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THE LANGUAGE OF OUR CELLS

THE COMPLEXITY OF DNA MAKES IT HARD TO BELIEVE THAT IT WAS PRODUCED BY NATURAL PROCESSES

Consider for a moment the cathedral-like structure of a snowflake under a microscope. Look at the beauty. Look at the complexity. Look at the originality of each individual flake. Surely this is evidence for a grand Designer in the universe.

Well, no, actually it's not—no more so than the burned enchilada of a woman in Mexico that apparently revealed the image of Jesus (though in the photo it did kind of look like him).

While I grant you that the crystalline forms of a snowflake are beautiful and impressive, designs of this type abound in nature, and natural processes can and do produce them. But this raises an important question: what constitutes legitimate evidence for intelligent design found in nature? If we want to know whether we have a purpose or are just here by accident, it's a question we'd better be asking.

OF CLOTHES DRYERS, MOUNT RUSHMORE, AND PRIME NUMBERS

The folks at SETI (Search for Extraterrestrial Intelligence) have done some thinking along the lines of what constitutes signs of intelligence. They are searching for extraterrestrial life, as opposed to God, but they have to deal with the same problem set. How would they recognize communication from outer space if they saw or heard it?

Some of their thinking is brought out in the movie *Contact*. In one scene, the character played by Jodie Foster spends the evening listening to her dryer (presumably Blockbuster was closed). But there is a method to her apparent madness. She is trying to train her ears so that she will be able to recognize intelligent radio signals from outer space, filtering out the zillion random signals produced by all manner of objects in the cosmos.

A clothes dryer produces a certain level of mechanical rhythm; its noise actually has a level of design sort of like that of a snowflake. But that noise (especially when you have sneakers thumping around in there) represents a type of design that nonintelligence (that is, nature) can produce.

You and I actually make decisions all the time about different levels of design.

Let's say we've headed out to Vegas, and along the way, we come upon a bizarre rock formation. I say, "Hey, look at the erosion on that rock. It looks kind of like Richard Nixon on acid." You, on the other hand, think it looks like Vladimir Putin eating scrambled eggs. We agree to disagree, but we both note that the forces of erosion made something that looks a bit like a product of intelligent design.

Now, as we drive farther, we come to Mount Rushmore. Seeing it for the first time, I am amazed. I say, "Wow, look at the erosion on those rocks. It looks just like three presidents I recognize and some guy wearing glasses." You rightly call me an idiot, not only because you know who Teddy Roosevelt is, but also because it is obvious by the way the stone is cut and the extraordinary degree of design that this is the product of intelligent craftsmen—ones who apparently have no fear of heights. But there must be a more scientific way to differentiate between these two levels of design: one that can be produced by nature and one that can't.

Later on in the movie *Contact*, the scientists receive radio waves at the sequence of 1,126 beats and pauses. The sequence, they deduce, represents the prime numbers 2 through 101. It becomes doubtful that random radio waves could emit something of such a high order of intelligence, and they presume they have made contact.

This is a more scientific way of differentiating between two different orders of design. It is commonly called *CSI*. This acronym has nothing to do with a popular TV show. It stands for "complex, specified information."

CSI: THE UNIVERSE

Here is what you need to remember about CSI, or complex, specified information. Nature can generate information that is complex, and it can produce information that is specified, but it cannot do both.

The best way to understand this is to think of yourself as a computer programmer. (You might want to grab a large bag of potato chips and a six-pack of Coke to get into character.) I want you to write a program for the computer telling it to type random letters of the alphabet.

It should be fairly easy to write the program. Just instruct the computer to type any key at random and repeat the process infinitely. Now, occasionally the letters might make an interesting pattern, perhaps even type the word "Nixon" by accident, but it is clearly generating a design of complexity without any real specificity.

Now let's switch it around. Let's say I ask you to program the computer to type the word "the." This is going to require specificity. You must specify, "Computer, type the letter 't,' then 'h,' and then 'e,' and do this over and over again until your printer runs out of ink or your hard drive crashes." This is specific, but it is not complex. You can program the computer in this case, like the previous one, with just a few lines of instructions.

Typing random letters or typing a simple word over and over is like the kind of design that natural processes can handle on their own.

Now let's look at specified complexity. Let's say I ask you to program the computer to write out a Harlequin romance novel and make the girl decide to dump the guy in the end. You would have to write a list of instructions for the computer larger than the book itself. You would have to specify, in the form of a command, every letter of every word.

Few people would have thought of Harlequin romances as specified complexity, but as you can see, they are. The commands to the computer are extremely complex and extremely specific. That's the kind of detail we must demand if we are going to believe that there is intelligent design exhibited in the world.

PROBABLY INTELLIGENT

Seems simple enough, but at what point does something cross the threshold from the simple design found in nature to second-order design produced only by intelligence? Dr. William Dembski tries to explain it by making an analogy with a rat trying to go through a maze.

If the maze is one-dimensional (a floor with no walls), the rat can take one turn and escape from the maze. Does the escape prove that the rat has intelligence? No. The maze is too simple to draw a conclusion on the question.

So, having cleared all that up, we come to the real question. Forgetting all the erosion and snowflake patterns, are there any examples of specified complexity found in nature pointing toward intelligent design? The short answer is yes. What follows is the longer answer. It uses the example of something each of us has heard something about: deoxyribonucleic acid, or DNA.

But now imagine that the maze is extremely complex, possessing walls and requiring 100 precise turns to reach the point of escape. If the rat, after several chances to learn the maze, manages to make all of the turns correctly and quickly so that it can escape, that proves its intelligence. The odds against such a performance being the result of mere chance are just too great.

The laws of probability tell us when there would be too many dead ends to create highly complex systems. We cannot expect any event to occur within our universe that has a probability of less than 1 in 10^{150}, a limit called a universal probability bound.[1] In his book *Intelligent Design*, Dembski concludes, "Natural causes such as chance and law are incapable of generating CSI."[2]

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WHAT A LITTLE STRAND CAN DO

Not until 1953, when Francis Crick and James Watson codiscovered the mystery of DNA's double helix did scientists grasp the secret of biological life. The discovery of DNA has revolutionized biology.[3]

Although Crick and Watson would later receive the Nobel Prize for their success in defining the architecture of the double helix, Rosalind Franklin, a physical chemist working in the biophysics unit of King's College in London, had already worked out that the molecule had its phosphate groups on the outside and that DNA existed in two forms.[4] In spite of her brilliant breakthrough, it was the *boys* in the lab who received the credit. (While all human DNA is the same, apparently there's still a glass ceiling for the female version.) Not long after after her discovery, Crick and Watson made their stunning announcement: "We have discovered the secret of life."

The genius of DNA lies not only in its complex coded instructions for life but also in its incredibly well-designed architecture, which allows it to contain billions of detailed instructions within a microscopic molecule. The amount of DNA that would fit on a pinhead contains information equivalent to that of a stack of paperback books—say, Harlequin romance novels—that would encircle the earth 5,000 times![5]

DNA. That one complex molecule contains the complete blueprint for every cell in every living thing. It is the basis for all life on earth.[6]

Our complete blueprint is present in each of our thousand million million cells. Think of an enormous building with thousands upon thousands of rooms, where each room houses a complete set of blueprints for the entire structure. (If these analogies are getting a little sterile for you, then you might want to imagine a large beach house—and imagine yourself sitting there.) However, instead of merely thousands of rooms, our bodies contain trillions of cells, each with a complete package of DNA instructions.[7]

Each strand of DNA in our bodies consists of three billion base pairs of genetic information. These base pairs form a chain, which constitutes the entire human genetic code. Today the entire human genome has been mapped out, spelling out in DNA code how we differ from chimps, dogs, and slugs.

YOUR CELLS ARE TALKING

But just what is DNA, and how does it work? Although scientists are only beginning to unravel its mysteries, they know that DNA works much like a coded language. Microsoft chairman Bill Gates (apparently sizing up the potential to patent it and make it a part of Windows) discloses, "DNA is like a computer program, but far, far more advanced than any software we've ever created."[8]

When we think of sophisticated computer programs, we immediately realize that their coded software was intentionally designed. Naturalists believe that DNA originated without any such intentional process. But is it possible that natural causes alone engineered DNA? Up till now that has been the subject of debate between naturalists and theists (those who believe in God). However, design theorists have now applied the mathematical discipline of CSI to the question of whether DNA is the result of intelligent design or was accidental in its origin.

Science historian Stephen C. Meyer comments on the intelligence required for coded languages: "Our experience with information-intensive systems (especially codes and languages) indicates that such systems always come from an intelligent source."[9]

In other words, like a code or language, DNA operates with specifically organized instructions. This is the CSI (complex, specified information) discussed earlier as the watermark of intelligent design.

When DNA directs the cell to make proteins, it first gives instructions to make amino acids. Then twenty different amino acids must precisely link up into a chain, folding into an exacting, irregular three-dimensional protein. The amino acids are like letters; their arrangement spells out the specific protein being made.

Proteins are truly amazing. MIT-trained scientist Dr. Gerald Schroeder explains,

> Other than sex and blood cells, every cell in your body is making approximately two thousand proteins every second. A protein is a combination of three hundred to over a thousand amino acids. An adult human body is made of approximately seventy-five trillion cells. Every second of every minute of every day, your body and every body is organizing on the order of 150 thousand thousand thousand thousand thousand thousand amino acids into carefully constructed chains of proteins. Every second; every minute; every day. The fabric from which we and all life are built is being continually rewoven at a most astoundingly rapid rate.[10]

Meyer points out that the chemical codes directing the process attach themselves to the structure of the DNA molecule like letters on a chalkboard, but they do so without becoming organically involved with the board or the other letters. Therefore, he distinguishes the information content from the chemical bonding.

Furthermore, Meyer compares the sequencing of the amino acids to a language: "Amino acids alone do not make proteins, any more than letters alone make words, sentences or poetry."[11] The fact that the arrangement of the letters is not the result of chemical bonding has driven Meyer to conclude that, without intelligence, DNA would never be able to turn amino acids into proteins. He writes, "The chance of each amino acid finding the correct bond is one in twenty; the chance of one hundred amino acids hooking up to successfully make a functional protein is one in 10^{30}."[12]

That means that the odds of a protein being manufactured randomly is one chance in a million trillion trillion. But that is not the only improbable event that must take place for DNA to exist.

WHERE DID IT COME FROM?

Such odds are so improbable that Meyer believes the DNA code cannot be the product of undirected natural processes. Meyer reasons that DNA coding exhibits creative intelligence beyond random chemical bonds.

Even a greater mystery for biologists is how DNA appeared in the first place. What natural process triggered a smattering of organic chemicals to come together and form the incredibly sophisticated double helix? Schroeder remarks, "And here's that enigma. … It shows its head in a dozen different ways, the problem of how the entire process originally got started."[13]

Dembski, Meyer, and Schroeder are part of a growing number of scientists and mathematicians who have concluded that the DNA molecule is so complex that it couldn't have spontaneously assembled itself. In *Probability 1*, mathematician and evolutionist Amir Aczel summarizes the DNA dilemma: "Having surveyed the discovery of the structure of DNA … and having seen how DNA stores and manipulates tremendous amounts of information (3 billion separate bits for a human being) and uses the information to control life, we are left with one big question: What created DNA?"

An increasing number of scientists in other fields are also admitting that DNA's complexity is not explainable by mere chance. Theoretical physicist Paul Davies affirms in *The 5th Miracle*,

> The peculiarity of biological complexity makes genes seem almost like impossible objects. … I have come to the conclusion that no familiar law of nature could produce such a structure from incoherent chemicals with the inevitability that some scientists assert.[14]

Molecular biologist Michael Behe comments on the dilemma facing scientists, "In the face of the enormous complexity that modern biochemistry has uncovered in the cell, the scientific community is paralyzed."[15]

DNA BY DESIGN

Scientists have been stunned by the overwhelming probability against DNA forming by chance. It is one thing for intelligent scientists to manipulate chemicals under laboratory conditions, and it is quite another to attribute the origin of DNA to random action. Even the most ardent naturalists are unable to explain DNA's origin.

Amir Aczel questions his own naturalistic belief by admitting that DNA is too complex to have arisen from natural processes. In a reflective mode he asks, "Are we witnessing here something so wondrous,

so fantastically complex, that it could not be chemistry or random interactions of elements, but something far beyond our understanding?"[16]

DNA's codiscoverer Francis Crick also considers DNA to be too complex to have arisen in a warm pond on early Earth. This highly regarded Nobel Prize–winning biologist concludes, "An honest man, armed with all the knowledge available to us now, could only state that in some sense, the origin of life appears at the moment to almost be a miracle, so many are the conditions which would have had to have been satisfied to get it going."

Having acknowledged the impossibility of DNA to originate naturally, some scientists have shifted their focus to RNA. Several biologists believe that DNA emerged from RNA. However, microbiologists who have analyzed RNA now believe it too "could not have emerged straight from the prehistoric muck."[17] The origin of life remains an unsolved riddle to scientists.

Aczel concludes that the complexity of DNA could not have arisen naturally on Earth, He asks, "Was it perhaps the power, thinking, and will of a supreme being that created this self-replicating basis of all life?"[18]

DNA is just one example of life's complexity being too great to be easily accounted for by random natural processes. Our complexity, then, is a key indicator that we were *designed* and didn't just *happen*.

NOTES

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