

"The Language of God" by Francis Collins
Chapter-by-Chapter Summary
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4/28/10

Background

The Language of God was published by the Free Press in 2006, and spent 20 weeks on the New York Times Bestsellers List. It was chosen by the Science and the Bible Club of Penn State (SciBle) as our focal reading for the fall semester of 2009. At the time of this writing, Dr. Collins is head of the National Institutes of Health.

Introduction and Chapt. 1

In the Introduction we learn that the title, "The Language of God", came from a speech by Bill Clinton at the announcement of the completion of human genome project, which Francis Collins headed up. The exact quote is, "Today we are learning the language in which God created life. We are gaining ever more awe for the complexity, the beauty, and the wonder of God's most divine and sacred gift." Francis Collins added, "It is humbling for me, and awe inspiring, to realize that we have caught the first glimpse of our own instruction book, previously known only to God."

Collins reports on a survey conducted in 1916 regarding the spiritual beliefs of scientists. 40% said that they believed in a God who actively communicates with humankind, and to whom one may pray in expectation of receiving an answer. This survey was repeated verbatim in 1997, and to the surprise of the researchers, the number was the same, around 40%. Obviously God is not "dead" in the scientific community, as the public is often led to believe.

Chapter one recounts Dr. Collins' journey "From Atheism to Belief". He became a physician, and recounts how the spiritual beliefs of some of his patients struck him profoundly. In particular, he tells of an older woman who shared her Christian beliefs with him, and asked him what he believed. His response was, "I'm not sure." He realized that he had never seriously considered the evidence for and against belief in spiritual matters. This incident haunted him, and started him searching.

Chapter 2, The War of the Worldviews

Collins frames this Chapter in terms of 4 questions:

1. Isn't God just a case of wishful thinking?
2. Hasn't a great deal of harm been done in the name of religion?
3. How could a loving God permit suffering?
4. How can a serious scientist accept the possibility of miracles?

Some of his comments regarding these questions are given below:

1. Isn't God just a case of wishful thinking? Here he refers to C.S. Lewis, who points out that wish fulfillment would likely give rise to a very different kind of God than the one described in the Bible. If we are looking for benevolent coddling and indulgence, that's not what we find there. He points out that there seems to be a universal longing for "the sacred", and asks if rather than wish fulfillment might it be "a pointer toward something beyond us", and asks, "Why do we have a "God-shaped vacuum" in our hearts and minds unless it is meant to be filled?"

2. Hasn't a great deal of harm been done in the name of religion? Here several answers are offered, including, "The church is made up of fallen people. The pure, clean, water of spiritual truth is placed in rusty containers."

3. How could a loving God permit suffering? Again, several answers are given, including, "... we have somehow been given free will, the ability to do as we please. We use this ability frequently to disobey the Moral Law. And when we do so, we shouldn't blame God for the consequences."

4. How can a serious scientist accept the possibility of miracles? Collins says, "If anything extraordinary seems to have happened, we can always say that we have been the victims of an illusion. If we hold a philosophy which excludes the supernatural, this is what we always shall say." This seems to be to philosophy of some scientists. Collins is not among them.

Chapter 3, "The Origins of the Universe"

Collins earned a Ph.D. in physical chemistry from Yale, and states that his "... experience of deriving simple and beautiful universal equations that describe the reality of the natural world left a profound impression on me, particularly

because the ultimate outcome has such aesthetic appeal." He wondered, "Why should matter behave in such a way?", and "what could be the explanation for the unreasonable effectiveness of mathematics?". "Are these mathematical descriptions of reality signposts to some greater intelligence? Is mathematics, along with DNA, another language of God?"

Regarding the Big Bang, he states, "The existence of the Big Bang begs the question of what came before that, and who or what was responsible. For faith traditions that describe the universe as having been created by God from nothingness (ex nihilo), this is an electrifying outcome."

He also discusses an idea that has been expressed in a variety of ways, including, "The Anthropic Principle", "The Goldilocks zone", and "The Privileged Planet". This is the idea that our universe in general, and earth in particular, seem to have been tuned for life. Collins: "Altogether, there are fifteen physical constants whose values current theory is unable to predict. They are givens: they simply have the value that they have. This list includes the speed of light, the strength of the weak and strong nuclear forces, various parameters associated with electromagnetism and the force of gravity. The chance that all of these constants would take on the values necessary to result in a stable universe capable of sustaining complex life forms is almost infinitesimal. And yet these are exactly the parameters that we observe. In sum, our universe is wildly improbable. He sets forth several explanations for this, including, "The precise tuning of all of the physical constants and physical laws to make intelligent life possible is not an accident, but reflects the action of the one who created the universe in the first place."

Chapter 4, "Life on Earth"

In this chapter Collins sets forth the current theory regarding the spontaneous origin of life, and progression of life forms due to random mutations, and natural selection. He admits to some problems with this theory, including the origin of the first living cells, and also the Cambrian Explosion. For example, "No current hypothesis comes close to explaining how in the space of a mere 150 million years, the prebiotic environment that existed on planet Earth gave rise to life". These problems do not bother Collins, who accepts the overall theory.

Chapter 5, "Deciphering God's Instruction Book"

This chapter deals with the Human Genome Project, also called "The First Reading" of the human genome, 3.1 billion letters of DNA code arrayed across twenty-four chromosomes. This project was started in 1990 and was originally headed by Jim Watson, the co-discoverer of the structure of DNA. But Jim resigned in 1992 over a public argument with the director of the National Institutes of Health regarding the wisdom of patenting bits and pieces of DNA, to which Watson was strongly opposed. Francis Collins was offered the chance to take over the project in 1992. He was happy in his present job at the University of Michigan and was unsure what to do. He writes, "As a believer in God, was this one of those moments where I was somehow being called to take on a larger role in a project that would have profound consequences for our understanding of ourselves? Here was a chance to read the language of God, to determine the intimate details of how humans had come to be. Could I walk away? ... Visiting my daughter in North Carolina in November 1992, I spent a long afternoon praying in a little chapel, seeking guidance about this decision. I did not "hear" God speak - in fact, I have never had that experience. But during those hours, ending in an evensong service that I had not expected, a peace settled over me. A few days later, I accepted the offer."

"In April 2003, in the month that marked the fiftieth anniversary of Watson and Crick's publication of the double helix, we announced the completion of all of the goals of the Human Genome Project. As the project manager of the enterprise, I was intensely proud of the more than two thousand scientists who had accomplished this remarkable feat, one that I believe will be seen a thousand years from now as one of the major achievements of humankind. Yes it is written in a language we understand very poorly, and it will take decades, if not centuries, to understand its instructions, but we had crossed a one-way bridge into profoundly new territory."

Chapter 6: Genesis, Galileo, and Darwin

Collins reviews the famous encounter between Galileo and the Catholic Church over the question of whether the sun revolves around the earth, or visa versa. Regarding this issue he states: "the claims that heliocentricity contradicted the Bible seems to have been overstated", and, "the Galileo affair demonstrates that a contentious chapter did eventually get resolved on the basis of overwhelming scientific evidence".

He asks: "could this same harmonious outcome be realized for the current conflict between faith and the theory of evolution?"

His conclusion: "in many ways the controversy between evolution and faith is proving to be much more difficult than an argument about whether the earth goes around the sun. After all, the evolution controversy reaches into the very heart of both faith and science. This is not about rocky heavenly bodies, but about ourselves and our relation to a Creator."

Regarding Genesis he states, "Despite twenty-five centuries of debate, it is fair to say that no human knows what the meaning of Genesis 1 and 2 was precisely intended to be. We should continue to explore that! [SciBle!] But the idea that scientific revelations would represent an enemy in that pursuit is ill conceived. If God created the universe, and the laws that govern it, and if He endowed human beings with intellectual abilities to discern its workings, would He want us to disregard those abilities? Would He be diminished or threatened by what we are discovering about His creation?"

Chapter 7: Option 1: Atheism and Agnosticism (When Science Trumps Faith)

Collins starts by recounting Apollo 8, the first manned spacecraft to orbit the moon. On Christmas Eve the three astronauts broadcasted a live television show from their capsule during which they jointly read the first 10 verses of Genesis. Collins writes, "As an agnostic on the way to becoming an atheist at the time, I still remember the surprising sense of awe that settled over me as those unforgettable words - "In the beginning, God created the heavens and the earth" - reached my ears from 240,000 miles away, spoken by men who were scientists and engineers, but for whom these words had obvious powerful meaning."

One reaction to this Bible reading from space was a lawsuit by the famous Madelyn O'Hair, arguing that U.S. astronauts are federal employees and should be banned from public prayer in space. (The courts ultimately rejected her suit.) Collins writes, "Atheism has evolved in the decades since O'Hair was its most visible advocate. Today, it is not secular activists like O'Hair who make up its vanguard - it is evolutionists", and he specifically mentions Richard Dawkins (Oxford biologist, author of "The God Delusion") and Daniel Dennett. Collins quotes Dawkins: "It is fashionable to wax apocalyptic about the threat to humanity posed by the AIDS virus, 'mad cow' disease, and many others, but I think a case can be made that faith is one of the world's great evils, comparable to the smallpox virus but harder to eradicate." Regarding Dawkins' position Collins states, "The major and inescapable flaw of Dawkins's claim that science demands atheism is that it goes beyond the evidence. If God is outside of nature, then science can neither

prove nor disprove his existence. Atheism itself must therefore be considered a form of blind faith, in that it adopts a belief system that cannot be defended on the basis of pure reason."

Regarding agnosticism (literally "don't know" from the Greek) Collins writes, "agnosticism also runs the risk of being a cop-out. To be well defended, agnosticism should be arrived at only after a full consideration of all of the evidence for and against the existence of God. It is a rare agnostic who has made the effort to do so."

In his conclusion to Chapter 7, Collins states, "if the existence of God is true (not just by tradition, but actually true), and if certain scientific conclusions about the natural world are also true (not just in fashion, but objectively true), then they cannot contradict each other. A fully harmonious synthesis must be possible."

Chapter 8: Option 2: Creationism (When Faith Trumps Science)

Collins makes an important point right at the beginning, and that is that essentially everyone that believes in God is a creationist - i.e., someone who believes that God was directly involved with the creation of the universe. But when the media uses this word ("Creationist"), they are almost always referring to people who believe in "young earth creationism" (YEC). In Collins' words, "over the past century... the term "Creationist" has been hijacked (and capitalized)".

He reviews a few things set forth by YEC believers, including the idea that microevolution (small changes within species) is true, but macroevolution (the process that would allow one species to change into another) is not. Another point set forth is the idea that the relatedness of organisms as visualized by the study of DNA is simply a consequence of God having used some of the same ideas in His multiple acts of special creation.

Collins' broad views on this topic are set forth in the following statements:

"Many believers in God have been drawn to Young Earth Creationism because they see scientific advances as threatening to God. But does He really need defending here? Is not God the author of the laws of the universe? Is He not the greatest scientist? The greatest physicist? The greatest biologist?" Most important, is He honored or dishonored by those who would demand that His people ignore rigorous scientific conclusions about His creation?"

"...it is not science that suffers most here. Young Earth Creationism does even more damage to faith, by demanding that belief in God requires assent to fundamentally flawed claims about the natural world."

"let me conclude ... with a loving entreaty to the evangelical Christian church, a body that I consider myself a part of, and that has done so much good in so many other ways to spread the good news of God's love and grace. As believers, you are right to hold fast to the concept of God as Creator; you are right to hold fast to the truths of the Bible; you are right to hold fast to the conclusion that science offers no answers to the most pressing questions of human existence; and you are right to hold fast to the certainty that the claims of atheistic materialism must be steadfastly resisted. But those battles cannot be won by attaching your position to a flawed foundation. To continue to do so offers the opportunity for the opponents of faith (and there are many) to win a long series of easy victories."

Chapter 9: "Option 3: Intelligent Design (When Science Needs Divine Help)"

Collins feels more positive about Intelligent Design (ID) than "Creationism". He writes, "From my perspective as a geneticist, a biologist, and a believer in God, this movement [ID] deserves serious consideration." Yet, much of this chapter is devoted to criticism of ID views. For example, "Intelligent Design fails in a fundamental way to qualify as a scientific theory. All scientific theories represent a framework for making sense of a body of experimental observations. But the primary utility of a theory is not just to look back but to look forward. A viable scientific theory predicts other findings and suggests approaches for further experimental verification. ID falls profoundly short in this regard." [It is worth noting that these comments don't address whether ID is right or wrong, just that it doesn't fit Collins' definition of a scientific theory.]

Collins specifically criticizes some of Michael Behe's work as presented in "Darwin's Black Box", such as the idea that blood clotting, and bacteria flagella represent irreducibly complex systems - i.e., systems that could not have been produced in a step-by-step manner by random processes.

Regarding the human blood clotting cascade Collins writes that it, "can in fact be understood as the gradual recruitment of more and more elements of the cascade. The system appears to have begun with a very simple mechanism that would work satisfactorily for a low-pressure, low-flow hemodynamic

system, and to have evolved over a long period of time into the complicated system necessary to humans and other mammals that have a high-pressure cardiovascular system, where leaks must be quickly stopped." Yet he also states, "Admittedly, we cannot precisely outline the order of the steps that ultimately led to the human clotting cascade. We may never be able to do so, because the host organisms of many predecessor cascades are lost to history."

Regarding how a flagellum might have developed he points to similarities between bacterial type III secretory apparatus and a flagellum, and writes, "The bacterial offensive weapon, referred to by microbiologists as the "type III secretory apparatus," provides a clear "survival of the fittest" advantage to organisms that possess it. Presumably, the elements of this structure were duplicated hundreds of millions of years ago, and then recruited for a new use; by combining this with other proteins that had previously been carrying out simpler functions, the entire motor was ultimately generated." But again he admits to the shortcomings of this theory. Collins: "Granted, the type III secretory apparatus is just one piece of the flagellum's puzzle, and we are far from filing in the whole picture (if we every can)."

In spite of the admitted shortcomings in the explanations above, Collins ultimately rejects ID. He writes, "The perceived gaps in evolution that ID intended to fill with God are instead being filled by advances in science. By forcing this limited, narrow view of God's role, Intelligent Design is ironically on a path toward doing considerable damage to faith."

After having presented 3 views of God/science that he doesn't agree with (Atheism and Agnosticism, Creationism, Intelligent Design), Collins is prepared to tell us his views regarding how to harmonize these two topics.

Chapter 10: BioLogos (Science and Faith in Harmony)

In the 3 previous chapters Collins discussed what he isn't in full agreement with: atheism and agnosticism, creationism, and intelligent design. In this chapter he discusses what he believes is the best way to harmonize Science and the Bible.

He starts with his personal decision to try to pursue medical genetics and "some of the eternal truths of the Bible". He writes, "I was vaguely aware that some of those around me thought that this pairing of explorations was contradictory and I was headed over a cliff, but I found it difficult to imagine that there could be a real conflict between scientific truth and spiritual truth.

Truth is truth. I found this elegant evidence of the relatedness of all living things [genomics] an occasion of awe, and came to see this as the master plan of the same Almighty who caused the universe to come into being and set its physical parameters just precisely right to allow the creation of stars, planets, heavy elements, and life itself. Without knowing its name at the time, I settled comfortably into a synthesis generally referred to as "theistic evolution," a position I find enormously satisfying to this day."

But Collins doesn't like the phrase, "theistic evolution" and proposes an alternate word. "My modest proposal is to rename theistic evolution as Bios through Logos, or simply BioLogos. "BioLogos" expresses the belief that God is the source of all life and that life expresses the will of God. ... BioLogos doesn't try to wedge God into gaps in our understanding of the natural world; it proposes God as the answer to questions science was never intended to address, such as "How did the universe get here?" "What is the meaning of life" " What happens to us after we die?"

He ends this chapter under the heading of "Science and Faith: The Conclusion Really Matters". Collins: "In the twenty-first century, in an increasingly technological society, a battle is raging for the hearts and mind of humanity. Many materialists, noting triumphantly the advances of science in filling the gaps of our understanding of nature, announce that belief in God is an outmoded superstition, and that we would be better off admitting that and moving on. Many believers in God, convinced that the truth they derive from spiritual introspection is of more enduring value than truths from other sources, see the advances in science and technology as dangerous and untrustworthy. ... Will we turn our backs on science because it is perceived as a threat to God, abandoning all of the promise of advancing our understanding of nature and applying that to the alleviation of suffering and the betterment of humankind? Alternatively, will we turn our backs on faith, concluding that science has rendered the spiritual life no longer necessary, and that traditional religious symbols can now be replaced by engravings of the double helix on our altars?"

Chapter 11: Truth Seekers

"Science is not the only way of knowing. The spiritual worldview provides another way of finding truth. Scientists who deny this would be well advised to consider the limits of their own tools, as nicely represented in a parable told by the astronomer Arthur Eddington. He described a man who set about to study deep-sea life using a net that had a mesh size of three inches. After

catching many wild and wonderful creatures from the depths, the man concluded that there are no deep-sea fish that are smaller than three inches in length! If we are using the scientific net to catch our particular version of truth, we should not be surprised that it does not catch the evidence of spirit."

An Exhortation to Scientists: "Have you been concerned that belief in God requires a descent into irrationality, a compromise of logic, or even intellectual suicide? ... Have you been turned off by the hypocritical behavior of those who profess belief? Again, keep in mind that the pure water of spiritual truth is carried in those rusty containers called human beings ... Are you distressed by some specific philosophical problem with faith, such as why a loving God would allow suffering? Recognize that a great deal of suffering is brought upon us by own action or those of others, and that in a world where humans practice free will, it is inevitable. ... Are you simply uncomfortable accepting the idea that the tools of science are insufficient for answering any important question? ... Does this discussion of spirituality simply make you uncomfortable, because of a sense that recognizing the possibility of God might place new requirements on you own life plans and actions? I recognize this reaction clearly from my own period of "willful blindness," and yet I can testify that coming to knowledge of God's love and grace is empowering, not constraining. God is in the business of release, not incarceration."

A Final Word: "Seekers, there are answers to these questions. There is joy and peace to be found in the harmony of God's creation. ... Science is not threatened by God; it is enhanced. God is most certainly not threatened by science; He made it all possible."

THE END