

Topic: Information theory and Physics do not admit evolution as science

Feb 2000

by Roger X. Lenard

This is Essay5a in a series of debate topics between CSFNM and NMSR.

Perhaps the best indictment of evolution's inefficacy in the biogenesis process comes from Fred Hoyle: "I don't know how long it is going to be before astronomers generally recognize that the combinatorial arrangement of not even one of the thousands of biopolymers on which life depends could have been arrived at by natural processes here on Earth. Astronomers... have little difficulty at understanding this because they will have been assured by biologists that it is not so, the biologists... by others that it is not so. The "others" are a group of persons who believe quite openly in mathematical miracles. They advocate the belief that tucked away in nature, outside of normal physics, there is a law which performs miracles"⁽¹⁾.

We will show that information theory requires just such mathematical miracles if evolution is to work as stated.

For evolution's claims to be true, changes must occur over the average of the population's genome through selections (mutations) that are random and spontaneous. The salient question is whether or not random spontaneous mutations can add information to the genome that will propagate through successive generations. This requirement simply cannot be sustained with current knowledge of genetics and information science. When NDT adherents state that natural selection operates, they merely mean a genome individual exhibits greater reproductive success, through what we shall call selection value (SV). SV operates on the population's genome, although heritable traits are transferred on an individual basis, incorporated into a population only when the new trait is ubiquitous in the population. To get to the point that NDT adherents presuppose, many steps are necessary.

First, information must be added to the genome through random, spontaneous processes, (e.g. copying errors) as required by NDT. Second, this information must be added to significantly change the genotype. Third, changes in the genotype must result in a positive significant mutation, Fourth, significant positive mutations must result in a dominant trait SV in order to propagate throughout the population. Finally, the genotypic SV must not be randomly selected out and fail to influence the entire genome.

The extreme rarity of copying errors is a severe problem for NDT. For example, in bacteria, the mutation rate per nucleotide is 0.1 -10 per billion,^{2,2a,2b}. In more complex life the rate is smaller, 0.001 - 1 per billion³. Using assumptions from competent authorities that the rate is ~ 1 part in 10^{10} , these are the chances of a mutation occurring in a particular nucleotide in a particular replication. The rates are

so low because the cell has an error correcting code to prevent such errors. (An interesting study for evolutionists is why the error correcting code exists if mutations truly produce long-term advantages).

To be a part of an evolutionary step, we must have a mutation with a positive selective value and it must also add information. The above requirements eliminate Richard Dawkins⁽⁴⁾ fatuous statement that the "change can be as small as you please and still qualify". The minimum change in a genome is a change in one nucleotide, or one bit of information. This minimum step is probably far too small to actually result in a credible change, but to allow evolution some chance, we state that the minimum informational change is also a sufficient change satisfying the two requirements stated. No point mutation has been observed to satisfy these requirements, however⁵.

Stebbins⁶, has estimated that the evolution of a new species will require at least 500 such steps. Inferring NDT data from horse evolution during the past (supposedly) 65 million years, one small evolutionary step could be expected in approximately 50 million births⁷. Combining the error rate and the proposed number of births, we find that in any evolutionary step, the chance of a single change occurring is 1/200. Since there are four nucleotide bases, there is an equal probability of substitution, thus the chance of a specific mutation occurring is 1/600. This mutation must be positive and add information; it must be a dominant trait so that it will be expressed in the phenotype if it's on only one member of the allele pairs.

Fisher's analysis shows that if the SV is 1% the probability of survival in a single generation is 2%⁸. Simpson estimated the SV at 0.1% or 1/500 successful selections (births)⁹. The probability that a trait will survive one generation using evolutionist probabilities is 1/300,000. To accumulate the necessary 500 steps results in a probability of $(3 \times 10^{-5})^{500}$, or about 2.7×10^{-2739} . This, of course renders evolution entirely impossible from an information theory perspective.

Evolutionists have argued that the information already exists in the genome, it is merely turned on at some point. This, too, can be shown to be impossible because the available variation in DNA itself is thousands of orders of magnitude larger than a single (particularly simple) chromosomal structure can possibly accommodate.

In truth, there is no known physical process that allows the accumulation of information through random processes to enable evolution as the evolutionists themselves require. Earlier, NMSR essays indicate that they acknowledge that some force (like God) may have been necessary to create the initial life, but that evolution is sufficient to maintain speciation and improvements over billions of years. Evolution can do neither, it is incapable of creating life and it is incapable of manifesting new forms of life. "There is no known natural law through which matter can give rise to information, neither is any physical process or material phenomenon known that can do this"¹⁰. Indeed, the six theorems of information theory state that it is impossible to¹¹:

1. Setup, store or transmit information without a code
2. Have codes apart from a free and deliberate convention (e.g. DNA)
3. Have information exist without having a mental source

4. Establish information without voluntary free will
5. Generate information without all five hierarchical levels of statistics, syntax, semantics, pragmatics and apobetics
6. Originate information by statistical processes

Only Fred Hoyle's mathematical miracles in action can admit evolution.

References

1. Hoyle, F. 1981. "The Big Bang Astronomy," New Scientist 19 Nov 1981. Pp. 521-527.
2. Fersht, A.R. 1981. "DNA replication fidelity," Proceedings of the Royal Society (London), vol B212, pp. 351-379.
- 2a Drake, J.W. 1969. "Comparative rates of spontaneous mutation," Nature, Vol. 221, p.1132.
- 2b Drake, J.W. 1991. "Spontaneous mutation," Annual Review of Genetics, vol. 25, pp.125-146.
3. Grosse, F., Krauss, G., Knill-Jones, W., and Fersht, A.R. 1984 "Replication of fX174 DNA by calf thymus DNA polymerase α : Measurement of error rates at the amber-16 codon," Advances in Experimental Medicine and Biology, vol. 179, Proteins Involved in DNA Replication, pp 535-540.
4. Dawkins, R. 1986. The Blind Watchmaker, New York & London: W.W. Norton
5. Spetner, L. 1997, 1998. Not By Chance! Shattering the Modern Theory of Evolution. Judaica Press: New York
6. Stebbins, G.L. 1966 Processes of Organic Evolution, Englewood Cliffs: Prentice-Hall
7. Op. Cit. Pg 97.
8. Fisher, R.A. 1958. The Genetic Theory of Natural Selection, Oxford, 2d Ed. New York: Dover.
9. Simpson, G.G., 1953 The Major Features of Evolution, New York: Columbia University Press, p 119.
10. Gitt, W. 1997. In the Beginning was Information, Christliche Literatur-Verbreitung e.V. Bielfeld.
11. Ibid.