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Learning the Language of God

FRANCIS COLLINS

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What if we could uncover the contents of the entire DNA instruction book inside every one of our cells, that drives the development and functioning of our bodies? This is the question that Francis Collins asked as the NIH Director of the Human Genome Project, a huge international effort that involved more than two thousand researchers. In 2000 the first draft of the DNA 'genome' was completed after ten years of hard work. The official statement from the White House said that 'We are gaining ever more awe for the complexity, the beauty and the wonder of God's most divine and sacred gift.' This wasn't political spin for Collins but really reflected his own experience.

I grew up on a small farm with no plumbing, home schooled by my mother and father until I was ten. I was given a great gift by my parents: the gift of learning to love learning and the discovery that new experiences could be some of the most exhilarating things that could happen to me. That gave me a sense of curiosity which worked its way through mathematics, chemistry and physics, onto biology and medicine, and then ultimately to the exploration of this amazing script called the human DNA genome.

My father was a professor of drama and my mother a playwright. We lived in this rather rustic environment, farming without any machinery but they quickly realised they couldn't make a living that way. My father's full time job of teaching was how he actually put bread on the table. My parents were very

much in the theatrical mode and of course all their four sons were expected to be the same. I was on the stage by the time I was four years old and loved every minute of it.

Science was not something that was really part of my family experience. It became real to me at the hands of a charismatic chemistry teacher in a public high school in Virginia. He could write the same information on the blackboard with both hands simultaneously! More importantly, he taught us the joys of being able to use the tools of science to discover things we didn't already know. I caught that fever, and I've still got it.

At home faith was not something that was talked about very much. I wasn't really raised with any particular spiritual worldview. My parents were not people who criticised faith but they didn't consider it particularly relevant or important. I didn't see any evidence in my parents of their leanings in that direction, although ultimately my father did become a believer. I was sent to learn music at the local Episcopal Church because they had a wonderful choirmaster and organist. My father made it clear that it wasn't really that important to pay attention to the sermons, so I learned a lot about music but I didn't learn much about theology.

I went on to study chemistry at the University of Virginia at the age of sixteen, because my home-schooling had meant that I was two years ahead in high school. When those late-night discussions about religion began to occur in the dormitory I was sceptical about what the believers were saying, on the basis of their own upbringing, about the reality of their faith. Some of my neighbours were strong atheists who were, I thought, effective in their arguments. I found myself identifying with the sceptics and the atheists because I had no particular reason to attach value to a faith system. As a young man with lots of temptations, it was also convenient to reject the idea that I was responsible to anyone or anything other than myself. I slipped into what essentially was agnosticism (the idea that we can't know for certain whether there is a God or not), although frankly I didn't know the word at that point.

As a PhD student studying quantum mechanics¹ my passion was mathematics, and the way that you can describe the collision of atoms and molecules using mathematical equations. I believed

that everything that happens in the world could be explained by reducing everything to this level, and that all our thoughts and actions are determined by these laws and equations. I was comfortable putting any religious beliefs down to superstition; the sort of thing that we should leave behind as we get more knowledgeable about how the universe works. I had no use for people who tried to argue that there was something outside of the physical world that was also valuable and true. I assumed that any religious feelings that anyone held must be because of some emotional experience (and I didn't trust those) or on the basis of some childhood indoctrination that I was glad to have missed.

In graduate school I decided I should broaden my horizons a little bit, and I took a course on biochemistry and molecular biology (the study of DNA). Until then I had not had much interest in biology or medicine at all. In high school I found biology boring, because it seemed to be largely about learning mindless facts. I had assumed it was just all murky and muddy and it wouldn't make any sense at all. The idea that there was this information molecule called 'DNA' and that it was the way in which all living forms directed their material processes was truly exciting. I got the sense also that this field was breaking wide open and that there were going to be consequences for humans in terms of our ability to understand and perhaps treat disease. Combined with my worry that the most exciting discoveries in quantum mechanics had been made fifty years ago, this began to emerge in my mind as an alternative way that I might decide to spend my career.

Changing directions in a rather drastic way (I was already married and had a child at this point), I decided that I would go to medical school. And I found that I loved the experience of learning about the human body and all of its components. I particularly loved being introduced to genetics: DNA was mathematical in a certain way. But later in my medical training, I found myself sitting at the bedside of patients with serious diseases. This was no longer an abstract study of molecules and organ systems. These were real people. I realised soon enough that the medical methods we had to help many of these people were imperfect, and were not going to save them from death. Many of them had cancer, others heart disease: a variety of incurable illnesses. We could make them

comfortable, and we might be able to slow down the disease for a bit but ultimately they were going to lose their battle.

Up until then, the idea of life and death had been abstract for me but now it was very real. I was puzzled how these people in this hospital were, for the most part, not angry about their circumstances. I thought I would be. Instead they seemed to be at peace, realising that their life was coming to an end. Many of them even talked about how their faith gave them comfort. This was the rock that they stood upon, and they were not afraid. I realised that I would be afraid. I didn't know what was on the other side; I suspected nothing at all.

One afternoon I was with one of my patients, a wonderful elderly woman who had very bad heart disease and had suffered mightily for it, and for whom we'd essentially run out of options. She had a particularly bad episode of chest pain while I was with her. She got through it, and then explained to me how her faith was the thing that helped her in that situation. She realised that the doctors around her weren't giving her that much help but her faith was. After she had finished her own very personal description of that faith, she turned to me (I had been silent), looked at me quizzically, and said, 'I've just shared my personal faith in Christ with you, doctor, and I thought you might actually say something but you haven't said anything. What do *you* believe?' Nobody had ever asked me that question so directly, and with such a generous, sincere spirit before. I felt the colour rising in my face, and I felt an intense disquiet about even being there. I stammered something about not being quite sure and left the room as fast as I could.

Afterwards I puzzled over what had happened with that lady, and why it had been so unsettling. Ultimately I had to admit to myself that her question sought an answer to the most important issue that we humans ever deal with: is there a God? I had arrived at my own negative answer without ever really looking at the evidence – and I was supposed to be a scientist! If there's one thing that scientists claim they do, it is to arrive at conclusions based upon evidence, and I hadn't taken the trouble to do that. I was pretty sure there wasn't any evidence for God but I had to admit that I didn't know. I also had to admit that some of my teachers in the medical school were believers, and they didn't seem to be the

sort of people that would stick to something just because they'd been told about it in childhood. I had wondered about that, and I'd never actually considered what they might describe as the basis for their faith. Maybe it was time to learn something about it? Maybe this wasn't all just superstition? At least maybe there was something there to understand?

There are all sorts of ways that one might come face to face with this question of whether there is a God but a particularly interesting one is sitting at the bedside of someone who is facing death and imagining yourself in that position. I couldn't help but think, 'I don't want to be in that position and not have some better sense of the answer.' When you're young you can imagine for the longest time that you're immortal but as a medical student facing death every day on the wards, it was hard. That's what happened to me that afternoon: a combination of realising I hadn't done the hard work that I should to answer a really important question, and a realisation that my life was not going to go on forever. Thinking about that, there in my twenty-sixth year, sitting at the bedside of this wonderful, kindly, spiritual woman, I realised this was not something to put off.

That day at my patient's bedside started a journey for me, a journey that I was reluctant to begin but felt I needed to; a journey that I thought would result in strengthening my atheism. First I had to understand what religious people believe, and I had a hard time finding out the basic principles of the world's faiths. I was quite muddled about what they stood for. I went to a Methodist pastor who lived down the road, and asked him about all this. He gave me a copy of C.S. Lewis' book *Mere Christianity* and told me that the author was an Oxford scholar, a prodigiously developed intellect, who had travelled the same path. Lewis had been an atheist, was puzzled by what his friends who were believers were talking about, and set out to disprove them. He found that the evidence went the other way, and ultimately became one of the most compelling Christian voices of the twentieth century. Within those pages I realised for the first time that one can come to a belief on a rational basis, and that in fact atheism is probably the least rational of all the choices.

It took me three or four months to get all the way through that book, because it was very unsettling to see that the foundations

of my atheism were falling apart page by page and leaving me in a position of having to accept the idea of God's existence: something that I was not prepared for. I realised that atheism claims a 'universal negative' (there is no God at all) which is a difficult thing to prove in any circumstance. I realised it was even more difficult given the many pointers to God in the universe: its beginning, and its fine tuning in terms of the way in which all those physical constants that determine the behaviour of matter and energy seem to have been set just in a certain, very precise range, to make life possible. There were many other things, including my beloved mathematics and why it actually works anyway to describe the universe; something that makes you think the Creator must have been a mathematician. All of those things I found compelling but they only got me as far as seeing the plausibility of belief in a deist² kind of Creator, a distant sort of God.

It was Lewis's argument about the moral law, this knowledge of right and wrong that distinguishes us from all other species that I found most convincing and do to this day. It is a moral law that we break quite regularly but we know it's there. It often makes very little sense in naturalistic terms because it sometimes calls us to do acts of radical self-sacrifice that are clearly not good for the passing on of our DNA, which is all that evolution by natural selection would care about. That part of the argument led me to acknowledge that if God exists, then God cares about people. Why else would this moral law be something that people, including me, experience? I began to realise that God was perhaps calling to me through a language I had lived with all my life without appreciating its source. If that was true, it also said that God is good and holy, and was calling me to be the same. Given all the times that the moral law had told me to do one thing and I had done the other, I was, and still am, hopelessly short of that.

The discovery that there might be a God who cared about me was a profound revelation but I also began to sense a growing foreboding. I was beginning to discover God but the character of this holy God was almost infinitely far away from what I might be able to approach with all my failings. That distress was blessedly answered as I began to understand the person of Jesus Christ. I had thought that Christ was as much myth as history but

I realised after reading more about him that he was a historical figure. There is a great deal of evidence for Jesus' existence and his teachings, and even strong support for his literally rising from the dead. This, while it seemed incredible at first, began to make the most perfect sense. I realised that I would be cut off for all time from God if I didn't have a bridge of some sort to make me right, given my imperfections and God's holiness. The perfect bridge, I realised, was Jesus himself. That was a joyous revelation but also a scary one. As it all began to fall into place, I realised I'd come so far down this road that it was going to be very hard to turn back.

In a muddle about all of this, on a beautiful afternoon (one of those rare moments as a medical resident where I had a little time off) I went hiking in the Cascade Mountains in the northwest of the United States. It was a sunny day, the sky was perfectly blue, and I had that experience that we are occasionally given of being cleared of all of the distractions that otherwise get in the way of thinking about what really matters. I just left the car and walked up a hiking trail. I had no idea where I was, and it's a wonder I didn't get lost. As I walked up that trail I turned a corner and there was a sheer cliff face in front of me, at the top of which there must have been a small trickle of moisture. As that trickle came down the cliff it froze, and glinting in the sun was this frozen waterfall that came down in three cascades. I'd never seen anything like this before. It would take anybody's breath away, spiritual or not, to see this beauty of nature. But it caught me at a moment where I realised that this was an opportunity to ask the question that we all have to ask at some point. Do I believe in God? Am I ready to say yes to that question? And I found that all of my resistance fell away. Not in a way that I could tell you precisely, in terms of 'Yes, I went through this logical argument and that theorem.' No, it just was a sense of 'I am ready to give myself to the love that God represents and that has reached out to me. I am ready to put aside my resistance and become the believer that I think God wants me to be.' I fell on my knees and said, 'This is something I want. Christ, come and be my Saviour, and change my life. I can't do it by myself, and maybe tomorrow I'm going to think I was nuts but today this is real. This is the most real thing that's ever happened.'

I was not quiet about my new faith. I was a young Christian full of excitement, wanting to share it with everybody. My colleagues were generally supportive, although a bit puzzled. A few of them, knowing that I was already on a pathway towards spending my professional career in the field of genetics, suggested that I was on a collision course and that my brain was in danger of exploding if I allowed my faith in Jesus and an exploration of genetics and evolution to come together. Those views would clearly be found incompatible and I would end up in some sort of misery and crisis.

But shortly after I became a Christian I realised there was no real conflict between belief in a Creator God and using science to understand how God had done that creating. It is well documented by a recent survey that 40% of scientists in the USA believe in a personal God. I can't imagine that science, which allows us to peer dimly into God's creation, would in some way threaten God. Here is an opportunity to understand God better and increase our awe for what God has created.

I have been more open in terms of talking about science and faith than many scientists have been. There wasn't much written about how to put these worldviews together, so I decided to speak and write more openly about it. This has, for the most part, been a really exhilarating experience, and has resulted in my having the chance to talk to thousands of people about a topic which often isn't discussed, and in a small way to encourage people to think these issues through and not just put them to the side. It's not necessarily an easy thing, though, for a scientist to talk about this. There's a bit of a taboo in academic circles about discussing matters of faith, and that topic will empty the seminar room about as quickly as any I know of. There's a sense that this is not what science is about, and you should leave those conversations for your home or your church. I understand the reasons for that discomfort but I think it's unfortunate that this view has led many people to believe that science and faith are incompatible.

You can read the book of the Bible or you can read the book of nature, and you can find truth in both ways. You need to be careful, of course, about what kind of question you're asking, and which tools are appropriate for that question. It seems to me that to put either of those kinds of investigations off to the side and say

'That's either inappropriate or dangerous' is to impoverish your opportunity to address the most important questions in life. We are only given a brief time to live here on this amazing planet, so why should we limit ourselves? We need to search in all kinds of directions for the truth.