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**ORIGIN OF LIFE: NEWTON, DARWIN, AND THE
ABUNDANCE OF LIFE IN THE UNIVERSE**
(revised Dec., 2010)

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Abstract

Two giants of British science, Newton and Darwin, developed theories of negentropic force in physics and biology. The two scientists are adjacently interred in Westminster Abby, and their theories of gravity and evolution likewise share common ground and a fractal resonance with DNA. Because DNA/RNA is both a replicating molecule and part of the universal 4x3 fractal pattern, the implications for the abundance of life in the Cosmos are enormous.

Translations

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- This article has been [translated into Macedonian](#) by Katerina Nestiv. 25 May, 2016. Many thanks, Katerina! See: <http://sciencevobe.com/2016/05/25/origin-of-life/>
- [This article has been translated into Slovenian](#) by Sophi Spacilova. Many thanks, Sophi! 26 June, 2016. See: <http://dreamicus.com/blog/origin-of-life.html>
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- This article has been [translated into Bosnian](#) by Amina Dugalic. Many thanks, Amina! 24 Jan., 2018. See: <http://the-sciences.com/2018/01/24/postanka-zivota-newton-darwin-i-obilja-zivota-u-svemir/>
- This article has been [translated into Thai](#) by Ashna Bhatt. Many thanks, Ashna! 26 Jan., 2018. See: <http://eduindexcode.com/origin-of-life/>
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<http://techglobaleducation.com/origin-of-life-newton-darwin-and-the-abundance-of-life-in-the-universe/>
- This paper has been [translated into Norwegian](#) by Lars Olden, 18 Sept. 2019. Many thanks, Lars!
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Introduction

Newton and Darwin are buried a few feet apart in Westminster Abby, but this is not the only distinction they have in common. Both developed major theories of negentropic forces which create information domains. Newton developed the theory of gravitation which produces time and the historical arena for evolution, and indeed creates the entire fractal hierarchy of Nature either directly or indirectly; Darwin developed the theory of Evolution through Natural Selection, producing in time the entire biotic realm (see: "[The Table of Natural Organization](#)"). The two theories intersect in DNA, which, like gravity, has a 4x3 fractal structure, dynamic, and negentropic role, but is also a replicating, biological molecule. Although gravity's connection is indirect, there can be no DNA without gravitation to produce the galaxies, stars, and planets where the molecule and its constituent elements are created and assembled. Even more fundamentally, without gravitation there is no temporal and historic dimension in which evolution can operate (see: "[Introduction to Gravitation](#)"). Gravity is the overarching negentropic energy source producing information as the crown of matter, in which DNA, life, and evolution are embedded like jewels.

Darwin's theory is biotic, and depends upon the 4x3 molecular structure and coding pattern of DNA, of which he was completely ignorant. Nevertheless, Darwin correctly developed the gross features of the theory of evolution and discovered its operant mechanism in Natural Selection. Natural Selection can also be modeled as a 4x3 mechanism: 1) heritability of 2) differential fitness with respect to 3) the utilization of a limiting resource (Leowntin 1970) within a 4 level population structure: a) the variable individual; b) the reproductive pair; c) the locally adapted population; d) the reproductively isolated species. Newton developed the idea of gravitation by discovering its

mechanism or force law ($F = GMm/rr$), which was later shown by Einstein to also have a 4x3 basis (four third-order equations - the changing rate of acceleration in x, y, z, t). Neither Newton nor Einstein elaborated upon the information building potential of gravitation, but this is displayed in "[The Information Ladder](#)".

Although gravitation is an abiotic force, it is nevertheless responsible, directly or indirectly, for every level of the fractal hierarchy, creating the stars and galaxies, creating the elements in stars, and creating the planets which support life. Therefore Newton's Gravitation stands to the Fractal Hierarchy of Nature as Darwin's Natural Selection stands to the Theory of Evolution - gravity is the negentropic engine which produces all the material realms of the fractal hierarchy, while Natural Selection is the negentropic engine of biotic evolution. The fact that both these negentropic drives intersect in the 4x3 fractal, replicating molecule of DNA has enormous implications for the abundance of life in the Universe, amounting to a theory of and a prediction for exobiology.

The 4x3 Fractal Algorithm Creates a Replicating Molecule

In addition to the physical manifestations of free and bound electromagnetic energy (light, dimensions, particles, charges, forces, etc.), the closed cosmic system is governed by four fundamental physical laws: the 1st and 2nd laws of thermodynamics (energy conservation and entropy), "Noether's Theorem" (symmetry conservation), and Causality-Information (the law of cause and effect, or "karma"). During the "Big Bang" or "Creation Event", these 4 natural regulatory laws interact with each other and the 4 dimensions of the spacetime metric to produce matter and the 4 charges and forces of physics, as illustrated in the "[Tetrahedron Model](#)". This still-mysterious symmetry-breaking process (mediated by the weak force) represents the [primordial example and dynamic](#) of the 4x3 fractal algorithm in Nature, producing in turn the first material iteration

of the fractal: the 3 families of 4 elementary particles, followed by the ground-state baryons of 3 quarks carrying 4 charges, etc. (see: "[Nature's Fractal Pathway](#)").

After producing the baryon at the particle level (via [weak force symmetry-breaking](#) during the Big Bang), the 4x3 fractal mechanism (operating both in the Big Bang and in the stellar nucleosynthetic pathway) produces alpha particles (helium nuclei) and carbon at the atomic level (carbon carries an astounding 5-fold resonance of the 4x3 algorithm). Shifting to the lower energies of the planetary arena and the atomic electron shell, the fractal drive next produces tetrahedral bonds and crystals at the molecular level (notably in both carbon and water), and finally the 4x3 molecular structure of RNA-DNA. DNA is the molecular intersection of the abiotic fractal resonance and the biological replicating series, due to the simple fact that DNA, while on the molecular structural level a fractal 4x3 resonance, is on the biological level a replicating molecule producing a 4x3 genetic code. Once DNA begins reproducing, molecular competition within a finite environment between similar consumers with similar needs for limited resources creates a new negentropic drive in the domain of Information - Natural Selection - which, like gravity, can also be modeled as a 4x3 dynamic (see above). Acting in concert with matter's eternal search for antimatter (via the electromagnetic force), gravity and natural selection are complementary abiotic and biotic negentropic drives which have carried biological information systems to fantastic levels of complexity. Augmented further by the abstracting, symbolizing intelligence and technology of humans, there is no known limit to the sophistication information systems may eventually achieve.

Finally, the fact that RNA-DNA is a 4x3 fractal resonance has enormous implications for the abundance of life in the Universe, for it means that the creation of the replicating molecule DNA is not a random event, but a likely and predictable product of the

abiotic fractal algorithm operating in any suitable environment. Because water also has a tetrahedral bonding pattern, the linkage between carbon and DNA via the 4x3 fractal series is especially enhanced in the presence of the "universal solvent". This evidently is why life arose on water-covered Earth so quickly after the cessation of the initial period of our planet's accretion and bombardment.

The parallel between the physical structure of atoms and the functional structure of our solar system - not in the sense of the "Bohr atom" (that the atom is a miniature solar system), but in the sense that the atomic nucleus drives the stellar engine and its evolution (the creation of new elements), while the electron shell is responsible for the chemical activity of the planets and their evolutionary productions, from the creation of simple, hardy minerals to the elegant, delicate biochemistry of life itself. The structural "division of labor" in the atom is mirrored in the functional "division of labor" in our solar system: nuclear energy and the evolution of elements in the sun, electron shell energy (chemistry) and the evolution of mineral and biological forms on earth. In this respect the duality in microcosmic atomic structure (nucleus plus electron shell) prefigures the functional macrocosmic duality of stars plus planets, which is all the more remarkable in that both dualities are necessary to the development of life, *the central rationale of our cosmos.*

While the stars are busy making the elements of the Periodic Table, the planets are busy making the chemicals of life. Even our "dead" moon plays a large role in the pageant of earth's life (especially marine and early life), stabilizes our climate, and perhaps works in other ways we do not yet fully understand (such as earth's internal heat and magnetic field?). Even space rocks (in the form of comets and asteroids) have played significant roles in the evolution of our planet's biology. The significance of the other planets for earth-life is unknown (except in the case of the formation of our (unusually large) moon, but must certainly be large (for example, in determining our

distance from the sun). The galaxy at large is necessary to produce the many different heavy elements life depends upon (via supernovas and stellar generations), and the entire cosmos is needed to supply temporal and spatial dimensions adequate to produce evolutionary forms intelligent enough to give the cosmos self-awareness, and a recursive, higher level of creativity, experience, understanding, and an *evolutionary direction toward abstract/symbolic forms of information* - as expressed (for a local example) in human imagination, thought, language, math, science, technology, art, philosophy, etc..

Hydrogen bomb development by humans is the equivalent of an atomic nucleus directly interacting with the electron shell of an atom, or of bringing a piece of the sun's interior down to earth. It is as if the electron shell has decided to help the nucleus along its path of transformation. But this cannot be a good idea - the nucleus doesn't need our help, and the nuclear energy domain is on the order of ten million times greater than that of the electron shell. In nature, a good result is obtained if this type of interaction (photosynthesis for example) is moderated by 93 million miles of intervening space (plus our atmosphere and the sun's atmosphere, earth's magnetic field, night time, overlying water, etc.). The symbolism/mythology relevant to this development is mind-boggling, recalling the opening of Pandora's box, the Genie escaping the bottle, the forbidden fruit of the Tree of Knowledge, the punishment of Prometheus, and all kinds of forbidden compacts with the devil and other human transgressions upon sacred (or cursed) grounds. Obviously, humanity has entered into a new age, the Nuclear Age (of fission or fusion), but is this a utopian age of great promise, or a horrible (perhaps final) age of great danger? Historically, we have behaved like apes with knives. Now science has replaced those knives with bombs which can destroy the world. Can we change our behavior in time to save ourselves and our planet? Is this why we see no visitors from other parts of our galaxy? (section added Oct. 2017)

See also: "The Origin of Life" by James Trefil et. al. *American*

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Diagrams

[The Tetrahedron Model](#)

[The "Biology" Tetrahedron](#)

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