

Genetic Entropy: Is the Human Race Degenerating?

A review of Genetic Entropy and the Mystery of the Genome

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Published by FMS Publications, Waterloo, New York. 233 pages.

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Introduction – Dr. John Sanford is an imminently qualified geneticist, a long-time Professor and Researcher at Cornell University. Among his many contributions is his invention of the “gene gun”, a method of direct gene transfer used in plant genetic engineering. In the Prologue to *Genetic Entropy* he begins with this statement: “In retrospect, I realize I have wasted much of my life arguing about things that don’t really matter.”

It takes a supremely honest man to make a statement like that, but he admits to previously subscribing to the “ideological foundation of undirected and pointless Darwinian evolution.” He admits also to previously being, at heart, a eugenicist. Not all evolutionists believe in eugenics, but many do believe that the future of the human race depends on our helping evolution along by assuring the survival of the fittest of our race. Not many, fortunately, have the opportunity as did Adolph Hitler, to actually begin such a program.

In the Prologue to this revolutionary book, Dr. Sanford states that the foundation of modern Darwinism is built upon what he calls “The Primary Axiom”, the idea that man is merely the product of “random mutations plus natural selection.” In graduate school he accepted the Primary Axiom primarily by trust in the authorities rather than by his own personal understanding. As Dr. John Baumgardner points out in the *Foreword* to the book, most professional biologists are not aware of the unjustifiable assumptions that form the foundation of evolutionary beliefs.

It is rare to find anyone in academia in this country who would dare to question Darwinism. And yet, late in his career, Dr. Sanford did something that seemed unthinkable to a Cornell professor; he began to question the Primary Axiom. He stated that he did so with “great fear and trepidation.” This is understandable, as anyone who has been through the educational system will testify, especially those in many of the science curricula. But to Dr. Sanford’s great amazement, he found that the revered foundation built around the Primary Axiom was a “house of cards”; the theory itself extremely vulnerable and indefensible. And in the final analysis the Axiom stands on little but the faith of the true believers. Consequently he began to realize that he would probably be offending the very religion of many people. But whatever the cost, he came to the place where he must say it out loud: “**The Emperor has no clothes!**”

Dr. Sanford does a masterful job of presenting a complicated subject in a way that can be understood by non-scientists. He promises that with “a reasonable mental effort” on the part of the reader, he can persuade the reader that the Primary Axiom is false. And if the Primary Axiom is wrong, there is an ominous and surprising consequence: “When subjected only to natural forces, the human genome must irrevocably degenerate over time.” He states that such a sober realization should cause us to reconsider where we should place our hope for the future.

The Genome – The size and complexity of the human genome is staggering; there is simply nothing designed by man with which to compare it. The genome is the sum total of our genetic makeup – the blueprint or instruction manual that determines our physical makeup. Genetic coding within the genome is carried with the chemical DNA. DNA forms the familiar “double helix” that looks like a twisted ladder. Letters in the blueprint are molecules – nucleotides known symbolically as A, T, C, and G that form the cross pieces of the DNA

ladder. Each cross piece (base pair) is composed of a pair from the group of the four nucleotides.

A human genome consists of two sets of 3 billion individual letters. If the letters were arranged linearly, in one long string, the result would be equivalent to many complete sets of a large encyclopedia. But the genome is not just a long, one-dimensional string of information. Most DNA sequences carry information on several different levels; i.e. they are *poly-functional*. And because they carry information on several levels, any change at one level will effect a change in another message contained on another level. Geneticists call this attribute *poly-constrained*.

For example, imagine a sentence that conveys a certain message when read in the usual way, from left to right, and an entirely different message when read from right to left. Then suppose another message was stored by reading every other letter, or every other word, and so on. It is obvious that changing one letter would impact more than one instruction. More complex schemes make the problem worse with respect to tolerance for misspellings or other “typographical” errors.

For example consider the so-called Sator Square, a Latin palindrome (reads the same left to right and right to left) written as a square. This example dates back to 79AD, and loosely translated says “The Farmer named Arepo works with wheels”. Notice it reads the same up and down and left and right. If you change just one letter in “ROTAS” across the top, you have not only changed that word, but have also messed up all the words that read up and down.

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R O T A S
O P E R A
T E N E T
A R E P O
S A T O R
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To add further to its complexity, the genome is full of countless loops and branches. Linear DNA can also fold into two- and three-dimensional structures, providing coding for still higher levels of information through data compression. And all of this complexity is stored in a genome that resides inside a cell’s nucleus in a space much smaller than a speck of dust. This is what the author calls the “mystery of the genome”. He concludes (p. 154) that “It should be very clear that our genome could not have arisen spontaneously.” Suffice it to say that we know enough about the complexity of God’s blueprints to be in awe, but will probably never come close to knowing everything about it. It is likely that there is coding imbedded in the DNA that we cannot even anticipate or imagine.

What are Mutations? – The current thinking of evolutionists is that all biological information arose through mutation and selection (“survival of the fittest”). Mutations are errors that occur when a DNA segment (gene) is damaged or changed. And here we come to what Dr. Sanford sees as a major flaw in evolutionary theory: Darwinists must believe that the genome is gradually improved by being damaged and changed in a random and un-ordered fashion through natural selection.

Imagine a modern automobile factory using a highly complicated system of robotics and human workers placing individual parts as the chassis moves along the assembly lines. Let’s further suppose that there is an Instruction Manual that is the guide to the entire operation. Every step, every operation goes strictly by the Instruction Manual. Now let’s introduce “mutations” – random errors in the instructions. Admittedly, the operations could survive a few random errors. A misspelled word now and then, a letter or even an entire word occasionally deleted might not spell doom for the production process. But it certainly wouldn’t help.

If an occasional error is introduced into this Instruction Manual, any effect at all would be detrimental – there is no way it could be otherwise unless guided by intelligence, purpose,

and design. Therefore if random errors can be introduced without intelligent oversight (as they could if copies of the Manual were produced by typists re-typing every additional copy), the quality of the Instruction Manual, and therefore the automobiles coming off the assemble line, would slowly deteriorate over time. Eventually, the effects would be made known not only in the appearance of the product, but in how well the engine and other critical components function.

Only in the minds of devoted Darwinists could this system even maintain the *status quo*, much less improve the product. But evolution from microbes to man depends on coding errors not only improving the quality of automobiles (in Dr. Sanford's example), but even in transforming them into space ships! Even if randomly introduced errors in the Instruction Manual could, on occasion, produce a car with a rocket engine (not likely), it would immediately be eliminated by the Inspector. What good is a car with a rocket engine? It would be a complicated monstrosity that would not even qualify as a good car, much less as a spacecraft.

The only way small changes in the Instruction Manual can improve the automobiles is if they are guided by intelligence. And the Primary Axiom does not allow the introduction of any intelligence, purpose, or forethought! An important point is that, as a genetic principle, the Primary Axiom also does not allow for direct selection for misspellings themselves, but only for the finished product. This is only one of many serious obstacles to the widely held belief that natural selection improves the genome. The reasons for this are convincing but too numerous to be mentioned here.

Can Random Mutations be Beneficial? “Random mutations consistently destroy information.” (P. 15). Mutations cause birth defects. Cancer is caused by mutations, and there is growing evidence that aging itself is caused by the accumulation of mutations. But random mutations are not observed to increase genetic complexity. In fact, in studies of bacterial resistance to antibiotics (One of the Darwinists favorite examples of “evolution”), it has been shown that mutations that have imparted resistance to populations of the bacteria have actually digressed (lost genetic information).

But in the special case of the environment inside a host's body infused with an antibiotic there are cases in which mutant bacterial strains happened to have resistance to the antibiotic, and thus survive. These strains are rapidly replaced by superior strains with natural genetic makeup as soon as the selective pressure (the antibiotic) is removed. And yet, thanks to an extensive miss-information campaign, many today have been led to believe that microbial resistance to antibiotics is some of the best “proofs” of molecules to man evolution!

Dr. Sanford gives several examples in his own field of plant genetics where much research was done in order to screen mutations for beneficial effects. From a huge number (billions of mutation events) many “small, sterile, sick, deformed, aberrant plants were produced.” Almost no meaningful crop improvements resulted. The exceptions were a very few cases where, although a mutant was beneficial in a certain context (low phytate corn for animal feed, for example), the mutant strain had lost genetic complexity and could not possibly be an example of evolution through favorable mutations.

Other examples given were in the field of ornamental plants, where dysfunctional attributes were found to be valued for aesthetic or other reasons. These attributes include sterility, dwarfing, mottled and variegated foliage, and misshaped flowers. Beneficial mutations are much too rare to be used for genome-building; their acceptance for this purpose is based on unquestioned acceptance of the Primary Axiom.

One of the well-known problems (that is, well-known to geneticists!) with thinking that natural selection can fix the mutation problem in the genome is Selection Interference due to physical linkage. As it turns out, there is a “tight physical linkage between beneficial and

deleterious mutations.” (p. 81). The ability to separate good and bad mutations is obviously a basic requirement for natural selection to work at all. The death knell for this procedure is the fact that essentially the entire genome exists in large linkage blocks. So even though the rare presence of a few beneficial mutations would seem to offer a glimmer of hope for forward evolution, the presence of physical linkage erases those beneficial mutations from consideration.

Is the human genome deteriorating? – Geneticists have long worried about the impact of mutations on the human population, and that at a rate of one deleterious mutation per person per generation, genetic deterioration would result. Earlier reports were based on estimates of mutation rates considerable lower than what we now know to be the case. Findings going back to 2002 show that the human mutation rate is at least 100 mistakes (misspellings) per person per generation. Some scientists believe the rate is closer to 300.

Even a rate of 100 has profound implications, and the mutation rate is itself increasing. Furthermore, most, if not all, mutations in the human genome must be deleterious. “And nothing can reverse the damage that has been done during our own generation, even if further mutations could be stopped.” (P. 40). It would appear that the process is an irreversible downward spiral that will end in “mutational meltdown”.

A considerable array of information is presented to show why natural selection is unable to stop this deterioration of the genome. Many of these arguments are too involved to be covered in a short review such as this one. To quote the author, “On a practical level, it means natural selection can never create, or even maintain, specific nucleotide sequences.” (p. 55). One problem is that selection occurs on the level of the whole organism, while mutation is occurring on the molecular level “It is like trying to fix a computer with a hammer.” (p. 147).

To qualify his statements on the limits of natural selection, Dr. Sanford makes it clear he is not saying that selection does not work. In his work as a plant breeder, many useful plant varieties were derived by selecting desirable traits from each generation. And natural selection has eliminated the very worst human mutations. But both natural and artificial selection have very limited ranges of operation; and they can never create higher genomes. An example with selective breeding of animals are modern swine breeds. Although converting pig feed to bacon more efficiently than their forbears, they are definitely not more fit in general, except in the pampered and protected environment of a pig farm.

What are the implications of genomic deterioration? – The author cites research showing that the human race is currently degenerating at 1 – 2 % per generation due to accumulation of mutations. At a 1% decline in fitness per generation, there is a sharp reduction in fitness after 300 generations (about 6,000 years). One of the most interesting revelations in *Genetic Entropy* is Dr. Sanford’s and other workers’ analysis of the Biblical account of life expectancies. In a statistical regression analysis of declining life spans since Noah (lived 950 years), after 32 centuries since Noah the life expectancy has declined to about 70. The remarkable aspect is that this curve, which shows a sharp drop-off after Noah and a more gradual decline about 1,000 years ago, is that it is very similar to theoretical curves presented by other researchers that show genetic degeneration. Either Moses faithfully recorded the events (and ages) recorded in Genesis, or he was a skilled statistician who made up data with a remarkable fit to an exponential curve!

On page 83 the author states “The extinction on the human genome appears to be just as certain and deterministic as the extinction of stars, the death of organisms, and the heat death of the universe.” In a summary statement on p. 139 he states “We have reviewed compelling evidence that, even when ignoring deleterious mutations, mutation/selection cannot create a single gene within the human evolutionary timescale. When deleterious mutations are factored back in, we see that mutation/selection cannot create a single gene,

ever. This is overwhelming evidence against the Primary Axiom. In my opinion this constitutes what is essentially a formal proof that the Primary Axiom is false.”

Is there any hope? – Toward the end of his personal *Postlude*, Dr. Sanford makes some astounding statements for a man of his standing in the scientific and academic community. On page 158 he writes: “Even as we cannot create life, we cannot defeat death. Yet I assert there is One who *did* create life and who designed the genome. ... He is called the Author of Life (Acts 3:15 – NIV).” He goes on to say that his personal belief is that Jesus is our hope and that apart from Him there is no hope. “He made heaven and earth in the first place, so He can make *anew* heaven and earth in the future. Because He rose from the dead, we can be raised from death, even the death which is already enveloping us.” Well stated.

Conclusions – This review can not do justice to the vast amount of scientific information which Dr. Sanford meticulously presents in the book, which includes 81 reference citations. Some of the many problems with natural selection improving the genome are covered in topics such as Invisible Mutations, Nearly Neutral Mutations, Too Many Minor Mutations, Reproductive Elimination, The Low Heritability of Fitness, and Excessive Noise Overrides Selection. Major problems, from the scientific literature, are presented in Appendix 1. Topics included are “Muller’s Fear”, “Muller’s Ratchet”, “Neel’s Realization”, “Kondrashov’s Question”, “Kondrashov’s Numbers”, “Nachman and Crowell’s Paradox”, “Crow’s Concerns”, “Lynch et al.’s Mutation Meltdown”, “Higgins and Lynch – More Meltdown”, “Hoyle’s Big Picture”, “Howell’s Challenge”, and “Loewe’s Limit”. We hope the reader will read the book to learn just how strong the case is for Genetic Entropy – and against the Primary Axiom.