Together they opposed Copernican astronomy, which a theological and scientific minority held. Indeed, if Galileo had been more tactful, modest, and patient in his attempt to reform his own church, there might have been no trial.

Although Galileo said that God's "book" of creation "is constantly open before our eyes," accurately reading this book can be challenging. And accurate interpretation of God's other book, the Bible, also requires careful rational protocol. Ultimately, both books are in harmony. One key to this harmony, Galileo and Kepler argued, is to recognize that typically the Bible uses ordinary observational expressions "of appearance" when referring to the natural world. So the Bible, like Copernicus himself, could describe a wondrous "sunset" without error. Rather than reflecting a fundamental conflict between science and Christianity, the Galileo affair is better characterized as the sour fruit of overstated scientific arguments, political turmoil, and personal vanity.

Although Copernicus, Galileo, and Kepler were not skeptical of theistic religion, the scientifically-inclined philosopher Baruch Spinoza certainly was. However, Spinoza contributed very little to science. Let's see why as we finish debunking the final myth in my essay.

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53 Maurice A. Finocchiaro, "That Galileo Was Imprisoned and Tortured for Advocating Copernicanism," in *Galileo Goes to Jail*, ed. Numbers, 71.
54 Finocchiaro, *Essential Galileo*, 183.

THE SKEPTIC MYTH

THE MAIN HEROES OF EARLY MODERN SCIENCE WERE SKEPTICS, NOT BELIEVERS IN GOD

My coverage of Copernicus, Galileo, and Kepler has already contributed positively to debunking the skeptic myth by showing how these scientists embraced Christianity. Now I turn to the negative side of this myth with a prominent case study: Spinoza.[55]

Episode one of the 2020 *Cosmos* TV series gives the impression that the main heroes of early modern science were skeptics, rather than believers in God. The series designates Baruch Spinoza (1632-1677) as the next greatest persecuted hero of science after Giordano Bruno (as depicted in the *Cosmos* 2014 season). Bruno was cruelly burned to death in 1600 primarily for his religious-philosophical (not scientific) views.[56] However, the attempted murder of Spinoza, if it occurred, was likely due to a disputed business transaction, not science or religion.[57] For *Cosmos* to suggest that Spinoza's life was threatened because of his scientific views is just the beginning of a series of enormous misrepresentations.

Like the heretical Catholic philosopher Bruno, Spinoza traded belief in the biblical God for a necessitarian philosophical creed. Both believed that "God" had no choice in creation, and an infinite cosmos resulted. Consequently, both had philosophical (rather than scientific) reasons for believing in an infinite number of inhabited worlds. There was, and still is, no scientific support for the idea of an infinite cosmos. Science is not well equipped even to address this kind of question.

In *Cosmos*, Tyson equates traditional religion with ignorance, especially the biblical religions of Judaism and Christianity. Spinoza was a wayward Jew whom Albert Einstein, a secular Jew, later celebrated as likeminded. *Cosmos* depicts this connection with film footage of Einstein visiting the Spinoza museum. Indeed, Einstein publicly confessed his faith in "Spinoza's God."

Spinoza's God

Spinoza's God was nature or some aspect of nature. To this day, scholars debate how to interpret his ambiguous views. However, it is clear that he viewed reality as

55 "The Skeptic Myth" section of my essay was adapted and expanded by permission from https://evolutionnews.org/2020/03/the-biggest-myth-so-far-in-cosmos-3-0-baruch-spinoza-as-science-hero/.
56 Keas, *Unbelievable*, 57-74.
57 https://jewishreviewofbooks.com/articles/4991/who-tried-to-kill-spinoza.

entirely deterministic. "From the necessity of the divine nature there must follow infinitely many things in infinitely many modes," Spinoza wrote.[58] The universe could not have been other that what it is. This necessitarian vision, which traces back to the ancient Greeks, is precisely the view that the Judeo-Christian tradition overcame, a transformation which was one of the key ingredients for a cultural context supportive of modern science.[59] So *Cosmos* 2020 celebrates Spinoza as a science hero, even though he who opposed the very Judeo-Christian cultural context that helped make modern science possible.

Spinoza's God vs. Science

In contrast, Christians believed in a God who was free. This belief undercuts the view, established by Plato and Aristotle, that the structure of the cosmos is a necessary one. Christians insisted that God could have created a universe quite different from ours. So, testing multiple hypotheses by observations was an effective way to determine which set of natural laws God actually created to rule our universe. So in his departure from theism, Spinoza actually undercut the science-fostering culture of his time.

Let's go deeper as to why Spinoza was no scientific hero. Scholarship on Spinoza in the last decade has increasingly recognized that he opposed the observational (empirical) and mathematical analyses of nature advanced by the likes of Kepler and Galileo. "Skepticism about the very *possibility* of empirical knowledge of nature runs through Spinoza's books," notes Eric Schliesser in *The Oxford Handbook of Spinoza*.[60] More specifically, "Spinoza was very critical of applying mathematics and measurement in understanding nature." Similarly, Alison Peterman, writes: "Spinoza took a dim view of the extent to which the application of mathematics to physics and the empirical investigation of the physical can give us knowledge of nature." [61] Considering that mathematics is the language of much science, Spinoza's dismissal of it – if taken seriously – would be crippling to scientific advancement!

Here is one memorable expression of Spinoza's criticism of the application of mathematics to science: "There are men lunatic enough to believe, that even God himself takes pleasure in harmony; indeed there are philosophers who have persuaded themselves that the motions of the heavens produce a harmony." [62] Spinoza attacked the view of Kepler that God infused mathematical harmonies into the cosmos. This is a projection of mathematical harmony into nature where none exists, Spinoza insisted.[63] Fortunately astronomy textbooks over the past four centuries have ignored Spinoza's

58 https://plato.stanford.edu/entries/spinoza.
59 I explain how in my video "Three Big Ways Christianity Supported the Rise of Modern Science" https://www.youtube.com/watch?v=HHcF-ffKkeg.
60 https://www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780195335828.001.0001/oxfordhb-9780195335828-e-020.
61 Alison Peterman, "Spinoza on Physical Science," *Philosophy Compass* 9, no. 3 (2014): 214-23.
62 Ibid.
63 Ibid.

attack on Kepler. Instead, they have affirmed Kepler's third mathematical law of planetary motion, also called the "harmonic law."

The Book of Nature

Contrary to the inaccurate history of the *Cosmos* TV series, Christianity has had a long and remarkable track record of contributing to the foundations of science. As mentioned earlier, Saint Augustine (354–430) expressed confidence in our ability to discover and read the "book of nature" because it is the "production of the Creator."

Galileo, Kepler, and many other early modern scientists used this traditional Christian metaphor of the "book of nature." They sought to convey the idea that God wrote two books that are consistent with one another: nature and the Bible. Nature is largely written in the language of mathematics, many of these scientists argued, and so it can be read only by those who know this language. Galileo argued as much in his book *The Assayer.* He wrote:

> *Philosophy [natural science] is written in this all-encompassing book that is constantly open before our eyes, that is the universe; but it cannot be understood unless one first learns to understand the language and knows the characters in which it is written. It is written in mathematical language.*[64]

Consider also these three sayings of Kepler, similarly celebrating the theological aspects and implications of science. Kepler wrote in a letter to his former professor Michael Maestlin in 1595:

> *God … wants to be known from the Book of Nature.*[65]

He wrote in a letter to Herwart von Hohenburg in 1599:

> *God wanted us to recognize them [i.e., mathematical natural laws] by creating us after his own image so that we could share in his own thoughts.*[66]

He wrote in a letter to Galileo in 1610:

> *Geometry is unique and eternal, and it shines in the mind of God. The share of it which has been granted to man is one of the reasons why he is in the image of God.*[67]

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64 Finocchiaro, *Essential Galileo*, 183.
65 *Johannes Kepler Gesammelte Werke*, 13, no. 23, 253–257, as cited in Aviva Rothman, "From Cosmos to Confession: Kepler and the Connection between Astronomical and Religious Truth," in *Change and Continuity in Early Modern Cosmology*, ed. Patrick J. Boner (Dordrecht: Springer, 2011), 115.
66 *Johannes Kepler Gesammelte Werke*, 13:309, letter no. 117, lines 174–9, as cited in Christopher B. Kaiser, "Science-Fostering Belief—Then and Now," *Perspectives on Science and Christian Faith* 59, no. 3 (2007): 175.
67 *Kepler's Conversation with Galileo's Sidereal Messenger*, translated by Edward Rosen (New York: Johnson Reprint, 1965), 33.

Kepler believed that mathematical ideas exist eternally in God's mind. God selected some of these principles to govern his creation (the book of nature). Because God created humans in his image, we have the intelligence needed to discover those natural laws, and in so doing, humans "share in his own thoughts." Such Christian beliefs contributed to the foundations of modern science.

Of course, it is possible that we, on occasions, have misinterpreted either the book of nature or the book of Holy Scripture—or both. In such cases there might appear to be a conflict between science and Christianity. But this would only be apparent, not real, conflict.

CONCLUSION

Despite being philosophically bankrupt, scientism thrives by perpetuating inaccurate stories of science and Christianity at war with each other. I have debunked six such myths: the Dark Myth, the Flat Myth, the Big Myth, the Demotion Myth, the Galileo Myth, and the Skeptic Myth. Along the way I also corrected the associated misconception that Christianity cannot be evaluated using the criteria for good scientific theories (theoretical virtues). As discussed above, the history of science and the history of Christianity are fatal to these scientistic misconceptions. Thus, my essay has shown scientism to be mere anti-theistic dogma masquerading as objective science and accurate history. It is neither. The real conflict is not between science and Christianity; it is between Christianity and scientism.

FURTHER READING

Michael N. Keas, *Unbelievable: 7 Myths About the History and Future of Science and Religion* (ISI, 2019). This book debunks more myths in more detail than my Ratio Christi booklet.

Michael N. Keas, "Systematizing the Theoretical Virtues," *Synthese* 195 (2018): 2761-93. There is free access to this top-tier philosophy journal essay. It covers a topic foundational to apologetics and many other disciplines. It shows how there are at least twelve major traits of good theories: evidential accuracy, causal adequacy, explanatory depth, internal consistency, internal coherence, universal coherence, beauty, simplicity, unification, durability, fruitfulness, and applicability.

J. P. Moreland, *Scientism and Secularism: Learning to Respond to a Dangerous Ideology* (Crossway, 2018).

James Hannam, *God's Philosophers: How the Medieval World Laid the Foundations of Modern Science* (Icon, 2009).

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After earning a Ph.D. in the history of science from the University of Oklahoma, Michael Keas won research grants from such organizations as the National Science Foundation and the American Council of Learned Societies. He experienced some of the last historic moments behind the Berlin Wall as a Fulbright scholar in East Germany. Keas serves as lecturer at Biola University (M.A. Science & Religion program) and on the board of directors of Ratio Christi. He is also a Senior Fellow of Discovery Institute where he has videos and essays. He has numerous publications including the book *Unbelievable: 7 Myths about the History and Future of Science and Religion*. He is the lead author of Ratio Christi's Apologetics Training for Faith and Science.

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