

The Religion of Science: The Largest Remaining Frontier Can an Evangelical Believe in Evolution? The Testimony of Today's Most Prominent Evangelical Scientist

by Francis S. Collins

From my perspective as director of the Human Genome Project, the scientific and religious world views are not only compatible, but also inherently complementary. Hence the profound polarization of the scientific and religious perspectives, now glaringly apparent in the fields of biology and genetics, is a source of great distress. Hard-liners in either camp paint increasingly uncompromising pictures that force sincere seekers to choose one view over another. How all of this must break God's heart! The elegance and complexity of the human genome is a source of profound wonder. That wonder only strengthens my faith, as it provides glimpses of aspects of humanity, which God has known all along, but which we are just now beginning to discover.

My Upbringing

I grew up in a home in the Shenandoah Valley of Virginia, where faith was not regularly practiced. My parents were very creative people, particularly in theater and the arts. They taught me at home until the sixth grade but not because of the desire to instill religious beliefs in me—as is now often the case in home schooling—but just to keep me out of the hands of the county schools, whose teachers were perceived as being a little less than encouraging to the creative instincts of my mother's four boys. She inspired in me a desire to learn things. But I did not learn much about faith or gain a belief in God. I was sent to church at the age of six, for a very specific reason—to join the boys' choir in order to learn music. I remember an exhortation from my father, saying, "You're there to learn the music. There's going to be this other puzzling stuff about theology. Don't pay any attention to that. It will just confuse you." So I followed those instructions, and I learned a lot about music, but I had no clue what was going on in terms of the rest of those services.

When my friends in the dormitory at college quizzed me about what I believed, I realized I had absolutely no idea. It was fairly easy for me to decide I did not believe any of this stuff that some of the people were talking about—about Christ or other forms of religious faith. I assumed that it was all superstition. I had gotten along quite well without it and did not feel any particular need to embrace it.

Following are two pages excerpted from the September 2003 issue of *Perspectives on Science and the Christian Faith*, which is the journal of the American Scientific Affiliation. The twelve-page article from which the excerpts here come is an edited transcription of the plenary address Collins gave at last year's annual meeting of the American Scientific Affiliation at Pepperdine University, Saturday, August 4, 2002. Used by permission.

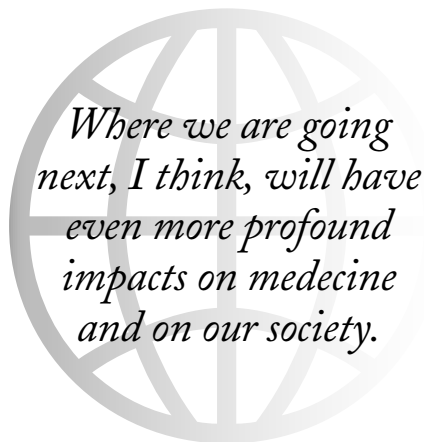
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I finished my undergraduate degree in chemistry and went on to work on a Ph.D. in chemical physics at Yale. After delving into that particular field and concluding that the only real truths were second-order differential equations, there seemed to be even less need for God. God did not seem to me like he would be a second-order differential equation. So I became a rather obnoxious atheist in graduate school. If you had gone to lunch with me, you would not have enjoyed the experience. I had absolutely no interest in matters of the spiritual life, because I did not think there was such a thing.

But then, I changed directions. Deciding that biology was a lot more interesting than I had earlier thought, I determined to go to medical school. I wanted to learn that particular discipline in order to apply my scientific instincts in a human health direction. As a medical student, I encountered many people going through terrible suffering, stricken down with diseases not of their own making. Yet I could not help but note that some of these people appeared to have incredible faith. They were not angry with God, which I thought they should have been. If they believed in a God and he let them get cancer, why weren't they shaking their fist at him? Instead, they seemed to derive this remarkable sense of comfort from their faith, even at a time of great adversity. That response really puzzled me. A few of my patients asked what I believed; I stammered and stuttered and realized I was too embarrassed to say, "I don't know."

Then something came to me. As a scientist, I had always insisted on collecting rigorous data before drawing a conclusion. And yet, in matters of faith, I had never collected any data at all. I did not know what I had rejected. So I decided I should be a little better grounded in my atheism. I had better find out what this is all about. I challenged a patient Methodist minister down the street. After listening to my questions and realizing I was not dealing with a very full deck of information, he suggested that I read the Gospel of John, which I did. I found that Scripture to be

interesting and puzzling and not at all what I had thought faith was about. But still I was not ready to consider the plausibility of faith; I needed more of an intellectual basis to get past my own arguments about why this was just superstition. For that purpose, he turned me to the writings of C. S. Lewis in his classic book, *Mere Christianity*. (Even today *Mere Christianity* seems to be the very best book to put in the hands of a young seeker who is trying to figure out if there is rationality for faith.) So I read *Mere Christianity*, and my materialist view was quickly laid to



ruins. Particularly compelling for me was Lewis' argument about the law of human nature: Why is it there? Why is it universal? Also his argument: Would not this be the place to look for evidence of a personal, perfect, and holy God if there was one?

Sociobiologists will argue that human nature is all, in some way, an evolutionary consequence. That just never seemed particularly compelling to me as an explanation for the moral law: that we know somehow intrinsically, and yet often do not obey. Here is a wonderful sentence from Lewis:

We find out more about God from the moral law than from the universe in general, just as you find out more about a man by listening to his conversation than by looking at a house he has built.

I realized that my scientific life was looking at the house, while I had never considered the conversation (the moral law) as evidence of God. I needed to study the Creator. After

struggling many months, I realized that if there was a God, he was holy and I was not. I realized for the first time just how flawed a person I was. I then recognized what Christ did by providing a bridge between God and all his holiness and me and all my unholiness. Finally I gave in and surrendered—not perhaps, like Lewis, the most dejected and reluctant convert in all England, which is how he described his conversion. A rush of warm emotion did certainly not afflict me either. Rather, it was very much like walking into a complete unknown. God is good, and over the course of many more years of learning—and I am still on that road—my faith has become the guiding light of my life.

My scientific world view began earlier. I got excited about science as a high school student. I then got excited about chemistry, went on to medicine, and ultimately got excited about genetics as a way to unravel all the difficult mysteries of medical illness. I certainly never imagined that a call would come, where I would be asked to move to the National Institutes of Health (NIH) and become, of all things, a federal employee, and to direct a project aimed at mapping and sequencing all of the letters of the human instruction book. It has been a truly remarkable moment in history, and a moment that we have essentially now just passed through. It has been nine years since I came to NIH. I have had an incredible ride, and it ain't over yet! In many ways, we are at the end of the beginning. Where we are going next, I think, will have even more profound impacts on medicine and on our society. As Christians, we bring a special perspective on how to usher in this new revolution in a fashion that has the maximum benefits and is done in the most benevolent way.

What is the Interface between Science and Faith?

I want to briefly turn to a question I have touched on a couple of times. Is there potential harmony between science and Christian faith? As ASA members and scientists who have a strong personal faith, how do we put

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these two things together? I will give you a bit of a personal view. After all, genetics is perceived by many as perhaps the area of science that is least compatible with faith. Regretfully a very polarized division separates the extremists: those who look at the science of the genome as a particularly dangerous way of misunderstanding God's providence, and those who by studying genetics have decided that there is no more need for God because they have discovered everything that matters in DNA.

Is this an irreconcilable conflict? Many of our colleagues seem to think so. But I do not have to tell you that this conflict does not make sense. Science explores the natural world. Faith explores the supernatural world. If I want to study genetics, I am going to use science. If I want to understand God's love, then that is where the faith world comes in. Does that make them separate and impossible to integrate into one person, one experience, one thought? Is Stephen Jay Gould right when he calls these "the non-overlapping magisteria"? No, from my perspective these two world views coexist in me, and in many of you, right now. We are not torn apart by that; we are not forced into contradictions. Rather, I believe that we are enriched and blessed. We have an opportunity to practice science as a form of worship. We have a chance to see God as the greatest scientist. As we discover things about the world, we can appreciate the wonders of God's creation. What a gift it is to be a scientist and be able to do that.

Why is the conflict then perceived to be so severe? Science and Christianity do not have a pretty history. Certainly conflicts tend to arise when science tries to comment on the supernatural—usually to say it does not exist—or when Christians attempt to read the Bible as a science textbook. Here I find it useful to recall that this is not a new debate, and I often refer back to the wisdom of St. Augustine. Augustine in 400 AD

had no reason to be apologetic about Genesis, because Darwin had not come along. Augustine was blessed with the ability to look at Gen. 1:1 without having to fit it into some sort of scientific discovery of the day. Yet, if you read Augustine's interpretation of Gen. 1:1, it is a lot like mine. In fact, Augustine makes the point how dangerous it is for us to take the Bible and try to turn it into a science text. He wrote:

It is a disgraceful and dangerous thing for an infidel [unbeliever] to hear a Christian, presumably giving the meaning of Holy Scripture, talking nonsense on these topics; and we should take all means to prevent such an embarrassing situation in which people show up vast ignorance in a Christian and laugh it to scorn ... If they find a Christian mistaken in a field which they themselves know well, and hear him maintaining his foolish opinions about our books [Scriptures], how are they going to believe those books in matters concerning the resurrection of the dead, the hope of eternal life and the kingdom of heaven, when they think their pages are full of falsehoods on facts which they themselves have learnt from experience and the light of reason?¹

These are very strong and effective words. But the past century has not been a good one in terms of the polarization between the more evangelical wing of the church and the scientific community. We seem to be engaged in contentious, destructive, and wholly unnecessary debate about evolution and creation. From my perspective as a scientist working on the genome, the evidence in favor of evolution is overwhelming.

What are the arguments in favor of evolution? Let me quickly describe two arguments. (1) The fossil record. Macroevolution has growing and compelling evidence to support it. Elephants, turtles, whales, birds often have been cited as species where transitional species have not been identified. That is no longer true. We have gained more in the fossil record

in the last ten years than in almost the entire previous history of science. (2) The DNA evidence for evolution. [Note] the ancient repeats we share with mice in the same location showing no conceivable evidence of function, diverging at a constant rate just as predicted by neutral evolution. One could only conclude that this is compelling evidence of a common ancestor or else that God has placed these functionless DNA fossils in the genome of all living organisms in order to test our faith. I do not find that second alternative very credible. After all God is the greatest scientist. Would he play this kind of game?

Arguments against macroevolution, based on so-called gaps in the fossil records, are also profoundly weakened by the much more detailed and digital information revealed from the study of genomes. Outside of a time machine, Darwin could hardly have imagined a more powerful data set than comparative genomics to confirm his theory.

So what are the objections then to evolution? Well, obviously, the major objection in many Christians' minds is that it is not consistent with Genesis. I find Gen. 1:1–2:4 powerful, but admittedly complex and at times difficult to understand with its seemingly two different versions of the creation of humans. Problematically, a literal translation of Gen. 1:1–2:4 brings one in direct conflict with the fundamental conclusions of geology, cosmology, and biology.

Professor Darrel Falk has recently pointed out that one should not take the view that young-earth creationism is simply tinkering around the edges of science. If the tenets of young earth creationism were true, basically all of the sciences of geology, cosmology, and biology would utterly collapse. It would be the same as saying 2 plus 2 is actually 5. The tragedy of young-earth creationism is that it takes a relatively recent and extreme view of Genesis, applies to it an unjustified

scientific gloss, and then asks sincere and well-meaning seekers to swallow this whole, despite the massive discordance with decades of scientific evidence from multiple disciplines. Is it any wonder that many sadly turn away from faith concluding that they cannot believe in a God who asks for an abandonment of logic and reason? Again from Augustine:

In matters that are obscure and far beyond our vision, even in such as we may find treated in Holy Scripture, different Interpretations are sometimes possible without prejudice to the faith we have received. In such a case, we should not rush in headlong and so firmly take our stand on one side that, if further progress in the search of truth justly undermines this position, we too fall with it.²

Again, written over 1600 years ago but right on target today!

Scientists who are Christians have a critical role to play in this genomic revolution both as scientists and as contributors to the ethical discussions. I hope the ASA and other organizations

like it will step to that challenge. In that regard, I would like to read another quotation written about one hundred years ago by the Princeton conservative theologian Benjamin Warfield. It is a wonderful exhortation to Christians; it could well be the motto of ASA.

We must not then as Christians assume an attitude of antagonism toward the truths of reason or to the truths of philosophy or the truths of science or the truths of history or the truths of criticism. As children of the Light, we must be careful to keep ourselves open to every ray of light. Let us then cultivate an attitude of courage as over against the investigations of the day. None should be more zealous in them than we are. None should be more quick to discern truth in every field, more hospitable to receive it, more loyal to follow it wherever it leads. It is not for Christians to be lukewarm in regard to the investigations and discoveries of the time. Rather, as followers of the Truth, indeed we can have no safety in science or in philosophy save in the arms of Truth. It is for us, therefore, as Christians to push investigation into the utmost, to be leaders in

every science, to stand in the band of criticism, to be the first to catch in every field the voice of the Revealer of Truth who is also our Redeemer. All truth belongs to us as followers of Christ, the Truth. Let us at length enter into our inheritance.³

I think scientist-believers are the most fortunate. We have the opportunity to explore the natural world at a time in history where mysteries are being revealed almost on a daily basis. We have the opportunity to perceive the unraveling of those mysteries in a special perspective that is an uncovering of God's grandeur. This is a particularly wonderful form of worship.

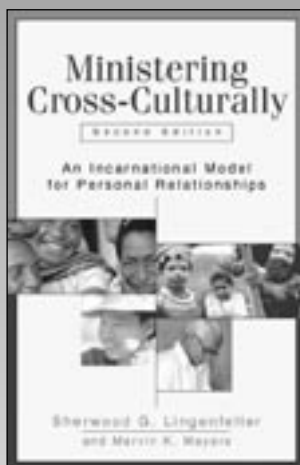
Endnotes

¹St. Augustine, *The Literal Meaning of Genesis*, Book 1, Chapter 19.

²St. Augustine, *The Literal Meaning of Genesis*, Book 1, chap. 18, in *Ancient Christian Writers* 41, translated and annotated by John Hammond Taylor, S.J. (New York: Paulist Press, 1982).

³Benjamin Warfield, *Selected Shorter Writings* (Phillipsburg, NJ: P & R Publishing, 1970), 463-5.

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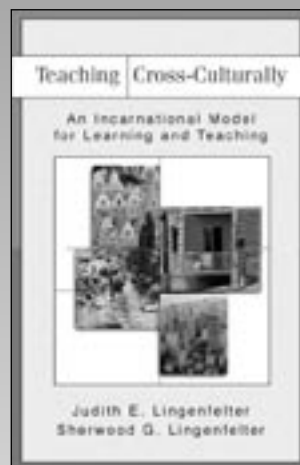
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