

10. DNA, the Genome and Information

DNA is a **digital communication and control system**. The discoveries, formulas and communication theories which created our modern digital world and the basic ideas and principles of computer design and engineering of Von Neumann, Alan Turing and Norbert Weiner (inventor of cybernetics) were derived from the linear digital genetic programming in life.¹¹⁷ “Life’s hardware and software systems use digital information processing to control, integrate, and maintain life’s processes. While physics and chemistry are physical sciences whose interactions are wholly determined by physicality, biology is an information science since all of the defining characteristics of biology are controlled by life’s information processing systems.”¹¹⁸

The **genome** is an instruction manual that specifies all the operations of an organism and its replication process. It has a tremendous amount of information: “The information content of a simple cell has been established as around 10^{12} bits comparable to about a hundred million pages of the Encyclopaedia Britannica.”¹¹⁹ This is not just mere information, but prescriptive information, meaning information that instructs and produces nontrivial function, just like an instruction manual for mechanical assembly. A **phenome** is the sum of all observable characteristics of an organism.

¹¹⁷ See Quastler, H. *A Primer on Information Theory in Symposium on Information Theory in Biology*. The Gatlinburg Symposium, H. P. Yockey, R. P. Platzman & H. Quastler, Eds., Pergamon Press, pages 37 and 360 (1958); Von Neumann, J. & A. W. Burks. *Theory of Self-Reproducing Automata*. University of Illinois Press, Urbana, (1966); Turing, A. M. *On computable numbers, with an application to the entscheidungs problem*. Proc. Roy. Soc. London Mathematical Society, 42, 230-265 [correction in 43, 544-546](1936); Von Neumann, J. *Collected works*. Pergamon Press, New York (1961); Wiener, N. *Cybernetics*. Wiley, New York (1948); Wiener, N. *Cybernetics, its Control and Communication in the Animal and the Machine*. New York (1948) through David Abel, *The Biosemiosis of Prescriptive Information*, Semiotica 1/4/09P.

¹¹⁸ Donald Johnson. *Biocybernetics and Biosemiosis in Biological Information: New Perspectives*. World Scientific. 2013. p. 402.

¹¹⁹ Carl Sagan, “Life” in *Encyclopaedia Britannica* 22, 1997, pp. 964-981.

In other words, the genome is the construction code and the phenome is the visible end product.

If we imagine a small automobile as an analogy, all of the information needed to make every single component part and fabricate all materials (steel, rubber, plastic, glass, paint), as well as how to assemble, repair and maintain everything would be its “genome”. The automobile with all its features is the “phenome”. However, this is overly simplistic and even analogising with a jet fighter or a naval warfare ship would not be adequate. Further, jet fighters and naval warfare ships do not replicate or reproduce themselves. The sum of all human technology produced to date does not match the complexity of the genome.¹²⁰

A genome is like a library of books. Letters (nucleotides)—in a digital information system of base 4—make up words (DNA sequences) which make chapters (genes) which make up volumes (chromosomes) which make up the library (genome).¹²¹ However, unlike a library of books, the information in the genome is not just linear. The information in the genome has several dimensions and layers subject to data compression. It is also self-regulating and consists of genes that regulate other genes that regulate yet other genes. Some genes can actually change sections of the instruction manual. Further, linear DNA can fold into two and three-dimensional structures that encode even higher levels of information that is decoded through translation machinery. There is multi-level encryption, codes within codes. To date, at least 20 different information codes have been discovered in addition to the base 4 DNA code.¹²² The genome is dynamic, self-regulating, multi-dimensional, algorithmic, programmatic and prescriptive. It codes

¹²⁰ As advances are made in genetics and cell biology, it is becoming clear that the DNA-Gene-Cell system is much, much more complicated than previously thought.

¹²¹ The human genome as around 3.2 billion base pairs.

¹²² By way of example, there are protein address codes, acetylation codes, RNA codes, metabolic codes, cytoskeleton codes, histone codes and alternative splicing codes.

for the performance of nutrition, repair, waste disposal, communication and reproduction.

The DNA information storing medium—a digital database—is much more complex than any man-made system by many orders of magnitude and it is still not fully understood. Microsoft founder Bill Gates writes: “Human DNA is like a computer program but far, far more advanced than any software we’ve ever created.”¹²³

“Nature’s devised¹²⁴ a stunningly elegant solution to storing information—a super-dense, knot-free structure,’ says senior author Eric Lander, director of the Broad Institute, who is also professor of biology at MIT and professor of systems biology at Harvard Medical School” and “...the information density in the nucleus is trillions of times higher than on a computer chip”¹²⁵

“Scientists have developed a digital storage solution capable of holding 700 terabytes of files—all contained within a tiny thread of artificial DNA. The technology, which was developed by scientists from the University of Washington, can store data in a small thread of DNA that is almost invisible to the naked eye... In theory, companies could store digital data that would currently take up warehouses of space, all in a space the size of a sugar cube.”¹²⁶

Research comparing between human genome and computer systems demonstrates that the DNA is the **hard drive**, RNA is **RAM**, polymerases and ribosomes are **processors**, the nucleus is the **motherboard**, the nucleolus is the **CPU** and phenotypes are the **output**.¹²⁷

¹²³ Bill Gates. *The Road Ahead*. New York: Viking. 1995. p. 228.

¹²⁴ Note the ascription of stunningly elegant design to nature.

¹²⁵ *A Look Inside: Scientists have deciphered 3-D structure of the human genome*. Harvard Gazette, October 8, 2009. According to calculations, given the cylindrical volume of DNA, the statistical information density of a small pinhead of DNA allows storage equivalent to 2 million lots of 2 terabyte hard drives.

¹²⁶ Refer to designtrend.com and natureworldnews.com.

¹²⁷ Josiah Seaman. *DNA.EXE: A Sequence Comparison between the Human Genome and Computer Code in Biological Information: New Perspectives*. World Scientific. 2013. pp. 397-398.

When describing DNA staunch atheists like Richard Dawkins are unable to escape language that belies their beliefs (emphasis added): “Biology is the study of complex things that appear to have been designed for a purpose. Physics books may be complicated, but ... the objects and phenomena that a physics book describes are simpler than a single cell in the body of its author. And the author consists of trillions of those cells, many of them different from each other, *organized with intricate architecture and precision-engineering into a working machine capable of writing a book.*”¹²⁸

Intricate architectural organizing and precision-engineering are actions performed on the basis of attributes such as knowledge, will, intent and purposefulness possessed by entities. This is an illustration of what we have mentioned in that atheists simply take the attributes of knowledge, will, power and wisdom that belong to a creating entity and confer them upon nature whilst using cryptic words and loaded terms that seamlessly merge these attributes with chance and necessity, turning everything into a mere illusion of design. These terms include *selection, self-assembly, self-organization, emergence* and so on.

To illustrate, the word *select* means “to choose in preference to another”. It is a conscious activity involving intent. It is *choice with intent*. In the term *natural selection*, choice with intent is being conferred upon nature. However, at the same time, it is claimed that natural selection is a totally blind, random, undirected process. So this is what we mean when we say that in their sleight of hand, atheists confer the attributes of a knowing, willing, purposeful agent upon matter (nature) through the use of cryptic words, doublethink and doublespeak. Subsequently, the inescapable language they use, “*precision-engineering, organized intricate architecture*” proves them to be liars and deceivers in their claims. It is wilful rejection of the truth and of what is obvious in innate disposition and reason.

Peter Corning, a highly credentialed American biologist, evolutionist and complex systems scientist writes: “All the equations

¹²⁸ *The Blind Watchmaker*. New York:Norton 1987. pp. 1-3.

of physics taken together cannot describe living systems, much less explain them. Indeed, the laws of physics do not even contain any hints regarding cybernetic processes or feedback control. Thus, the term dissipative structures¹²⁹ does not adequately describe the informed, purposive organization of living systems. It is comparable to characterizing jet engines—which are painstakingly designed and manufactured with extremely precise dimensional properties and tolerances—as dissipative structures. They are not self-designed, nor are their dissipative properties among their most salient features.”¹³⁰

Atheist philosopher, **Thomas Nagel**, one of a growing number of dissenters from Darwinist Materialism states: “The more details we learn about the chemical basis of life and the intricacy of the genetic

¹²⁹ This term refers to an attempt to provide an explanation for biological order from a thermodynamic perspective. Dissipation means loss of energy. The essence of the claim is that “creative events” can arise as a system moves from being far away from equilibrium to equilibrium. It is another imaginative, creative way of trying to explain the emergence of biological organisation. Just a complicated, smoke and mirrors way of saying that nature is the creator. To make the point once again for emphasis, the scam is that atheist scientists simply take the attributes of knowledge, will, power and wisdom that belong to a creating entity and confer them upon nature whilst using cryptic words and loaded terms that merge these attributes into chance and necessity. Corning is refuting the far-fetched theories of other evolutionists who are trying to provide a route for the emergence of living systems through physical laws.

¹³⁰ Peter Corning. *Holistic Darwinism*. Chicago:University of Chicago Press. 2005. p. 330. Note that after having realised the immense complexity, organisation and purposiveness of biological systems, evolutionists are trying to develop newer, broader theories, after realising that neo-Darwinian “modern synthesis” as an all explanatory mechanism is false. In doing so, they simply continue—with their arrogance and pride—to flee from the obvious. All they will be doing is developing an alternative story of the way in which “chance (random events)” and “necessity (physical law)” produce life.

code, the more unbelievable the standard historical account becomes.”¹³¹

Chance (random events), **necessity** (physical law) and “**natural selection**” are not sufficient to create prescriptive information and self-replicating computational machine-networks that process such information. Information requires a knower and *intricate architecture* with *precision-engineering* requires an architect and an engineer.¹³² “Biological information is not a substance... biological information is not identical to genes or to DNA (any more than the words on this page are identical to the printers ink visible to the eye of the reader). Information, whether biological or cultural, is not a part of the world of substance.”¹³³

¹³¹ Refer to Thomas Nagel’s interesting book: *Mind and Cosmos: Why the Materialist Neo-Darwinian Conception of Nature is Almost Certainly False*, Oxford: Oxford University Press, 2012.

¹³² “Peer-reviewed life-origin literature presupposes that, given enough time, genetic instructions arose via natural events. Thus far, no paper has provided a plausible mechanism for natural-process algorithm-writing... Cause-and-effect physicality has no ability to anticipate or devise a conceptual system that employs symbolic representationalism. Both the semantics and syntax of codonic language must translate into appropriate semantics and syntax of protein language. That symbolization must then translate into the “language” of three-dimensional conformation via minimum-freeenergy folding. No combination of the four known forces of physics can account for such conceptual relationships. Symbolism and encryption/decryption are employed. Codons represent functional meaning only when the individual amino acids they prescribe are linked together in a certain order using a different language. Yet the individual amino acids do not directly react physicochemically with each triplet codon. Even after a linear digital sequence is created in a new language, “meaning” is realized at the destination only upon folding and lock-and-key binding.” J.T. Trevors, D.L. Abel. *Chance and necessity do not explain the origin of life*. *Cell Biology International* 28 (2004) 729-739.

¹³³ Hoffmeyer, J. & Emmeche, C. *Code-Duality and the Semiotics of Nature*. *Journal of Biosemiotics* (1), 2005, pp. 37-64.

Meaning, that the DNA, as matter, is not information, but is a medium for the encoding of information which has to have a **source**.¹³⁴

Today, a cell “is viewed as a complete computational machine in terms that are akin to a multi-core computer cluster, where there is a centralized memory and instruction set, yet computational tasks are distributed among distinct processing elements.”¹³⁵

“The genetic system is a pre-existing operating system of unknown origin that supports the storage and execution of a wide variety of specific genetic programs (the genome application), each program being stored in DNA.”¹³⁶

In their paper, “*DNA as a Real Time, Database Operating System*” submitted at the Proceedings of the World Multiconference on Systemics, Cybernetics, and Informatics in 2001 **Bozinovski et. al.** write: “From the computer science viewpoint, we are looking for the best metaphor that will describe the DNA... previously we proposed that the DNA can be viewed as a cell master database. That seems to be currently an acceptable metaphor for the DNA. Now we are considering a broader view toward DNA, that it is actually a cell Operating System which contains and takes care of a huge database, but also governs all the complex control processes.”¹³⁷ The same researchers state: “... a kind of real time, database operating system

¹³⁴ Atheists like Richard Dawkins know this well, which is why, when cornered and pressed, make the confession that they admit to the possibility that an advanced intelligence from another part of the universe—which also arose through Darwinian evolution—planted the seeds of life on this earth.

¹³⁵ Refer to D’Onofrio, D & Gary, A. *A Comparative Approach for the Investigation of Biological Information Processing: An Examination of the Structure and Function of Computer Hard Drives and DNA*. Theoretical Biology and Medical Modelling. 2010. 7:3.

¹³⁶ Donald E. Johnson. *Programming of Life*. Big Mac Publishers. 2010. p. 48.

¹³⁷ Bozinovski, S., Jovancevski, G., Bozinovska, N. *DNA as a Real Time, Database Operating System* in Proceedings of the World Multiconference on Systemics, Cybernetics, and Informatics, 2001, Volume XV: N. Callaos, W.Badawy, S. Bozinovski (Eds.) Industrial Systems, pp. 65-70.

that manages the activities over cell database and real-time activities carried by the cell processors. This opened a new viewpoint, not used before in cell research, the systems software metaphor. We believe that this metaphor offers some candidate explanations for relevant and non-answered questions in molecular biology, examples being what are exons, what are cell data files, what are the executable files, and what are chromosomes, among others.”

Evolutionist **Douglas Hofstadter** writes: “A natural and fundamental question to ask on learning of these incredibly interlocking pieces of software and hardware is: ‘How did they ever get started in the first place?’ It is truly a baffling thing. One has to imagine some sort of bootstrap process occurring, somewhat like that which is used in the development of new computer language—but a bootstrap from simple molecules to entire cells is almost beyond one’s power to imagine. There are various theories on the origin of life. They all run aground on this most central of all central questions: ‘How did the Genetic Code, along with the mechanisms for its translation (ribosomes and RNA molecules) originate?’ For the moment, we will have to content ourselves with a sense of wonder and awe, rather than with an answer.”¹³⁸

Evolutionary biologist **Eugene Koonin** writes: “In our opinion, despite extensive and, in many cases, elaborate attempts to model code optimization, ingenious theorizing along the lines of the coevolution theory,¹³⁹ and considerable experimentation, very little definitive progress has been made... Summarizing the state of the art in the study of the code evolution, we cannot escape considerable

¹³⁸ Hofstadter, Douglas R. (1980), *Godel, Escher, Bach: An Eternal Golden Braid*. New York: Vintage Books. p. 548.

¹³⁹ *Coevolution or complimentary coevolution* is a cryptic term used by religious fundamentalist atheists to conceal their far-fetched religious beliefs in wondrous miracles that somehow biological processes, pathways or organs that have multiple elements or requirements evolved because there was “complimentary coevolution” taking place simultaneously such that the various individual elements or requirements of these multi-faceted processes appeared coincidentally. Koonin is honest enough to describe this as *ingenious theorizing*. It is ingenious theorizing to justify belief in miracles.

skepticism. It seems that the two-pronged fundamental question: ‘why is the genetic code the way it is and how did it come to be?’, that was asked over 50 years ago, at the dawn of molecular biology, might remain pertinent even in another 50 years. Our consolation is that we cannot think of a more fundamental problem in biology.”¹⁴⁰

The reason why this is and will remain a fundamental problem is because naturalists, atheists and materialists are too arrogant to acknowledge what is obvious in innate human disposition, basic reason and practical experience: That knowledge, will, power and wisdom are behind the emergence of cybernetic systems that govern biological life just like knowledge, will and power are behind the cybernetic systems that govern and control the services of Google, Facebook and Twitter.

Allāh (عَزَّوَجَلَّ) said:

أَوَلَمْ يَرَ الْإِنْسَانُ أَنَّا خَلَقْنَاهُ مِنْ نُطْفَةٍ فَإِذَا هُوَ خَصِيمٌ مُبِينٌ. وَضَرَبَ لَنَا مَثَلًا
وَنَسِيَ خَلْقَهُ قَالَ مَنْ يُحْيِي الْعِظَامَ وَهِيَ رَمِيمٌ. قُلْ يُحْيِيهَا الَّذِي أَنشَأَهَا أَوَّلَ مَرَّةٍ وَهُوَ
بِكُلِّ خَلْقٍ عَلِيمٌ

“Does man not consider that We created him from a mere sperm-drop¹⁴¹, then behold, he becomes a clear adversary? And he puts forth for us a parable and forgets his own creation. He says: ‘Who will give life to these bones when they have rotted away and become dust?’ Say, ‘He will give them life who produced them the first time; and He is, of all creation, knowing’.” (36:77-79).

Allāh (عَزَّوَجَلَّ) also said:

أَلَا يَعْلَمُ مَنْ خَلَقَ وَهُوَ اللَّطِيفُ الْخَبِيرُ

“Should not He Who has created know? And He is the Subtle, the Acquainted.” (67:14).

Knowledge, information and creation are binding.

¹⁴⁰ Koonin EV, Novozhilov AS. *Origin and evolution of the genetic code: the universal enigma*. Iubmb Life. 2009;61(2):99-111.

¹⁴¹ A sperm-drop contains millions of individual sperm cells that contain information for the creation of a being.