FAITH AND SCIENCE: HARD QUESTIONS

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Upon reading my title, most who pay attention to discussions of faith and science will assume I mean questions surrounding conflicts between faith and science. If theologians and scientists working independently come up with conclusions that seem mutually exclusive, or at least difficult to reconcile, what do we do? Pick one side as having methods that give a more secure path to truth with respect to the issue at hand and reinterpret the other side? Try to find a third answer to the problem? Accept the conflict and fall back on mystery?

Much energy has been expended and much ink has been spilled in an attempt to answer these questions. But I'm not convinced that they are the right questions, or at least I am convinced that the focus on them tends to obscure other important questions. Various schools of thought in Christian circles give various answers, and for the most part debates between them repeat tired arguments without changing anyone's mind. And for Christians who are also scientists, the focus on conflict between the two encourages a posture of compartmentalization. After all, most scientists are not inclined toward mystery, and to remain both a scientist and a Christian one cannot give up on one or the other.

Furthermore, the idea that faith and science are inherently at odds is a fairly recent one. Historians of science refer to this idea

as the "conflict thesis," and are in agreement that it was largely a late-19th-century invention of John William Draper, a chemist, and Andrew Dickson White, first president of Cornell University. Draper's *History of the Conflict between Religion and Science* (1874) is a polemic against Roman Catholicism, which he portrayed as blocking the progress of science. It was a quick success in the world of popular publishing, but the author's biases were close enough to the surface of the text that Draper's influence was less enduring that was White's. White's book, *History of the Warfare of Science with Theology in Christendom* (1896) was written in an academic style, with extensive use of footnotes to cite his sources, and in academic circles, the quality of his scholarship went mostly unquestioned for decades. Not until the mid-20th century did scholars begin to dig into his sources and realized that they did not support his thesis. Many of his claims remain in popular consciousness today as historical myths—the idea that the medieval Church insisted that the earth was flat, that Copernicus would have been severely persecuted had he not died shortly after the publication of *De Revolutionibus*, that science was widely condemned as satanic as it developed in the late medieval era, that Roger Bacon was persecuted for his scientific investigations. In retrospect, White is understood as biased from the start of his research into the conflict. As one of the founders of Cornell—the first American University to be founded as a secular institution—he described it as "an asylum for *Science*—where truth shall be sought for truth's sake, not stretched or cut exactly to fit Revealed Religion."[1]

My point, and the point of the historians of science who have debunked Draper and White, is not that there are not genuine conflicts between science and Christianity today, or even that there were no conflicts in the past. But historical conflict has been drastically overstated and misunderstood. Indeed, many historians of science have argued that science developed not in essential conflict with Christian ideas and the Christian church, but at least partially *because* of them. One of the simplest arguments along these lines is that Christianity has traditionally taught that there is truth to be known and that the human mind is so constituted as to be

able to grasp truth about the world. These ideas are not unique to Christianity, but they would seem to be basic preconditions of the development of science. Alfred North Whitehead wrote that there is an "instinctive conviction, vividly poised before the imagination, which is the motive power of research:--that there is a secret, a secret which can be unveiled." The source of this attitude is "the medieval insistence on the rationality of God, conceived as with the personal energy of Jehovah and with the rationality of a Greek philosopher. Every detail was supervised and ordered: the search into nature could only result in the vindication of the faith in rationality . . . in Asia, the conceptions of God were of a being who was either too arbitrary or too impersonal for such ideas to have much effect on instinctive habits of mind."[2]

Many early scientists found their Christian faith to provide motivation for studying the world. Johannes Kepler argued, for instance: "Many types of living creatures, in despite of the unreasonableness of their souls, are capable of providing for themselves more ably than we. But our Creator wishes us to push ahead from the appearance of the things which we see with our eyes to the first causes of their being in growth, although this may be of no immediate practical avail to us."[3] And from Newton: "this most beautiful system of sun, planets, and comets could only proceed from the counsel and dominion of an intelligent and powerful Being."[4]

Caution is needed here. Some well-meaning Christians have pressed these observations into the service of apologetics, painting a picture in which science is solely or primarily an outgrowth of Christianity, and using this as an implicit or explicit argument in favor of Christianity over other worldviews. Although Christians and Christian ideas were important in the rise of science, they were not the only people and ideas involved. The ancient Greeks, especially Aristotle, were clearly important scholars of the natural world. The Islamic world preserved Aristotle's writings after they were lost in Europe, and following Aristotle, studied the natural world.

There is a more subtle difficulty in trumpeting the role of Christianity in the rise of science. Modern science developed not in philosophical isolation, but as part of the package of modernity. The

hidden premise in the argument that Christianity is true because it gave rise to our modern way of thinking is that our modern way of thinking is true. This brings us to the hard questions, the ones that do not center around *conflicts* between Christianity and science, but rather around the ideas on which they *agree*, at least today. The intellectual conflicts in the late middle ages were not so much between Christianity and science as between competing theological and philosophical positions. The ideas we now call modernity prevailed. But are these ideas true?

In order to explain more specifically what I am arguing, a closer examination of the theological and philosophical debates of the past is in order. In the early centuries of the church, as Christians attempted to make sense of the world in a way that took both Scripture and philosophy, which at the time encompassed all of what Christians today might call general revelation, into account. There were many competing philosophical ideas at the time, but one that was very influential on the early church was the philosophy of Plato. Plato had argued for the existence of a single, perfect, divine being who had created the world (albeit not *ex nihilo*). This was against the popular mythology of his day that described many gods who were immortal and had impressive abilities, but were far from perfect. Plato also argued (against some materialists of his day) that the nature of things was dualistic, that is, that things have immaterial as well as material reality, and that the immaterial realm of the Forms, as well as an unformed material world, was co-eternal with the divine being. The early church fathers were careful to insist, against Plato, that only God is eternal. Augustine dealt with the problem of the eternal forms by understanding them as ideas in the mind of God, which God chose to use in his creation.[5] The color red, for example, is found in many objects, but the idea of red has eternally existed in God's mind. Human nature, in its pre-fall state, also exists in the mind of God, as does the nature of all created beings. In answering the question of whether or not truth can be perceived by the physical senses, Augustine maintained that the senses only detect that which changes over time, "[t]herefore truth in any genuine sense is not something to be expected from

the bodily senses."[6] For Augustine, genuine truth was atemporal and derived from God's eternal mind.

In the 12th and 13th centuries, the works of Aristotle, Plato's student, were translated into Latin and reintroduced to the west. Aristotle, like Plato, considered the natures of things to be real, although his theory of the relation between the material and immaterial is different, involving a closer relationship between the two. While Plato considered the soul to be unhappily trapped in the body, Aristotle considered both the body and soul to be natural to humans. He understood nature in terms of each thing existing for a purpose, or end, to which it naturally moved, and had a four-fold system of causality. Whereas only one work of Plato was known at the time,[7] dozens of works by Aristotle on a wide variety of subjects were rediscovered. Aristotle's work is impressive in its internal coherence. His physics, biology, cosmology, ethics, and psychology all integrated his overall philosophy of nature.

Many Christians were attracted to Aristotle's philosophy. He retained Plato's idea of the reality of the immaterial realm, and added ideas that were a better fit than were Plato's for the Christian doctrines of the incarnation, the resurrection of the body, and a purposeful creation. The theologian Thomas Aquinas, born about a century after the rediscovery of Aristotle, wrote the massive *Summa Theologica* reconciling Aristotle's thought (and other philosophical thought, including Plato's) with Christian theology. For Aquinas, as for Aristotle, immaterial human nature was the same for all of us, and human bodies distinguish between different humans. Aquinas thought that because angels do not have bodies, they cannot have a common nature; rather each individual angel is its own species. Because Aristotle's theory of nature involved a closer relationship between the physical and non-physical world than did Plato's, Aristotle and Aquinas, unlike Plato and Augustine, had use for the physical senses in the acquisition of truth.

But not all 13th century Christians were as enthusiastic about Aristotle as was Thomas Aquinas. A major concern was that the eternality of the immaterial ideas of things in the mind of God limits God's free will. In 1277, the Bishop of Paris, apparently acting on

concerns expressed in a letter by the Pope, issued a condemnation of 219 propositions, many of them from the writings of Aristotle or Thomas Aquinas or both.[8] There was particular concern about limitations on God's omnipotence. Although the targeting of Aquinas is not explicit, many of the condemned theses were held by him, and the condemnation was issued on the third anniversary of Aquinas's death.

William of Ockham (1288-1348) is often associated with the concern that the natures of things being derived from the mind of God limits God's omniscience. Ockham's philosophy eliminates the eternal ideas in the mind of God, thus allowing God the option of creating a wider range of worlds.[9] For Ockham, God might change the rules of the created realm at any time, decreeing what we now call good to be evil and evil to be good.[10] Ockham did not think this was *likely*, but it was important to him that it be *possible*. For Augustine and Aquinas, goodness was part of God's nature and therefore could not change. Ockham appears to have been influential; certainly the influence of Aristotle waned.

Ockham's philosophy separated God's nature from the world, and this separation tended to promote the development of modern science and of technology. Modern science is the study of the physical world, considered in isolation from God and the immaterial in general, and the philosophical separation encouraged examination of the physical alone. Modern technology manipulates the world for our use, something that would tend to be limited by the idea that the things we are manipulating reflect God's nature and encouraged by the idea that the material world is distant from God. Ockham's philosophy also tended to encourage modern science through encouraging a shift in the focus of scholarship away from the eternal reality that Augustine called "genuine truth" and toward a temporal reality in which truth is primarily truth about what happens in the physical world and in time.

A distant God who could at any moment change the rules of the universe is a rather scary prospect. Martin Luther, who was educated as an Ockhamist, struggled with intense fear that he was unable to please God. It was this struggle that motivated his development of his theology of grace. Luther's solution to the problem of the distant God was that God, through the work of Christ on the cross, reaches down and transforms the life of the sinner. God, for Luther, is still considered to be the *Deus absconditus*, the "hidden God," but his anxiety over his inability to bridge the gap between himself and God by his own merits disappeared.[11] While Luther's solution brings God and humankind back together, albeit in a different sense, God and the world outside of the individual Christian are still far apart. Contemporary Christians generally take something like Luther's approach, although they disagree about the extent of God's breaking through to miraculously change the course of nature.[12]

Today, practically everyone takes this distance for granted. But is it true? What is the nature of the relationship between God and the universe? Is there a real human nature that we all share, or is the fundamental human reality individualistic? Is matter in motion through time the most basic reality, or is there atemporal reality behind the changing world? These are philosophical, not scientific questions, and they are *hard* questions.

If Deism portrays God at the most distant, and at the other end of the spectrum, Pantheism brings God and the world so close they collapse into one, what point on that spectrum seems most likely to be true? Most Christians want to avoid both extremes, but that still leaves a lot of territory. The answer we have now, which leans strongly in the direction of Deism, is based partially on an obscure concern about God's freedom, perhaps helped along by attempts by the 13th century church to suppress competing ideas. This does not exactly inspire confidence that competing arguments were thoroughly examined for their merits before answers were settled upon.

Although there is much debate about what constitutes postmodernity and when it began, it is generally understood as a reaction against modernity, which raises further concerns. The shifts described above about how nature was understood eventually raised questions about how humans discover truth. Plato thought that everyone had pre-birth knowledge of the realm of the Forms and

remembered upon being reminded. Augustine thought that Christ illuminated the Forms to us, allowing us to see truth. Aquinas had a complex theory in which the physical senses take in the physical nature of an individual thing and the intellect grasps the immaterial nature of the thing, so that its whole is understood. But if there is no immaterial aspect of a thing to be grasped, if the most basic truth about nature is matter in motion, how does the human mind understand it? Rene Descartes thought we could build with mathematical precision using logic on foundations that were indubitable, but the building project never got very far. Francis Bacon, the father of the scientific method, advocated simply observing individual things through the senses and deriving general principles through induction. David Hume, however, pointed out that if all knowledge relies on induction, and induction can't validate itself, Bacon's method is flawed. Immanuel Kant, partially because of Hume's critique, put forward a theory he called his "Copernican revolution," in which the human mind *does not* grasp knowledge, but creates it. This series of events is, in a real sense, a critique of modernity and science as part of it.

I am not suggesting that we go back to the "good old days" before the 13th century. I am happy to live in an era in which Christians who strongly disagree merely trade scathing criticisms rather than killing each other. And I acknowledge that the rise of modern individualism and pluralism are part of the explanation for this state of affairs. As a scientist, I certainly do not want people to stop caring about the nature of the physical world, even if it is possible that we started caring on false pretenses. But I think it is not really possible to reverse the cultural consequences of the scientific revolution, many good, some bad, and if I am taking a false idea for granted, I very much want to know. I am not arguing for any particular answers to the questions I have posed, or even that the standard modern answers are definitely wrong. I am simply arguing that they are questions worth revisiting.

It is easy to adopt the answers that our modern culture takes for granted – that God is out there occasionally (or frequently) pushing the pieces of the world around and interacting with humans primarily on an individual basis, that human individuality trumps commonality, that understanding change throughout time is far more important and worthy a goal than understanding that which transcends time. These might even be the answers that we hope are true. But Hume's critique of the modern scientific approach to knowledge still seems valid, and it's not clear from the story of how we came to these answers that they were as rationally motivated as we might hope.

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(Endnotes)

1 As quoted by Ronald L. Numbers in *Galileo Goes to Jail and Other Myths about Science and Religion* (Harvard University Press, 2009), 2.

2 Alfred North Whitehead, *Science and the Modern World* (New York: The Macmillan Company, 1925), 12.

3 As quoted by Nancy K. Frankenberry in *The Faith of Scientists in their Own Words* (Princeton, NJ: Princeton University Press, 2008), 44.

4 Sir Isaac Newton, *Philosophiae Naturalis Principia Mathematica*. Translated by Andrew Motte (D. Adee, 1848), 504.

5 Frederick Copleston, *A History of Philosophy,* Volume 2 (The Newman Press, 1950), 60.

6 Saint Augustine, *Eighty-three Different Questions* (Washington, DC: The Catholic University of America Press, 1982). Question 9

7 Specifically the *Timaeus*, which describes the creation of the world.

8 An abridged list, with theses held by Aquinas marked, is found in chapter 22 of *Medieval Philosophy: Essential Readings with Commentary*, Ed. Gyula Klima (Oxford: Blackwell Publishing, 2007).

9 Frederick Copleston, *A History of Philosophy,* Volume 3 (The Newman Press, 1953), 48.

10 Michael Allen Gillespie, *The Theological Origins of Modernity* (Chicago: University of Chicago Press, 2008), 23-24

11 For more on Luther's theology of the *Deus absconditus*, see B.A. Gerrish, "'To the Unknown God': Luther and Calvin on the Hiddenness of God" *The Journal of Religion*, Vol. 53, No. 3 (Jul. 1973), 263-292.

12 The modern notion of a miracle as God's intervention in a world that normally functions independently is dependent on a modern notion of a distant God. For a discussion of changing ideas about the nature of miracles, see Peter Harrison's (1995) "Newtonian Science, Miracles, and the Laws of Nature" at http://epublications.bond.edu.au/hss_pubs/55.