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Where Faith and Science Meet: An Opportunity for Cross-Cultural Outreach

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Abstract: How should we as Christians respond to science? How should we interact with scientists and others whose worldviews are shaped or impacted by science? These are important questions if we are to equip Christians to nurture the faith of other believers and to share the faith with unbelievers. All too often, however, responses within Christendom range from shifts away from sound theology, to attempts to change science, to fear and/or hostility. However well-meaning, such approaches are detrimental and are based on fundamental misunderstandings of science. A clearer understanding of science is necessary for a faithful alternative based on cross-cultural communication.

We all know that we live in a scientific age. Science¹ shapes many practical aspects of our lives, from food production, to medicine, to communication, to transportation. Yet, we find a remarkable lack of consensus and often a good deal of confusion about what this means for the Christian faith and the Church, among churched and unchurched folks alike.² Because science seems to address so many of our practical needs, does it become our ultimate source of hope or even our ultimate authority? Does it shape our faith, our worldview, our ethics, or our understanding of who we are? We, as Christians, are not of this world, but we are definitely still in it; and so it is important that we be prepared to address such questions—both in conversation with our brothers and sisters in the faith and as we share the reason for



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the hope that is in us with those who are unchurched or de-churched.

There is a common public perception of conflict at the interface between the church and science, regardless of what that interface *should*, and sometimes does, look like. I would suggest that this conflict is rooted in common fundamental misconceptions of what science is and how it functions. It's exacerbated by a variety of resulting inappropriate responses from well-intentioned Christians.³ We will look at some of the manifestations of hostility or at least mistrust between faith and science, then examine what science is and how it functions in order to see whether the conflict has any merit, and finally consider what might be a better way to approach the faith-science interface.

First, however, we should agree that there is no single view that Christians have of science or *vice versa*. Christians' reactions to science range from fascination to fear, trust to suspicion, excitement to hostility. Most lie somewhere between these extremes, while some Christians simply take science for granted, not thinking much about it except as consumers. The reactions of scientists to Christians and Christianity in many ways run a similar gamut. And, to be sure, many scientists are Christians.

Conflict at the Interface

This conflict, whether real or perceived, can result in real casualties and presents a series of important issues for Christians to address. For example, David Kinnaman has identified antagonism between the church and science as one of the factors alienating young adults from the churches in which they were raised (based on the results of Barna research). He cites the following comment from a young man who had left the faith: "To be honest, I think that learning about science was the straw that broke the camel's back. I knew from church that I couldn't believe in both science and God, so that was it. I didn't believe in God anymore." Kinnaman goes on to argue that

Issues of science are one of the significant points of disconnection between the next generation and Christianity. Many times churches are unprepared to help young adults navigate an increasingly complex world where scientific breakthroughs seem to happen every day. This lack of preparation is due in part to the perceived long-running culture war between science and religion that has been fought, on various battlefields, for centuries. Might it be that the church is so used to being science's debate opponent that we've forgotten how to be anything else?⁴

While Kinnaman's observation is significant, it describes only one aspect of the problem. It is not simply a generational issue confined to younger adults or the next generation. As important as those demographic groups are, we do a grave disservice to God's people if we think that is as far as the issues extend. It has been my

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experience that many adults of all ages have questions about faith and science. Some question their understanding of Scripture, and ultimately their faith, because they believe it is threatened by science. Some anguish over how to respond when unbelieving friends or family members attack their faith along these lines: “How can you believe that [existence of God, Scripture, the Christian faith]? I believe in science.” Sadly the latter scenario is all too common among older adults with disaffected family members, often in middle age themselves, who seem to view their older relatives as having had little science education and therefore easy targets.

There are two main areas in which churches across denominational lines are generally not equipping their members to interact with science: faith and witness—and that covers a lot of the Christian life! There are several pitfalls that can beset churches. For example:

- Some discourage their people from engagement with science on the basis that they might be corrupted by it. This approach fails both to address the natural curiosity of those living in a culture permeated by science, and to teach them how to answer questions they may already have or may hear from others. It also denies them possible witness opportunities.
- Some attempt to prepare their people to dispute scientific theories that do not support the witness of Scripture and/or to use science to prove aspects of Scripture. This is at best a mistaken and often a dangerous tactic, as we will see below once we have looked at how science functions.
- All too often, churches take an adversarial stance towards science and scientists, with little evidence of gentleness or respect *contra* 1 Peter 3:15, which does little to foster communication and opportunities for witness.
- Another common strategy is for churches to start accommodating their theology to fit current theories in science, which does little to support the faith of believers and may ultimately undermine what is presented as the Good News of Jesus Christ. We will see a twentieth-century example below, which had a devastating effect on people’s willingness even to hear or read Scripture for a long time in England. Again, as we see how science functions, I will also argue that this type of move is unnecessary.

Miracles have often been dismissed because they cannot be demonstrated “scientifically,” i.e., empirically under controlled experimental conditions, and because they cannot be explained by science. The dismissal is coupled with an assumption that anything that cannot be demonstrated and/or explained by science cannot be objective truth.⁵ Therefore, the conclusion is that miracles are impossible, and miracle accounts are regarded either as objectively false or as figurative or fictional. Such thinking has had profound implications for the interpretation of Scripture. The Enlightenment (and responses to deism, in particular) heralded an era of attempts to “prove” what one might variously call the truth or the historicity of

Scripture, particularly with regard to miracles, which in turn led many to dismiss miracles—including the Incarnation and the Resurrection, divinely orchestrated Creation, and sometimes of the very existence of God.

For example, Hans W. Frei has observed, with regard to the deistic controversy in the eighteenth century, that “The immediate question was whether there are good grounds for believing in the actual occurrence of the miraculous events constituting the indispensable evidence for historical revelation. How authoritative, in short, how well attested are biblical accounts, especially those of miracles, since the natural presumption in a ‘scientific age’ is obviously against them?”⁶ By the middle of the twentieth century, Rudolf Bultmann claimed, “It is impossible to use electric light and the wireless and to avail ourselves of modern medical and surgical discoveries, and at the same time to believe in the New Testament world of spirits and miracles.”⁷ And again: “An historical fact which involves a resurrection from the dead is utterly inconceivable!”⁸ Even in this postmodern age, the notion still persists that anything that cannot be demonstrated and/or explained by science cannot be real or objectively true in the physical world.

When science is pitted against religion such that miracles, or supernatural events in general, are discounted because we live in a “scientific age,” it elevates science to the rule and norm of objective truth. In a sense, the concept of objective truth is *redefined* to mean only that which science can demonstrate and/or explain, and which science currently accepts. But is this true to how science actually works?

There is one overarching assumption that is common to all of science: the assumption that the physical world always works in the same way. In other words, we assume that the laws of nature work consistently and do not change. In many ways, this corresponds to a common-sense understanding of routine day-to-day existence. For example, long before the era of modern science, people recognized that certain things were good to eat while others were poisonous, and this finding did not change from day to day. We know that mistletoe berries are poisonous, and we expect that they will still be poisonous next week! This assumption is fine for describing how God has created the physical world to function in general, but it makes it impossible for science to describe, let alone prove, the miraculous—which would include creation and all the other miracles, especially Jesus’ resurrection.

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Is it compatible with the Christian faith to assume that the laws of nature do not change? The answer depends on whether one believes that anything can ever happen contrary to the laws of nature. If the answer is no, then the two are obviously irreconcilable (at least without some kind of Bultmann-style “demythologizing”). If, however, one believes in a God who has created our physical reality to function in a certain way on a day-to-day basis, but who may on occasion choose to act differently in this world, i.e., a God who also works miracles, the two are perfectly compatible. Miracles are the exception rather than the rule,⁹ and there is no problem with a Christian’s assuming that the physical world works consistently the rest of the time. In fact, we do that all the time in our everyday lives. Thus, it is possible for any of us as Christians to be scientists, without rejecting the miracles that Scripture describes. We understand that the almighty Creator is capable of intervening in our physical existence in extraordinary ways. We also realize that miracles can serve as His signs to communicate certain things to us (as in Jn 2:11; 4:54; 20:30), simply because they are miraculous.

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The assumption that the physical world always works consistently renders science incapable of proving the Bible. For example, consider Jesus’ turning the water into wine (Jn 2:1–11). If we could travel back in time and analyze that wine, what would we expect to find? The Creator formed it from water, which required transmutation of the elements. Would we expect it to contain DNA like regular wine¹⁰ even though it was not made from grapes? Indeed, would we expect its composition to resemble that of wine at all, since it was not made from grapes? Alternatively, if it did not resemble wine, then how would we know we were analyzing wine? The same argument applies to all the miracles in Scripture. Expecting to prove (or disprove) miracles by laboratory experimentation is as meaningless as expecting to listen to a CD on a sundial! And of course Scripture tells us that we walk by faith and not by sight (2 Cor 5:7). If science could prove the Scriptural account, why would we need the gift of faith that Jesus Himself commends (Jn 20:26–29)?

A Science Studies¹¹ Perspective on What Science Is and How It Works

Philosopher of science Karl Popper describes modern science and technology as having been inspired by an idea expressed by Descartes and Bacon—both Christians:

At the heart of this new optimistic view of the possibility of knowledge lies the doctrine that *truth is manifest*. Truth may perhaps be veiled. But it may reveal itself. And if it does not reveal itself, it may be revealed by us. Removing the veil may not be easy. But once the naked truth stands revealed before our eyes, we have the power to see it, to distinguish it from falsehood, and to know that it *is* truth.¹²

Descartes spoke of the truthfulness of God, according to which God would be deceiving us if what we see clearly and distinctly to be true were not true; thus, His truthfulness makes truth manifest. Bacon spoke of the truthfulness of nature, according to which nature is an open book that we cannot misread if we read with a pure mind, from which flowed his theory of inductive reasoning. Scientific knowledge came to be seen as advancing by inductivist methods—by generalizations from observations to experiments to universal laws. Unfortunately, the ideas of these devout men have helped to pave the way for some of the present-day tensions between science and faith. Even though understandings of science itself have changed, these themes still linger below the surface: the optimistic view of nature as an open book and the idea that God would be deceiving us if what it appears to tell us were not true.

The twentieth century witnessed the development of philosophy and sociology of science. In particular, Popper challenged the earlier description of science. Hume had already pointed out that induction cannot be logically justified and had instead proposed a psychological theory of induction to account for belief in physical laws, but Popper proposed an alternative involving trial and error, or “conjectures” and “refutations,”¹³ which challenged the idea that science is simply built up from observations. He argued that every observation is made within some frame of reference, and the interpretation of it is an iterative process that involves both development and testing of hypotheses. Popper developed his criterion of testability as a criterion of demarcation between what is science and what is not, suggesting that it is “easy to obtain confirmations, or verifications, for nearly every theory—if we look for confirmations.” A genuine test of a theory, on the other hand, is an attempt to refute it. Irrefutable theories are metaphysical, not scientific,¹⁴ and thus of no interest to empirical science. However, that does not render them untrue. Science purports not to be metaphysical, but this claim holds only so long as it restricts itself to what is testable/refutable, which raises questions with regard to multiverse theories.¹⁵ Popper’s criterion does not mean that every scientific theory (or “law”) is true—or that science gives (or will ever give) us a complete understanding of how the natural world works. Moreover, it also means that science cannot rule out the existence or activity of God.

The second half of the twentieth century brought substantive changes in the understanding of how science works. In particular, the idea of a single universal scientific method was largely abandoned following the work of Thomas Kuhn, who

described the producers and validators of scientific knowledge as members of *scientific communities*.¹⁶ Members of these communities share a “sub-culture” that has many commonalities with regard for example to education, technical literature, areas of interest, etc.

Members of any such community share a “paradigm,” the nature of which may go through three distinct phases. The “pre-science” phase is in essence a time when the community is trying to develop an interpretive framework for its observations. It is followed by the “developed” or “normal science” phase, which is commonly very productive because a shared paradigm has developed that identifies challenging puzzles and supplies clues to enable their solution. During this phase, Popper’s falsifiability criterion does not apply. If results are obtained that do not conform to the paradigm, they are typically seen as the researcher’s error rather than as a refutation of the paradigm. “Revolutionary science” is characterized by a “crisis” (generated by a build-up of anomalous results) resulting in a shift to a new paradigm. Paradigm *shifts* may be large or small and affect large or small (say ≤ 25) groups of scientists.

Paradigms encompass shared generalizations; shared beliefs in particular models (which help to determine what are acceptable explanations and puzzle-solutions); shared values (regarding judgment of, for example, acceptable accuracy, margins of error, plausibility, consistency, or simplicity); and shared exemplars.¹⁷ In a sense, paradigms can be regarded as shared examples that help scientists to see similarities between different situations that would allow for application of the same interpretive framework.¹⁸

Jan Golinski describes the subsequent development of constructivism, which “directs attention systematically to the role of human beings, as social actors, in the making of scientific knowledge.”¹⁹ Constructivism has built on aspects of Kuhn’s analysis, as well as on other studies, such as the work of Collins and Pinch.²⁰ Their work on scientific controversies supported the idea that scientists do not simply develop ideas from unambiguous evidence or logical deduction from prior beliefs; rather, they make practical judgments related to their sub-culture. Replication was shown to be a more complicated process than often assumed. In normal scientific work, scientists typically trust the work of other scientists, particularly those within their “core set” or sub-culture, and do not test it. Thus, replication is typically incidental, as results and their interpretations are applied in other work. Failures to replicate data are first attributed to experimental differences or experimenter error. Overall, constructivism shows that the practice of science “involves grappling with the material world, not just engagement with purely social entities. But it is not reduced to a process of revealing preexistent ‘reality.’”^{21,22} Scientific communities are in essence interpretive or hermeneutical communities, using two “texts”: the natural world, which they interrogate through experimentation or modeling, and the community narrative, which is applied during normal science but only really

interrogated during periods of crisis; and then often only a small part of the community narrative is interrogated.

An Alternative Approach to the Faith-Science Interface

Science is a great blessing that God has used as a means to improve the quality of earthly life for many people, and for that we should give Him thanks; however, it is also not a panacea. It is geared to solving puzzles and problems, but it does not address such questions as meaning, e.g., *why* we are here, *why* the cosmos is as it is, or the foundations of ethics. It is not sufficient to address all of our problems or solve all of our interesting puzzles; and, like the other blessings we receive, it is vulnerable to misuse in this fallen world, which is all the more reason that we need faithful Christians who are also good scientists.

For the most part, science strives to describe physical reality, and here it is helpful to retain Popper's view of objective truth, which does not preclude truth in metaphysics. Thus, like Popper, we see science as striving towards objective truth, while realizing that scientific knowledge is not always objective truth, nor is it the source of all objective truth. In fact, both the scientist and the biblical exegete strive to interpret texts: one the natural world and the other the Scriptures. The inductive nature of science results in an inability to allow for the possibility of discontinuities in the operation of natural laws, i.e., miracles; it is not that these cannot occur, but rather that science simply cannot describe them. It does not address metaphysical questions.

The view that science invalidates any objective truth claims of miracle accounts is rooted in a misconception of what science is and how it works. Thus, Christians should not see it as a threat to their faith if science predicts something different from what Scripture records. Rather they can look *with the eyes of faith* at what science predicts would have happened had God not done something miraculous, the classic example being the Resurrection. First, science would not have predicted or explained how Jesus could leave the tomb alive. Second, if there had been someone around with modern laboratory equipment and able to take tissue samples, what could they have found? If the tissue looked like human tissue, they would doubtless have concluded that He had not died; if it did not, then the first suggestion would probably have been experimental error.

The chief battleground we see now is in the area of origins; and, in fact, on the science

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front, the main thrust is now common ancestry based on genomic studies. But again, how can science predict what creation would have looked like initially? One hears the argument that God would not have created things to “look old,” which, of course, harks back to Descartes and Bacon. But such an application of manifest truth (a) cannot account for the way that scientific knowledge actually develops (unless perhaps we want to assume that all earlier scientists somehow had less pure minds than later ones), (b) assumes the current theories to be manifest truth, and (c) presumes that we can know the mind of God (perhaps better than He does). Yet, Scripture does not always show Him doing what we would expect.

It is clear from the science-studies literature that science is performed by and within communities that share common paradigms and methodologies for generating and interpreting data, something that I also observed in my own working experience. It is important, therefore, to consider encounters with scientific communities as cross-cultural encounters. Attempting to equip a Christian (young or old, but let us take a college student as an example) to go out and challenge the science in scientific communities of which they are not a part is potentially a recipe for disaster. The Christian student is challenging that community without being a part of it or sharing its sub-culture; his perspective is based on a paradigm that the community does not own or acknowledge. It is likely to end up with the student’s being marginalized on the campus and the scientific community’s closing ranks and, depending on the strength of the attack, seeing Christians as either ridiculous or threatening. If the attack is sufficiently strident, they will also likely perceive Christians as, well, un-Christian.

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Does this mean that we abandon or compromise our beliefs? Of course not! But it does suggest a different approach to this type of cross-cultural outreach. Scientists (and others who are confused into thinking that science and faith are incompatible) are people for whom Christ died and rose, many of whom still need to hear the Good News of Jesus Christ. Our Lord bids us to love our enemies, and that includes even the most antagonistic. Most scientists, however, are not antagonistic unless attacked! There is a mission field out there on our doorstep, which too often churches have ignored, attacked, or provided with a compromised Gospel. Let us by the grace of God be the people we should be and see the interface between faith and science as a place, not for war or fear, but for offering an opportunity for cross-cultural outreach.

Endnotes

¹ I use science as an umbrella term here to include both science and engineering, since they share many common features in underlying assumptions and methods of practice; the boundaries between them are increasingly blurred in many areas; and both generally contribute extensively to the practical benefits to society that the public commonly associates with science.

² That many people in the LCMS have questions about the relationship between science and faith is evidenced by the fact that the Commission on Theology and Church Relations (CTCR) was called upon to produce its recent report on the topic: *In Christ All Things Hold Together: The Intersection of Science and Christian Theology* (St. Louis: LCMS, 2015).

³ I have lived much of my working life at the interface of faith and science, including more than twenty years as a faculty member (and also a Christian) in the field of materials science and engineering, before being commissioned and serving as a deaconess. This has afforded me extensive opportunities to observe the attitudes and stereotypes that often characterize this interface, as well as the challenges and opportunities it presents.

⁴ David Kinnaman, *You Lost Me: Why Young Christians Are Leaving Church and Rethinking Faith* (Grand Rapids: Baker, 2011), 132–133.

⁵ Throughout this document, I will use “objective truth” in the sense of correspondence to fact.

⁶ Hans W. Frei, *The Eclipse of Biblical Narrative: A Study in Eighteenth and Nineteenth Century Hermeneutics* (New Haven: Yale University Press, 1974), 53.

⁷ Rudolf Bultmann *et al.*, *Kerygma and Myth: A Theological Debate*; trans. Reginald H. Fuller (New York: Harper and Row, 1961), 5.

⁸ *Ibid.*, 39.

⁹ I am speaking here of physical miracles, such as the raising of the dead (prior to our Lord’s return), water being turned into wine, or the parting of the Red Sea.

¹⁰ Techniques for DNA extraction from wine have been a subject of study in recent years to identify the grape varieties used.

¹¹ History, philosophy, and sociology of science.

¹² Karl R. Popper, *Conjectures and Refutations: The Growth of Scientific Knowledge* (New York: Basic Books, 1962), 5.

¹³ *Ibid.*, 33–47.

¹⁴ *Ibid.*, 257.

¹⁵ See, for example, the manuscript on “Parallel Universes” by Max Tegmark (currently a faculty member at M.I.T.), which can be downloaded from <http://space.mit.edu/home/tegmark/multiverse.pdf>. Most science does not branch out into such largely untestable directions; when it does, one has to ask whether science is encroaching on metaphysics.

¹⁶ Thomas S. Kuhn, *The Structure of Scientific Revolutions: Fourth Edition* (Chicago: University of Chicago Press, 2012), 175–180.

¹⁷ *Ibid.*, 182–186.

¹⁸ *Ibid.*, 189–197.

¹⁹ Jan Golinski, *Making Natural Knowledge: Constructivism and the History of Science* (Chicago: University of Chicago Press, 2005), 6–7.

²⁰ *Ibid.*, 22, 27–30.

²¹ *Ibid.* 203.

²² Osborne suggests that: “Many doubt Kuhn’s pessimism about truth-seeking in philosophy and science” whereas Mohler describes postmodernists as “arguing that neither revelation nor the scientific method is a reliable source for truth.” Grant R. Osborne, *The Hermeneutical Spiral: A Comprehensive Introduction to Biblical Interpretation* (Downers Grove, IL: IVP Academic, Second Edition, 2006), 507. In: Köstenberger (ed.), *Whatever Happened to Truth?* (Wheaton, IL: Crossway, 2005), 58.