

Mind, Soul, and Neuroethics

Neuroscience is the next frontier for research, and Kerby Anderson urges Christians to pay attention to these findings and provide a biblical perspective to the research and an ethical framework for its application.

Let me begin with a question. Imagine that our medical technology has advanced enough that we can transplant a human brain. If we exchanged your brain with that of another person, would you wake up in your body with someone else's thoughts and memories? Or would you wake up in the other person's body?

Or consider the following questions concerning brain research:

- Scientists are beginning to work on a "smart pill" that would increase your memory and intelligence. If such a pill existed, who should take it?
- Scientists are working to develop brain fingerprinting to reveal a person's knowledge of events. If perfected, should these brain scans be used like polygraph tests to detect if people are lying?
- Pharmaceutical companies are working to develop chemicals that block the formation of memories. If perfected, should these pills also be used to erase memories that people don't want to have?
- Areas of the brain can be stimulated or suppressed by placing a device over the scalp. Should doctors use these devices to control your brain?

These are just a few of the questions being raised in a relatively new ethical field of discussion known as neuroethics.

In the past few years, neuroscience has been making discoveries about the human brain at an incredible rate of

speed. Advances in neuroscience and imaging methods have made it possible to observe the brain more directly. And advances in neurosurgery have also made it possible to intervene more precisely and effectively.

This new arena of neuroethics is beginning to deal with the hard questions about our rapidly growing knowledge of the human brain and our ethical and social responsibilities concerning this new information. Doctors, scientists, lawyers, politicians, and theologians are all interested in neuroethics. But as you can see from the above examples, the implications of these concerns should extend to all of us since we will ultimately be affected by the moral and legal decisions concerning neuroscience.

In developing a Christian perspective on neuroethics, we should begin with a proper understanding of the mind and brain. Nearly all scientific investigation begins with the *a priori* assumption that we are material, not spiritual. Thus, scientists assume there is only a brain and not an immaterial mind. Put another way, they assume there is only a body and not a soul.

Dualism

Are we merely a brain or are we both brain and mind? This is a fundamental question in science, philosophy, and theology. New advances in science seem to be challenging the notion that we are both mind and brain.

Most Christians are Cartesian dualists in that they believe that the soul inhabits the body. The name Cartesian dualism comes from the philosopher René Descartes who four hundred years ago argued that identity and thought were distinct. He is famous for the phrase, "I think, therefore I am." In other words, the fact that he could think about himself showed that there was something distinct from him. He was doing something

with his brain, but he was also distinct from his brain because he was having thoughts.

A quarter century ago, Probe Ministries published a book that showed that we are both mind and brain. The book, *The Mysterious Matter of Mind*, by Dr. Arthur C. Custance presented experimental evidence that led scientists to conclude that the mind is more than matter and more than a mere by-product of the brain.[\[1\]](#)

One of the most famous findings in this field involved the research of Wilder Penfield. Although he was born in the U.S., he did most of his research in Canada and was later celebrated as “the greatest living Canadian.”

In 1961, Penfield reported a dramatic demonstration of the existence of a mind that is separate from the brain. He found that the mind acted independently of the brain under controlled experimental conditions. His subject was an epileptic patient who had part of the brain exposed. When Penfield used an electrode to stimulate a portion of the cortex, here is what he reported:

When the neurosurgeon applies an electrode to the motor area of the patient's cerebral cortex causing the opposite hand to move, and when he asks the patient why he moved the hand, the response is: "I didn't do it. You made me do it." . . . It may be said that the patient thinks of himself as having an existence separate from his body.

Once when I warned a patient of my intention to stimulate the motor area of the cortex, and challenged him to keep his hand from moving when the electrode was applied, he seized it with the other hand and struggled to hold still. Thus, one hand, under the control of the right hemisphere driven by the electrode, and the other hand, which he controlled through the left hemisphere, were caused to struggle against each other. Behind the "brain action" of one hemisphere was the

patient's mind. Behind the action of the other hemisphere was the electrode. [\[2\]](#)

This experiment (and others like it) demonstrates that there is both a mind and brain. Mind is more than just merely a by product of the brain.

Neuroscience: Opportunities and Challenges

Neuroscience has been making discoveries about the human brain at an incredible rate of speed, and this provides both new opportunities and major ethical challenges. For example, existing brain imaging methods provide scientists with some very powerful tools to discover the structure and function of the human brain. These tools can detect various brain abnormalities. They can also help in the diagnosis of various neurological disorders.

Scientists have also been using these brain imaging machines to study emotions, language, and even our perceptions. It is possible that eventually these machines could even be used to read our thoughts and memories.

Scientists who have developed a brain fingerprinting machine believe they will be able to determine a person's knowledge of events. By measuring electrical activity within the brain, they can see the response of a person to certain stimuli (words, sounds, pictures). Analysis of these responses might be helpful in various investigations.

Sometimes crime investigators use a polygraph machine to detect lies. But these devices are not completely foolproof. Scientists believe they might be able someday to develop accurate readings from functional magnetic resonance imaging (fMRI) to determine whether a person is telling the truth.

What are the implications of this? Is it possible that one day people who are suspected of a crime will be required to submit to a brain scan? Could brain scans be used to determine high-risk employees, potential criminals, even terrorists? For now, this is mere speculation, but neuroscience may force us to deal with these questions in the future.

Some have even speculated that measurements from these machines could help in distinguishing true memories from false memories. In some experiments, certain areas of the brain appear to respond differently to true memories and false memories.

Could brain scans be used to predict certain neurological disorders? Scientists using fMRI have found that people with schizophrenia have different sizes of key brain structures (e.g., larger lateral ventricles, reduced hippocampus, etc.) than those people without this mental disorder. Many of the ethical questions already surrounding the use of genetic screening would no doubt surface with the application of brain scans that would screen for neurological disorders.

A related question in this growing field of neuroethics is the use of mood altering drugs. Psychopharmacology has already provided pills to treat depression, anxiety, and even attention deficit disorder. Future development in this area will no doubt yield other mood-altering and brain-altering drugs.

In the future, it might be possible to genetically engineer drugs or even genetically engineer human beings to treat and even cure mental disorders. This same technology might also allow scientists to increase memory and perhaps even increase intelligence. For now, the idea of a smart pill is just science fiction. But what if we develop such a medicine? Who should get the pill? Under what conditions would it be administered? These are all questions for the twenty-first century in this growing field of neuroethics.

Erasing Memories

In the film *Eternal Sunshine of the Spotless Mind*, a couple (played by Jim Carrey and Kate Winslet) undergo a brain procedure that allows them to erase each other from their memories because their relationship has turned sour. The story develops when Joel discovers that his girlfriend, Clementine, has undergone a psychiatrist's experimental procedure which removes him from her mind. Joel then decides to undergo the same procedure. In the process, however, he rekindles his love for her.

Although the film is science fiction and essentially a thought experiment, erasing memories is something scientists are pursuing right now. They are already testing a pill that, when given after a traumatic event, seems to make resulting memories less intense. The pill appears to blunt memory formation and could be very useful as a treatment. For example, this pill could be used if a person experiences a horrible event (such as a rape or witness to a murder). It would also be helpful to those who have endured an earthquake, hurricane, or tsunami.

Doctors also believe that it would help victims of post-traumatic stress disorder (PTSD). This was a problem first recognized in the Vietnam War and a disorder diagnosed in men and women who have been serving in Iraq and Afghanistan. Those affected often experience mental symptoms (flashbacks) and physical symptoms.

When a traumatic event occurs, the brain is flooded with stress hormones (such as adrenalin) that actually store these memories in different ways than the manner in which memories are normally preserved. These memories seem to be stored in our brain's hard drive, and therefore seem nearly impossible to erase.

The new pills are a class of drugs known as beta blockers

which can cross the blood-brain barrier. They can actually dull the impact of the memory formation by getting to the place where stress hormones work to form these traumatic memories. Scientists believe that they can not only blunt the impact of these memories, they might even prevent PTSD. Some physicians believe it might be possible to cure PTSD by triggering these memories and then administering this new drug to eliminate them.

Not everyone is excited about the prospects of erasing memories. Already we have a variety of drugs that can alter a person's personality. Antidepressants and tranquilizers are used by millions of people every day. Antipsychotic drugs are used to treat people with such mental disorders as schizophrenia. Erasing a person's memory with certain drugs would certainly change their personality. Would that change always be for the better?

When researchers working in the area of erasing memories were asked to testify before the President's Council on Bioethics, there was deep concern. Chairman Leon Kass argued that painful memories serve a purpose and are part of the human experience.

Biblical Perspective

Advances in the field of neuroscience certainly raise new ethical dilemmas for the twenty-first century. But they also challenge the biblical understanding of human nature. Neuroscience is beginning to explain a great deal of human behavior by mapping the human brain. Scientists are locating regions that influence personality, character, and even spirituality. Does this challenge the concept of Cartesian dualism? Can we explain mind as merely a by-product of brain?

One researcher in this field thinks the research does challenge this biblical foundation. She says you "can still believe in what Arthur Koestler called 'the ghost in the

machine'." But she concludes that "as neuroscience begins to reveal the mechanisms of personality, character, and even sense of spirituality, this Cartesian line of interpretation becomes strained. If these are all features of the machine, why have a ghost at all? By raising questions like this, it seems likely that neuroscience will pose a far more fundamental challenge to religion than evolutionary biology."{3}

So if you think evolution has been a challenge to Christianity, just wait until the findings of neuroscience reach the society at large. There are large and significant issues that need to be addressed. So what is a Christian perspective on these issues of mind/brain and body/soul?

First, the Bible teaches that when the soul leaves the body, the body is dead (James 2:26). And if the soul returns to the body, the whole person comes back to life (Luke 8:55). This dual nature of the body and soul is documented in many passages of Scripture (Matt. 26:41; Rom. 8:10; 1 Cor. 5:5; 6:17, 20; 7:34; 2 Cor. 7:1; Gal. 5:17).

Second, the New Testament also talks about the resurrection of the body, and Paul elaborates on the nature of this body (1 Cor. 15:35-44). We have the most complete picture of this resurrection body by observing what the Bible tells us about Jesus Christ after His resurrection. Paul tells us this is the body we will have (Phil. 3:20-21).

This resurrection body of Jesus Christ was able to freely pass through physical barriers (walls, locked doors). But it could also be examined for purposes of identification. It is a body that is able to communicate with the physical world (can be seen, heard, felt). Likewise, we can anticipate that our bodies will be able to share a meal and then disappear only to reappear in another location. It will also be a body that can act upon the physical world by moving objects, going for a walk, even starting a fire.

The Bible teaches that we are more than matter. We are both body and soul, mind and brain. Neuroscience is the next frontier for research, and Christians must pay attention to these findings and provide a biblical perspective to the research and an ethical framework for its application.

Notes

1. Arthur C. Custance, *The Mysterious Matter of Mind* (Grand Rapids: Zondervan/Probe, 1980).

2. Wilder Penfield, in the "Control of the Mind" Symposium, held at the University of California Medical Center, San Francisco, 1961, quoted in Arthur Koestler, *Ghost in the Machine* (London: Hutchison Publishing Group, 1967), 203-4.

3. Martha J. Farah, "Neuroethics," Op-Ed, American Medical Association, www.ama-assn.org/ama/pub/category/12727.html.

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Was Darwin Wrong? A Rebuttal to the November 2004 National Geographic Cover Story

Our authors examine arguments for evolution commonly brought out by evolutionists. They show these arguments are not as strong as they purport and in many instances make a stronger case for intelligent design. Every person, especially Christians, should be aware of the information presented in this article.

Over the last few decades more and more scientists from every

field of discipline have voiced concerns with Darwinian evolution's ability to explain the origin and diversity of life on earth. However, you would not know that from reading a recent article in *National Geographic*. The cover of the November 2004 issue grabs the reader's attention with the question, "Was Darwin wrong?" To few people's surprise, upon turning to the first page of the article you see the boldfaced words, "NO. The evidence for Evolution is overwhelming." But how can this be when so many scientists are in disagreement? Is it possible that the five lines of evidence presented in the article aren't as indisputable as the reader is led to believe? What if each one of these evidences for evolution is fatally flawed? What would evolution have left to stand upon? It is my opinion, as well as many others', that this is indeed the case. Let us critically evaluate each of these five lines of evidence (embryology, biogeography, morphology, paleontology, and bacterial resistance to antibiotics) and see what, if anything, we can conclude from them.

Embryology

First let's examine the so-called evidence from embryology, which Darwin himself considered to be "by far the strongest single class of facts in favor of" his theory.^{1} *National Geographic* asks the question, "Why does the embryo of a mammal pass through stages resembling stages of the embryo of a reptile?"^{2} This, however, is a loaded question.

This line of evidence presented by *National Geographic* is known as Embryonic Recapitulation, or in other words, as the embryo develops it passes through stages that retrace its evolutionary past. This idea was originally developed in the mid 1800's by Ernst Haeckel, which he illustrated with drawings of embryos of various species. However, as Jonathan Wells points out in his book *Icons of Evolution*, this has been known to be false for over 100 years! Not only were Haeckel's drawings fraudulent but the late Stephen J. Gould called them

“the most famous fakes in biology.” Furthermore, embryologist Walter Garstang also stated in 1922 that the various stages of embryo development of different species “afford not the slightest evidence” of similarities with other species supposed to be their ancestors, stating that Haeckel’s proposal is “demonstrably unsound.”^{3} In 1894 Adam Sedgwick wrote, “A species is distinct and distinguishable from its allies from the very earliest stages all through the development.”^{4}

So how is *National Geographic’s* question, “Why does the embryo of a mammal pass through stages resembling stages of the embryo of a reptile?” a loaded question? Because mammalian embryos never pass through such stages in the first place! Darwin’s “strongest” evidence for evolution turns out to be no evidence at all.

Biogeography

Biogeography, as defined by *National Geographic*, “is the study of geographical distribution of living creatures—that is, which species inhabit which parts of the planet and why.”^{5} *National Geographic* asks, “Why should [such similar] species inhabit neighboring patches of habitat?”^{6} Why are there several different species of zebras found in Africa, or dozens of species of honey creepers in Hawaii, or thirteen species of finches in the Galapagos Islands? The answer given is that “similar species occur nearby in space because they have descended from common ancestors.” There is nothing controversial about that. But I don’t believe that this in anyway supports the kind of evolution that *National Geographic* is trying to promote. Allow me to explain by taking a closer look at the term “evolution.”

There are two different kinds of “evolution” within the biological sciences. The first kind of evolution is *macroevolution*, or, big change over time. Macroevolution requires a vast amount of new genetic information and

describes the kind of evolution required to make a man out of a microbe. It is this kind of evolution that is being propagated by *National Geographic*.

The second kind of evolution is *microevolution* which describes small changes or variations within a kind. For example, you may breed a pair of dogs and get another dog which is smaller than both its parents. You may then breed the new smaller dog and get an even smaller dog. However, there are limits to this kind of change.[\[7\]](#) No matter how often you repeat this procedure the dog will only get so small. It is also important to note that the offspring will always be a dog. You will never get a non-dog from a dog through this kind of change. Not to mention this kind of evolution tells us nothing about where the dog came from in the first place.

So what about *National Geographic*'s examples? They are all examples of microevolution. Why, for example, are there several species of zebras in Africa? Because they had a common ancestor that probably lived in Africa—a zebra. Or why are there thirteen species of finch on the Galapagos Islands? Because they are all descended from a single pair or group of finches. To use this kind of observation and try to explain where a zebra or finch came from in the first place goes beyond the data and the scientific method, and enters into the realm of imagination.

Evolutionists are still puzzling over the connection between these two forms of evolution, macro and micro. Perhaps the puzzle remains because macroevolution is just wishful thinking.

Morphology

Morphology is a term referring to “a branch of biology that deals with the form and structure of animals and plants.”[\[8\]](#) It is presented by *National Geographic* as having been labeled by Darwin the “‘very soul of natural history.” So what is this

evidence from morphology that lends itself as “proof” for microbes-to-man evolution? Simply put, it is that similarities in shape and design between different species may indicate that those species have originated from a common ancestor by way of descent with modification. *National Geographic* gives a few examples such as the “five-digit skeletal structure of the vertebrate hand,” and “the paired bones of our lower legs” which are also seen “in cats and bats and porpoises and lizards and turtles.”[{9}](#)

Perhaps an easier to follow illustration concerning this is evolutionist Tim Berra’s famous illustration which he used in his book *Evolution and the Myth of Creationism*. In it he states the following:

If you look at a 1953 Corvette and compare it to the latest model, only the most general resemblances are evident, but if you compare a 1953 and a 1954 Corvette, side by side, then a 1954 and a 1955 model, and so on, the descent with modification is overwhelmingly obvious. This is what paleontologists do with fossils, and the evidence is so solid and comprehensive that it cannot be denied by reasonable people [emphasis in original].[{10}](#)

So why is this illustration famous? It’s because Berra, although an evolutionist, unwittingly demonstrated why similar structures across different species is just as naturally attributed to intelligent design. For what do each of these various Corvette models have in common? They were all designed and manufactured by the same company, General Motors. In fact, the Corvette has many design features in common with other automobiles as well, such as four wheels, a gasoline engine, brakes, a steering wheel, etc. Why do most cars share these things, and many others things, in common? Because they are effective and efficient features designed for the proper operation of the vehicle. Maybe this is the same reason we find commonalities between many different kinds of plants and

animals.

It must be granted that if evolution were true, then one would expect to see similarities between closely related species. However, as illustrated above, they could also be explained as the result of a common designer. So how can we tell which it is?

There are at least two ways. First, if similar structures did truly descend from a common ancestor, then those structures should have similar developmental pathways. In other words, they should develop in a similar manner while still in the embryonic stage. However, as early as the late 1800's scientists observed that this simply isn't the case. Embryologist Edmund Wilson in 1894 noted that structures which appear similar between adults of different species often differ greatly either in how they form or from where they form, or both.[\[11\]](#)

Secondly, if similar structures are the result of descent with modification, then you would expect the development of those structures to be governed by similar genes. Concerning this very point biologist Gavin de Beer said, "This is where the worst shock of all is encountered . . . the inheritance of homologous structures from a common ancestor . . . cannot be ascribed to identity of genes."[\[12\]](#) In other words, different genes govern the development of similar structures which runs contrary to what evolution would predict.

It would appear then, that morphology, the "'very' soul of natural history," is more the "ghost" of natural history than supporting evidence for evolution. There are certainly many features of organisms resulting from a common ancestry, such as the beak of the Galapagos finches; but that doesn't mean that the beaks of all birds are also related by common ancestry. Perhaps applying the perspective of Intelligent Design can help clarify the difference.

Paleontology

Paleontology simply put is the study of the fossil record. So how does the fossil record support the “theory” of evolution? According to *National Geographic*, Darwin observed that species presumed to be related tend to be found in successive rock layers.[{13}](#) *National Geographic* asks if this is just coincidental. The answer provided, of course, is a firm no. Rather, they say, it is “because they are related through evolutionary descent.”[{14}](#) Is this conclusion truly supported by scientific observation?

The biggest problem with identifying a gradual change from one species into another within the fossil record is that by and large no such gradual sequence of fossils exists! With the exception of a few disputed examples, such as the horse and whale, what truly stands out in the fossil record is sudden appearance. The late Stephen J. Gould, a world renowned evolutionist, noted concerning this, “The extreme rarity of transitional forms in the fossil record persists as the trade secret of paleontology. The evolutionary trees that adorn our textbooks have data only at the tips and nodes of their branches; the rest is inference, however reasonable, not the evidence of fossils.”[{15}](#) This is especially true within the Cambrian rock layer, dated by evolutionists at over 500 million years old, where complex species appear for the first time with no sign of gradual development from simpler forms.

To illustrate this point, imagine, if you will, that you covered the entire state of Texas with playing cards. If someone were to then go for a walk across Texas and periodically pick up a card at random, what might they begin to think if all they ever picked up were 2s and aces, and never any of the cards in between? He might begin to wonder if those other cards were there at all.

This is precisely what we find within the Cambrian rock layer. We always find fully formed species, like finding just 2s and

aces, and never any intermediates, like your 3s, 4s, and so on. In fact, *National Geographic* even acknowledges this problem when it compares the fossil record in general to a film with 999 out of every 1,000 frames missing.[{16}](#) It's more likely that there are few if any missing frames; rather those frames never existed in the first place.

Darwin himself, observing the lack of transitional forms within the fossil record, noted this problem to be "perhaps the most obvious and serious objection which can be urged against [his theory of evolution]."[{17}](#) Today, with nearly 150 years of advancements in the area of paleontology, the fossil record still fails to meet the expectation of Darwin's theory. This problem goes unaddressed by *National Geographic*.

Bacterial Resistance to Antibiotics

National Geographic derives a fifth line of evidence from more recent scientific data. They state, "These new forms of knowledge overlap one another seamlessly and intersect with the older forms, strengthening the whole edifice, contributing further to the certainty that Darwin was right."[{18}](#) Is this really the case? The most lauded of these "new forms of knowledge" is from the study of bacteria that acquire resistance to modern medicines. *National Geographic* states that "there's no better or more immediate evidence supporting the Darwinian theory than this process of forced transformation among our inimical germs."[{19}](#)

These adaptations are in fact evidence for change over time, but not the kind that would change a microbe into a man. Rather, all examples of bacterial resistance are that of micro-evolution, i.e. change *within* a kind. For example, a staph infection is caused by a bacterium known as a *Staphylococcus* or "staph" for short. Whenever a staph bacterium acquires resistance to a particular antibiotic, it still remains a staph. It doesn't change into a different kind of bacterium altogether. In fact, no matter how much it

changes, it always remains a staph.

Secondly, when we take a closer look at how bacteria become resistant to a particular treatment, we find something very interesting. Just like in humans, information on how bacteria grow and survive is stored in the bacteria's DNA. Therefore, if any change is to take place to turn an organism from one kind to another "more complex" kind, such as a microbe into a man, it must add new information to that organism's DNA. However, that is not what we observe taking place in bacteria at all. New information is *never* created. Existing information may be modified, lost, or even exchanged between bacteria, but never created.

Thirdly, and perhaps most significantly, is that nothing which *National Geographic* presents even begins to explain where the information to make a bacterium came from in the first place. Rather, and to no surprise to the creationists, the study of bacterial resistance testifies to an intelligent Designer who created all living organisms with an ability to adapt to changing environments.

Conclusion

Modern science has indeed offered us great insight into the complexities of life and the inner workings of all living things. Advances in population genetics, biochemistry, molecular biology, and the human genome will surely result in greater understanding of life on our planet. But unlike what *National Geographic* suggests, it is these advances which have served to convince an increasing number of scientists to abandon Darwin's theory as an explanation for the origin of life on earth. Rather, these advancements point to the necessity of intelligent design as an added tool in the toolbox.

Notes

1. Jonathan Wells, *Icons of Evolution* (Washington, DC: Regnery Pub., 2000), 82.
2. David Quammen, "Was Darwin Wrong?," *National Geographic* November, 2004: 13.
3. Wells, 88.
4. Ibid., 97.
5. Quammen, "Was Darwin Wrong?," 9.
6. Ibid., 12.
7. Lester, Lane P., Raymond G. Bohlin, and V. Elving Anderson, *The Natural Limits to Biological Change* (Dallas: Probe Books : Distributed by Word Pub., 1989).
8. Merriam-Webster Inc., *Merriam-Webster's Collegiate Dictionary*, 10th ed. (Springfield, Mass: Merriam-Webster, 1996).
9. Quammen, "Was Darwin Wrong?," 13.
10. Tim Berra, *Evolution and the Myth of Creationism* (Stanford, Calif.: Stanford University Press, 1990), 117.
11. Edmund B. Wilson, "The Embryological Criterion of Homology," pp.101-124 in *Biological Lectures Delivered at the Marine Biological Laboratory of Wood's Hole in the Summer Session of 1894* (Boston: Ginn & Company, 1895), p. 107.
12. Wells, *Icons of Evolution*, 73.
13. Quammen, "Was Darwin Wrong?," 12.
14. Ibid., 13.
15. Stephen J. Gould, "Evolution's Erratic Pace," *Natural History* 85(5).
16. Quammen, "Was Darwin Wrong?," 25.
17. Charles Darwin, *On the Origin of Species by Means of Natural Selection* (New York, New York: The New American Library of World Literature, Inc., 1958), 287.
18. Quammen, "Was Darwin Wrong?," 20.
19. Ibid., 21.

Being a Christian in Science

Rich Milne covers an excellent book by Walter Hearn, both a Christian and a scientist, giving perspective and advice on how to be a Christian in the science field.

Being a Christian in Science

“Carl Sagan is a friend of mine. He said that if Jesus ascended literally and traveled at the speed of light, he hasn’t yet gotten out of our galaxy.”[\[1\]](#)

So said Episcopal Bishop John Spong, when asked if he believed that Jesus had ascended into heaven. This is an example of the worst kind of mixing of science and Christianity.

In this essay we are considering how to live with integrity as both a Christian and a scientist. Books about science and Christianity are published every month, but they are usually difficult to read and seldom easy to apply. Walter Hearn dynamites those stereotypes in his new book, *Being a Christian in Science*.

Hearn’s book is the result of having been a Christian from childhood, and a scientist for much of his working life. His desire is for Christians to enter into science and make a career of it. But he also wants anyone who enters this road to know what joys and obstacles lie ahead around the many bends. His book is by turns intensely practical and deeply devotional.

Ever since Darwin, many Christians have been uncomfortable around science. Many of us have the feeling that science is trying to do away with the need for God. Most of us have heard scientists like Carl Sagan, speaking far from their field of

expertise, make grand pronouncements like “The universe is all that is, or was, or ever will be.” Is it possible for Bible-believing Christians to also be committed scientists?

Hearn’s book, *Being a Christian in Science*, does not try to deal with creation/evolution issues, or chance vs. design arguments, or even science vs. God questions. Instead, his clear and heartfelt focus is on questions such as, How do you work as a scientist if you are also a Christian? What is science like as a profession? Can I really pray in the laboratory?

At the outset it is important to distinguish between a “Christian Scientist,” with a capital S, and a “Christian scientist.” In the first pages of the book, Hearn, a life-long chemist and editor, separates what science can and cannot do. Science can in no way establish the claim that nothing supernatural or eternal is real. When such a claim is made, it is not scientific but scientific.[{2}](#) While this is not the book’s emphasis, Hearn is very clear about what the limits of science are, and as Christians we must think clearly about what science can and cannot do.

Using *Being a Christian in Science* as a basis, we will look at what scientists really do, why Christians might spend their lives in science, and what resources there are for believers who make science their chosen career. My hope is that you will see, not only the value of science, but, if you are a Christian young person who already loves science, you will see that this is a vocation to which God may be calling you. Science is changing the shape of our world and we need Christian scientists just as much as we need Christian teachers, or carpenters, or missionaries.

What Do Scientists Do, Anyway?

Many Christians are not too sure what scientists do, and fairly sure they don’t want to know. As Walter Hearn pointedly

observes in his book, “Evangelical churches that send missionaries around the world seldom see the ‘World of Science,’ or scholarship in general, as a mission field.”[\[3\]](#) Too many Christians seem to see scientists as “the enemy” with little thought of what they do or how they might be reached with the Gospel.

What is a Christian? Someone who believes in Jesus. Yes and no. What is a scientist? Someone who believes in science. Again, yes and no. A Christian believes that Jesus is the answer to certain questions about how we can be forgiven and stand before a holy God, questions about how we can know what will happen to us when we die. As a Christian, have you ever thought about being a scientist? Just what is a scientist, anyway?

A scientist believes that science is a “group of methods for solving a particular kind of problem.”[\[4\]](#) Science is not just a list of facts or theories, it is a way to understand the natural world by observing, experimenting, and then attempting to find cause and effect relationships. Scientists are fascinated by the world around them. They long to understand more than what we already know about this complex and intricately connected world we live in. A scientist knows we have few of the answers, and he or she sets out to at least try to ask the right questions so that we can learn more about how things work, and how this wildly diverse world fits together.

What does it take to be a scientist? Walter Hearn, himself a lab chemist for twenty years, gives a disarmingly simple answer to this question. A scientist needs “curiosity about nature, intelligence, perseverance, common sense, and better-than-average conceptual ability. . . . Flexibility is another important characteristic.”[\[5\]](#) This is a little like saying “Just have faith” to someone about to enter a long spiritual trial. What he does not say is how hard it can be to maintain these admirable traits on a day-to-day basis in the face of

what much of science really is.

Mathematicians can look at the same set of equations for months before they see the relationship between them. Biologists can do the same or nearly the same experiment dozens of times over weeks and months, before they see the result they hoped might happen. Geologists may spend months in the field gathering data, unsure of how they will ever make sense of the big picture. Much of science is daily hard work, often without knowing whether you are succeeding or failing, and then, occasionally, the “aha” moment when things suddenly fall into place and you have one more small stepping stone across the wide expanses we know little or nothing about. Would you still like to be a scientist?

Next we will consider why God might call people to be full time scientists and how a Christian might live out such a calling. There are no easy answers, but if you enjoy science, God might well call you to be one of the bridges in the twenty-first century that allows Christians and scientists to understand one another. It is a critically important calling.

How Can a Believer Live as a Christian in Science?

“Avoiding profane and vain babblings, and oppositions of science falsely so called, which some professing have erred concerning the faith.” (1 Tim. 6:20-21, KJV)

Misunderstanding Paul’s admonition to Timothy has left many Christians skeptical of science. After all, don’t most scientists believe Darwin, and didn’t Darwin disprove the need for God? Why should Christians waste their time on science?

In his wonderfully gentle-tempered book *Being a Christian in Science*, Walter Hearn offers a quotation from a Christian physics professor that capsulizes this feeling as it applies to a broad range of academic pursuits:

One hears Christians speak proudly of their sons or daughters who have married seminary students or missionaries. . . [But] I have yet to hear a Christian father speak proudly of his son or daughter marrying a graduate student. No wonder our young people are discourage from entering the rigorous life of learning and research.[{6}](#)

Christians could once justly claim to be leaders in most intellectual arenas. Modern science is widely acknowledged to have its roots in a Christian perspective on nature. If we believe that God created the world we live in, then shouldn't we be involved with the scientists who are exploring it?

We have already spoken briefly of some of the personal characteristics that many scientists share. If God is calling you to a life as a scientist it is likely that He has also given you the gifts or talents that it takes to work as a scientist. Have math and science classes gone well for you in school? Do you feel some drive to find out more than what you already know about outer space or inner space? What would life be like as a scientist?

Being a Christian in Science spends several chapters on questions like "What to Expect" and "Science as a Christian Calling." Perhaps the most difficult situation is being misunderstood by both scientific colleagues and other Christians. Christians in science live between two cultures. As Hearn warns: "Christians in science are people with two strong allegiances, holding citizenship in two distinct communities."[{7}](#)

The scientific community sets a very high premium on good work. Hearn writes of the importance for Christians who are also scientists not only to make clear their faith in Jesus Christ, but also to be committed to doing really good science. One author found that many Christian graduate students felt guilty about how much time they spent in the laboratory or the

library, because it took time away from other Christian activities. They seemed to feel that “their professional work clearly did not have the same value in God’s sight as their Christian ‘witness.’”[{8}](#)

If God is calling you into scientific work, you must not only love scientific work, you must have an assurance that your work will be a way to serve God with your life. And this is where you may feel under attack from your Christian friends.

Most of us are used to the idea that the world needs Christian salespeople and Christian mechanics and Christian lawyers. If scientists are to be reached with the good news of Jesus Christ, the church must see that scientists too are a mission field, and, like most mission fields, they are best reached by the “natives,” other scientists.

In the next section we will consider some of the controversies that await a Christian entering science, and how a believer might respond to them.

Caution, Controversies Ahead

“Scientists may not believe in God, but they should be taught why they ought to behave as if they did.”[{9}](#)

Max Perutz, with a Nobel prize in chemistry, made this statement several years ago in response to critical remarks about Cambridge University establishing a Lectureship in Theology and Natural Science. Richard Dawkins, outspoken biologist and atheist, could barely contain himself in an editorial letter about the same lectureship: “The achievements of theologians don’t do anything, don’t affect anything, don’t achieve anything. What makes you think that ‘theology’ is a subject at all?”[{10}](#)

Being a Christian in our culture is often not politically correct. Christians often see scientists as not being biblically correct. So, if you intend on being a Christian

scientist, controversy likely awaits you. How can you respond?

Walter Hearn has a chapter entitled "What to Expect." It has much hard-won advice, and he skillfully raises a number of issues while carefully avoiding taking sides. Hearn seems preeminently the peacemaker in both this chapter and the whole book.

One of Hearn's suggestions is to learn to live cross-culturally. A missionary to Africa may learn another language, and must understand a new culture well enough to explain the Bible in ways that make sense to those people. So, too, a Christian scientist must learn to explain the beliefs of Christians to unbelieving scientists. But at the same time, he or she must also learn how to explain the workings of science to Christians suspicious of the pronouncements of scientists. And the two different funds of knowledge make fundamentally different requirements on those who hear. Hearn summarizes: "Scientific conclusions generally take the form of statistical generalities making no demands on the knower. In contrast, the moral aspect of religious knowledge puts doing the truth on a par with knowing the truth."[11](#)

A second simple statement of great insight is, "It may be wise to step back from some issues even when people whom we admire are passionate about them."[12](#) Hearn follows his own advice as he discusses Phil Johnson and his critiques of Christian scientists who accept the whole of evolutionary theory and then have God direct evolution. Hearn does a masterful job of stepping back from this issue and presenting mostly the views in favor of Johnson's position. At the very least he is demonstrating another characteristic of a peacemaker: being willing to listen to and understand the criticism of those who disagree.

One area Hearn discusses at some length is the growing crisis in ethics among scientists. This is exactly the point of the quotation at the beginning of this section. As science has

disowned God, it has also lost any rock on which to anchor a sense of right and wrong conduct. This is where Christians have much to contribute to the discussion. The Bible gives us a basis for deciding right and wrong that science is sorely missing. But it will be primarily in our daily work as scientists that we will show what a biblical framework for ethics looks like.

Hearn makes the wonderfully sensible suggestion of keeping our Bible among the reference works at our desks. All of us, whether scientists or not, need to live more clearly by the book we claim as our authority.

Christians in Science Have a Godly Heritage to Follow

Being a Christian in Science may frustrate some people. Some will find themselves wondering why he doesn't take a more clear-cut stand on certain issues. Others will want Hearn to be more specific. But the often inconclusive stance of the book is also what allows Hearn to be so conciliatory in tone. On almost every issue he touches he allows as much diversity as he feels he possibly can. He is never strident, almost never critical, always positive or at most questioning. He models the role of a peacemaker in the midst of controversies that are dividing both the church and the scientific community.

Some of the best material in the book Hearn saves for last. In his chapter "Good Company" he gives us his personal Hall of Fame and Encouragement. Much like Hebrews 11, Hearn considers the lives of other Christians who have gone before him and lived the Christian life in the midst of the scientific community. Some are dead, some are newly arriving on the scene. All he considers friends. What unites them is their commitment to the work of science and their service for the God they love. It is both an encouraging and challenging

chapter. There are men and women, a Nobel laureate, and the head of the government's Human Genome Project. There are mathematicians and biochemists, teachers and astronomers. Some are members of the National Academy of Sciences, the most prestigious group of scientists in America. But all of them, Hearn tells us, "Have contributed to science . . . while clearly identifying themselves as Christian believers." [{13}](#)

Another feature of the book is its short but intensely practical suggestions for living out what we believe. Stuck in a meeting that is starting late? Don't waste the time, says Hearn—pray for each person around the room or table, bringing each before the Lord. Don't know how to pray for someone? Perhaps this is a sign you need to spend more time listening to that person.

Possibly the most valuable part of the book are the resources mentioned throughout the text and then richly documented in the notes at the end of the book. Hearn describes how to develop a web of friends who can be a support when experimental work is going badly or when spiritual encouragement is needed. He also shows how the ubiquitous World Wide Web is opening up a whole new frontier of both information and possible friendships.

The twenty-three pages of notes at the end must be read to be appreciated. It is amazing how much diverse information Hearn packs into his comments on each chapter. If you are considering a career in science, or if you are already a working scientist, you need to read this section.

In summary, *Being a Christian in Science* is a compelling expression of just what Paul exhorts us to do: "Whatever you do, do your work heartily, as for the Lord rather than for men." [{14}](#) Hearn shows the potential young scientist what it will take to do his or her work heartily, and at the same time makes clear where many of the potential pitfalls lie, and what vast resources are available for the Christian who is serious

about living as both a Christian and a scientist in this complex and confusing world. If you are a scientist, keep this book on your desk along with your Bible.

Notes

1. Quoted in Phillip Johnson, *Defeating Darwinism* (Grand Rapids, Mich.: InterVarsity Press, 1997), p. 110, Note 1.
2. Walter Hearn, *Being a Christian in Science* (Grand Rapids, Mich.: InterVarsity Press, 1997), p. 12.
3. Hearn, p. 90
4. Hearn, p. 46.
5. Hearn, p. 51-52.
6. Hearn, p. 11
7. Hearn, p. 59.
8. Hearn, p. 112-113.
9. Hearn, frontispiece.
10. Ibid.
11. Hearn, p. 61.
12. Hearn, p. 74.
13. Hearn, p. 138.
14. Col. 3:23, NASV.

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