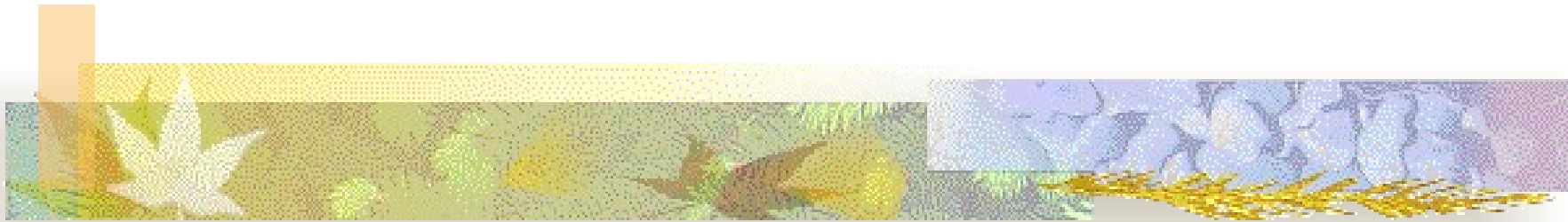


What Does Science Say About Creation?



Dr. Heinz Lycklama

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“If I have seen further than others, it is by standing on the shoulders of giants.” Isaac Newton.



Science and Creation

- What is science?
- Scientific method
- Origins – Evolution or Creation?
- Creation and Evolution models
- Which model best fits the facts?
- Basic predictions of the models
- Looking at the scientific evidence
 - Origin of matter, energy and natural law
 - 1st and 2nd Laws of Thermodynamics



What Does Science Have To Say?

Harrison Matthews, in the “Foreword” to the 1971 edition of “Origin of Species by Natural Selection”, by Charles Darwin states that “Belief in evolution is thus exactly parallel to belief in special creation - both are concepts which believers know to be true but neither, up to the present, has been capable of proof.”

An Objective statement of fact!



Is This Science?

“Since Darwin, every knowing person agrees that man is descended from the apes. ... Today, of course, there is no such thing as the theory of evolution; it is the fact of evolution. The only arguments now are over technical problems, but the basic fact of evolution is so clearly established that no scientist worries about it any more.” - so states **Ernst Mayr**, professor of Biology at Harvard.

A Subjective statement!

Science

■ “Operational” Science

- Postulate theory -> make observations -> prove/falsify theory
- Using the Scientific Method

■ “Origins” Science

- Were you there at the beginning?
- Model of Creation
- Model of Evolution
- Which model fits the observed facts best?
- “Forensic” science



For by Him (Jesus) were all things created, that are in heaven, and that are in earth. Colossians 1:16a

Scientific Methodology

- Make observations
- Develop a hypothesis or theory that explains the observations
- Conduct experiments to test accuracy and predictions made by the theory
- Draw conclusions
- Repeat experiments to verify results and eliminate sources of inaccuracy
- Report results so others can repeat the experiment(s)





Theory Criteria

- To apply scientific methodology, the theory must meet these criteria:
 - Must be falsifiable or verifiable
 - Must make quantifiable predictions
 - Experimental results must be repeatable
 - Must be as simplistic as possible with no unnecessary components (Occam's Razor)
- Adherence to the methodology allows for self-correction and increases confidence in the assumptions made by scientific philosophy



Origins - Evolution or Creation?

- “Science is the search for truth”
- Hypothesis, theory, model, law, or fact?
 - Fact – proven to be true
 - Law – no known exception
 - Theory – testable, falsifiable, based on empirical findings
 - Hypothesis – provisionally explains some fact
 - Model – simplified representation of reality
- Which is Evolution? Creation?
 - A model – let’s see why ...



Models of Origins

- We can neither observe nor repeat “origins”
- Origins “theories” cannot be tested or proven
- We have two models (not theories) of origins
 - Creation and Evolution
- Models can be compared as to their respective capacities for correlating observable data
- Evolutionists regard Evolution as “a proven fact.”
 - They believe that Evolutionism is science and that Creationism is religion
 - Evolutionists are unable to prove evolution
- Thousands of scientists believe in Creation



Creation Model

- Involves a process of special creation in the beginning
- All the basic laws and categories of nature brought into existence by special creative processes which are no longer in operation today
- Distinct kinds exist today as they have existed in the past
- Processes of Creation replaced by processes of conservation



Evolution Model

- Explains origin, development and meaning of all things in terms of natural laws and processes which operate today as they have in the past
- No extraneous processes requiring an external agent (i.e. a Creator) are permitted
- The universe in all respects evolves itself into higher levels of order (particles to people), elements -> complex chemicals -> simple living systems -> complex life -> man



More on Origins Models

- Creation cannot be proved:
 - Not happening now, so far as can be observed
 - The scientific method cannot repeat Creation
 - Cannot ascertain whether Creation took place (except through divine revelation)
- Evolution cannot be proved:
 - Operates too slowly to be measurable, if it is taking place
 - The scientific method cannot be used to measure it
 - Small variations in organisms, observed today, are not relevant (can't be used to distinguish between Creation and Evolution)



Which Model Best Fits The Facts?

- Creation and Evolution are the only two models of origins
- Both models should be considered as equal alternatives and evaluated objectively in terms of their relative abilities to correlate and explain scientific data
- **The model that incorporates the most data and has the smallest number of unresolved issues is the most likely to be true**

Basic Predictions of The Models

<u>Category</u>	<u>Basic Predictions of Evolution Model</u>	<u>Basic Predictions of Creation Model</u>
Galactic universe	Galaxies changing	Galaxies constant
Structure of stars	Stars changing into other types	Stars unchanged
Other heavenly bodies	Building up	Breaking down
Types of rock formations	Different in different "ages"	Similar in all "ages"
Appearance of life	Life evolving from non-life	Life only from life
Array of organisms	Continuum of organisms	Distinct kinds of organisms
Appearance of kinds of life	New kinds appearing	No new kinds appearing

More Predictions of The Models

<u>Category</u>	<u>Basic Predictions of Evolution Model</u>	<u>Basic Predictions of Creation Model</u>
Mutations in organisms	Beneficial	Harmful
Natural selection	Creative process	Conservative process
Fossil record	Innumerable transitions	Systematic gaps
Appearance of man	Ape-human intermediates	No ape-human intermediates
Nature of man	Quantitatively superior to animals	Qualitatively distinct from animals
Origin of civilization	Slow and gradual	Contemporaneous with man



Looking At The Scientific Evidence

- Origin of matter, energy and natural law
- Origin of the solar system
- Teleology – study of evidences of design in nature, e.g. Anthropic Principle
- Classification of biological organisms
- Natural selection and mutations (vestigial organs)



More on the Scientific Evidence

- Origin of man
- Origin of life – probability
- The fossil record
- Geologic ages – Uniformitarianism vs. Catastrophism
- Age of the world (earth/universe)



#1 - Origin of Matter, Energy & Natural Law

- Evolution model predicts:
 - Matter, energy and laws may still be changing
 - May have changed in the past since there is no external agent to bring Evolution to a stop
 - Systems can evolve to higher levels of complexity
- Creation model predicts:
 - Basic laws would not now be changing
 - Fundamental nature of matter and energy would not now be changing
 - Finished in the past, conserved in the present
 - Matter should go from order to disorder



First Cause – Divine or Matter?

- The First Cause of Limitless Space – must be infinite
- The First Cause of Endless Time – must be eternal
- The First Cause of Boundless Energy – must be omnipotent
- The First Cause of Universal Interrelationships – must be omnipresent
- The First Cause of Infinite Complexity – must be omniscient
- The First Cause of Moral Values – must be moral
- The First Cause of Spiritual Values – must be spiritual
- The First Cause of Human Responsibility – must be volitional
- The First Cause of Human Integrity – must be truthful
- The First Cause of Human Love – must be loving
- The First Cause of Life – must be living



Conceptual Systems of Science

- **Cause and Effect** - an omnipotent Creator is an adequate cause for all observable effects in the universe
- **Energy Conservation** – energy can be converted from one form into another, but can neither be created nor destroyed
- **Classification and Order** - table of chemical elements, biological taxonomy, hierarchy of star types. All entities are in a state of flux in the evolution model
- **Processes** - all processes are well-defined and orderly. If not, there is no point to scientific study. Creation predicts “purpose” and “meaning”

These systems all favor the creation model!



Conceptual Systems of Science - 2

- **Forces and Fields** - types of forces in nature (electromagnetic, gravitational, nuclear and weak) have always acted the same from the beginning
 - These forces did not evolve
- **Environmental Interdependence** – the environment coupled with natural selection constitutes a powerful mechanism to conserve the created kinds and balance of nature
- **Energy Decay** – changes always tend to go in a “downward” direction such that there results a net decrease in the “availability” of the converted energy for further useful work

These systems all favor the creation model!



The Laws of Nature

- Everything in the universe is bound by laws
 - Physics, chemistry, mathematics, life, logic
 - Universal constants, planetary motion
 - Laws of nature are uniform throughout the universe
 - Explain the logical orderly state of the universe
- Consequences of laws of nature
 - Laws require a law-giver
 - Laws of nature are consistent with creation
 - Laws of nature make science possible!

“ordinances of heaven and earth” Jer. 33:25



The Laws of Physics

- Describe behavior of universe at its most fundamental level
 - How the universe operates today
 - How light propagates
 - How energy is transported
 - How gravity operates
 - How mass moves through space
- Mathematical in nature
 - $F = ma$ [*acceleration of mass*]
 - $E = mc^{**2}$ [*conservation of energy*]



The Laws of Physics - 2

- Universal constants
 - Strength of fundamental forces, e.g. gravity
 - Mass of fundamental particles, e.g. electron
 - Electromagnetic coupling constant makes molecules possible
- Anthropic Principle
 - Laws of physics fine-tuned for human life
 - Derived laws of physics and chemistry



Laws of Chemistry

- Life requires a specific chemistry
 - Human body depends on chemical reactions
 - Information stored on long molecule – DNA
- Laws of chemistry just right for life
 - Depend on laws of physics
- Hydrogen and Oxygen react to form water
 - Special properties, e.g. ice floats
- Elements organized into periodic table
 - Properties of elements and compounds
 - Outermost electrons determine physical characteristics of the atom

PERIODIC TABLE OF THE ELEMENTS

<http://www.ktf-split.hr/periodni/en/>

PERIOD	GROUP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18					
		IA	IIA	RELATIVE ATOMIC MASS (1)										IIIA	IVA	VA	VIA	VIIA	VIIIA					
		1	2	GROUP IUPAC										13	14	15	16	17	18					
		1	2	GROUP CAS										13	14	15	16	17	18					
		1	2	ATOMIC NUMBER										13	14	15	16	17	18					
		1	2	SYMBOL										13	14	15	16	17	18					
		1	2	ELEMENT NAME										13	14	15	16	17	18					
1		1 1.0079 H HYDROGEN																		2 4.0026 He HELIUM				
2		3 6.941 Li LITHIUM	4 9.0122 Be BERYLLIUM											5 10.811 B BORON						6 12.011 C CARBON	7 14.007 N NITROGEN	8 15.999 O OXYGEN	9 18.998 F FLUORINE	10 20.180 Ne NEON
3		11 22.990 Na SODIUM	12 24.305 Mg MAGNESIUM											13 26.982 Al ALUMINIUM	14 28.086 Si SILICON	15 30.974 P PHOSPHORUS	16 32.065 S SULPHUR	17 35.453 Cl CHLORINE	18 39.948 Ar ARGON					
4		19 39.098 K POTASSIUM	20 40.078 Ca CALCIUM	21 44.956 Sc SCANDIUM	22 47.867 Ti TITANIUM	23 50.942 V VANADIUM	24 51.996 Cr CHROMIUM	25 54.938 Mn MANGANESE	26 55.845 Fe IRON	27 58.933 Co COBALT	28 58.693 Ni NICKEL	29 63.546 Cu COPPER	30 65.39 Zn ZINC	31 69.723 Ga GALLIUM	32 72.64 Ge GERMANIUM	33 74.922 As ARSENIC	34 78.96 Se SELENIUM	35 79.904 Br BROMINE	36 83.80 Kr KRYPTON					
5		37 85.468 Rb RUBIDIUM	38 87.62 Sr STRONTIUM	39 88.906 Y YTTRIUM	40 91.224 Zr ZIRCONIUM	41 92.906 Nb NIOBIUM	42 95.94 Mo MOLYBDENUM	43 (98) Tc TECHNETIUM	44 101.07 Ru RUTHENIUM	45 102.91 Rh RHODIUM	46 106.42 Pd PALLADIUM	47 107.87 Ag SILVER	48 112.41 Cd CADMIUM	49 114.82 In INDIUM	50 118.71 Sn TIN	51 121.76 Sb ANTIMONY	52 127.60 Te TELLURIUM	53 126.90 I IODINE	54 131.29 Xe XENON					
6		55 132.91 Cs CAESIUM	56 137.33 Ba BARIUM	57-71 La-Lu Lanthanide	72 178.49 Hf HAFNIUM	73 180.95 Ta TANTALUM	74 183.84 W TUNGSTEN	75 186.21 Re RHENIUM	76 190.23 Os OSMIUM	77 192.22 Ir IRIDIUM	78 195.08 Pt PLATINUM	79 196.97 Au GOLD	80 200.59 Hg MERCURY	81 204.38 Tl THALLIUM	82 207.2 Pb LEAD	83 208.98 Bi BISMUTH	84 (209) Po POLONIUM	85 (210) At ASTATINE	86 (222) Rn RADON					
7		87 (223) Fr FRANCIUM	88 (226) Ra RADIUM	89-103 Ac-Lr Actinide	104 (261) Rf RUTHERFORDIUM	105 (262) Db DUBNIUM	106 (266) Sg SEABORGIUM	107 (264) Bh BOHRIUM	108 (277) Hs HASSIUM	109 (268) Mt MEITNERIUM	110 (281) Uun UNUNNIUM	111 (272) Uuu UNUNUNIUM	112 (285) Uub UNUNBIUM		114 (289) Uuq UNUNQUADIUM									

Legend for element classification:

- Metal
- Semimetal
- Nonmetal
- 1 Alkali metal
- 2 Alkaline earth metal
- Transition metals
- Lanthanide
- Actinide
- 16 Chalcogens element
- 17 Halogens element
- 18 Noble gas

STANDARD STATE (25 °C; 101 kPa)

- Ne** - gas
- Fe** - solid
- Ga** - liquid
- Tc** - synthetic

LANTHANIDE

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(1) Pure Appl. Chem., 73, No. 4, 667-683 (2001)

Relative atomic mass is shown with five significant figures. For elements with no stable nuclides, the value enclosed in brackets indicates the mass number of the longest-lived isotope of the element.

However three such elements (Th, Pa, and U) do have a characteristic terrestrial isotopic composition, and for these an atomic weight is tabulated.

57 138.91 La LANTHANUM	58 140.12 Ce CERIUM	59 140.91 Pr PRASEODYMIUM	60 144.24 Nd NEODYMIUM	61 (145) Pm PROMETHIUM	62 150.36 Sm SAMARIUM	63 151.96 Eu EUROPIUM	64 157.25 Gd GADOLINIUM	65 158.93 Tb TERBIUM	66 162.50 Dy DYSPROSIUM	67 164.93 Ho HOLMIUM	68 167.26 Er ERBIUM	69 168.93 Tm THULIUM	70 173.04 Yb YTTERIUM	71 174.97 Lu LUTETIUM
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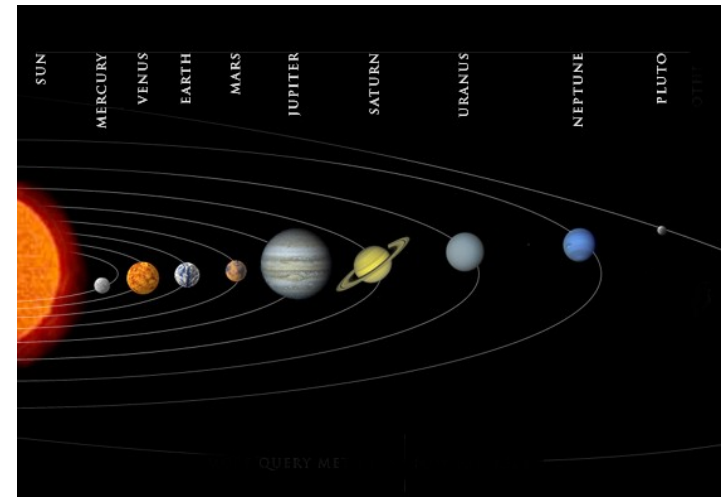
ACTINIDE

89 (227) Ac ACTINIUM	90 232.04 Th THORIUM	91 231.04 Pa PROTACTINIUM	92 238.03 U URANIUM	93 (237) Np NEPTUNIUM	94 (244) Pu PLUTONIUM	95 (243) Am AMERICIUM	96 (247) Cm CURIUM	97 (247) Bk BERKELIUM	98 (251) Cf CALIFORNIUM	99 (252) Es EINSTEINIUM	100 (257) Fm FERMIUM	101 (258) Md MENDELEVIUM	102 (259) No NOBELIUM	103 (262) Lr LAWRENCIUM
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Editor: Aditya Vardhan (adivar@netlinx.com)

Laws of Planetary Motion

- Kepler discovered that planets in our solar system obey three laws of nature
 - Planets orbit in ellipses
 - Planets sweep out equal areas in equal times
 - Exact mathematical relationship between planet's distance from the sun and its orbital period, i.e. $p^2 = a^3$
- Kepler's laws also apply to orbit of moons
- Laws of planetary motion are derived from laws of gravity and motion (Newton)



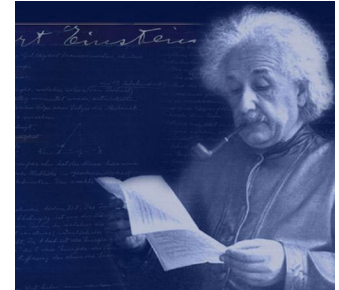
Laws of Mathematics

- Laws of physics are highly mathematical in nature
 - Would not work otherwise
- Laws and principles of mathematics
 - Addition, multiplication, transitive, etc.
 - Commutative properties of addition/multiplication
 - Binomial theorem
- Laws of mathematics
 - Abstract, not attached to any specific part of the universe
 - A “transcendent truth”, not part of the physical universe

“Mathematics is the language in which the gods talk to people.” *Plato*

Nature of Mathematical Laws

- Secular view of law of mathematics
 - Cannot account for the laws
 - Not part of the physical universe
- Christian view of law of mathematics
 - God's nature is logical and mathematical
 - Any created universe is mathematical in nature
 - There is a God beyond the universe
 - Mathematics reflects the thoughts of God
 - Mathematics illustrates God's immutability
 - Discovered by human beings, not invented



“Thinking God’s thoughts after Him.” *Kepler*



Laws of Logic

- Transcendent truths
- Depended on by the laws of nature
- Law of non-contradiction
 - Cannot have both “A” and “not A” at the same time and in the same relationship
 - God cannot contradict Himself, **Num. 23:19**
- Make reasoning possible
 - God is logical
 - Reflect God’s nature
 - Man, created in God’s image, instinctively knows the laws of logic
- Secularist cannot account for these laws



More On The Natural Laws

- The first two laws of thermodynamics are constant:
 1. The total energy of any system remains the same
 2. The entropy of a system increases over time
- Other constant laws include:
 - Law of gravity
 - Conservation of momentum
 - Conservation of electric charge
- Did natural laws evolve?
 - There is no evidence of this
 - Laws of nature are uniform throughout the cosmos



Asimov's Definition of 1st Law

- “To express all this, we can say: ‘Energy can be transferred from one place to another, or transformed from one form to another, but it can be neither created nor destroyed’.”
- “Or we can put it another way: ‘The total quantity of energy in the universe is constant.’
 - When the total quantity of something does not change, we say that it is conserved.”
- “The two statements given above, then, are two ways of expressing ‘the law of conservation of energy.’
 - This law is considered the most powerful and most fundamental generalization about the universe that scientists have ever been able to make.”



The 2nd Law of Thermodynamics

- 2nd Law - The entropy of a system increases with time
- Entropy is defined as “a measure of the quantity of energy not capable of conversion into work”
- 2nd Law holds in the fields of classical thermodynamics (unavailability of energy for further work), statistical thermodynamics (decreased order of the system’s structure), as well as in informational thermodynamics (lost/distorted information)
- Creation predicts and is supported by the First and Second Laws of Thermodynamics

Let’s see what Dr. Gish [ICR] has to say ...



Comments on 2nd Law

- “... all real processes go toward a condition of greater probability. The probability function generally used in thermodynamics is *entropy*. ... the smaller the number of possible arrangements the less the entropy. If there is only one place for each thing... the entropy is zero; if the system is highly random... the entropy is a large number. Thus orderliness is associated with low entropy; randomness with high entropy. In the systems we ordinarily study there are a large number of possible arrangements so the entropy is a large number.
- The second law of thermodynamics says that left to itself any isolated system will go toward greater entropy, which also means toward greater randomness and greater likelihood.”

Blum, Harold 1955. Perspectives in Evolution, American Scientist 43.

Asimov's Definition of 2nd Law

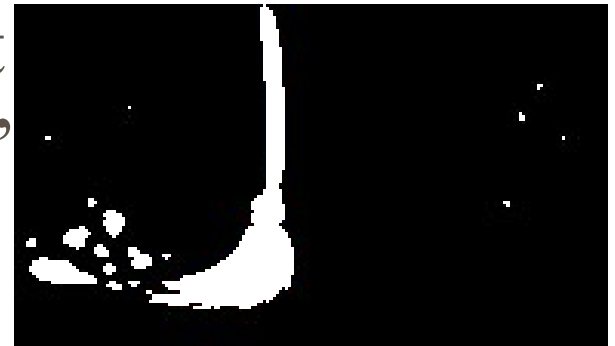
- “Another way of stating the Second Law, then, is:
 - ‘The universe is constantly getting more disorderly’.”



**Asimov, Isaac. 1970.
In the game of energy
and thermodynamics you
can't even break even.
Smithsonian 1 (August): 10.**

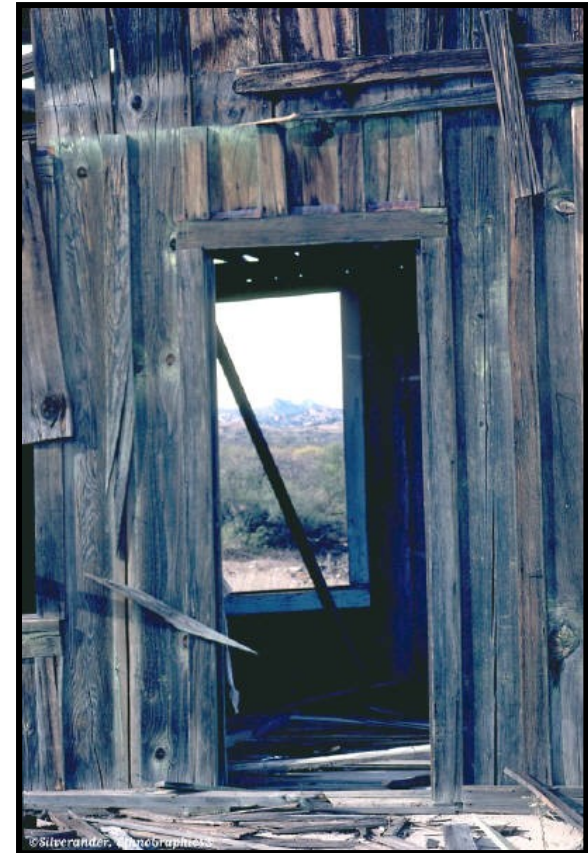
Asimov's Definition of 2nd Law

- “Viewed that way, we can see the Second Law all about us. We have to work hard to straighten a room, but left to itself, it becomes a mess again very quickly and very easily.
- Even if we never enter it, it becomes dusty and musty.”



Asimov's Definition of 2nd Law

- “How difficult to maintain houses, and machinery, and our own bodies in perfect working order; how easy to let them deteriorate.”



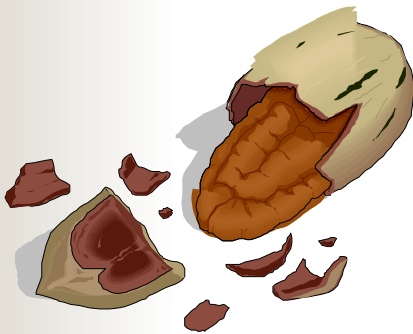
Asimov's Definition of 2nd Law

- “In fact, all we have to do is nothing, and everything deteriorates, collapses, breaks down, wears out, all by itself – and that is what the Second Law is all about.”



More on the 2nd Law

- All things left to themselves always tend to go from the complex to the simple, from the organized to the disorganized.

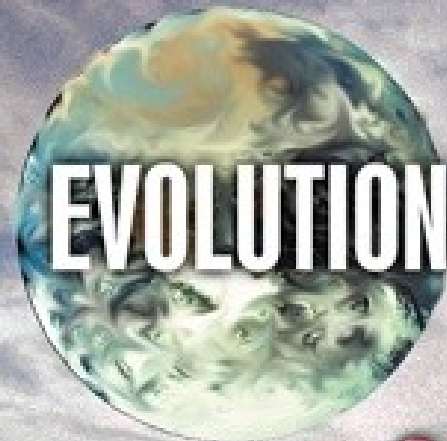


- Evolution would require just the opposite... the continual building up from the simplest to the more complex forms.

Chaos
&
Disorder



Simplicity
of H and He



Complex
Universe



The Biologist's Problem

- “...the apparent contradiction by evolution of the second law of thermodynamics.
- Systems should decay through time, giving less, not more, order.”

Lewin, Roger. 1982. A downward slope to great diversity. *Science* 217 (24 September):1239.

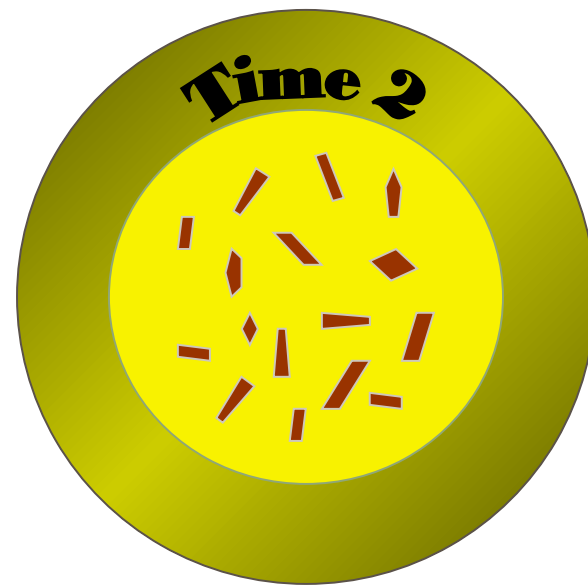
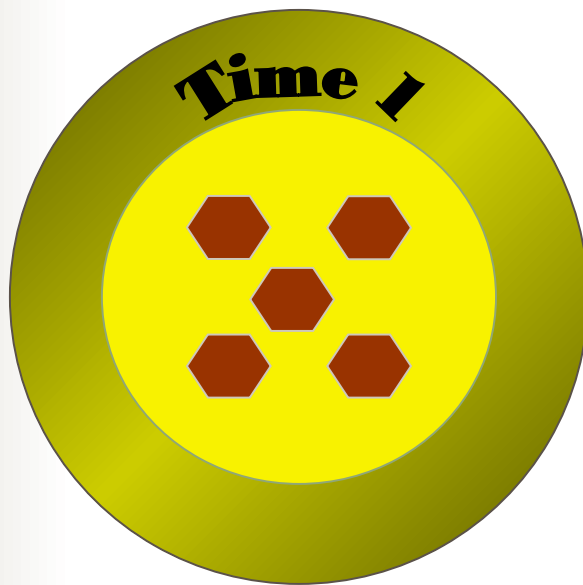
The Evolutionist's Response

- “One legitimate response to this challenge is that life on earth is an open system with respect to energy and therefore the process of Evolution sidesteps the law's demand for increasing disorder with time.”



More on the 2nd Law

- Entropy (simplicity) increases in a closed system.



2nd Law and Open Systems



Entropy normally increases rapidly in a system due to the influx of external energy



Increasing Complexity

- Conditions for increasing complexity in an Open System:
 1. Open system
 2. Available energy
- Note: These two conditions are satisfied by all systems on earth
- Therefore, though necessary, they are not sufficient conditions

Storage Required

3. Mechanism for storing and converting incoming energy
 - a. Photosynthesis in plants
 - b. Metabolism in animals
 - c. Machinery in artificial construction



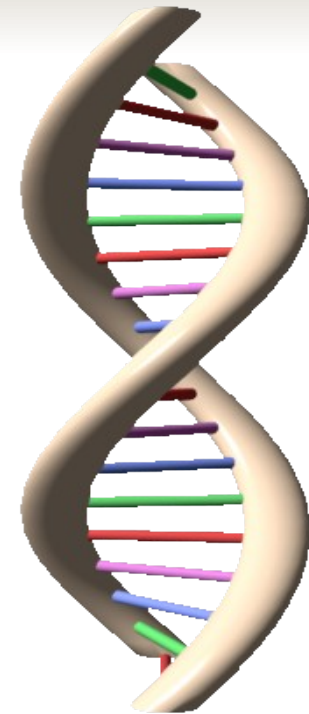
Program Required

4. Program to “direct” the growth of complexity

■ Examples:

a. “Genetic code” in DNA of living systems

b. “Plans and specifications” for construction of an artificial system





Insufficiency of External Energy

- “...the simple expenditure of energy is not sufficient to develop and maintain order. A bull in a china shop performs work, but he neither creates nor maintains organization. The work needed is particular work; it must follow specifications; it requires information on how to proceed.”


Simpson, George. G., and William Beck. 1965. *Life: An introduction to biology*. 2d ed. New York: Harcourt, Brace, and World Pub. Co. p. 466.



Conditions For Increasing Complexity in an Open System

- Necessary, but not sufficient conditions:
 1. Open System
 2. Available Energy
- Additional requirements:
 3. Mechanism for storing and converting incoming energy
 4. Program (to “direct” the growth of complexity)

Keeping Score

	<u>Creation</u>	<u>Evolution</u>
Laws of nature & Thermodynamics		
TOTAL =	1	0