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Article

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C. S. Lewis on Science and Technology

Harry Lee Poe

C. S. Lewis (1898–1963) found science both fascinating and helpful to him in his understanding of the world, both physical and spiritual. He incorporated scientific concepts into his apologetics and his fiction. He found that the new scientific discoveries of the twentieth century illuminated his theology. Instead of a conflict with science, Lewis waged an ongoing war against the confusion of materialistic philosophy with science. He was also concerned with the problem of "value-free" technological innovations which have an implication for what it means to be human. Lewis believed that ethics must have a place in the scientific enterprise.

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Some critics of the science fiction trilogy of C.S. Lewis have charged that Lewis had an aversion to science and scientists. Lewis answered this charge in "A Reply to Professor Haldane," in which he explained that his aversion was to the corruption of science by what he called scientism:

> the belief that the supreme moral end is the perpetuation of our own species, and that this is to be pursued even if, in the process of being fitted for survival, our species has to be stripped of all those things for which we value it—of pity, of happiness, and of freedom.[1]

Rather than an aversion to science, Lewis found science both fascinating and helpful to him in his understanding of the world, both physical and spiritual. Science informed his theology.

This article will explore several of the ways that Lewis incorporated science into his writings. First, Lewis employed science to illustrate the theological ideas he addressed in his essays, especially in his last series of radio broadcasts in 1944. Second, when Lewis turned to writing fiction, he chose science fiction over fantasy as his literary form. Third, more than simply illustration, science brought theological illumination to Lewis in his fantasy fiction and in his apologetic essays. Fourth, science also provided Lewis with critical information, which he included in a number of his essays, in refuting a growing tendency to confuse materialistic views with science. Finally, Lewis distinguished scientific knowledge from technological invention in his effort to warn his world of the dangers to humanity of technological development unhindered by the constraints of moral values.

C.S. Lewis took the view that Christians who intend to represent Jesus Christ to the world should stay abreast of scientific advances and changes in thought. During his lifetime, Lewis witnessed the scientific revolutions that came with Einstein's theory of relativity, Niels Bohr's quantum theory, Edwin Hubble's big bang theory,

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and the revisions to Darwin's theory of natural selection following the discovery of DNA by Watson and Crick. He was familiar with them all. He was reading Arthur Eddington, Erwin Schrödinger, Alfred North Whitehead, J.B.S. Haldane, F.B. Hoyle, and many others.[2] He dined and talked with the great scientists of Oxford. He thought it was important to keep up because the current scientific attitude toward Christianity was constantly changing, even as the science changed. Because of the changing science, Lewis warned against linking one's theology or apologetics to any scientific theory.[3] Luther and Calvin had made this mistake by linking their interpretation of the Bible to Aristotle's and Ptolemy's theory of an Earth-centered cosmos. Lewis took the view that in questions of theology, "Sentences beginning with 'Science has now proved' should be avoided."[4]

Lewis had not originally developed his knowledge of science as a Christian who wanted to be aware of something at work in the culture. Instead, he approached it in his younger days as a passionate disciple who worshipped at the altar of Darwin and Freud. When he abandoned the Christian faith in his mid-teens, he found a new belief system in a materialistic view of science which he acquired from his tutor, W.T. Kirkpatrick, with whom he lived and studied between the ages of fifteen and seventeen.[5] Of those days of his youth, Lewis would remark decades later, "Yet though I could never have been a scientist, I had scientific as well as imaginative impulses, and I loved ratiocination."[6] As an undergraduate reading English at Oxford in the early 1920s, Lewis's interest in science expanded to include psychology. He devoured the new psychology beginning with William James's *Varieties of Religious Experience* to which he added Miller's *The New Psychology and the Teacher*, Rivers's *Instinct and the Unconscious*, Hingley's *Psycho-analysis*, and Havelock Ellis's *Psychology of Sex*.[7]

Science as Illustration

Faith in Jesus Christ provided Lewis with a larger vision for understanding reality, but this larger vision did not mean the jettisoning of his interest in science. This interest can be clearly seen in the conversational way he incorporated illustrations from various sciences in his last series of radio broadcast talks in 1944.[8] His earlier broadcasts utilized war imagery almost to the exclusion of any other illustrations. War was an apt metaphor when Britain stood alone against Hitler's Germany. He could talk about the spiritual condition of the world as enemy-occupied territory, and his audience would appreciate the gravity of the situation.

By 1944, however, the tide had turned. Victory seemed certain, and Lewis changed his metaphors to science, for science was being touted as the solution to all the world's problems. In "Making and Begetting," he discussed biology. In "The Three-Personal God," he discussed the concept of multiple dimensions from physics. In "Time and Beyond," Lewis explored the concept of eternity in terms of the relativity of time from the perspective of Einstein. In "The Good Infection," he returned to biology to explore the concept of Christ in us. With "The Obstinate Toy Soldier," he combined the implications of the previous discussions of biology and physics to discuss what the death of Christ means for the human race. In "Two Notes," he touched on cosmology and possible universes to discuss briefly why God would have made this kind of universe and dealt with sin the way Christ did. He also touched on anatomy, like Paul, to discuss how the individual (an organ in the body) can be important while at the same time the individual belongs to a huge organism. In "Let's Pretend," he used the image of an injection to explain how Christ puts his life into us while repeating the notion of a "good infection." He once again used cosmology in "Is Christianity Hard or Easy?" to consider the spiritual condition of creatures who might live on other planets. In "Counting the Cost," he compared Christ to a dentist who extracts the cause of our pain and does not just relieve the pain. Lewis explored natural causality in "Nice People or New Men" to discuss why God does not force people to be nice. In "The New Men," he discussed evolution in order to distinguish it from the transformation involved in salvation. Lewis found science a useful partner in his apologetic work. True science merely describes what God has done in creation; of course, it would be consistent with anything God said in scripture.

From Science to Science Fiction

At a deeper level, science found its way into Lewis's fiction. While essays and sermons and lectures allow the author to explain and inform and attack and persuade, a story allows an author to show and to touch someone at the feelings level. By turning to science fiction long before he tried his hand at rationalistic apologetics, Lewis indicated where his heart lay. By 1937, he knew that he was a storyteller and

not a philosopher, and that was his choice. At the end of World War II, he explained to a group of youth ministers, while discussing apologetic issues related to science, that the best apologetics is not little Christian books, but little books by Christians on every subject—books with the Christianity latent.[9] Lewis had learned this approach through his own scholarship, particularly in *The Allegory of Love* (1936), *A Preface to Paradise Lost* (1942), and *The Abolition of Man* (1943).

From his childhood days, C.S. Lewis had a fascination with science that only increased when his father introduced him to the science fiction of H.G. Wells. Eventually, the pleasure he derived from science fiction led to Lewis's first piece of prose fiction, *Out of the Silent Planet*, a space adventure published in 1938. He would go on to write two more science fiction novels over the next six years, *Perelandra* and *That Hideous Strength*. Though Lewis spoke of himself as an example of Old Western Man, a dinosaur, a Neanderthal among modern men in his 1954 inaugural address at Cambridge, he chose a form of storytelling that speaks to the heart of his newly transformed culture, for science fiction itself arose as a new form of story during the nineteenth century. Lewis believed that the greatest division of eras in human history was not the division between the medieval world and the renaissance, but the division that comes in the nineteenth century after Jane Austen with the explosion of technology. His analysis of this great divide in human history helps us see how and why science fiction suddenly arose as an important artifact of our culture.

Though one might argue that Kepler's *Somnium* (ca. 1630) and Voltaire's "Micromégas" (1752) could be classified as science fiction, we do not have true science fiction until Mary Shelley and Edgar Allan Poe, just after the age of Jane Austen. In Shelley's *Frankenstein* (1818) and in Poe's eleven science fiction short stories of the 1830s and 1840s, both authors use this new form of storytelling to explore profound questions of morality, ethics, philosophy, and theology. Inspired by Poe's stories, Jules Verne took up the new kind of story and developed many of Poe's plots into full novels. For a century after *Frankenstein*, however, the new kind of story struggled without the benefit of a name. Critics referred to Poe's science fiction as "hoaxes." *Frankenstein* was merely gothic horror. Lewis first called it *scientifiction*. He was one of the new generation of writers who went through The Great War before giving science fiction a name and a new lease on life. In science fiction, the author imagines what science might discover in the future and how those discoveries might lead to new technologies. Instead of fiction stories about real science, science fiction weaves a tale of fictional science.

In his first letter to Charles Williams in March 1936, Lewis mentioned how Williams had treated one of the great scenarios of science fiction:

> I have read *Many Dimensions* with an enormous enjoyment—not that it's as good as the [*Place of the*] *Lion*, but then in a sense it hardly means to be. By Jove, it is an experience when this time-travelling business is done by a man who really thinks it out. I believe all your conclusions do follow—and I never thought of being caught in that perpetual to-and-fro.[10]

Sister Penelope, an Anglican nun who belonged to the convent of St. Mary in nearby Wantage, wrote a fan letter to Lewis after reading *Out of the Silent Planet*. A prolific author and Classics scholar, she wrote dozens of books, including translations of the early Church Fathers, but she also loved science fiction. From this initial common interest in science fiction, a significant friendship grew, and the two would correspond for years. In his first letter to her in August 1939, just a few weeks before the German invasion of Poland, Lewis discussed several aspects of *Out of the Silent Planet*:

> The letter at the end is pure fiction and the "circumstances wh. put the book out of date" are merely a way of preparing for a sequel. But the danger of "Westonism" I mean to be real. What set me about writing the book was the discovery that a pupil of mine took all that dream of interplanetary colonization quite seriously, and the realization that thousands of people, in one form or another depend on some hope of perpetuating and improving the human species for the whole meaning of the universe—that a "scientific" hope of defeating death is a real rival to Christianity.[11]

To Sister Penelope in a letter on November 4, 1940, Lewis remarked:

> Isn't *Phantastes* good? It did a lot for me years before I became a Christian, when I had no idea what was behind it. This has always made it easier for me to understand how the better elements in mythology can be a real *praeparatio evangelica* for people who do not yet know whither they are being led.[12]

In his first letter to Sister Penelope, he had remarked on the profound spiritual ignorance of educated England and how science fiction could be an aid to evangelism in this state of cultural collapse:

> You will be both grieved and amused to learn that out of about 60 reviews, only 2 showed any knowledge that my idea of a fall of the Bent One was anything but a private invention of my own? But if only there were someone with a richer talent and more leisure, I believe this great ignorance might be a help to the evangelization of England: any amount of theology can now be smuggled into people's minds under cover of romance without their knowing it.[13]

In a letter to Ruth Pitter in January 1947, Lewis connected the dots between his love of fantasy and his love of science fiction. Pitter thought that David Lindsay had relied upon Lewis when he wrote *Voyage to Arcturus.* Quite the opposite was in fact the truth. In acknowledging his dependence on David Lindsay, Lewis wrote:

> Can you bear the truth?—*Voyage to Arcturus* is not the parody of *Perelandra* but its father. It was published, a dead failure, about 25 years ago. Now that the author is dead it is suddenly leaping into fame: but I'm one of the old guard who had a treasured second hand copy before anyone had heard of it. From Lyndsay [sic] I first learned what other planets in fiction are really good for: for *spiritual* adventures. Only they can satisfy the craving which sends our imaginations off the earth. Or putting it another way, in him I first saw the terrific results produced by the union of two kinds of fiction hitherto kept apart: the Novalis, G. Macdonald, James Stephens sort and the H. G. Wells, Jules Verne sort.[14]

As it turns out, science fiction does not have to be about other worlds to provide a platform for exploring deep religious, moral, and philosophical issues. All kinds of science fiction provide this opportunity, as Lewis had already demonstrated in *That Hideous Strength*.[15]

Science as Theological Illumination

Lewis found that the new science of his day offered remarkable insights into theological problems. Science did not merely provide the useful devotional illustrations of his radio broadcasts; it also offered illumination to biblical faith. The old science of the Enlightenment had its roots in Aristotle's understanding of reality. The old science was wed to the assumptions and presuppositions of Aristotle's pagan view of the world—a universe without beginning, of infinite size and absolute time. Of course, this science conflicted with scripture, but the medieval scholastics managed to reconcile them. Lewis found, however, that the new science of the twentieth century helped to clarify some aspects of faith such as time and eternity, miracles, and rationality.

Time and Eternity

Lewis's most enduring works may, in the long run a century from now, be The Chronicles of Narnia in which the very idea of time played a part. With The Chronicles of Narnia, Lewis demonstrated that he could explore a major scientific idea in a story that was not science fiction. In fact, it would not be a stretch to say that Lewis employed more scientific ideas in his Narnia stories than in his Ransom stories. One of the most notable features of the Narnia stories is the concept of time. Lewis had long been interested in time and Einstein's insight into how time actually works in our universe. Aristotle had propounded the idea of absolute time which dominated western thinking for 2,300 years. Lewis did not particularly care for Aristotle whom he called "the philosopher of divisions."[16] With the overthrow of absolute time by Einstein's theory of relativity, however, Lewis had at his disposal a valuable tool with which to think and with which to imagine.

When Lucy returned from her first visit to Narnia where she spent "hours and hours, and had tea," she was shocked to realize that only a moment had passed at the Professor's house.[17] At the end of *The Lion, the Witch and the Wardrobe*, the children reign as kings and queens of Narnia together. They grow up into adults and forget their early years and their passage from one world to another through a wardrobe. Then one day while hunting, they chance—if chance is really the right word—to come upon the lamppost in the woods, and then tumble back into the wardrobe. After a lifetime in Narnia, they found "It was the same day and the same hour of the day on which they had all gone into the wardrobe to hide."[18] *Prince Caspian*, the second book of The Chronicles of Narnia, begins with the narrator's comment that, though the children had reigned "for years and years," upon their return to England "it all seemed to have taken no time at all."[19]

When the children return to Narnia, they find the great castle of Cair Paravel in ruins on an island, its peninsula long since cut off by the sea. They wonder how centuries could have passed in Narnia when only one year had passed in England. Edmund concluded that "once you're out of Narnia, you have no idea how Narnian time is going. Why shouldn't hundreds of years have gone past in Narnia while only one year has passed in England?"[20]

According to Einstein's theory of relativity, time is a dimension within the physical universe like height, width, and depth. In understanding the nature of time, it may be more helpful to use the word duration since time has so many connotations connected with clocks and calendars. Duration involves the persistence of physical matter. As such, Einstein regarded time or duration as a physical thing. The metaphysical implications of this theory are staggering. God is not physical; therefore, God is not bound by time. In his radio talks during World War II and in their published form as *Mere Christianity*, Lewis remarked, "It was the Theologians who first started the idea that some things are not in Time at all: later the Philosophers took it over: and now some of the scientists are doing the same."[21]

When Lewis said "some Theologians," he meant Augustine who had declared 1,600 years ago that God created time when he created the universe. Thus, Augustine distinguished between time and eternity, the quality that most corresponds to time for God. By "the scientists," Lewis meant Einstein and the world of physicists who had accepted his theory whereby they had an entirely new understanding of reality. Lewis reasoned that if God is not physical, then "almost certainly God is not in time."[22] This would mean that God does not travel through time from one moment to the next. God has no past or future in the physical world, for all moments of the physical world lie open to God simultaneously. Lewis gave the illustration of a line drawn on a piece of paper that represents the movement of time from past to future. In this illustration, God is the piece of paper.

Lewis believed that this understanding of time helps in clearing up some problems of Christian teaching that people have because of their assumptions about reality. Here Lewis spoke autobiographically of his thinking before he became a Christian. It involved one of his objections to the incarnation. If God is everywhere and keeps the universe going, then how did everything keep going when he became a baby? Lewis explained,

> … I was assuming that Christ's life as God was in time, and that His life as the man Jesus in Palestine was a shorter period taken out of that time—just as my service in the army was a shorter period taken out of my total life. And that is how most of us perhaps tend to think about it. We picture God living through a period when His human life was still in the future: then coming to a period when it was present: then going to a period when He could look back on it as something in the past. But probably these ideas correspond to nothing in the actual facts. You cannot fit Christ's earthly life in Palestine into any time-relations with His life as God beyond all space and time.[23]

This view of time helped Lewis to understand how humans can have free will, that is, if God knows what they will do. Lewis argued that the apparent conflict between the knowledge of God and the freedom of people arises "from thinking that God is progressing along the Time-line like us: the only difference being that He can see ahead and we cannot."[24] Since God is not physical and is therefore outside the physical universe, he does not foresee what will happen tomorrow. He has no tomorrow. He does not foresee; he simply knows. He does not know what you *will* do; he simply knows what you do. Thus, our actions are not prescribed by prediction. In our time-space continuum, we experience the word of God as pointing to our future, but not to God's future. God only has his own eternity, an existence unaffected by time or space.

Finally, the being of God outside of time and space suggests how God attends to the prayers of millions of people.[25] God does not necessarily hear us all at the same time, since God has no time to hear us at all. Conversely, God has all the time in the world, none of which is needed for him to know our prayers. Time has nothing to do with God's attention to the world and all of his creatures. He does not have time; he has eternity. Lewis thought this insight of Einstein, which only added a formula to the musings of Augustine, absolutely ripping. Yet, he added a disclaimer. He was cautious not to build theology on the basis of science since the science is always changing. For instance, the view many people have that God created the plants and animals as fully formed, distinct species, is not a position taught in scripture, but by Lewis's old nemesis Aristotle. Here he distinguishes between theology and the actual authoritative basis for the Christian faith: the Bible and the creeds.

Miracles

Lewis thought that quantum theory shed light on the phenomenon commonly called miracles by the modern world. He also thought that the Enlightenment critique of miracles was entangled with the clockwork universe of Hume. Such a universe no longer existed.

Lewis devoted a good deal of energy on the problem of making sense of miracles to a culture committed to a self-existent universe, that of a closed system of interlocking parts—the great machine of the seventeenth century. If anything interferes with one of the gears of the great machine, then the whole mechanism will come to a grinding halt. Lewis provided a thought experiment to analyze this view. If you place a coin in a drawer, it should be there the next day with all the laws of the universe operating, unless a thief intervenes. If the thief takes the coin, the laws of the universe still continue on as they always have. In a second thought experiment, Lewis proposed calculating how a billiard ball would travel on a smooth billiard table. Yet, if someone knocks the ball with a billiard cue stick while it is in motion, the ball will move in a different way than had been calculated—while the laws of the universe still keep ticking away.[26] He mused that Nature is "an accomplished hostess" who assimilates a miraculous event into herself and makes complete accommodation for it.[27]

Lewis has demonstrated something most profound: our universe is designed in such a way as to allow for regular order which Francis Bacon called *God's* laws of nature, while at the same time allowing for interference. It is this interference that makes scientific experimentation and technology possible. Lewis did something else extremely important in this essay on "Religion and Science." He treats miracles as an *interference* with the laws of nature.[28] For Lewis, closing a window to keep out a draft represents an interference with the normal course of nature.[29] Since the time of Hume in the eighteenth century, materialists had defined miracles as a *violation* of the laws of nature which, unfortunately, many Christian theologians accepted. To accept such a definition is to deny the Holy Spirit and give the whole show away. Lewis corrected the error. Through his discussion of miracles, he insisted that "it is therefore inaccurate to define a miracle as something that breaks the laws of Nature."[30]

He also made clear that the laws of nature do not *cause* anything; they simply describe the behavior of the physical world. This task of describing is the activity of science. Science does not have the means or the method to consider, much less assess, if anything else exists.[31] In his reply to Professor H. H. Price who had addressed the Socratic Club in Oxford on the subject "The Grounds of Modern Agnosticism," in which Price had stated that modern science disproves miracles, Lewis countered that science does no such thing. Since a miracle is a unique, nonrepeatable event, the scientific method has no means of assessing such an event experimentally.[32]

Rationality

Lewis observed that scientists involved in the hard sciences of mathematics, physics, and chemistry tended to be religious and even mystical. Biologists were less likely to be religious. People involved in the social sciences like economics and psychology are seldom religious. He noted the nearer a program of study comes to humans, the more an anti-religious bias sets in.[33] In *The Abolition of Man*, Lewis explored the implications of the shift in scientific study from humans studying nature to humans becoming the object of study. In visualizing the effect of a value-free society on the development of science, Lewis wrote,

> Man's conquest of Nature, if the dreams of some scientific planners are realized, means the rule of a few hundreds of men over billions upon billions of men. There neither is nor can be any simple increase of power on Man's side. Each new power won *by* man is a power *over* man as well. Each advance leaves him weaker as well as stronger. In every victory, besides being the general who triumphs, he is also the prisoner who follows the triumphal car.[34]

Lewis insisted that he was not attacking science which he valued for its pursuit of knowledge. Instead, he attacked the idea of a value-free society that could not retain a value like the value of knowledge or truth. Without guiding universal values, science can be corrupted into something hideously strong but diabolical.[35] The human mind is susceptible to corruption from its base instincts and emotions if not guided by the mediating influence of the universal values of right and wrong instilled in human character. Yet, the idea of rationality has other implications.

The rationality of the mind itself became for Lewis the ultimate example of a miracle, an interference by God in the time-space continuum. In *Miracles*, Lewis began by arguing that for naturalism to be true, everything must find its explanation within the time-space continuum of matter and energy—the physical universe. If anything can be found that cannot be fully explained by the universe itself, or natural causes, then naturalism would be falsified and overthrown. Lewis pointed to the recent discoveries in quantum mechanics to demonstrate that the old

mechanical model of the universe no longer stood up and that the old closed, deterministic universe no longer existed before moving to his argument.[36]

Lewis suggested that the quantum world tells us that the universe is not a tightly interlocked machine of cause and effect and that the universe operates on several levels. While he allows for the regularity of nature as humans experience it, he also suggested a subnatural level to the universe that involves matter which behaves idiosyncratically. Instead of certainty, science is left with probability of how it will behave, and those probabilities do not deal with individual bits of matter but with the average behavior of all the bits of matter. The natural world receives its building blocks from the subnatural world of random and "lawless" events.[37]

When it comes to human knowing at the natural level, our minds receive sensations from the senses and interpret them. All human knowledge depends upon the validity of human reason. If human reason is not valid, then science is not true. For any confidence in reality as we experience it, humans must have confidence in the validity of reason. At this point, Lewis put the fly in the ointment. He proposed the rule that "*no thought is valid if it can be fully explained as the result of irrational causes*."[38] If the mind is the product of the total system of the universe as Naturalism insists, and the total system is not rational, then all thoughts are ultimately the result of irrational causes by the naturalist's definition.[39]

Elizabeth Anscombe brought a linguistic analytical critique of *Miracles* to a meeting of the Socratic Club in 1948 which prompted Lewis to clarify several terms found in chapter three of his 1960 revision of the book.[40] His result remained the same. Lewis quoted J.B.S. Haldane's *Possible Worlds* for the short form of his argument:

> If my mental processes are determined wholly by the motions of atoms in my brain, I have no reason to suppose that my beliefs are true … and hence I have no reason for supposing my brain to be composed of atoms.[41]

On these grounds, Lewis argued that in addition to the natural and the sub-natural, there must also exist the super-natural that feeds into our world of experience just as the sub-natural does. The super-natural is the source of rationality and is Lewis's example of a miracle that overthrows naturalism. In his private correspondence, Charles Darwin had expressed the same view. He believed that the human mind was the great problem with his theory of natural selection without the involvement of God in the process.

Distinguishing Science from Philosophy

The materialist believes that only physical matter exists. The naturalist believes there are only physical or natural causes. Lewis spent a great deal of time and effort, particularly in the 1940s, refuting these claims and helping people understand the difference between science and philosophy. Materialism and Naturalism are philosophical positions that do not arise from science. Instead, people who hold these views tend to impose them upon science as though they are the same thing or somehow logically related. If the universe is a closed system and all events and phenomena within the universe have physical causes, then even if a god of some kind exists, that god would not be involved in any way in the actual events within the closed time-space continuum. We see this view in both deism and pantheism.

Science and Scientism

Lewis realized that the science of the twentieth century was his greatest ally in combating the confusion of science with philosophy. Between 1939 and 1947, but particularly during World War II, Lewis devoted a great effort at debunking these philosophical views that allowed no room for revelation, miracle, or any interference in the universe from God.[42] He was particularly concerned to show the difference between such a philosophical view, which he termed *scientism* or *evolutionism*, and true science which does not have the method or tools to make such claims.[43]

He had a three-fold strategy for dealing with this problem that involved his fiction writing, his popular apologetic essays, and his scholarly work. His science fiction trilogy (*Out of the Silent Planet*, *Perelandra*, and *That Hideous Strength*) attacked the materialist/naturalist point of view at the affective level.[44] Thus, his science fiction dealt with philosophical/ethical issues rather than scientific problems. He wanted his readers to feel a certain way about the materialist/naturalist agenda and to see where it leads. With his short essays published in the denominational press, he sought to give Christians reassurance about their faith in short, easily digestible bites. With his academic lectures at the University of Durham that were published as *The Abolition of Man*, he indicated how a thoroughgoing materialism can destroy the scholarly enterprise by replacing it with a purely social agenda

to be set by whoever holds the reins of power, since no transcendent reality of value would be recognized as an alternative to the prevailing cultural value.

To discuss the unreasonableness of materialism and naturalism, however, Lewis turned to the findings of modern science to support his view. Lewis had a good working knowledge of the proposals of Edwin Hubble regarding an expanding universe, usually called the big bang theory. While defending the reasonableness of the resurrection and ascension of Christ in his little essay on "Miracles," Lewis reminded his audience that modern physics then understood the universe as "running down," and that at one point in the "not infinitely remote" past, it had all been wound up. He contrasted the universe of Aristotle, which prevailed until the third quarter of the twentieth century, with the new cosmology. Aristotle's universe had no beginning and would have no end. It was infinite in size and duration. Furthermore, it was as fixed and static as a picture. However, physics discovered, with the new measuring techniques that were not invented until the twentieth century, that the universe is more like a story with a beginning, a development, and an ending.[45]

Lewis essentially charged that theologians who denied the resurrection and ascension of Jesus were antiques living in a universe that never existed. They operated out of old, discredited science. They wanted the body of Jesus to behave as bodies do in the static universe of Aristotle, but the real universe that modern science is only barely beginning to understand is actually a "magical" space. It does not have only the three dimensions of Aristotle. Lewis explained that Schrödinger speculated that the explanation of the atom requires seven dimensions.[46] Today, that number has grown to ten dimensions or more at creation, according to one version of string theory. Lewis made mention of the new understanding of the cosmos in a sermon preached at St. Jude on the Hill Church in London in 1942 when even physicists were just beginning to understand Schrödinger's ideas.[47] In his own way, Lewis accused those theologians who abandoned the biblical testimony to the resurrection and ascension of not only being guilty of bad theology, but also of being guilty of bad science.[48]

The actual nature of the universe as understood by science is critical to the materialist's claim that the only thing that exists is the physical world, understood today as the relation of matter and energy. Lewis argued that all of the great materialist systems of the past have depended upon the view that the physical world is eternal and self-existent. David Hume, in the eighteenth century, had argued "in an eternal duration, that every possible order or position must be tried an infinite number of times."[49] Lewis declared that "if anything emerges from modern physics, it is that nature is not everlasting. The universe had a beginning, and it will have an end."[50]

As for the vastness of the universe, the materialist argues both sides against God. If we find life elsewhere in the universe, then the critic misstates the Christian faith and asserts that Christians claim the earth is unique and humans the only intelligent life that God created, and therefore false. If we find that we are alone, then the critic claims that life must only be an accident. To these assertions, Lewis countered that the size of the universe makes no difference.[51] (Size mattered in Aristotle's universe. From the time of Aristotle, scientists had believed that the size of an object determined how fast a dropped object would fall. Galileo put this Aristotelian fact to rest.)

As for other life, Lewis said that the universe "may be full of life that needs no redemption. It may be full of life that has been redeemed."[52] The Bible tells us only about our world, not the whole of the universe. Lewis rebuked the materialists who talk "as if revelation existed to gratify curiosity by illuminating all creation so that it becomes self-explanatory and all questions are answered."[53] Instead, Lewis said that the Bible is a practical book that relieves humanity's "most urgent necessities."[54] While he discussed these matters logically in his essay "Dogma and the Universe" in 1943, Lewis also addressed these issues in his science fiction trilogy and in The Chronicles of Narnia. In both fictional cases, he explored such "supposals" as suppose there were another world which had endured Satanic attack, as in *Out of the Silent Planet*. Or, suppose there were a world in which the first people did not surrender to temptation, as in *Perelandra*. Or, suppose there were a world of sentient animals in which God became incarnate, as in *The Lion, the Witch and the Wardrobe*. These are all speculations about the questions raised by the materialist, none of which challenge biblical faith in any way.

Another implication of the current cosmological model of a finite, expanding universe that will one day come to an end concerns biology. In *Out of the Silent Planet*, the story ends with the physicist

Weston giving his defense before the Oyarsa of Malacandra. His defense is simply that humans have the right to dominate the universe and subdue all things before them because they can. It is the right of power or power makes right argument. It is not to humans, however, that Weston bequeaths the universe. Rather, it is to the descendants of humans that evolve from the human race, "whatever strange form and yet unguessed mentality they have assumed."[55] Weston assumes an unending universe with an unlimited supply of worlds where evolving humanity can migrate, as one world after another dies. The Oyarsa then asked Weston what would happen once all the worlds had died.[56] In "Dogma and the Universe" Lewis answered the Oyarsa's question. The materialist was "committed to a sinking ship," because "entropy is the real cosmic wave, and evolution only a momentary tellurian ripple within it."[57] The universe as a whole is dying. It will not go on forever.

Distinguishing Evolution from Natural Selection

As regards the general concept of evolution, Lewis had no objection. Darwin's understanding of natural selection, however, once again raised the specter of philosophy for Lewis. For him, the idea of human descent from animals was not inconsistent with biblical teaching about creation.[58] This view does, however, violate Aristotle's view of the original forms which became the standard of Western science and, therefore, Christian theology during the medieval period. The confusion of Aristotle's science with Christian theology during the medieval period, the period of Lewis's study, is a major reason he urged Christians not to build their theology on passing science as process theologians tended to do in his day.

In *The Problem of Pain*, Lewis offered what he called "a 'myth' in the Socratic sense" to describe how God might be involved in what is popularly called evolution.[59] Lewis described God perfecting the animal form over many long centuries, before arriving at the form he would use as the vehicle for his own image. This creature may have existed for ages before God bestowed a new kind of consciousness in this animal such that it became human. This new creature would have had a relationship to the rest of creation, to the other animals, and to God unlike anything that exists today in terms of its harmony. Lewis speculated that we do not know how many of these first humans God made or how long they existed in a paradisal state, but finally they fell into sin.[60]

Darwin, on the other hand, could not tolerate a view that included God in the development of life. Eighteen times in his argument in *Origin of Species*, Darwin rejected the Aristotelian view that each organism resulted from an independent or special act of creation.[61] More specifically, he rejected, eleven times, the idea that God had a "plan of creation."[62] Yet, he had no way of knowing whether God was involved through any known science or scientific instrument. He knew better than to make the claims he did about God's involvement in the world, because Darwin was a trained theologian from Cambridge, as well as a founder of modern biology. Lewis thought Darwin overstepped his bounds as a biologist by discussing what God could or could not do, in that biology does not have the tools to examine such questions. Lewis accepted the observations of evolutionary biology but not the theological assertions of Darwin.

Having offered what he called his own "myth" of evolution as a divine act of interference in the normal course of nature, Lewis then described the naturalistic cosmic myth of evolution that had grown up in the twentieth century, a myth that went far beyond the simple biological theorem that organisms change over time. The biological concept of evolution has nothing to say about the origin of life, and even less to say about the entire universe evolving.[63] At this point and in numerous other essays, Lewis reminds us that biology lends itself to mythmaking whereas physics does not.[64] Increasingly, we hear people speaking of nature not merely in anthropomorphic terms but even of the earth as a living thing, such as the new Gaia theology.[65] Citing Haldane on the law of entropy, he repeated the idea that degeneration is the rule.[66]

The Dangers of Technology

Though Lewis had a lifelong love of science, he had no such love of technology. Lewis tried to learn to drive several times, but he could not master it. He loved the gramophone as a boy, but he never had the same love of a radio or television. Surprisingly, he fell in love with air flight when he flew with his wife to Ireland and could view the patchwork quilt of England from the sky. Nonetheless, he maintained a lifelong dread of the impact of technology on people.

In his inaugural lecture as professor of Mediaeval and Renaissance Literature at Cambridge University in 1954, C.S. Lewis sought to identify the greatest

point of demarcation in human history. Rejecting such gradual divides as those between the classical and medieval periods, or between the medieval and modern periods, Lewis chose instead something closer at hand. Even with the birth of modern science in the seventeenth century, the division had not come, because the new learning had not yet affected "the tone of the common mind" as would happen later.[67] Lewis explained,

> Science was not the business of Man because Man had not yet become the business of science. It dealt chiefly with the inanimate; and it threw off few technological by-products. When Watt makes his engine, when Darwin starts monkeying with the ancestry of Man, and Freud with his soul, and the economist with all that is his, then the lion will have got out of its cage. Its liberated presence in our midst will become one of the most important factors in everyone's daily life. But not yet; not in the seventeenth century.
>
> It is by these steps that I have come to regard as the greatest of all divisions in the history of the West that which divides the present from, say, the age of Jane Austen and Scott.[68]

In the period since *Persuasion* and the Waverley Novels, great changes had come in politics, art, and religion, but Lewis argued that the greatest transformation of culture came from a new source:

> Between Jane Austen and us, but not between her and Shakespeare, Chaucer, Alfred, Virgil, Homer, or the Pharaohs, comes the birth of the machines. This lifts us at once into a region of change far above all that we have hitherto considered.[69]

Unlike the change from stone to bronze or the change from a pastoral to an agricultural society, the machine "alters Man's place in nature."[70] Lewis focused on the psychological effect of this alteration as he asked, "How has it come about that we use the highly emotive word 'stagnation,' with all its malodorous and malarial overtones, for what other ages would have called 'permanence'?"[71] Lewis's stress on machines reminds us not only of his fascination with science but also of his suspicion of technology. Science is the discipline that describes the behavior of the physical world while technology (machines and such) is the practical application of what we know of the physical world; this results in invention. From a theological perspective, God established the laws of nature which science makes known, while people make technology.

In observing a new common mindset that regards old as bad and new as good, Lewis proposed that a new value now dominates Western thinking. Lewis argued,

> … that what has imposed this climate of opinion so firmly on the human mind is a new archetypal image. It is the image of old machines being superseded by new and better ones. For in the world of machines, the new most often really is better and the primitive really is the clumsy. And this image, potent in all our minds, reigns almost without rival in the minds of the uneducated. For to them, after their marriage and the births of their children, the very milestones of life are technical advances.[72]

In this mindset, the values of a culture that arose over thousands of years, and only painstakingly emerged through the struggle, are in danger of being discarded as outmoded simply because old fashioned. As he began to elaborate on the danger of neglecting the instruction of the accumulated wisdom of the past, Lewis could not help slipping from what had been a straightforward scholarly address into science fiction. In his effort to explain the importance of a common received tradition, Lewis remarked,

> If one were giving a lecture on Warwickshire to an audience of Martians (no offence; Martians may be delightful creatures) one might loyally choose all one's *data* from that county; but much of what you told them would not really be Warwickshire lore but "common tellurian."[73]

Thus, the pervasiveness of technological advances alters culture not just locally, but globally. Lewis's views on technology are most clearly expressed as an argument in *The Abolition of Man* and most clearly as an appeal to the emotions in *That Hideous Strength*. For better or worse, technology changes the human relationship to the rest of nature, but it also changes human behavior and how we understand ourselves. The current concerns about transhumanism and AI were science fiction when Lewis wrote about them, but they are technological advances which have profound implications for what it means to be human from a theological perspective. The future which Lewis anticipated we now call the present.

Conclusion

In his essay on "Christian Apologetics," Lewis argued that Christians should be familiar with the latest discoveries in the sciences. As we have seen, Lewis was familiar with relativity, big bang cosmology, quantum theory, and natural selection. This kind of awareness would be especially important for theologians and those interested in making an apologetic for the faith. He also insisted that Christian

apologists who engage the sciences would have to be "perfectly honest" in their science. He stressed that "science *twisted* in the interests of apologetics would be sin and folly."[74] This admonition did not come as mere speculation for Lewis, but from years of experience. He had a life-long fascination with what God had made, and science is simply the discipline that describes how creation behaves. For Lewis, no possible conflict could exist between science and faith.

Lewis was not a scientist any more than he was a theologian, but he was a brilliant classicist and medievalist, having taken a first in both his Oxford degrees. From his study of literature, which included science and theology from 800 BC through AD 1600, Lewis understood how western theology had mingled the science of Aristotle and the religion of the Celtic pagans with Christian faith. Though he loved the medieval world, he was never hoodwinked by the medieval synthesis which he called a syncretism of pagan beliefs with Christianity. Though it was a beautiful example of the power of imagination to harmonize contradictory beliefs, in his "Epilogue" to *The Discarded Image,* he remarked that it was simply not true.[75] His warning to modern apologists was not to make the same mistake.

In the modern western cultural crisis over God and nature, however, many conflicts can occur. This cultural crisis has little, if anything, to do with faith or with science. Instead, the problems tend to emerge from philosophy and tradition (or old habits of thinking). Science presents no challenge to biblical faith, but naturalism and materialism and pragmatism and utilitarianism present enormous challenges for people who confuse these philosophical positions with science. Through many essays, sermons, poems, stories, and monographs, Lewis fought the tenacious grip that these philosophies have on the modern western mind. As long as these pernicious philosophies permeate the thinking of the philosophically unsophisticated culture of the west, the writings of C.S. Lewis will be relevant and helpful to people in pursuit of the truth about reality.

Notes

[1]C.S. Lewis, "A Reply to Professor Haldane," in *Of Other Worlds*, ed. Walter Hooper (New York: A Harvest Book, 1994), 77. See also, David C. Downing, *Planets in Peril* (Amherst, MA: University of Massachusetts Press, 1995), 144.

[2]Harry Lee Poe, *The Making of C.S. Lewis* (Wheaton, IL: Crossway, 2021), 194, 331; Walter Hooper, ed., *The Collected Letters of C.S. Lewis*, vol. 2 (New York: HarperSanFrancisco, 2004), 407, 1011; C.S. Lewis, "Miracles," in *God in the Dock: Essays on Theology and Ethics*, ed. Walter Hooper (Grand Rapids, MI: Eerdmans, 1979), 35; C.S. Lewis, "Dogma and the Universe," in *God in the Dock*, ed. Hooper, 39; C.S. Lewis, "Is Progress Possible? Willing Slaves of the Welfare State," in *God in the Dock*, ed. Hooper, 311; C.S. Lewis, *Miracles* (London, UK: Geoffrey Bles, 1947), 28–29, 60, 106, 126, 127–128; and C.S. Lewis, "Religion and Rocketry," in *The World's Last Night and Other Essays*, ed. Walter Hooper (New York: A Harvest Book, 1988), 83. I have named books and articles and people in this article and not mentioned them in these Notes. Lewis mentions the ideas of these and others in many other places.

[3]Lewis, "Religion and Rocketry," in *The World's Last Night and Other Essays*, ed. Hooper, 92.

[4]Ibid.

[5]Harry Lee Poe, *Becoming C.S. Lewis* (Wheaton, IL: Crossway, 2019), 119–21, 125, 153–57.

[6]C.S. Lewis, *Surprised by Joy* (London, UK: Geoffrey Bles, 1955), 131.

[7]Walter Hooper, ed., *All My Road before Me: The Diary of C.S. Lewis, 1922–1927* (New York: Harcourt Brace Jovanovich, 1991), 44, 62, 64, 70, 75.

[8]Poe, *The Making of C.S. Lewis*, 291–93.

[9]C.S. Lewis, "Christian Apologetics," in *God in the Dock*, ed. Hooper, 93.

[10]Hooper, ed., *The Collected Letters of C.S. Lewis*, vol. 2, 187.

[11]Ibid., 261–62.

[12]Ibid., 453.

[13]Ibid., 262.

[14]Ibid., 753.

[15]For a critical study of Lewis's science fiction trilogy, see Downing, *Planets in Peril*. See also, Diana Pavlac Glyer and Julianne Johnson, eds., *A Compass for Deep Heaven: Navigating the C.S. Lewis Ransom Trilogy* (Baltimore, MD: Square Halo Books, 2021) for a collection of essays on the science fiction trilogy.

[16]C.S. Lewis, *The Allegory of Love* (Oxford, UK: Clarendon Press, 1936), 88.

[17]C.S. Lewis, *The Lion, the Witch and the Wardrobe* (New York: Macmillan, 1950), 18–19.

[18]Ibid., 153.

[19]C.S. Lewis, *Prince Caspian* (New York: Macmillan, 1951), 1.

[20]Ibid., 25–26.

[21]C.S. Lewis, *Mere Christianity* (New York: Macmillan, 1952), 131.

[22]Ibid., 131.

[23]Ibid., 132.

[24]Ibid., 133.

[25]Ibid., 130.

[26]Lewis, "Religion and Science," in *God in the Dock*, ed. Hooper, 73–74.

[27]C.S. Lewis, *Miracles*, 170.

[28]Ibid., 73. Lewis also provided this definition at the beginning of chapter two of *Miracles*, 15.

[29]Lewis, *Miracles*, 169.

[30]Ibid., 72.

[31]C.S. Lewis, "The Laws of Nature," in *God in the Dock*, ed. Hooper, 76–79.

[32]C.S. Lewis, "Religion without Dogma," in *God in the Dock*, ed. Hooper, 134–35.

[33]Ibid., 135.

[34]C.S. Lewis, *The Abolition of Man* (New York: Macmillan, 1955), 71. Michael Ward has produced a new commentary-style guide to *The Abolition of Man,* a guide which he published as *After Humanity: A Guide to C.S. Lewis's The Abolition of Man* (Des Plaines, IL: Word on Fire Academic, 2021).
[35]Ibid., 86–87.
[36]C.S. Lewis, *Miracles*, 23–24.
[37]Ibid., 24–25.
[38]Ibid., 27.
[39]Ibid., 28.
[40]For a helpful summary of *Miracles* and the revisions to chapter three, see Walter Hooper, *C.S. Lewis: A Companion and Guide* (New York: HarperSanFrancisco, 1996), 342–56.
[41]Ibid., 28–29. See J. B. S. Haldane, *Possible Worlds and Other Essays* (Chatto & Windus, 1927), 209.
[42]For a discussion of how Lewis addressed the confusion of science with the philosophy of materialism in historical context, see Poe, *The Making of C.S. Lewis*, 194–99, 266–69, 282–88, 290–300, 324–31. Michael Ward examines several of Lewis's essays that deal with the confusion of science and philosophy in Michael Ward, "Science and Religion in the Writings of C.S. Lewis," *Science and Christian Belief* 25, no. 1 (2013): 3–16. See also, Downing, *Planets in Peril*, 36, 128, 144.
[43]For an important treatment of Lewis's understanding of scientism and its flaws, see Michael D. Aeschliman, *The Restitution of Man: C.S. Lewis and the Case against Scientism* (Grand Rapids, MI: Eerdmans, 1983). See also, Alister McGrath, *C.S. Lewis: A Life* (Carol Stream, IL: Tyndale House, 2013), 234–38.
[44]For a discussion of Lewis's treatment of these issues in his science fiction trilogy, see Sanford Schwartz, *C.S. Lewis on the Final Frontier: Science and the Supernatural in the Space Trilogy* (New York: Oxford University Press, 2009).
[45]C.S. Lewis, "Miracles," in *God in the Dock*, ed. Hooper, 33. This was the view expressed by Edgar Allan Poe in *Eureka,* which Dorothy L. Sayers borrowed in *The Mind of the Maker*.
[46]Lewis, "Miracles," in *God in the Dock*, ed. Hooper, 35.
[47]Lewis, "Preface," in *God in the Dock*, ed. Hooper, 13.
[48]Lewis, "Miracles," in *God in the Dock*, ed. Hooper, 35.
[49]David Hume, *Dialogues and Natural History of Religion* (New York: Oxford University Press, 1998), 84.
[50]Lewis, "Dogma and the Universe," in *God in the Dock*, ed. Hooper, 39.
[51]Lewis, "Dogma and the Universe," in *God in the Dock*, ed. Hooper, 40. He returned to this topic in his article "Will We Lose God in Outer Space?," which was published as "Religion and Rocketry" in *The World's Last Night*, ed. Walter Hooper (New York: Harcourt, Brace and Company, 1960), 83–92.
[52]Lewis, "Dogma and the Universe," in *God in the Dock*, ed. Hooper, 43.
[53]Ibid.
[54]Ibid.
[55]C.S. Lewis, *Out of the Silent Planet* (New York: Macmillan, 1943), 148.
[56]Ibid., 151.
[57]Lewis, "Dogma and the Universe," in *God in the Dock*, ed. Hooper, 44.
[58]C.S. Lewis, *The Problem of Pain* (New York: HarperOne, 1996), 67. Again in "The Funeral of a Great Myth," Lewis insisted, "I am not in the least denying that organisms on this planet may have 'evolved.'" See, C.S. Lewis, "The Funeral of a Great Myth," in *Christian Reflections*, ed. Walter Hooper (Cambridge, UK: C.S. Lewis Pte. Ltd., 1967), 91.
[59]Lewis, *The Problem of Pain*, 71.
[60]Ibid., 72–76.
[61]Charles Darwin, *The Origin of Species* (New York: Gramercy Books, 1979), 101, 110, 113, 189, 192, 195, 198, 201, 216, 217, 223, 444, 445, 446, 448, 452, 454, 457. This volume is a republication of the first edition in 1859.
[62]Darwin, 399, 415, 417, 432, 444, 446, 447, 450, 453, 458.
[63]C.S. Lewis, "The Funeral of a Great Myth," in *Christian Reflections*, 86.
[64]C.S. Lewis, "Revival or Decay," in *God in the Dock*, ed. Hooper, 253; C.S. Lewis, "The Grand Miracle," in *God in the Dock*, ed. Hooper, 86; and C.S. Lewis, *The Abolition of Man* (New York: Macmillan, 1955), 82–83.
[65]See Simon Winchester's discussion of the modern view of the Earth as a living being in *Krakatoa: The Day the Earth Exploded* (New York: Harper Collins, 2003).
[66]C.S. Lewis, "*De Futilitate*," in *Christian Reflections*, 8.
[67]C.S. Lewis, "*De Descriptione Temporum*: An Inaugural Lecture" (Cambridge, UK: Cambridge University Press, 1955), 10.
[68]Ibid., 11.
[69]Ibid., 15.
[70]Ibid., 16.
[71]Ibid.
[72]Ibid., 16–17.
[73]Ibid.
[74]C.S. Lewis, "Christian Apologetics," in *God in the Dock*, ed. Hooper, 92–93.
[75]C.S. Lewis, *The Discarded Image* (Cambridge, UK: Cambridge University Press, 1964), 216.