

Chapter Five



WHAT DOES OUR UNIVERSE REVEAL: A DESIGNER, CREATOR, OR NOTHING AT ALL?

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Abstract

Modern science has been successful in explaining much of what we observe around us. The inventions it has inspired would have been considered miraculous just a short time ago. However, many fail to realize that the earliest of modern scientists were motivated by a faith that nature was comprehensible. They believed the universe was governed by the "cause-effect" laws of its Creator and this belief made science, or the search for an understanding of these laws, a rational thing to do. This essay offers personal reflections from a physicist about why science is impossible without accepting that we live in a "caused" universe that ultimately should encourage one to acknowledge its "first cause" or Creator.

“GENESIS IS A BORING BOOK.” THIS statement was made by a professor at Princeton Theological Seminary.¹ Before you react to this seemingly outrageous claim, it is important to recall that our overarching goal as Christians is to engage the culture in which we live. Without this type of engagement, we will simply “talk past” those with differing views, using terms the other neither respects nor understands.

The seminary professor’s assertion that Genesis is a boring book should prompt us to ask what the professor meant. The opening verses of Genesis are concise and magnificent in communicating the creation of the universe.

In the beginning God created the heavens and the earth . . . Then God said, “Let there be light”; and there was light . . . and “let the dry land appear . . .”; “let the earth sprout vegetation”; let the earth bring forth living creatures”; . . . and [finally], “Let Us make man in Our image.”²

There are no titanic struggles among the gods or stories of worlds with fantastic beings that were created and destroyed before ours. Rather, the account is “mundane” in the original and best sense of the word. It is a sober description of how the universe came to be. It certainly did not sound anachronistic when read by the Apollo 8 astronauts during a mission that epitomized the triumph of modern science.

Belief in Science and Belief in God

While the supernatural is not colorful in the Genesis account, it is evident that the only reason the “supernatural” and “natural” exist at all is because of God. As the Apostle Paul writes, “Since the creation of the world [God’s] invisible attributes, His eternal power and divine nature, have been clearly seen, being understood through what has been made.”³

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For example, Johannes Kepler is widely admired as a great “modern” scientist, but Christian astrophysicist Owen Gingerich points out that Kepler never wavered in his “views of God as a geometer and of a universe filled with God’s geometrical designs.”⁴ Kepler’s *Astronomia Nova* includes the following exhortation:

I implore my reader not to forget the divine goodness conferred on mankind, and which the psalmist urges him especially to consider. When he has returned from church and entered on the study of astronomy, may he praise and glorify the wisdom and greatness of the creator Let him not only extol the bounty of God in the preservation of living creatures of all kinds by the strength and stability of the earth, but also let him acknowledge the wisdom of the Creator in its motion, so abstruse, so admirable.⁵

Kepler was careful to make statements about the universe as *observations* (i.e., what the data reveal), not *proof*. While the universe clearly *reflects* the Creator, it does not necessarily prove His existence. Nonetheless, the “worldview” of the earliest modern scientists clearly reflected their belief that the Book of Laws (the Bible) tells us that the Book of Nature reveals the Creator of both. Psalm 19 testifies, “The heavens are telling of the glory of God; and their expanse is declaring the work of his hands.”⁶

Therefore, the universe is not characterized by a jumble of random, unconnected phenomena, but follows ordained “Laws of Nature.” This

assumption made science, the search for these “Laws,” a rational activity for Kepler and his contemporaries; it is implicitly assumed by all scientists today, whether or not they embrace belief in a personal Creator. I am not claiming that all, or even a majority, of scientists are theists. Even believing scientists, like myself, are rarely conscious of God’s involvement in the cosmic order in our day-to-day research. All scientists implicitly assume searching for “Laws of Nature” is a rational thing to do, but the atheist may have a more difficult time explaining *why*. This is because abandoning the beliefs of Kepler and his contemporaries also requires you to abandon the reason why their approach to science is rational and purposeful. I assert that modern science actually requires “purpose” to make science possible at all.

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For example, we are practically forced to assume “purpose” to describe scientific research. Richard Feynman, the brilliant Caltech Nobel laureate physicist (known popularly as the leader of the Challenger disaster investigation), called the process analogous to learning chess by watching it being played. At first, the reasons *underlying* the variety of pieces are not obvious, and their motions seem arbitrary. After a while, however, it becomes clear that pieces of a certain type all move in the same way. There may still be occasional surprises, such as the way pawns capture pieces and become queens or the “castling” process, but the rules of the game are eventually learned from the patterns observed.⁷

This analogy helps show the value of organizing our knowledge. First, the rules in physics are simple enough that the “game” can be learned. Just as the rules of chess are finite, the equations governing the physical laws – while often difficult to solve in specific cases—are relatively few in number. For example, the gravitational, electromagnetic, and “strong and weak” nuclear forces govern all the phenomena we know in the universe.

Chess not only requires rules, but the pieces must each be the right size. If they are too small to be seen by the participants or too large to

be moved by them, the game cannot be played. To illustrate this, Gingerich explains that a change of only one-half percent in the nuclear resonance levels of oxygen and carbon would have made the production of the latter impossible through stellar nucleosynthesis.⁸ As a rough analogy, one could imagine the constituents of the carbon nucleus as children bouncing on trampolines near each other. We pretend the only place you find trampolines in such close proximity is the inside of stars. The object of this game is to bounce at the same frequency so that all the participants can hold hands when they are in the air. If three link hands, they call themselves "carbon," but if a fourth joins them, they become "oxygen." The "pieces" in this game have to be just the right size in order for the game to be possible.

Finally, the starting positions in chess allow us to play an interesting, (non-trivial) game. Imagine a form of chess where only two kings are placed next to each other in the middle of the board, and whoever goes first naturally wins when he captures the opponent's king. Such a game would not be interesting and would seem to have no point. Chess does not appear to be "designed" that way and neither does the universe, as evidenced by its complexity. We will revisit this in the next section.

The physical sciences are most closely associated with the "Laws of Nature" and their practitioners are the most outspoken in confronting the issue of apparent design in the universe. One way to eliminate the need for a designer, for example, is to invoke the "anthropic cosmological principle" (ACP). Hawking provides a concise statement of the ACP in his book, *A Brief History of Time*: "We see the universe the way it is because we exist...[it is as old as it is because] it takes about that long for intelligent beings to evolve."⁹ This assertion was used to predict the properties of carbon and oxygen I described earlier¹⁰ and offered as support for the validity of the ACP.

Why go to such lengths to refute "purpose," even to the point of using what may sound like a tautology? If you accept the existence of a Creator who makes science a rational endeavor, you might logically conclude that He would want to reveal Himself. The Book of Laws describes His invisible attributes, His eternal power, and divine nature.¹¹ This might be the sort of Creator even scientists might want to believe in, but such lofty descriptions do not force them to make the choice. The Book of Laws, however, does not stop there. It also depicts scientific

details brutality of the kind that still persists, in one form or another, to the present day.

The soldiers therefore came, and broke the legs of the first man, and of the other man who was crucified with Him, but coming to Jesus, when they saw that He was already dead, they did not break His legs; but one of the soldiers pierced His side with a spear, and immediately there came out blood and water.¹²

The account is uncomfortable because we know, scientifically, what happens when someone is crucified and then stabbed in the way the passage describes. This detail assures us that there is no doubt Jesus Christ is dead. However, this is not the end of the story. Just as science explains Christ's death, it also explains that His resurrection is impossible—unless He is the Son of God as He claimed to be.

Then [Jesus] said to Thomas, "Reach here your finger and see My hands, and reach here your hand, and put it into My side; be not unbelieving, but believing."¹³

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To engage our culture, the issue is not whether one believes in the Bible or science. One needs the Bible to understand science and one needs science to understand the Bible. The issue is whether one chooses to be "unbelieving" or "believing" in the face of the evidence. This seems to be why the need to challenge the "purpose" presupposition underlying science looms so large for so many today.

To summarize, I argue that "purpose" must be an underlying tenet if the pursuit of science is to be a rational activity. In addition, science, when properly understood, is an enterprise based on intelligible "rules" that are necessary to make comprehensible both the Christian faith and

the “design” of the “Rulemaker.” This conclusion makes some people uncomfortable and leads them to posit the “anthropic cosmological principle” (ACP) as a means by which to circumvent the “problem” of the Creator.

The Limits of Science and the Limitlessness of God

Physicists John Barrow and Frank Tipler elaborate extensively on the ACP in their book, which Nobel laureate Christian de Duve calls a “massive, vastly documented opus of 700 pages, 600 mathematical equations, and 1,500 notes and references.”¹⁴ The first of their so-called “Anthropic Statements” is straightforward:

Weak Anthropic Principle (WAP): The observed values of all physical and cosmological quantities are not equally probable but they take on values restricted by the requirements that there exist sites where carbon-based life can evolve and by the requirement that the universe be old enough for it to have already done so.¹⁵

In other words, this is simply an assertion “that those properties we are able to discern are self-selected by the fact that they must be consistent with our evolution and present existence.”

Another physicist, Brandon Carter, first introduced a more speculative statement:

Strong Anthropic Principle (SAP): The Universe must have those properties which allow life to develop within it at some stage in its history.¹⁶

This goes beyond the WAP, which is cast only as a means of determining if a particular experimental observation is sensible, by placing upon the constants and laws of Nature (that is, the “rules, pieces, and initial conditions of the game”) the requirement that they *must* enable life to exist. Barrow and Tipler claim that one interpretation could be categorized as “religious,” in that it “continue[s] in the tradition of the classical Design Arguments” of natural theology.¹⁷ They summarize that

interpretation in the following way: “There exists one possible Universe ‘designed’ with the goal of generating and sustaining ‘observers.’”¹⁸

We see a progression from a universe that is merely *consistent* with life, to one where it *must permit* life to develop by the sheer fact of its own existence. This may be “religious,” but it certainly stands in marked contrast to the divine directedness of the universe which Genesis records as essential to its creation.

The idea of a created being that is responsible for its own creation may seem absurd, but, in the same way, some features of modern physics are used by some to provide a basis for it. Physicist, John Wheeler, offers another interpretation of the SAP. “Observers are necessary to bring the Universe into existence.”¹⁹

Barrow and Tipler call this the Participatory Anthropic Principle (PAP) and they say it is closely related to an additional conclusion: “An ensemble of other different universes is necessary for the existence of our Universe.”²⁰ They elaborate by adding,

This statement receives support from the “Many Worlds” interpretation of quantum mechanics and a sum-over-histories approach to quantum gravitation because they must unavoidably recognize the existence of a whole class of *real* “other worlds” from which ours is selected by an optimizing principle.²¹

To understand what this means, let us first describe the so-called “Many Worlds” view of quantum mechanics. We use an example in physics called the two-slit diffraction experiment. In the version used by Richard Feynman, a beam of electrons impinges on a tungsten plate with two holes in it. In his colorful jargon, electrons come in “lumps” like bullets. On this microscopic level, everything looks “lumpy”—hence the appellation “quantum” mechanics for the theory that describes them. The electrons can be detected individually by any electrical system that can pick up their discrete charge. On the other hand, those that are detected past the plate follow the distribution expected if they were waves—that is, the maxima and minima characteristic of an interference pattern.²² This is what happens when

you toss pebbles into a still pond and see the ripples, which are waves of water, cross each other.

A consequence of this so-called “wave-particle duality” is the inability to determine how, as a discrete entity, the electron could be “aware” of the other hole so it can “interfere” as a wave. Furthermore, any experiment that attempts to determine which hole the electron “actually” passes through perturbs it in such a way that it indeed behaves like a bullet passing through armor plate, and does not exhibit wave-like interference.²³ It would be difficult to go into the underlying details of the quantum mechanics in this essay, but suffice it to say that, as peculiar as the theory is, you see its application every time your purchases are scanned at a cash register or a disk is popped into your CD player.

This is the great mystery of quantum mechanics. It is completely contrary to classical mechanics, where your observations are in no way contingent on the way you made it. In this framework, there is only one “reality,” as reflected in the measurement you performed. In quantum mechanics, however, some hold that the two potential outcomes of the experiment with the electron reflect two possible “realities.” When one of those “realities” appeared when we did our measurement, what happened to the other “reality?” The people who hold to the view of two “realities” suggest that the universe actually divides into: (a) a world that contains what we observe and (b) another whole world that “contains” the other “reality,” but is forever separate and completely inaccessible to and unobservable by us. It must be this way, because we can only “experience” one reality at a time; the electron is a wave or a particle to us, but not both, when we measure its characteristics.

Such bizarre claims about the nature of “reality” are possible because there is no way to make the consequences of quantum mechanics any clearer. As the Feynman puts it,

[H]ow does it really work? What machinery is actually producing this thing? Nobody knows any machinery. Nobody can give you a deeper explanation of this phenomenon than [what has been] given; that is, a description of it...no one can go any deeper today.”²⁴

Nevertheless, some have taken the idea of new “universes” being created every time a measurement is performed to establish the “Many Worlds” viewpoint,²⁵ which allows us creatures within the universe to create new ones by our actions in it.

We see a progression from a universe that is merely consistent with life, to one where it must permit life to develop by the sheer fact of its own existence.

Later, I address why the “Many Worlds” viewpoint might be philosophically satisfying, but, for now, I will examine why the British philosopher Mary Midgley, who is also Anglican, offers a more fundamental criticism of the PAP. The key point is that the “observer” is a disembodied physical detection device, like a photographic plate or a particle counter. An electron or a photon might behave like a particle or a wave, depending on how the measurement is performed. However, the *individual human mind* is not involved, as anybody will see the same interference pattern or a record of counts at a particular physical location for a given experimental configuration. As a result, Midgley argues:

The vast cosmic claims collapse into absurdity. Measuring devices, if they are really detached from human intentions, are just physical objects. On their own, in a world where no mind uses or understands them, grains of silver bromide can no doubt exist and respond to photons. But they do not measure or register or record anything at all. These words only have a sense when they describe acts carried out by enquirers. The grains could indeed still be affected causally by quantum events. But then so would other physical things, for instance the particles surrounding those events. None of these effects would have any meaning, any significance, any importance. None could possibly be credited with exciting roles in creating the cosmos.²⁶

If, during this discussion, your intuition suggested to you that the “Many Worlds” line of reasoning was rather incredible, you are certainly in good company. Barrow and Tipler venture an explanation as to why anyone would go to such great lengths to subscribe to the Strong Anthropic Principle (SAP) in spite of such critiques:

Suppose that for some unknown reason the SAP is true and that intelligent life must come into existence at some stage in the Universe’s history. But if it dies out at our stage of development, long before it has had any measurable non-quantum influence on the Universe in the large, it is hard to see why it must have come into existence in the first place. This motivates the following generalization of the SAP: Final Anthropic Principle (FAP): Intelligent information-processing must come into existence in the Universe, and, once it comes into existence, it will never die out.²⁷

Barrow and Tipler claim that the “FAP is a statement of physics and hence *ipso facto* has no ethical or moral content.”²⁸ In fact, it is *very much* a philosophical statement which hopes the universe does not have a designer, even though it appears as if it had one (the SAP). Yet—because the universe *has* to possess intelligent life embodied in humanity—sentient life has to go on forever. This conundrum resembles the covert question many agnostics ask: Given all that we are able to experience, feel, and do, doesn’t it seem that there *must* be a point to our existence beyond an ignominious return to dust?

The best explanation Barrow and Tipler offer is to equate the meaning of existence with immortality. They “prove” the latter, and thus the “point” of intelligent life amounts to this:

- 1) Any living creature is fundamentally a type of computer.
- 2) In a computer, the program is really important, not the hardware on which it runs.
- 3) Humans may very well become extinct, but intelligent programs do not have to run on the “special hardware” of their bodies.

- 4) Intelligent “life” can thus continue to exist forever as long as there is some type of construction material for the computer hardware, and the energy to run them.²⁹

They argue for an immortal “soul,” in the sense that Aristotle and Aquinas thought of it. I should point out that Barrow and Tipler still refer to an individual soul, not a “world” soul. The particular claim by Aristotle that they cite, for example, is his assertion that “soul is analogous to knowledge possessed rather than the act of knowing. That is, the soul is analogous to the [computer] program rather than to the running of the program,” in modern parlance.³⁰

Concerning Aquinas, Barrow and Tipler point out that he

regarded the human mind as consisting of two faculties: the agent intellect (*intellectus agens*), and the receptive intellect (*intellectus possibilis*). The former is the ability to acquire concepts, and the latter is the ability to retain and use the acquired concepts. A similar distinction is made in computer theory. In any physical computer, general rules concerning the processing of information are coded in the physical structure of the central processor and in ROM. Such ‘hardwired’ programs are analogous to Aquinas’ agent intellect. The programs which are coded in RAM or in disks or tape are the computer analogue of Aquinas’ receptive intellect.³¹

As individual computer programs exist, so can there be individual souls. The key point is that if they are indeed equivalent, we can eliminate God as the soul-giver who “breathed into [Adam’s] nostrils the breath of life” (Gen. 2:7, NASB), and all the consequences that follow from such a belief.

We need not condescendingly critique the proponents of such views, especially since those cited here are world-class scholars. Instead, we should realize that our yearnings are the same and this should embolden us in our witness. Helping our culture admit this is the first and most critical step in moving from unbelief to belief, or from the

“darken[ed] counsel by words without knowledge” (Job 38:1, NASB) to the true “Light of the World.”

The Conflict of Worldviews

Contrary to popular belief, modern physics is not antithetical to a theistic perspective. Myths have given way to the explanations of science. The stories of the ancients at least present arguments of cause and effect that we can follow. As we have shown, however, the world of quantum mechanics is so contradictory to everyday experience that it becomes difficult to use in refuting any beliefs that purportedly defy “conventional” scientific wisdom. Rather, modern physics confronts us with the limitations of “science”—that we can know anything for sure. The issue is not what unique worldview permits the “impartial judgment” of science, but which among many it now permits should you choose.

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Recall that on the scale of atomic phenomena, there are two possible outcomes to certain kinds of experiments and neither can be determined beforehand. For example, in certain quantum mechanical experiments, the *momentum* of an electron, may be tracked, but we cannot be certain of its *location*. On the other hand, if we track the location of the electron, we cannot know its momentum. There are some who believe the universe actually divides into one world that “contains” what we observe, and another world that is forever separate and unobservable, to us. This “Many Worlds” view allows us as “creatures” in the universe to “create” new realities by our actions within it.³²

We must be reminded that what are “observing” in this paradigm is some kind of physical detection device, like a photographic plate or a particle counter. While an electron or a photon might behave like a particle or a wave, depending on how the experiment is set up, the *individual human mind* does not participate in the same manner.

Otherwise, you would be forced to claim that *everyone would not necessarily see the same physical results of a given measurement at a particular physical location for a specific experimental configuration*. This would have rather serious consequences, to say the least, for the efficacy of the scientific method. In spite of the fact that then “the vast cosmic claims collapse into absurdity,” as Midgley pointed out above, the “Many Worlds” concept has many adherents, for reasons which are more philosophical than scientific. In spite of its difficulties, the ACP in its various forms—such as the “Many Worlds” viewpoint—has strong philosophical and psychological appeal to many people. The appeal comes from its seeming ability to solve the “Creator problem.” Hawking unabashedly writes:

Einstein once asked the question: “How much choice did God have in constructing the universe?” If the no boundary proposal is correct, he had no freedom at all to choose initial conditions. He would, of course, still have had the freedom to choose the laws that the universe obeyed. This, however, may not really have been all that much of a choice; there may well be only one, or a small number, of complete unified theories, such as heterotic string theory, that are self-consistent and allow the existence of structures as complicated as human beings who can investigate the laws of the universe and ask about the nature of God.³³

Hawking concludes with the rhetorical question, “What place, then, for a creator?” His position, however, is rooted in a philosophical “anthropic” assertion—because we exist, our “creator” somehow had no choice but to create a universe that permitted this.

In fact, the Bible *does* implicitly and explicitly explain our Creator’s role. The question of who (or what) has “choice” is clearly not modern. The Gospel of Luke records the joyful entry of Jesus Christ into Jerusalem, where His followers were saying, “Blessed is the King who comes in the Name of the Lord; Peace in heaven and glory in the highest!” (Luke 19:38) When the leaders of the community told Jesus to rebuke His disciples, He replied “I tell you, if these become silent, the

stones will cry out!" (Luke 19:40) Contrary to what adherents of the ACP might assert, then, God does have a choice. It should humble us to realize that even stones would cry out, "What place, then, for a creator?" if we did not exist to ask the question!

Contrary to what adherents of the ACP might assert, then, God does have a choice. It should humble us to realize that even stones would cryout ... if we did not exist to ask the question!

Even if the "anthropic" explanation for the creation of the universe were tenable, it still does not address the question of its nature after it was formed. Assume that God had no "choice" in making up the "rules" we talked about in the first section. What do they give us? We can build up quite intricate and ornate objects like snowflakes from the laws of physics. Such systems are highly ordered, and their structures can be dictated by relatively few and simple instructions.

Living systems are generally not highly ordered in the same sense as snowflakes, but are immensely more complex. The instructions that are needed to specify them are consequently far more numerous. To illustrate this difference between order and complexity, note the highly simplified example following the arguments in Hubert Yockey's book, *Information Theory and Molecular Biology*.³⁴

Consider a simple rule where you choose letters at random and keep only G's and H's. You repeat this until you have eleven, and the result has the high order of complexity in a snowflake. Therefore, it has low entropy, which commonly describes the degree of disorder of a system. If instead I ask you to choose three O's and one each of the letters D, E, G, L, S, U, V, and Y, their distribution is far more scattered among the alphabet than in the previous case. This situation has a much lower order and much higher entropy, but you can arrange the letters in this set to spell "God loves you." By contrast, the other high complexity/low entropy group contains no message at all.

The instructions in the situation with a greater number of letters are more complex, and so is their execution. Some claim low entropy argues for the existence of a creator, but we see how easily this can be refuted

by appealing to a limited set of physical laws. Ironically, the opposite situation of high entropy with high complexity is needed to explain life. No simple rules can "create" the information required for life to exist. Unlike Hawking, I conclude that there is indeed a "place for a creator." The only way to refute this conclusion is to resort to statements like those made by the biologist de Duve, whose arguments were cited earlier. He asserts, "natural processes [are all that are permitted] if we wish to remain within the realm of science."³⁵

The problems this claim causes for science can be illustrated in the comparison of two rock formations. One can be found in the Black Hills of South Dakota, and it is called Mount Rushmore. This huge relief of the heads of George Washington, Thomas Jefferson, Abraham Lincoln, and Theodore Roosevelt force one to conclude it was "created" by an intelligent designer since we know its sculptor, Gutzon Borglum.³⁶ Contrast this with the most famous geological feature in the White Mountains of New Hampshire — the "Profile," or the "Old Man of the Mountains." Nathaniel Hawthorne referred to it as the "Great Stone Face," and the formation became widely known through his short story by the same name. Hawthorne describes it this way:

The Great Stone Face, then, was a work of Nature... [formed] precisely to resemble the features of a human countenance.... There was the broad arch of the forehead, a hundred feet in height; the nose, with its long bridge; the vast lips, which if they could have spoken, would have rolled their thunder accents from one end of the valley to the other.³⁷

The two formations are similar in scale and granite composition. Each head on Mount Rushmore is about sixty feet high, and the "Great Stone Face" stands at an impressive 40 feet high. De Duve's position would permit focus only on the comparable "heap of ponderous and gigantic rocks, piled in a chaotic ruin one upon another" and demand that only the physical mechanism of how the rocks arrived there lies within the purview of science. As the "laws of physics and chemistry" operate identically at each location in telling us how rocks fall and

fracture, the “created” sculpture and natural geological feature become essentially indistinguishable.

... it is thus philosophical assumptions and/or bias that cause many people to refuse to acknowledge the logical consequences of their methodological claims.

Science can tell the difference between the two rock formations, precisely because it permits us to consider their settings. This includes the ability to recognize Mount Rushmore as an intentional rendering of four American presidents. This provides the basis for its “meaning.” Refusing to consider the questions of setting and purpose involves a refusal to see the meaning of what is observed, yet this is the consequence of de Duve’s methodology. What forces this refusal is the *a priori* assumption that a creator does not exist. If observation does not support this claim, then it is not science. This limitation is imposed on science philosophically and it is thus philosophical assumptions and/or bias that cause many people to refuse to acknowledge the logical consequences of their methodological claims.

Conclusion

The universe does appear to reveal a designer and creator. Otherwise, this would not create the problem that requires positing something like the ACP. The issue is not how well the data are accumulated or how skillfully the argument is formulated in support of the Christian position. The key issue is the way in which people *respond* to the evidence—and this, in turn, follows the dictates of their worldviews.

The key issue is the way in which people respond to the evidence – and this, in turn, follows the dictates of their worldviews.

The problem of human response occurs even on a pedestrian level, as illustrated by the recent example of “crop circles” in Great Britain.³⁸ During the past few years, mysterious patterns were found in wheat fields in the form of large, distinct geometric patterns. No one observed them being formed, and speculation ran from “intelligent causes”—such as ingenious pranksters or the perennial favorite, extraterrestrial beings—to natural phenomena. Two gentlemen finally admitted responsibility, and revealed that their equipment consisted only of large versions of the stylus and string people have used to make geometric figures since antiquity. On the nights they were inspired to creativity, it did not take them very long to produce their designs, hence the difficulty in detecting them at work. In spite of this unequivocal “evidence for a creator,” some insisted this did not explain *all* the crop patterns and some persisted in suggesting highly improbable natural causes (perhaps to cover embarrassment from their past advocacy of such fantasies as anything else).

Only when we provide appealing alternatives will others consider releasing their philosophical prejudices. Since we are dealing ultimately with mindset, we are reminded of the role God must play in changing it. The Westminster Confession of Faith states that it is ultimately He who must enlighten anyone “spiritually and savingly to understand the things of God.”³⁹ The Confession explains that when those who reject the evidence for the Creator are effectually called, they come to accept it “most freely being made willing by His grace.”⁴⁰ For Christians in the sciences, then, the goal of constructively engaging society is not simply to win the debate. We cannot truly do so against those without the “heart of flesh” that the Confession contrasts with the “heart of stone” God replaces in “His appointed and accepted time.”⁴¹ Rather, our ultimate calling is to join all believers in proclaiming the good news of salvation through Jesus Christ and the meaning this gives to our lives. That is something science alone can never provide.

¹ Wright, D., 1993, personal communication.

² Genesis 1:1-26 (NAS).

³ Romans 1:20 (NAS).

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- 5 Kepler, cited by Gingerich, 1994, 45.
- 6 Psalm 19:1 (NAS).
- 7 Feynman, R., *The Character of Physical Law*. (Cambridge, MA: MIT Press, 1967): 59-60.
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- 12 John 19:32-34 (NAS).
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