

## What About Scientific Integrity?

Don Johnson

Ph.D.s: Chemistry-- MSU, Computer & Information Sciences--UMN

### Overview of Presentation

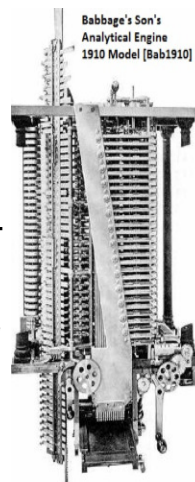
Review of reality of computers and programs in life  
Is Darwinism scientific? What's the evidence?  
What about mass/energy origin & fine-tuning scenarios?  
What about origin of life scenarios?  
Is intelligent design religion or science?  
What's with global warming?  
What about Common Core?  
Are scientific speculations appropriate?

## Life as Computer System? Mechanical computer designed 1837

**"The machine code of the genes is uncannily computer-like. Apart from differences in jargon, the pages of a molecular biology journal might be interchanged with those of a computer engineering journal."** Dawkins *River Out of Eden*, p17

**"Human DNA is like a computer program but far, far more advanced than any software we've ever created."** Bill Gates, *The Road Ahead*, p.228.

**"Life is basically the result of an information process, a software process. Our genetic code is our software."** Craig Venter, 2010 Guardian interview.



## Evidence-Based Science

- Obama's speech to NAS on 4/29/13: "what is so necessary for us to continue our scientific advance and ... a fidelity to facts and truth, and a willingness to follow where the evidence leads ... we've got to make sure that we are supporting the idea that they're not subject to politics, that they're not skewed by an agenda, that, as I said before, we make sure that we go where the evidence leads us."
- Science as we don't know it is NOT science, e.g. --
  - >speculations for origin of mass/energy, life, species
  - >speculation of unobservable multi-universes or strings

## What is A Computer?

Necessary and sufficient requirements for a functional computer are:

- Input (or embedded data)
- Memory and internal data transfer
- An instantiated algorithm (program)
- Processing capability
- Capability to produce meaningful output

Electronic and biological computers have multiple components

- DNA/RNA can store program instructions to be executed
- Proteins can be processing and communication components
- Proteins and cellular controls are examples of output
- **In each cell, there are multiple OSs, multiple programming languages, encoding/decoding hardware and software, specialized communications systems, error detection/correction mechanisms, specialized input/output channels for cell component control and feedback, and variety of special-ized "devices" to accomplish the tasks of life.**

Science Needs to Provide Plausible Mechanisms to Explain **How did nature:**  
 write the prescriptive programs needed to organize life's metabolism?  
 formally solve life's other complex problems and write the programs?  
 develop the operating systems and programming languages?  
 develop the arbitrary protocols for communication and coordination  
 among the thousands (or millions) of computers in each cell?  
 develop alternative generation of prescriptive messages using  
 techniques such as overlapping genes, messages within messages,  
 multi-level encryption, and consolidation of dispersed messages?  
 defy computer science principles by avoiding software engineering's  
 top-down approach required for complex programming systems?  
 produce complex functional programs without planning by randomly  
 modifying existing algorithms?  
 simultaneously modify multiple such programs to result in the  
 production of irreducibly complex structures?  
 (from "Programming of Life" -- www.programmingoflife.info)

Interesting Observations

- "Biological functionality is turning out to be much more highly specified and precise than we had originally envisioned... biology is really a science of engineering, where the constraints for bio-functionality are extreme – to the point that nearly every molecular interaction is remarkably precise and tightly controlled. Molecular biology is much like a jigsaw puzzle where each piece must be specifically shaped to fit with the other pieces around it." [w.iscid.org/papers/Bracht\\_GoodenoughResponse\\_021203.pdf](http://w.iscid.org/papers/Bracht_GoodenoughResponse_021203.pdf)
- Philip Skell, chemist and member of the US-NAS, writes: "Darwinian evolution – whatever its other virtues – does not provide a fruitful heuristic in experimental biology." "Why Do We Invoke Darwin? Evolutionary Theory Contributes Little to Experimental Biology," *The Scientist*, 8/29/05

Are Speculative Scenarios Science?

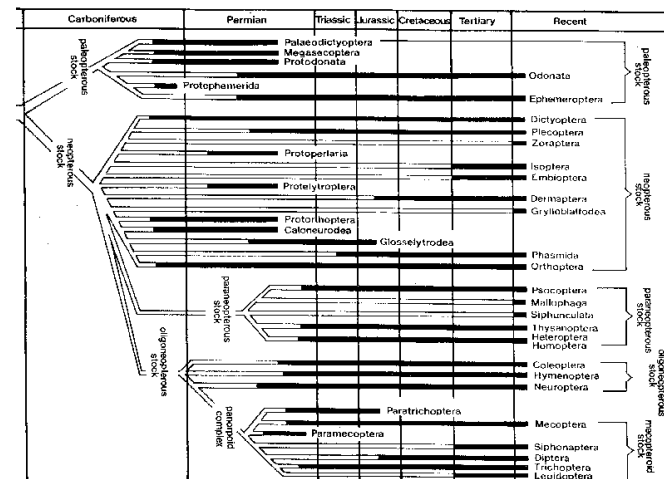
Nearly everything learned (ACS "From Molecules to Man") as chemical evolution has been debunked by science.

The PBS Nova program "What Darwin Never Knew is a good example of "non-explanation." Except for a minor gene mutation for mouse color modification (minute 39), all evolution evidence presented involved turning **existing genes** on or off via switches (no NEW information).

For the "perfect" **transitional form** (that was looked for and "proves" evolution of tetrapods from fish), Tiktaalik, "The genes needed to make legs and arms were **already** being carried around by prehistoric fish." (min 78) But, a tetrapod 10 million years older was found! *Nature* (463), 2010, p43-48

From the information presented, one could conclude that the first life was created with all genes; all that was needed was control of gene expression (a ridiculous hypothesis).

Actual (black) vs. Presumed Connections ('77 Ency. Brit.)



### Mass/Energy Origin Is Unknown to Science

- Oscillating Universe violates: 2<sup>nd</sup> law & expansion
- Quantum fluctuation of undetectable vacuum energy
- >10<sup>500</sup> Colliding unseeable “Universes” with 10+ dimensioned “Strings” collapse to our 3 space + time
- “Infinite” energy being(s) convert energy to mass or otherwise supernaturally create universe's 3 X 10<sup>55</sup> g or 3 X 10<sup>68</sup> joules of mass/ energy
- ALL 4 have unprovable/unverifiable/unfalsifiable assumptions not bound by known science
- All are philosophical or theological beliefs
- It is no more scientific to believe a natural scenario than to believe a supernatural one since known science cannot account for the origin.
- Most violate conservation of mass/energy and/or increasing entropy

### Universe is “fine-tuned” to allow for life

- “An accuracy of one part in  $10^{10^{123}}$ ...the precision needed to set the universe on its course.” Penrose in *The Emperor's New Mind*, p.344
- “There is for me powerful evidence that there is something going on behind it all.... It seems as though somebody has fine-tuned nature's numbers to make the Universe.... The impression of design is overwhelming.” Paul Davies, *The Cosmic Blueprint: New Discoveries in Nature's Creative Ability To Order the Universe*, 1988, p203
- “A common sense interpretation of the facts suggests that a superintellect has monkeyed with the physics” [F. Hoyle, “The Universe: Past and Present Reflections,” *Engineering and Science*, 11/81U, p8-12]
- “If we nudge one of these constants just a few percent in one direction, stars burn out within a million years of their formation, and there is no time for evolution. If we nudge it a few percent in the other direction, then no elements heavier than helium form. No carbon, no life. Not even any chemistry. No complexity at all.” David Deutsch, Interviewed on *The Science Show: The Anthropic Universe*, 2/18/06.

### Fine-Tuned Nature of the Universe

- Physical constants for weak and strong nuclear forces, electromagnetic and gravitational forces, ratios of forces and electron/proton masses, and properties of neutrons are all critical, as are the expansion rate, mass, and density of the universe
- Earth's orbit, tilt, rotation, magnetic field, atmosphere, and composition are life-critical
- Concerning the constants of physics: “The remarkable fact is that the values of these numbers seem to have been very finely adjusted to make possible the development of life.” Stephen Hawking, *A Brief History of Time*, 1988

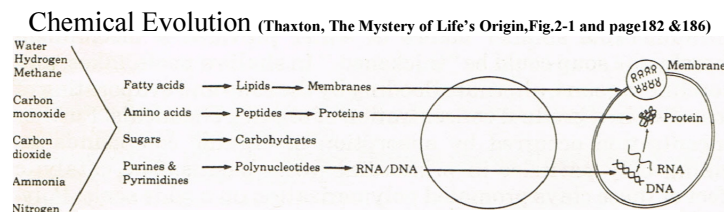
### The Uniqueness of Earth

A list of probabilities that any planet within the Universe will possess the specific features within the appropriate range to support bacterial life for 90 days or less is based on a study of >650 astronomical/astrophysical research papers. The probability for occurrence of all 501 parameters occurring on one planet is  $10^{-311}$ . Long-term simple life and intelligent life have much lower probabilities. [H. Ross, “RTB Design Compendium (2009),” Part 3 [http://www.reasons.org/files/compendium /compendium\\_Part3 \\_ver2 .pdf](http://www.reasons.org/files/compendium /compendium_Part3 _ver2 .pdf)]

## Infinite Universes Problems: “The Grand Design”

Describes how miraculous it is that the laws of physics allow for a Universe that is hospitable for life, in which the Universe has an excess of matter over antimatter and galaxies with stars (& planets) that last billions of years, “explained using “M-theory”

**“Besides the absence of any compelling experimental evidence for M-theory, there is another difficulty — its predictions are far from unique. There are  $10^{500}$  different ways to curl up the extra seven dimensions and hide them, and how they curl up determines the fundamental constants and what we four dimensional creatures see as the laws of physics.”** [M. Turner, “Hawkings: No miracle in the multiverse,” Nature, 10/7/10, p657-658]



**“Chemical evolution is broadly regarded as a highly plausible scenario for imagining how life on earth might have begun. ... what has emerged over the last three decades ... is an alternative scenario which is characterized by destruction, and not the synthesis of life. ... The undirected flow of energy through a primordial atmosphere and ocean is at present a woefully inadequate explanation for the incredible complexity associated with even simple living systems”**

True for Proteins, DNA/Enzymes, RNA (ribozymes), or Metabolism First

## God: The Failed Hypothesis Victor Stenger, 2007

- “A plausible scientific model... need not be proven to be correct, just not proven incorrect.” p17 (plausible does NOT mean not impossible)
- “The hypothesis of a God... is falsified by the absence of data.” p188
- “**Theists** who argue that the universe is fine-tuned to earthly life have the **burden of proving that no other form of life is possible...** in every **conceivable** universe that has different physical parameters.” p154
- There is a “**possibility** that an appreciable number of planets exist with conditions that, while unsuitable for our form of life, can support some kind of life” p144 (in science “possible” = proven non-zero probability)
- “Well-understood **physical and chemical processes... are sufficient to account for the observed interactions between various parts of living organisms.**” p85
- “The equations of cosmology that describe the early universe apply equally for the other side of the time axis” p126
- “The three great conservation laws are not part of any structure. Rather they follow from the very lack of structure” p131

## Origin of Life Observations

- **Could a Protocell Live and Reproduce Without a “Genome”?** Reliable, yet evolvable, replication is fundamental to life **Cybernetically-controlled chemical metabolic networks are needed to admit and process fuel to harness energy for growth, reproduction, manufacturing, etc.** (from Johnson, “What Might Be a Protocell’s Minimal Genome?” in The First Gene, 2012)
- **“The origin of life remains one of the humankind’s last great unanswered questions, as well as one of the most experimentally challenging research areas.”** Miller & Cleaves, “Prebiotic Chemistry on the Primitive Earth,” in Systems Biology VI: Genomics, 2007
- **“The origin of life remains one of the most vexing issues in chemistry, biology, and philosophy,”** Bioinorganic Photochemistry, 2009, p109
- **“The challenge for an undirected origin of such a cybernetic complex interacting computer system is the need to demonstrate that the rules, laws, and theories that govern electronic computing systems and information don’t apply to the even more complex digital information systems that are in living organisms.”** Johnson, Probability’s Nature and Nature’s Probability, 2009/2010, p48.

## Natural Science Probabilities of Life

Law of Probability allows a maximum probability of forming-

- a typical functional protein<sup>a</sup>: 1 part in  $10^{175}$
  - the required enzymes for life<sup>b</sup>: 1 part in  $10^{40,000}$
  - a living, self-replicating cell<sup>c</sup>: 1 in  $10^{340,000,000}$
- <sup>a</sup>Thaxton, Bradley, & Olsen, *The Mystery of Life's Origin*, 1992  
<sup>b</sup>Fred Hoyle, *The Intelligent Universe* pp. 16-17, 1983  
<sup>c</sup>Harold Morowitz, *Energy Flow in Biology*, p. 99

Equivalent to winning each (once is 1 in 41,416,353) CA Superlotto for: <sup>a</sup>23 times, <sup>b</sup>50 years, <sup>c</sup>125 million years

- Life is unfathomably complex: "Functionally effective proteins have a vanishingly small chance of arising spontaneously in a prebiotic environment." Jimenez-Montano, "Applications of Hyper Genetic Code to Bioinformatics", *J. Biol. Sys.* (12) pp5-20, 2004

## Intelligent Design Basics

- ID "holds that certain features of the universe and of living things are best explained by an intelligent cause, not an undirected process such as natural selection. Through the study and analysis of a system's components, a design theorist is able to determine whether various natural structures are the product of chance, natural law, intelligent design, or some combination thereof." (Discovery Institute Website) (Religious implications doesn't make ID a religion)
- Until known science can demonstrate feasible scenarios for the Universe's fine-tuning and informational features of life arising by undirected nature, science must recognize that intelligence is the **only** scientifically feasible source, making ID a certainty based on known science

## Interesting Observations

- "None of the papers published in JME (Journal of Molecular Evolution) over the entire course of its life (1971-) as a journal has ever proposed a detailed model by which a complex biochemical system might have been produced in a gradual, step-by-step Darwinian fashion." Michael Behe., *Darwin's Black Box: the biochemical challenge to evolution*, 1996, p176
- "The unexpected levels of complexity revealed at the molecular level have further strained the concept of the random assembly of a self-replicating system." AW Swee-Eng, "The Origin of Life: A Critique of Current Scientific Models", *CEN Tech. J.* 10-3, pp300-314, 1996
- "It's hard to see how the chemicals on early Earth could have combined to form the complicated nucleotides that make up RNA." John R. Davenport, "Possible Progenitor of DNA Re-Created," *Science Now*, 11/16/00, p1

## Intelligent Design

- ID is NOT connected to any theology
- "God" is not a required belief (but is certainly compatible), e.g.– Hoyle states "the intelligence which assembled the enzymes did not itself contain them...which by no means need be God, however." *Evolution From Space*, p. 139
- Science currently restricted to "undirected natural processes". Consideration of intelligence, design, and purpose are not allowed.
- ID makes better science:  
"Vestigial organs" & "junk DNA" have purpose.  
Complex Functional Information requires intelligence Nearly

## Explanatory Nature of Intelligent Design

“What natural selection lacks, intelligent selection--purposive or goal-directed design--provides. Rational agents can arrange both matter and symbols with distant goals in mind. In using language, the human mind routinely ‘finds’ or generates highly improbable linguistic sequences to convey an intended or preconceived idea...The causal powers that natural selection lacks--almost by definition--are associated with the attributes of consciousness and rationality--with purposive intelligence. Thus, by invoking design to explain the origin of new biological information, contemporary design theorists are not positing an arbitrary explanatory element unmotivated by a consideration of the evidence. Instead, they are positing an entity possessing precisely the attributes and causal powers that the phenomenon in question requires as a condition of its production and explanation.” Stephen Meyer, “The origin of biological information and the higher taxonomic categories” in *Proc Biol Soc Wash* 117(2):213-239, 2004

## Pertinent US Court Rulings

1980 Supreme: implications of material alone do not make a religion even if they “coincide or harmonize with the tenets of some or all religions.”

1961 Supreme: “Among religions in this country which do not teach what would generally be considered a belief in the existence of God are ... Secular Humanism.”

2005 Appellate: “Atheism is religion, and the group... was religious in nature even though it expressly rejects a belief in a supreme being.”

1961 Supreme: “religious beliefs... are based... upon a faith to which all else is subordinate .... Some believe in a purely personal God, ... others... as a way of life”

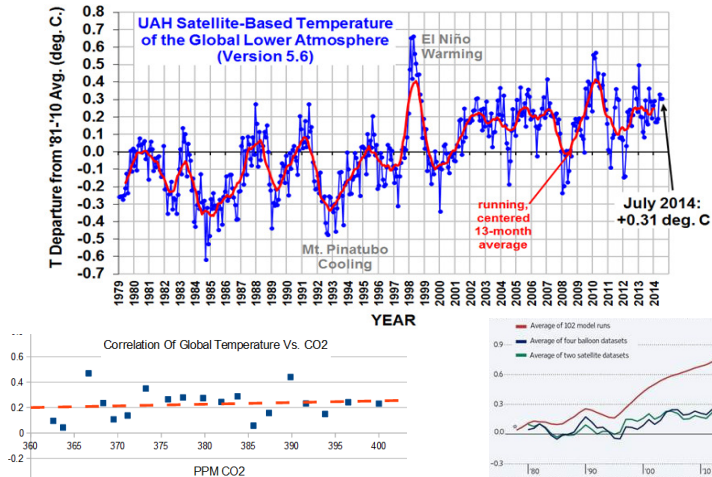
## The Best Explanation of Observations

- “Limiting science to a predetermined set of acceptable explanations naturally begs the question, ‘What if there is no natural explanation?’ What if, in fact, an intelligent agent was responsible for DNA, etc.? Science would forever miss it and would continue to squander intellectual and financial capital on finding naturalistic answers that do not exist. Scientific progress depends heavily upon discovering blind alleys and rejecting failed theories. This is simply the way that science works, and thus, ID theory should be seen as invigorating, not stifling, scientific investigation.” [www.uncommondescent.com/education/open-inquiry-the-new-science-standard/](http://www.uncommondescent.com/education/open-inquiry-the-new-science-standard/)
- Occam's razor: “the explanation of any phenomenon should make as few assumptions as possible, eliminating those that make no difference in the observable predictions of the explanatory hypothesis or theory... entities must not be multiplied beyond necessity... ‘All other things being equal, the simplest solution is the best.’ In other words, when multiple competing theories are equal in other respects, the principle recommends selecting the theory that introduces the fewest assumptions and postulates the fewest entities.”

IPCC-GW criticized by tens of thousands of informed scientists

- Heidelberg Appeal (4000 signatures including 62 Nobel prizewinners), The Oregon Petition (31,000 accredited scientists), The Manhattan Declaration (600 research climatologists), The Petition to the United Nations (100 geoscientists), Statement from the American Physical Society (150 physical scientists), UN Climate Scientists speak out on Global Warming (700, many previously involved with the IPCC), etc. All are critical of the notion of man-made global warming.
- IPCC's charter: "to assess... risk of human-induced climate change"
- Fifty-three authors and five reviewers are all that can be said to *explicitly* support the claim of a significant human influence on climate. The figure of 4000 is a myth". (professor Penny Sackett)

## Global Warming? (flat for 17 years)



## Defeating Creationism in the Courtroom, But Not in the Classroom

- Berkman & Plutzer, 1/28/11 Science. P404-405.
- Only “28% of all biology teachers consistently implement the major recommendations and conclusions of the National Research Council”
  - Recommended fix is for those “who cannot accept evolution as a matter of faith to pursue other careers.”
  - Such statements destroy the credibility of science.
  - Darwinism forces scientists to dogmatically ignore known scientific evidence.
  - Americans aren’t interested in pursuing a field of study that consistently portrays as unassailable truth ideas that are believed to be wrong, causing the US to fall behind in science (see [www.ussci.info](http://www.ussci.info)).

## Common Core Facts & Problems

Common Core takes from parents their primary right regarding the education of their children.

- Common Core Frustrates the Purpose of Education: Goal is Making Students “Career and College Ready”
- CC by its standardized teaching and testing seeks to create a massive machine of education.
- CC Standards require children’s personal information to be provided to a database that can be expected to sell or share the data to unspecified companies
- CC has Devastating Impact on Literary Study and Analytical Thinking
- e.g. -- Common Core Civics Assignment: Revise the Constitution’s Outdated Bill of Rights

## Speculation and Integrity in Science

- Speculation within the scientific community is important when generating or imagining new scientific theories.
- Avoid propagating speculations as something worthy of consideration by non-scientists.
- Science has suffered a reputation decrease because of unsubstantiated speculations.
- The argument “we don’t yet know how this feature can arise by undirected natural processes, but we will someday” is not a scientific statement, but is faith based on “naturalism of the gaps” dogma, which has no more scientific validity than appeal to the “God of the gaps” as explanation for complex systems.