

Circuits in the Brain

If a million cortical nerve cells were connected one with another in groups of only two neurons each in all possible combinations, the number of different patterns of interneuronic connection thus provided would be expressed by 102,783,000. This, of course, is not the actual structure, as we shall see; but the illustration may serve to impress upon us the inconceivable complexity of the interconnections of the ninety-two hundred million (9,200,000,000) nerve cells known to exist in [ONLY] the cerebral cortex." [Referring only to cells in the cortex, not the number of different connections] (C. Judson Herrick, Prof. of Neurology, University of Chicago, Brains of Rats and Man: A survey of the Origin and Biological Significance of the Cerebral Cortex, New York: Hafner Publishing Co. 1963, p.5)

The brain of a human contains a network of organized and interconnected nerve cells that is so vast, it cannot even conceive of the number. This fully organized network consists of cells communicates with other cells in order to create thought, love, emotions, touch, regulate an incomprehensibly complex body, perceive through senses and perform uncounted other functions.

Each of these nerve cells is electrical. Each has a particular purpose and each has been microscopically placed into its own particular position in this vast network. And each one is electrically connected to all of the other cells.

The regulation of these connections is so precise that the cells contain timing devices to cause electrical impulses to reach their destination at exactly the right moment.

The number of these organized electrical is much larger than the number of individual neurons because each neuron may have thousands of connections.

"The number of connections in the human brain is approximately 1,000,000,000,000,000. Imagine an immense forest that stretches over half the United States, a single forest that covers one million square miles. Each square mile contains 10,000 trees and each tree contains 100,000 leaves. Imagine the vast number of trees in such a forest. The number of organized electrical connections in your brain is approximately equal to the number of leaves on those trees."

Denton, Michael, *Evolution: A Theory in Crisis*

(Adler & Adler, 1985), p 330. Michael Denton gained a medical degree from Bristol University in 1969 and a PhD from King's College, London University in 1974. He was senior research fellow in the Biochemistry Department at the University of Otago, Dunedin, New Zealand from 1990 – 2005. He later was a scientific researcher in the field of genetic eye diseases. He has spoken worldwide on genetics, evolution and the anthropic argument for design. Denton's current interests include defending the "anti Darwinian evolutionary position" and the design hypothesis formulated in his book *Nature's Destiny*. Denton is an agnostic. Quoted from http://en.wikipedia.org/wiki/Michael_Denton.

The amount of *molecular sized* wiring that is necessary for these connections is approximately 100,000 kilometers (62,137 miles) or slightly more than two circumferences of the earth:

"In the human brain, for example, the total length of wiring is about 10^8 meters and it has to be packed into a volume of about 1.5 liters.

. . .

"Using the criterion of joules per operation, the brain is about *7 or 8 orders of magnitude* more power efficient than the best of the silicon chips. A direct consequence of their energy efficiency is that brains can perform many more operations per second than even the newest supercomputers. The fastest digital computers are capable of around 10^9 operations per second; the brain of the common housefly, for example, performs about 10^{11} operations per second when merely resting."

Churchland, Patricia S. and Sejnowski, Terrence J., *The Computational Brain* (MIT Press, 1992) p. 9.

Each of these connections works in cooperation with the other 1,000,000,000,000,000 connections. Not one of these connections acts on its

own; each one acts in concert with the others; they are *all organized*.

To understand the size of this vast network of electrical connections, one must first comprehend the size of the number 1,000,000,000,000,000.

Imagine that all of the leaves in the forest are connected to each other by wires connected to each leaf. That is the brain of a human. What is the rate of evolution necessary to evolve such a brain?

There are 1,051,200,000,000,000 minutes in 2 billion years and there are 1,000,000,000,000,000 connections in the brain.. In order to evolve that many connections, evolution must produce by sheer accident approximately one organized, perfected, in place and fully functional connections *every minute* for 2 billion years*, which is the amount of time that evolutionary science claims for the existence of all life. Since all of the connections are interrelated, each new neuron must somehow anticipate the arrival of new neurons with regard to timing, function and essentially all that it does, because they all work together as one whole. Evolution is grossly inadequate to account for this complexity, because evolution accounts for intelligence by alleging small incremental changes in intellect over the course of generations, not in *hours or minutes*.

This calculation assumes that each one of the new neurons and new connections is perfected, organized and in place *ab initio*. If one applies the real theory of evolution and assumes that these developing neurons are initially imperfect and improved by fortunate accidents over time, then the rate of change and rate of evolution must increase exponentially in order to account for what is observed. Under those circumstances, evolution must now require new imperfect neurons and

connections at hundreds or perhaps thousands per hour, or millions per generation.

And even if such a rate of evolving changes could be shown (and it can't), one is still left with the impossible hurdle of showing how the neurons of a brain accidentally created the non-physical code necessary to communicate between themselves.

Purkinje cells located in the cerebellum each receive 100,000 separate and distinct inputs from other cells, each receiving 100,000 separate electrical codes.

See S. Raymon y Cajal, *Histologie du Systeme Nerveux de l'Homme et des Vertegres*. Paris: Maloine, 1909-1911; reprinted, Madrid: C.S.I.C., 1972.

There are billions of Purkinje cells in a brain. Just imagine what a task it would be to organize and connect billions of Purkinje cells together for the purpose of creating organized *thought*.

Recent discoveries have showed that one of the sub-networks in the brain is an extremely accurate time-keeping mechanism, or, if you will, a clock.

"An MIT team led by Institute Professor Ann Graybiel has found groups of neurons in the primate brain that code time with extreme precision. 'All you do is time stamp everything, and then recalling events is easy: you go back and look through your time stamps until you see which ones are correlated with the event,' she says." An MIT team led by Institute Professor Ann Graybiel has found groups of neurons in the primate brain that code time with extreme precision. "All you do is time stamp everything, and then recalling events is easy: you go back and look through your time stamps until you see which ones are correlated with the event," she says.

"That kind of precise timing control is critical for everyday tasks such as driving a car or playing the piano, as well as keeping track of past events. The discovery, reported in this week's issue of the Proceedings of the National Academy of Sciences, could lead to new treatments for diseases ..."

Quoted from *Science Daily* see
<http://www.sciencedaily.com/releases/2009/10/091019162921.htm>

How could accidental mutations have possibly produced a precisely accurate clock that time-stamps memory molecules? Perhaps when men were monkeys, the monkeys who could keep time were better able to survive. And the ones that could keep better time could survive much better. So the time-keepers just got better and better through random beneficial mutations until all of the time-keeping mechanism, the codes, the logic and the algorithms that are necessary to keep precise time were finally assembled by Mother Nature and the monkeys ended up with a precise timing control that is critical for driving a car or playing the piano.

Evolutionary science has no idea how brains work or how evolution can account for them. Yet, it explains their existence away by defaulting to millions of unobserved fortunate accidental mutations and survival of the fittest. That is no explanation at all. The only logical explanation is that the brain was designed by a Designer. But that explanation is ignored by evolutionists because evolution cannot even posit the existence of a Creator.

"The theory still remains that accidental changes over millions of years has somehow produced a larger brain to survive and be fit. No one can explain exactly how this occurred."

Thompson, Richard F., *Localization of the*

Essential Memory Trace Circuit for a Learned Response, Brain Structure, Learning, and Memory, Ed. Davis, Joel L., Newburgh, Robert W. and Wegman, Edward J. (Westview Press; Frederick A. Pareger, 1988), p. 69.

By refusing to even consider the existence of a Creator, evolution limits itself by its own *ab initio* theological conclusion.

"[Evolution is] a theory universally accepted not because it can be proved by logically coherent evidence to be true but because the only alternative, special creation, is clearly incredible." D.M.S. Watson, "Adaptation," *Nature*, Vol. 123 (1929), p. 233.

Evolutionist Richard Dawkins echoes his predecessor:

"Even if there were no actual evidence in favor of the Darwinian theory ... we would still be justified in preferring it over rival theories [creationism]" Richard Dawkins, *The Blind Watchmaker* (NY Norton, 1986), 287, emphasis in the original.

So, evolution simply does not consider rival theories (such as special creation) because evolutionists just don't believe in God. That decision not to believe in God is a theological decision, not a scientific one, and that decision is the bedrock of evolution.

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