

October 2018

**Review of *Heretic: One Scientist's Journey from Darwin to Design*****by Matti Leisola and Jonathan Witt****By Dan Reynolds**

**H***eretic*<sup>1</sup> by Matti Leisola and Jonathan Witt is a very accessible up-to-date summary of the concepts, history, discoveries, and predictions of the intelligent design (ID) movement. The book is also the story of a scientist's (Leisola) intellectual and vocational journey from belief in Darwinism to ID. The authors touch on the works of William Dembski, Michael Behe, Stephen Meyer, Jonathan Wells, A. E. Wilder-Smith, Dean Kenyon, Philip Johnson, James Tour, Richard Sternberg, Michael Denton, Ann Gauger, and many others. If you were only going to read one book on ID, this is it.

Matti Leisola has a DSc in biotechnology from the Helsinki University of Technology.<sup>2</sup> He is an expert in enzyme chemistry and has published extensively. One of his research areas has been the optimization of enzymes for synthetic applications in industry. Leisola's insight into biochemistry and consideration of the available evidence convinced him that living things are designed. Jonathan Witt helped Leisola write the book.

This review will consider each chapter individually and in the order presented in the book. Some chapters will be summarized without much detail. All quotations are from Leisola in the book unless indicated otherwise. It is hoped that this review will motivate the reader to buy and read the book then share what is learned with others.

**Introduction**

Leisola recalls a time when he laughed at those who would suggest God had a role in creation. Such god-of-the-gaps notions were from ignorant and lazy people who

could not or would not do the science to find the true natural causes. However, he eventually became aware of the many "just so" evolutionary stories that were not really scientific explanations supported by experimental evidence but mere naturalistic speculative placeholders for our ignorance. He came to realize that the assumption that everything in nature must have a materialistic explanation might be wrong. He decided to follow the evidence wherever it led without artificially eliminating live options from the outset. Hence design as an explanation was back on the table. He also came to realize that the opinions of the majority or scientific "authorities" do not determine scientific truth; the results of scientific investigations do. He cites several historical examples of where the opinion of the majority of scientists proved incorrect. One notable and recent example is the idea of "junk DNA," which has been essentially overturned by the ENCODE project and many other discoveries; most DNA in the human genome appears to be functional after all. Leisola quotes Richard Feynman who said, "If it disagrees with experiment it is wrong."

**Suspicious Awoken**

Leisola tells of his early education in Finland where he was taught both the Bible and evolution. While the Bible was respected, it was not presented as an epistemological epistemology equal with science. The Bible belonged to the realm of nonreason and faith, while science was concerned with reason and empirical evidence. And science had shown that man "is only a machine produced by random processes." After all, evolution, the idea that all living things emerged from a process of descent with modification from a single or very few common ancestors by a random variation/natural selection process, was an established scientific fact, or so it seemed. Leisola was presented with a challenge to his evolutionary faith and found himself angered. He discovered he was very touchy about anything that called his worldview into question. He came to appreciate that there are two possibilities concerning the universe: either it is a result of impersonal, purposeless, blind, random processes or the product of a

<sup>1</sup> Leisola M, Witt J (2018) *Heretic: One Scientist's Journey from Darwin to Design*, Discovery Institute Press, Seattle, WA

<sup>2</sup> Sarfati J (2010) Enzyme expert exposes evolution's error. *Creation* 32(4):42-44. <<https://creation.com/matti-leisola-interview>> Accessed 2018 Sep 17

designing intelligence. Modern science disallows the inclusion of intelligent causes in its explanatory toolkit; all scientific investigations must assume all phenomena have materialistic causes. This assumption has been called methodological naturalism. For some, methodological naturalism has become metaphysical naturalism or basic atheism. Leisola came to see that most scientists practice science without an awareness of the philosophical presuppositions involved. Most consider science a neutral search for the truth. Leisola began to ask evolutionists what evidence they had; and, to his surprise, he learned they had little; what they did have were stories.

As Leisola began to question further, he learned scientists have no idea how life began. Experience has shown only life begets life. He realized that the Miller experiments shed little light on the problems of abiogenesis, even though they are promoted as an enormous step forward in our understanding of how biochemistry could have emerged from chemistry. The problems for abiogenesis are many: nucleic acid monomer synthesis, amino acid synthesis, polymerization of nucleic acid monomers into functional self-replicating DNA or RNA molecules, polymerization of amino acids into functional proteins, the emergence of cellular membranes, the origin of the genetic code, etc. And these problems include many other difficulties such as having a reducing atmosphere for monomer synthesis, the synthesis of various sugars such as ribose, the extreme rarity of functional nucleotide sequences in DNA/RNA or amino acid sequences in proteins, the problem of chirality, etc. Modern science has not a clue as to how these miracles could have occurred by known chemical and physical processes.

One theory of abiogenesis that has been put forth is the "RNA World." Presumably, the first self-replicating chemical system was an RNA molecule. However, no self-replicating RNA molecule is known to occur in nature or to have been made in a laboratory. Questions about monomer synthesis, polymerization, the required monomer sequence, etc. are far from being answered. RNA is also known to be unstable. The theory is without much evidential support.

Others have suggested that chemicals self-organized to form the first living thing. To be sure, there are some spontaneous order-producing chemical and physical processes such as crystallization or the organization of a hurricane. But the order produced by these processes is extremely simple and repetitive and unlike the aperiodic nature of information found in the codes in DNA and proteins. "Such patterns are information starved compared to the living world, and non-functional."

The origin of the cell membrane is also problematic because it contains several specialized channels for letting specific molecules in and out of the cell at appropriate times.

We know the structure of DNA and the sequence of bases in many DNA molecules found in living systems, but we do not know how the sequence of bases, the information for building proteins and making RNA, came to be. And the information problem is perhaps the most difficult attribute of living things to explain. How did the DNA monomers become correctly sequenced in the first place before there was a self-replicating molecule? No one has a materialist explanation for this. Based on what we know about chemical reactions and probability, it would take trillions of years to form just a few functional proteins.

Based on experiments, Douglas Axe demonstrated that there is only 1 in  $10^{77}$  sequences of the amino acids in a protein containing 150 amino acids that has biological function. This is akin to asking how many meaningful sentences are there in all the possible sequences of 150 letters. Imagine the difficulty of finding a meaningful sentence out of all the possibilities if a blind random search is all you have to work with.

Faced with these difficulties, evolutionists have counseled patience. It seems obvious to any objective unbiased observer that random physical processes simply can't produce the information found in the biochemistry of living things. We should make an inference to the best explanation based on the evidence. The evidence screams ID.

### ***Fossilized Materialism***

Despite the evidence, evolutionists insist that only natural causes can be considered. Hence the exclusion of consideration of intelligent causes is based upon a materialistic philosophy and not on evidence. Leisola recounts how almost all the scientists he has known privately admit we have no idea how life began, yet they still put their faith in their materialistic philosophy.

Evolutionists like to point to the fossil record as proof for evolution. They mention things like the horse series, archaeopteryx, fossils of extinct primates, etc. But the Cambrian explosion, which occurred at the bottom of the fossil record where most basic body plans (phyla) appeared in a short period of time, does not fit the gradual changes expected from a Darwinian mechanism. The fossil record is characterized by sudden appearance, stasis, and disappearance/extinction. The gradual transitions from simple to complex organisms are not observed. A theory called punctuated equilibrium was devised to account for these discrepancies. Presumably, a species remains stable for long periods but then evolves rapidly in response to changing environmental pressures until a new stable species is formed. The transition period is relatively short so that relatively few of the intermediate forms ever exist and become fossils. But this mechanism requires the mutation/selection process to generate enormous amounts of information in a short period of time, a tall order for a

process that must blindly search for functional DNA sequences. And it is well known that most mutations are deleterious, and the few beneficial ones come at a cost with no net information gain. Darwinism can explain the survival, but not the arrival, of the fittest.

### ***Students Begin Listening***

As an expert on enzymes, Leisola has credibility when speaking on the evolution of enzymes to student audiences. Leisola explains how genetic mutations are minimized in the cell by built-in error correction processes. Genomes are setup to conserve their DNA sequence integrity. So, the total number of mutations passed on to the next generation is minimized. According to Darwinism, these mutations are supposed to be the source of all biological innovation. But it is known that most mutations are harmful or deleterious. The few mutations that are beneficial are advantageous only under special circumstances and facilitate adaptation at the expense of breaking something with a net loss in biological information.

One of evolutionists' favorite "proofs" is antibiotic resistance. It is well known that some infectious bacteria become resistant to various antibiotics over time. We are told this is "evolution in action" that can "be observed in real time." The bacteria have mutated and the resulting mutants are better adapted than the original strain. What more evidence of evolution could you ask for? We have to understand that there is a great difference between mutations that lead to adaptation and mutations that result in new biological information. What we see in nature is the former but not the latter, and it is the latter that macroevolution, molecules to man evolution, requires. Sometimes mutations that would otherwise be deleterious confer an advantage to an organism under unusual and specific circumstances. This is the case for antibiotic resistance. For example, an antibiotic may work by fitting a receptor on a molecule (lock and key mechanism) critical to the survival of a bacterium, rendering the molecule unable to fulfill its normal function, resulting in the death of the bacterium. However, a mutation in the critical molecule may change the three dimensional structure of the receptor site in such a way that the antibiotic will no longer bind to the site (the key no longer fits the lock) rendering the bacterium unaffected by the antibiotic. While this mutant bacterium will survive in the presence of the antibiotic, the mutation has also caused the critical molecule to perform its original function less efficiently and/or selectively than it had previously. Hence antibiotic resistance has been purchased by damaging part of the molecular system. This type of mutation/adaptation/partial damage scenario is the usual way mutations confer adaptation. In the absence of the antibiotic, this mutation would have left the resulting mutant less well adapted. This type of mutation/adaptation process can't be extrapolated to explain macroevolution where new functional information must be created. Hence

we can refer to this type of mutation in the presence of an antibiotic as "beneficial" yet not innovative. This is a good example of microevolution (variation within kinds), which has nothing to do with macroevolution.

### ***Professors and Presidents React***

Leisola recalls a time when universities at least respected debates about evolution, but no longer. "Today naturalism controls the universities so completely that debates about the problems of evolution are rarely tolerated." Nowadays, any professor expressing doubts about Darwin may face dismissal, be denied promotions, have their prodesign publications rejected, etc. Many critics of ID have never actually read the original authors or even examined the arguments for themselves. This is clearly prejudicial and indefensible. One can't rightly reject an argument he has never heard or seriously considered. The same people who shut down open debate about evolution say they fully support academic freedom!

Leisola says that "macroevolution is a philosophical concept starved of observational evidence." Many point to the universality of the genetic code and the nested hierarchies formed by comparison of organisms' phenotypes (suggesting descent with modification). But these data can also be explained by a common designer who uses similar parts for similar functions in different organisms. The evidence is therefore equivocal and in no way eliminates design as a possible explanation. Hence there is no empirical basis for rejecting design out of hand. Evolutionists have no credible mechanism for macroevolution and the evidence they claim in support of it is equivocal. Therefore, their rejection of design as an explanation is based on philosophical and not empirical considerations. It's amazing, then, that evolutionists claim their theories are "scientific" while the idea of design is merely religious and faith-based without evidence.

Linus Pauling, one of the great scientists of the twentieth century, suggested a test for the validity of macroevolution. He said that if macroevolution is true, then the phylogenetic trees based on anatomical and molecular evidence should be the same. As it turns out, this is not generally found. Even worse, different trees are obtained depending on which molecule is being compared. These results contradict what is expected from descent with modification but make perfect sense from a design perspective. So do evolutionists now consider their theory disproved? Of course not. Evolution is so malleable it can be spun to explain any data. But if a theory can't be disproved, is it really scientific or is it merely metaphysics?

Leisola also discusses how certain “icons” of evolution<sup>3</sup> miss the mark: peppered moths, sickle cell anemia, and Darwin’s finches. None of these examples begin to explain macroevolution.

### ***Publishers Hesitate***

Leisola relates difficulties he had publishing his work when talking about evolution. Some critics of ID claim that the arguments made in defense of design were disproved long ago by philosophers such as Hume and Kant. But this is untrue. Today’s design advocates discuss the information content of biomolecules. The minimum quantity of information in DNA can be calculated and a number assigned to it. The probabilities of generating those quantities of information with a blind and random chemical process in billions of years can be calculated. The results are always the same. There is simply no chance that even an average-sized protein could have been generated in the alleged 13.8 billion years of the universe’s existence by known chemistry, even if all the known matter in the universe were put on the task. However, we do know of a sufficient cause from our everyday experience that can generate this information: intelligence. It is an empirical fact that intelligent beings such as us can generate vast quantities of information. So what is so unscientific about invoking a cause we have observed repeatedly to be causally sufficient (intelligence), especially in the absence of any other adequate mechanism?

### ***Broadcaster Bias***

There are many nature documentaries that present evolution as an established fact. The evolution of echolocation, the neck of a giraffe, flight, the human mind, the dance of bees, and anything else found in biology is discussed as if the evolutionary pathways and mechanisms were well understood and in hand. Leisola described one such documentary thusly: “The documentary simply assumed evolution to be true, and repeated it ad nauseam—persuasion through repetitive conditioning rather than rational explanation and argument.” Any documentaries which dispute evolution, even on purely scientific grounds, are considered unscientific and religious. Those who subscribe to ID are either disallowed from television spots or are included to be made fools of.

One of the mysteries of evolution is the origin of phyla or body plans. We know that the basic body plan of an organism is laid out very early in embryological development. So, for a new body plan to evolve, changes in the genes that control early development would have to

be made. But experiment has shown that mutations of the these genes invariably lead to disfigurement, deformity or death, but never a new and better body plan or organism. We are also finding that most organisms have genes that are unique to them without any known counterparts in other organisms. These genes are referred to as orphan genes since it is unclear what genes in an alleged ancestor they might have evolved from. Orphan genes make sense from a design perspective since a designer would be expected to often make unique genes for each organism.

### ***The Church Evolves***

This chapter deals with theistic evolution and how some in the church have bought into the myth that science deals with the “riddle of the origin of the world” while faith trusts God is somehow behind it all. “The Christian faith has with this definition been cut off from reality and moved to the realm of subjective beliefs, isolated from the claims of materialistic science.” Leisola detects an inherent contradiction in theistic evolution: how can the idea that blind, random, purposeless, and undirected physical processes made make the biological world dovetail with the idea that God created the world and us for a purpose? Unfortunately, those in the church who subscribe to theistic evolution consider people who would argue with evolution are misinterpreting scripture and causing an unnecessary and embarrassing rift between the scientific establishment and the church. However, Leisola has found that many theistic evolutionists, especially in the clergy, often don’t understand the science and merely bow down to scientific authority. And there are people like Richard Dawkins who rightly argue that if Darwinism is true, God is unnecessary. There is no possible logical union of materialism and Christian faith.

### ***“Rationalists” Behaving Irrationally***

In this chapter, Leisola describes several experiences he had with evolutionists planning conferences and media appearances. Commitments were made, then broken or changed at the last minute; speaking opportunities were traps where evolutionists tried to make the ID folks look foolish; meeting announcements were highly biased against the ID folks, etc. The arguments made against ID were usually based on the “authority of science” and not evidence. Leisola summarizes the reality of ID theory:

ID theory does not criticize the natural sciences. It uses evidences and methods from the natural sciences to critique modern evolutionary theory and scientific materialism and to argue that ID is the best explanation for certain patterns in nature. It does so based not on what is unknown but on our uniform experience in the present of what does and doesn’t cause things like information and irreducibly complex machines. Thus

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<sup>3</sup> Reynolds D (2006) Intelligent design. <<https://www.tasc-creationscience.org/article/intelligent-design>> Accessed 2018 Sep 17

it is based on what we know about the cause-and-effect structure of the world.

Leisola says that evolutionists tend to respond to ID by (1) focusing on religion and avoiding scientific arguments, (2) creating a straw man of ID then dismissing it, and (3) invoking authority (science says so). Anyone can see this strategy is doomed to fail because it does not actually engage the arguments ID theorist are making. Could it be evolutionists don't have good arguments to counter ID? Leisola refers to many of the confident pronouncements of evolutionists as "bluffing."

Leisola clarifies that ID makes arguments from science only, without invoking scripture, all claims that ID is creationism notwithstanding. There are literally thousands of PhD scientists who are on the record as being skeptical of Darwinism.<sup>4</sup> And these are just those who are willing to make their position known. It is not uncommon for those in the natural sciences who profess ID to be ridiculed, denied promotions, forced out of their jobs, be denied tenure, have their papers refused by journals, have opinion pieces rejected, etc.<sup>5</sup> Leisola tells the stories of the mistreatment of Richard Sternberg and A. E. Wilder-Smith.

The ENCODE project and its implication that most non-coding DNA is functional is discussed. This discovery is demolishing the argument for the common ancestry of humans and chimps based upon similar non-coding DNA sequences. If the non-coding DNA sequences have function and are not junk after all, then invoking a designer who used similar DNA sequences in different organisms for achieving the same functional purposes makes perfect sense. Hence it makes sense to say that humans and chimps share a common designer.

### ***Colleagues Dare to Explore***

Leisola relates how he has known many people in the biological sciences with advanced degrees and successful careers who had accepted evolution without question and did not even know the basics of the theory. He found that many, once presented with the evidence, were open to ID. However, he also found while many were open to discuss ID in private, they were still reluctant to express their views in public for fear of harming their careers. Leisola pointed out how many experiments, thought to support evolution, did not show how novel information could be

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<sup>4</sup> A Scientific Descent From Darwinism <<https://dissentfromdarwin.org/>> Accessed 2018 Sep 17

<sup>5</sup> Reynolds D (2008) Freedom of speech and religion? Not in academia. <<https://www.tasc-creationism.org/article/freedom-speech-and-religion-not-academia>> Accessed 2018 Sep 17

generated and hence really offered nothing to support macroevolution.

Biochemist Branko Kozulic showed by a literature search that many species of bacteria contain orphan genes which defy common ancestry.

Leisola explains that the alleged evidence that bacteria could evolve the ability to metabolize different sugars is in error. Either the ability to metabolize the different sugars already existed in some members of a population or a mutation resulted in the unregulated production of a "promiscuous"<sup>6</sup> enzyme that could metabolize the sugar. The latter case actually involved breaking the regulatory system resulting in a net loss of information.

Leisola describes the work of Richard Lenski. Lenski has conducted the world's longest evolution experiment with bacteria with more than 60,000 generations now passed. Many claim his experiments are like watching evolution in action. But on closer inspection, the most successful strains of bacteria in his experiments had either broken genes or turned genes off, neither of which explains the origin of new information. The advantage these strains had was more efficient energy consumption; when food is scarce, turning off nonessential functions conserves energy. Once again, we see how evolution can explain the survival, but not the arrival, of the fittest.

Other examples that allegedly demonstrate evolution with bacteria are discussed and debunked.

### ***Mechanisms Malfunction***

One of the major questions Leisola considers in this chapter is protein evolution. Proteins are made from 20 types of amino acids. Proteins function as enzymes (carry out specific chemical reactions) or are used structurally to build nanomachines such as the bacterial flagellum. An average protein might consist of 300 amino acids. The amino acid sequence determines the three dimensional structure of the protein and hence its function. There are  $20^{300}$  or  $10^{390}$  possible amino acid sequences for a 300-amino acid protein. Of these sequences, how many are functional in biology? It is a critical question because the alleged mechanism for the evolution of new proteins is to duplicate the genes for a given protein and then randomly mutate the copy until a new functional protein is obtained. If there are many functional sequences, then we might expect a random search to easily stumble upon a new functional sequence. However, if functional sequences are rare, then a random search would likely destroy the existing function long before a new function was found,

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<sup>6</sup> A promiscuous enzyme can react with more than one substrate but usually at very different rates.

making the mutant sequence useless and even harmful because of the wasteful use of resources. Such a mutant would likely be eliminated by natural selection. Experimental studies have arrived at different numbers, but all agree that the total number of functional sequences is a mere tiny fraction of the total possible amino acid sequences. The most optimistic number Leisola reports is 1 out of  $10^{24}$ . In other words, there are very few functional sequences of all the possible arrangements making protein evolution by random search highly unlikely.

Leisola relates experiments using “directed evolution” to improve the performance of an enzyme for some industrial application. The idea is to randomly mutate the genes that code for a desired enzyme and select any mutants that produce enzymes with improved activity. But note that the experiment is done under very controlled conditions with artificially induced mutations and artificial selection and has nothing to say about how evolution might occur in nature.

Michael Behe has shown from his studies of malaria and HIV that the most nature can accomplish with random changes is two coordinated mutations. If more than four coordinated mutations are required to transform an amino acid sequence into another functional sequence, then evolution can’t find the new sequence. In other words, four coordinated mutations are all that evolution could have ever achieved using all the bacteria that have ever existed over billions of years. Behe called this limitation the “edge of evolution.”

Experiments looking at the possibility of one functional protein evolving into another with a different function have so far provided negative results for evolution. In one experiment, two proteins with very similar amino acid sequences but different functions were studied. The goal was to see if one of the proteins could be randomly mutated into the other. The investigators concluded that at least 7 specific mutations would be required to achieve the transformation, a feat that would require  $10^{27}$  years at known mutation rates.

### ***The Chasm Widens***

Leisola compares modern evolutionary theory to failed theories of geocentrism and phlogiston. Geocentrism and phlogiston were the scientific consensus/paradigms of their day that were held in spite of the evidence against them. Only after decades or even centuries of opposing evidence were they eventually replaced with better theories. Evolution is the phlogiston of our day. Evolutionary theory is so flexible that it can be amended to explain any observation and hence can’t be disproved by the scientific method.

Evolutionists attack ID theorists as being religiously motivated all the while blind to their own commitment to

metaphysical naturalism, itself a religious position or worldview. Some evolutionists claim design can’t be true because there are things in nature that are badly designed. But most of these things turn out not to have been designed badly upon closer inspection. The detection of the alleged “bad” design was a matter of ignorance, not science. Leisola points out that everyone makes unprovable reality assumptions and hence to some extent lives by faith. This is as true for the atheist as it is for the believer.

Leisola says we are in the midst of a paradigm shift towards design. The more we learn about the activity of non-coding DNA, the more we discover genes that can code for thousands of proteins, the more we learn about the epigenome, and many other codes we are just beginning to understand, the more design makes better sense of the data than does evolution. It has become apparent that organisms can nonrandomly mutate in response to environmental changes suggesting a designed/built-in mechanism of adaptation.<sup>7</sup>

### ***Through a Doorway to Adventure***

Leisola relates how the current paradigm shift will not be easy or fast. There is too much at stake: money, reputations, prestige, lifestyles, worldviews, and power. And worldviews have consequences. The logical conclusion to be drawn from metaphysical naturalism is that life is meaningless and free choice is illusory. But our freedom to choose is self-evident, and so a purely materialistic explanation of our origins can’t be true. And if chemical mechanisms are all there are, how can we trust our minds since every thought would be inevitable whether it is correct or not?

Leisola reflects on the new horizons in biology: the functions of non-coding DNA, the epigenome, the regulation and coordination of cell operations, programmed cellular response to certain stimuli, the limits of microevolution, orphan genes, and how much we can reprogram cells. These frontiers will best be conquered by assuming design. Evolutionists have taught for centuries that God was merely a god-of-the-gaps in our knowledge that science has systematically filled with physical causes over the years. Perhaps it did seem that way for a time. But science is now showing that the “just so” stories of evolution have little explanatory power in the face of staggering biological complexity and information. It would seem that a designer is the best explanation for these wonders after

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<sup>7</sup> Reynolds D (2009) Has science found how life began and species evolved? An examination of the “RNA World” hypothesis and rapidly changing lizards. <<https://www.tasc-creationscience.org/article/has-science-found-how-life-began-and-species-evolved-examination-rna-world-hypothesis-and>> Accessed 2018 Sep 19

all. True science will follow the evidence wherever it leads, and the evidence points to a creator now more than ever before. ☞

## **COMING EVENTS**

**Thursday, October 11, 7:00 pm, Providence Baptist Church, 6339 Glenwood Ave., Raleigh, Room 237**

Because we had to cancel our meeting last month because of inclement weather, we will have Phillip Johnson return for our October meeting. Phillip Johnson will be talking about creation in the book of Romans. We will be discussing what the gospel is and how it relates to the very beginning of the universe. The book of Romans reveals certain truths about God's creation of men and the world.