

Making Peace Between Science and God



**A Covenant
scientist looks
at evolution.**

JOEL OL FELT

Bitter conflict surrounds what we teach about our origins. At stake, according to some participants, is our belief in God or the future of science. The way we interpret our knowledge about the origins of life is critical to important parts of our beliefs and to the nitty-gritty of life. Our interpretation informs us about the possibility of a relationship with God. It shapes our understanding of the nature of God, the origin of souls, and our relationship with other organisms.

Some interpretations lead toward trust in the Triune God; others to belief that only physical things are real. A standard scientific interpretation has led to the tools of modern medicine and agriculture. The stakes are high. We face knowledge from both Scripture and science, and we need to formulate our response.

I am a Christian and an associate professor of biology at Northeastern Illinois University, a state university. I was nurtured from infancy in a loving Christian family and in a larger church family. I am fascinated by God's creation and do my best to be a good steward of that creation. My research on the genetics of natural plant populations, interpreted through the lens of evolutionary theory, has helped wildlife managers make informed conservation decisions. In the classroom I do my best to teach sound biology in a way that is true to my own evangelical Christian beliefs and that respects the diverse faiths of my students.

One of my high-school teachers, Mr. Willis Olson, helped prepare me for this work. Mr. Olson was an accomplished student of biology and a Covenant minister. He taught using the Lord's Prayer, reminding us that when we pray "Give us this day our daily bread," we believe that God provides our bread, even though we also can explain how wheat is grown, harvested, milled, leavened, and baked. Our understanding of the physical process of bread making is important in our world economy, just as scientific understanding of our origins is important in health-care, in conservation, and in agricultural breeding programs. Our understanding of science need not change our belief in a loving, caring God. Instead we might accept it as creating a healthy tension, like the tension Jesus created in his followers when he broke custom by eating with tax collectors and sinners and healing on the Sabbath. Jesus used the tension to teach his disciples. Perhaps we can follow truth unearthed by science and truth revealed in Scripture to deeper knowledge of God.

The creation-evolution controversy has raged for more than a century. Debaters have argued over the age of the earth, over fossil evidence, and over whether humans and apes are genetically related. Some have said that evolution is only a theory—meaning that we should not be upset by an idea that may soon end up in the scrap-heap of unsupported ideas. Biologists have countered that the term *theory* refers to the principles of a well-supported body of knowledge, like gravitation.

Theories change; the theories of gravitation and evolution are both under continuing review and modification, but few scientists doubt their basic tenets; no one doubts that an object dropped on earth will fall toward the earth's center of gravity. The predictions of gravitation theory are used to place satellites, guide space probes, and bring astronauts to and from space stations. Like gravitation theory, evolutionary theory has enormous explanatory and predictive power. It makes sense of previously puzzling observations like the lack of native mammals on oceanic islands; it predicts the ways organisms change in breeding programs and in changing environments; it informs public health officials in their efforts to prevent and contain flu epidemics.

The media reports of antibiotic resistant strains of bacteria are observations that are predicted by evolutionary theory. They are important to anyone who might need an antibiotic treatment for a common bacterial infection. A population of bacteria treated with an antibiotic might contain some resistant individuals. Any bacteria that survive the treatment will be antibiotic resistant. The population will have evolved. Patients infected with the new bacterial population will want their physicians and the pharmaceutical industry to provide treatments to deal with the evolved bacteria.

In spite of the predictive power of evolutionary theory, controversy continues. Recent legal proceedings in

Pennsylvania and in Kansas have featured testimony from advocates of an idea called intelligent design. Because the arguments of intelligent design are much in the news I will focus on them in this discussion, leaving other aspects of the creation-evolution controversy aside.

Intelligent design is a response to the perception that evolutionary theory itself opposes the possibility of a Creator. Its proponents accept the ideas that the earth is much more than 10,000 years old, that fossils were not deposited during the Genesis flood, and that some evolution has occurred. One of intelligent design's main advo-

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cates, Michael Behe, is a biochemist at Lehigh University. Behe argues that some biological structures are made of so many exquisitely interdependent parts that they are "irreducibly complex." To illustrate, he describes the flagellum, a tail-like organelle that some micro-organisms use for propulsion. He notes that a flagellum is made of at least forty different kinds of proteins that must interact in specific ways. If any one of the proteins is removed, he says, the flagellum could not function. In short, Behe argues that gradual evolution cannot explain the formation of irreducibly complex structures like a flagellum. Therefore, such structures must have been created as units in their fully complex, functioning forms by an intelligent designer.

William Dembski, who holds a master of divinity degree and doctorates in mathematics and philosophy, argues intelligent design based on mathematical modeling. Dembski has used probability estimations to say that the complexity we see in organisms must be the product of an intelligent creator. He

Joel Olfelt, a member of North Park Covenant Church in Chicago, teaches biology at Northeastern Illinois University.

has also used so-called No Free Lunch theorems, developed in the late 1990s by physicists David Wolpert and William Macready to argue that the mechanisms of evolutionary theory cannot build complex organisms. Dembski concludes that the theorems point to the action of an intelligent designer. Behe and Dembski are affiliated with the Center for Science and Culture at the Discovery Institute, a Seattle think-tank, which officially takes no position on the identity of the intelligent designer. Many intelligent design advocates, however, clearly make the conclusion that the designer is the God we find in the Christian Bible.

Richard Dawkins, an evolutionary biologist and professor at Oxford University, speaks in direct opposition to the ideas of intelligent design. Dawkins has written several books explaining how, under widely accepted physical laws of matter and energy, the amazing complexity of eyes and other organs could arise. Following mainstream evolutionary theory he writes that there is inheritable variability in populations of organisms that is caused by mutations. Some organisms are better able than others to produce offspring in their environment and leave a disproportionately large number of offspring. Over many generations the variants that most successfully produce offspring predominate. The population gradually changes.

Dawkins uses the analogy of climbing a mountain with a sheer cliff on one face and a gentle slope leading up from behind to illustrate his idea that the cliff top of complexity can be reached through the gentle slope of the process of evolution. Dawkins uses computer modeling to support his explanations, perhaps as a way of showing that his ideas are more than simply a plausible story, but Dawkins is not known for rigorous mathematical reasoning. He has left that side of evolutionary theory to biologists like Peter and Rosemary Grant, who have used mathematical modeling along with data from decades of careful work with wild finch populations to successfully predict how beak sizes will change from

year to year in response to changing environmental conditions. The Grants' work is regarded by most biologists as compelling evidence that evolutionary theory works in real situations. Some scientists, like Dawkins, move beyond explanations and predictions of how organisms change to the position that evolutionary theory explains all aspects of life, and that there is no God.

What position should a Christian parent, teacher, pastor, or concerned citizen take? Dawkins's position is clearly contrary to Christian belief, but is the evolutionary theory that has brought us modern medicine and agriculture as bankrupt as some would have us believe? As a biologist and Christian, I believe that three basic principles are essential to answering that question, and to clear thinking about biological origins.

There is no inherent conflict between Christian beliefs and basic science. Practitioners of science test physical explanations of physical phenomena. Explanations that are allowed within the intellectual construct of science must be testable using instruments that can measure matter or energy. The major strength of science is in its explanatory and predictive power for the physical universe. It cannot directly answer questions about the existence and actions of God. In searching for answers to questions about God we must depend primarily on the strengths of theological and philosophical tools.

We must seek truth—we must not fear it. We should look beyond the popular caricatures of Christianity and of science. We should study the Bible, live in community with followers of Christ, and employ heart, mind, soul, and strength in our seeking. Through honest searching we will be challenged and, I believe, we will find joy, peace, and freedom in Christ. We should read important scientific works, like Darwin's *On the Origin of Species*. In *On the Origin of Species* we will find that Darwin himself wrote of a Creator as being compatible with his theory. Honest searching in scientific works will challenge us with many of the important questions of our times and will bring us

face to face with wonderful discoveries from centuries of study.

We are finite beings grappling with the question of how life began. Any one of us, scientist, theologian, or layperson, who claims to possess the definitive truth about our origins, is surely mistaken. An honest biologist will freely admit that our understanding of the evolutionary process grows and changes as we make new discoveries. An honest Christian likewise knows that our understanding of God grows and changes as we encounter God.

With these three principles in mind we can ask again what position a thoughtful Christian might take. We can begin by accepting that we are created by a loving God and by rejecting the notion that evolutionary theory is by itself able to explain all of life. We can recognize that any position on the existence or nature of a Creator is within the arena of theology. Individual scientists are entitled to formulate their theological views and to share them in appropriate venues, but they must not pretend to speak primarily from the authority of science. If and when science can speak to the existence or nature of God, it must do so in the context of the best available theology. Likewise, if theology will make contributions to our interpretation of the physical universe, it must do so in light of the finest available science.

The literature of intelligent design appears to me less than convincing. The argument of irreducible complexity is undermined by careful examination of evidence. Biologists have in fact reported examples of organisms with functioning components of flagella that differ in arrangement. Thus so-called irreducibly complex structures are apparently reducible in complexity. The mathematical formulae of Dembski's arguments are probably misapplied—one of the authors of the No Free Lunch theorems described Dembski's use of them as "fatally informal and imprecise."

On top of this, intelligent design does not demonstrate the explanatory

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and predictive power of evolutionary theory. Intelligent design does not offer a useful framework for crop breeding or for the development of new medical treatments.

The ideas of intelligent design may not fit well with mainstream theology either. They suggest a designer who has occasionally entered history, injecting the most complex structures at critical points. In contrast, most evangelical Christians believe that God is constantly in intimate relationship with creation. Our belief might be more compatible with ongoing evolution than with the ideas of intelligent design.

I believe that all things came into being through the Word of God. I also find that the evidence supporting evolutionary theory is compelling. I believe Christians must take the tension between these truths as an opportunity to explore again the ways in which God relates with creation. If we choose to deny knowledge gained through science, we will needlessly alienate many friends and neighbors.

St. Augustine of Hippo warned in the fourth and fifth centuries against using Scripture to dispute commonly accepted knowledge obtained through non-Scriptural sources. He wrote, “if they find a Christian mistaken in a field which they themselves know well . . . how are they going to believe . . . [Holy Scripture] 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?”

Knowledge changes over time. If we want to participate meaningfully in the lives of our neighbors and in shaping the ways we use our current knowledge, we must explore the tensions we perceive between the truths revealed in Scripture and truths discovered through science. We may at times feel uncomfortable, but we need not fear, God knows that we are tiny, frail beings exploring the infinite. God will accompany us. □