

THE HUMAN CONNECTION: Part II

(revised July, 2016)

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Abstract (from part I)

As Carl Sagan famously said, we are "star stuff" exploring the stars. Life is the information pathway by which the universe achieves consciousness and self-awareness, and begins to explore itself, including evolving new modes of experience, creativity, and beauty. In terms of creativity, humans represent a fractal iteration of the creative energy of the Cosmos, as well as of its evolutionary powers. Because the entire material universe devolves from light, matter and life are a conserved form of the information content latent in the energy of light, expressed primordially through the broken symmetry of light - leading to our "matter-only" cosmos, charge conservation, atoms, the Periodic Table, chemistry, biology, and humanity. *The charges of matter are the symmetry debts of light (Noether's Theorem)*, and through these charges the energy of light is transformed into the information content of the world. Hence it is ultimately through the connection between light and matter (atoms), charge conservation and symmetry conservation, that humans retain their connection to the primordial creative energies and information content of the universe (and the multiverse). "We come trailing clouds of glory..." (Wordsworth)

Shaman-Priest-Magician and the Weak Force IVBs

In physics, it is the role of the weak force "Intermediate Vector Bosons" ("IVBs" - the W, Z) to "marry" a "real" particle with the appropriate alternative "virtual" charge carrier so that a transformation of identity can take place. The alternative charge carriers (leptons, neutrinos, and mesons) exist in the "spirit world" of quantum physics, the Heisenberg/Dirac vacuum "sea" of "virtual" particle-antiparticle pairs, which wink in and out of existence continuously as they form, self-annihilate, and form again. Essentially, the IVBs provide a bridge between the 4-dimensional "real" world and the 2-dimensional "virtual" world; the real particle and virtual particle pairs meet on this IVB bridge, where the particle receives from the virtual pair the alternative charge carrier it needs for its transformation, then returns to the real world with a new identity. (The IVBs can also be seen as a bridge to the electroweak force unification symmetric energy state, where particle identity exists at a generic rather than a specific level.) The similarity of this process to the trance possessions of

shamans and mediums and their purported journeys to the "spirit world" to effect healing or other transformations is evident. The shaman or medium is in the specialized, high energy role of the IVBs, providing a bridge between the real and the spirit world of "virtual" or unmanifest beings. (For a discussion of the physics of the weak force, see: ["The "W" IVB and the Weak Force Mechanism"](#) and ["The Higgs Boson and the Weak Force IVBs"](#).)

In the human world, the priest, shaman, or medium provides a bridge between ordinary people and the spirit world. It is the role of the priest, shaman, or medium to ensure that proper rituals are followed, so the exchanges can occur and the transformations take place; this is the analog of the IVB insuring that the proper quantum rules are followed, while it provides the special high energy, dense metric in which the joining of the virtual and real worlds can take place. When the ceremony is over, the people and the spirits return to their respective worlds, both transformed. (The human body functions as a temporary, physical, alternative charge carrier for individual "identity", of which the "soul" is the presumed immortal or spiritual component.) The church is always a special "holy" place, where the "wholeness" of life is celebrated, that is, where the spiritual realm is reunited with the physical, the "virtual" or 2-dimensional realm is united with "real" or 4-dimensional particles and people. In some sense the church (building as well as institution) acts as the massive IVB, producing a "special metric" or "holy space" in which the manifest and unmanifest worlds can meet and effect transformations of identity and/or charge (for example, "born again").

The services of the priest are most necessary when identity transformations are occurring between this and the spirit world, such as at birth (baptism), marriage, and death. The joining of people in marriage requires the services of the priest because it is a genuine transformation of identity: names are changed, families are joined, and formal preparations are made for the conception of new lives and identities. Marriages are usually declared to be consummated in the spirit world as well as in the material world ("What God has joined together...").

The archetypal magic trick is to vanish or create a real item - "now you see it, now you don't". The rabbit comes out of the hat and disappears again. The quarter disappears from the hand and reappears behind the ear. This is also nature's ultimate magic trick - the creation (or transformation) of real particles from light or virtual reality, and their disappearance or return into the "vacuum" (whether elementary particles or people: life and death). This is likewise the ultimate magic of the shaman, the creation (for example) of prey animals for the hunter by intercession with the spirit world through the use of alternative identity carriers, in this case symbolic drawings and sculptures which are analogous to "animal neutrinos" (alternative identity carriers) or "souls". In the church today, which is our modern dimly lit "magic cave" with its priest/shaman, we find iconic art with a very similar "miraculous" purpose, the intercession with the spirit world through alternative identity carriers embodied as symbolic or representational icons, talismans, figures, etc., and of course the ultimate church "miracle", the transformation of the wine and wafers via the mediation of the priest with a virtual spirit world.

The Fractal Connection

As Chardin so eloquently realized, life is the whole rationale, purpose, and goal of the Cosmos; that is why life feels so natural, right, and good to us, and why the Universe appears to be so beautiful and friendly (the "Anthropic Universe"). We belong here, the Universe exists for us and wants our awareness, intelligence, creativity, and capacity to experience, appreciate, and create beauty. The production of life from inanimate matter is the great miracle and sacred mystery of the Universe. The energy and information contained in every atom is the Divine Presence. Every religion however constituted celebrates the experience of life and its ultimate triumph - everywhere and always - over death. As the patient eons turn, the creation of the

elements in the stellar forges of the galaxies provides a firm foundation for the information age that emerges as a dominant and fertile parameter from the primordial chaos of raw energy, spacetime, matter, charge, and field vector. It is no wonder that when life achieved the capacity for self-contemplation, it declared itself a miracle and created religion to sanctify and celebrate itself, the Life Force, and the Information content (including Natural Law) of the Universe.

Among the many great wonders of our existence that we might mention, at least six stand out: 1) the "Big Bang" creation of our life-friendly universe; 2) the evolution of the planets, stars, and galaxies; 3) the evolution of the atoms and elements; 4) the evolution of life; 5) the evolution of humans; 6) the evolution of symbolic thought - producing language, spiritual awareness, religion, the arts, sciences, and technology, and the recognition of Natural Law. While it may "take a village to raise a child", it takes the entire universe to create one: the size and complexity of the universe measures both the difficulty and the significance of that task.

From the dust of the Earth, mixed with water and energized by the Sun, life arose on this planet as an inevitable expression of the information content and fractal form of matter (if life is the rationale for the Cosmos then life must also be inevitable). In "[Nature's Fractal Pathway](#)" (and "[Table](#)") I have documented the fractal nature of the information pattern of life, specifically DNA, as part of a nested pattern of similar forms, beginning with the three families of four elementary particles produced during the "Big Bang", carried through the nuclear, atomic, molecular, and chemical levels of structure to the (biological) nuclear material of reproducing, living systems. The pattern is repeated at largest scale in astrophysical processes, bodies, and systems of stars and galaxies. Life is one expression of a universal fractal pattern which appears on every natural scale in a 4x3 and 4x4 form. The pattern occurs extensively as well in human thought concerning the form of the Cosmos, in our religions, legends of creation, mystic and occult systems, and scientific cosmologies. We have two premier examples of ancient systems of prognostication, both still in use after more than two millennia, Astrology and the I Ching, representing intuitively derived "world orders" rather than specific cosmologies or religions. Both are perfect examples of the universal 4x3 fractal pattern, one Eastern, one Western, both independently derived. Western religion and mythologies are replete with the 4x3 pattern, which is also found in Buddhist and Hindu philosophy; the pattern recurs in minor religions around the world. The fractal pattern of life and human thought is another link between the system of matter, humanity, and the Cosmos: "as above, so below". The intersection of the universal 4x3 fractal algorithm with the replicating molecule RNA-DNA is of the utmost significance for the origin and abundance of life in the Universe. (See: "[Newton and Darwin: The Origin and Abundance of Life in the Cosmos](#)".)

One of my favorite stories in the history of science is that of the discovery of the transmission of electromagnetic waves by the great German physicist Heinrich Hertz. Hertz knew how to produce electromagnetic waves, but not how to demonstrate their transmission through space and reception at a distant location. In a flash of insight, he realized that the receiver must be built in the same form as the sender. Thanks to this intuition, Hertz became the first to demonstrate the wireless transmission of what we today call radio waves. This principle of the isomorphic, resonant, symmetric (fractal) form of the sender and receiver of energy supplies us with the necessary clue to understand one of the most enigmatic statements in the Bible - the creation of man in God's own image and likeness (Genesis 1:26-27). This is an intuitive recognition and statement of the General Systemic or Fractal nature of the Cosmos, leading us directly to an understanding of the reason for the fractal nature of the Universe: its nested, isometric form is the functional basis of its resonant connectivity, allowing the Cosmos to communicate with itself, transmitting energy and information to all its parts, regardless of distance, time, or scale. This leads us to the question: has God created us in His image, or have we created God in ours? In a thoroughly fractal Universe, are these even different questions?

How are we to know the dancer from the dance? (See: "[The Information Pathway](#)"; "[The Information Ladder](#)"; and "[The Fractal Organization of Nature](#)" (table).)

The Miracle of our Universe

John A. Gowan Jan., 2014

Perhaps the most astonishing thing modern physics has revealed to us is that the world is built from the simplest of ingredients. How do we get from a proton, neutron, electron, and neutrino to a Beethoven symphony? But given enough time, Nature somehow evolves even this emergent miracle.

The "Big Bang" begins with pure electromagnetic energy (light), and a few conservation laws - the conservation of energy/entropy (Clausius, Boltzman); symmetry/charge (Noether); and causality/information (Einstein - velocity "c"). These 3 linked couplets of physical law are themselves linked within thermodynamic, electromagnetic, quantum, and relativity theory, and they include an emergent, crucially important 4th linked couplet, spacetime and gravity/inertia (Einstein). It is this combination of positive electromagnetic energy, negative gravitational energy, conservation law, and information which builds our universe. Creation begins with the simplest of blind forces, the attractive/repulsive forces of electromagnetism, and the attractive-only forces of gravitation and the color charges of the strong force. The neutrinos act as an information-only component of this primordial "soup", distinguishing among leptonic "flavors", and separating matter from antimatter.

Of course, even pure light is far from simple: the rainbow tells us that much. But modern physics informs us that light not only has multiple frequencies, it contains "virtual particles" (a "bound" or (potentially) "massive" alternative form of electromagnetic energy), composed of matter-antimatter particle pairs of specific kinds of leptons and hadrons ([whose ultimate origin](#), like that of light itself, remains mysterious). The hadrons in turn are composed of quarks and a confining gluon field, so as it turns out, light is not simple at all, it contains hidden within itself a fantastic amount of information mostly in the form of virtual particles, a portion of which are made manifest during the "Big Bang" or "Creation Event" (presumably due to the [asymmetric weak force decay of electrically neutral leptoquarks](#)). It is this information which will, over evolutionary time, under the impetus of energy and entropy, and with the constraint of conservation law, build all the complexity of our universe, even including the emergent genius of Beethoven and his Ninth Symphony.

Homer's "war for beauty" (for Helen) seems to me a correlate of the principle of symmetry/charge conservation in modern physics. Even in the simple snowflake we see the connection between symmetry and beauty. In physics, symmetry conservation is forcefully effected through charge conservation (in particles) and inertial force (in spacetime), establishing the connection between beauty (symmetry) and truth (conservation), as intuited by Keats and [proved mathematically by Noether](#). In biology, the "war for beauty" takes place explicitly in competition between (for one example) the male birds of paradise, enticing females to choose the most handsome among them. In our own species, this principle (sexual selection) has transformed prehistoric apes into modern supermodels - and likewise transformed our brains in a parallel and entrained process. In music also, we choose the best composers (or at least we used to), according to similar aesthetic principles - principles of harmony which, as discovered by Pythagoras, translate into mathematical harmony as well - and, as revealed by quantum mechanics, extend to the resonant harmonics of electron shell frequencies.

Is the evolution of the universe, from simple energetic principles of attraction vs repulsion, into human beings, also a blind process, or is it in any sense guided? Well, it is obviously guided by physical

conservation law, and by the information inherent in the primordial particles and "quark soup" (Gamow's "Ylem"). Because symmetry conservation is one of these fundamental guiding principles (manifest primitively as charge conservation), we end in biology with beautiful creatures who recognize, express, and value beauty. There is also a fractal pattern driven by a [4x3 algorithm operating](#) within the evolutionary process, beginning with the quarks and ending with our genetic code. Hence we are created in the image and likeness of a universal conservation/information/fractal/resonance principle - and if you want to call that "God" I will not object, but suggest that you must probably add the "Multiverse" to your equation.

Breaking the primordial symmetry of light and its particle-antiparticle pairs (during the "Big Bang" or "Creation Event"): (added July, 2014)

[Neutrinos and the "Identity" charges](#) they carry form and conserve our *personal* connection to the Cosmos, beginning with each and every elementary particle. Neutrinos are the physical analog of the metaphysical "soul" - the identity component and quantum of the information field, or information parameter, which constitutes our personal connection to the Cosmos - indeed, the personal connection to the Cosmos of *every* elementary particle of matter. [Creation is not possible](#) without the "Identity" charge of the neutrino, as it provides an *alternative charge carrier* to replace the elementary particle's actual antimatter partner - which would of course cause an annihilation reaction if it was itself used to balance charges. Such annihilation reactions would return all elementary particles and their antimatter partners to the photons which created them, leaving the symmetry of light and its matter-antimatter particle pairs (whether virtual or real) unbroken. (The primordial symmetry of light must be broken before information of any kind can manifest - typically in the form of the charges of elementary particles - which we have identified as "*the symmetry debts of light*", acknowledging "[Noether's Theorem](#)".) The symmetry debt of missing antimatter - the "Great Asymmetry" of our "matter-only" universe - is the source of all our woe: mass, charge, gravity, time, causality. Hence it is the neutrino, the least of all particles, which carries the most important of all charges: neutrino "identity" charge allows single, massive elementary particles to manifest without their antimatter annihilation partners (presumably during the primordial asymmetric decays of [electrically neutral "leptoquarks"](#) during the "Big Bang"), while charge conservation allows these particles to wander the vast entropic conservation domain of spacetime without becoming lost.

Synopsis of the Cosmic System (July 2014)

Matter - Energy - Life: ([Teilhard de Chardin](#))

Bound electromagnetic energy (atomic matter) - free electromagnetic energy (light) - Information (periodic table): ("[Tetrahedron Model](#)") This "Cosmic Trinity" of free vs bound forms of electromagnetic energy plus the information contained in the Periodic Table of the Elements (information revealed by [weak force symmetry-breaking](#) during the "Big Bang") is a succinct formulation of the basic ingredients (ontology) of our Cosmos.

To these basic constituents, we need to add preexisting physical constants (derived from the Multiverse - such as the value of "c"), and post-existing evolutionary forces (Darwinian Natural Selection). The Four Charges (electric, color, identity, location) and the Four Forces (electromagnetic, strong, weak, gravity) they create must also be considered. Finally, conservation laws pertaining to the long-range spacetime and short-range particle forces are required to control the [unfolding dynamic of the Cosmos](#), which is driven by three [primordial and interrelated forms of entropy](#) (the intrinsic dimensional motions of [light, time, and gravity](#)). Chief among these conservation laws are Energy, Symmetry, and Causality-Information, as set forth in the

"[Tetrahedron Model](#)", as well as the "[Standard Model](#)" of particle physics. Dynamical theories of the forces developed by Newton, Maxwell, and Einstein (among others), and quantum mechanics, are involved in regulating the expanding Cosmos and its material content.

Transformations between free and bound electromagnetic energy states (light vs matter) account for the [major charges and forces of physics](#): they are the [symmetry debts of light](#) and the [local gauge symmetry forces](#) (field vectors of the forces) which maintain the values of these charges despite local conditions of relative motion and variable metric fields. The physical "agenda" of the Cosmos is to return its asymmetric bound form of electromagnetic energy (atomic matter) to its original symmetric form (light), in obedience to [Noether's Theorem](#). This it accomplishes through the conversion of mass to light in stars, supernovas, quasars, and finally and completely, via the "Hawking radiation" of black holes. Life is the beneficiary of the free energy released during this conversion process. (See: "[The Tetrahedron Model](#)".)

The [meaning of our Cosmos](#) appears to be an anthropomorphic ("human life-friendly") exploration by the energy of the Multiverse of its information potential, including the extent of its creative powers and capacity for beauty, culminating (locally) in humanity. Our universe is created from/by the Multiverse, which thus becomes the mysterious and sacred "First Cause". God rules an Empire, not just a Kingdom. [The creative pathway](#) of our Cosmos is apparently a [fractal iteration/evolution](#) of ever more complex information systems, interactive with and [derived from one another](#). The connection between the abiotic and biotic information systems is through the electron shells of carbon and the reproductive capacity of molecular RNA/DNA. A [4x3 fractal algorithm](#) is operative, such that the generation of [life in not a random event](#). Once a reproducing molecule is achieved, Darwinian evolution takes over and the rest, as they say, is history. Life is probably commonplace in the Cosmos, although technologically sophisticated life may be rare. In any case, *interaction* between such advanced life forms appears to be extremely unlikely due to the [tremendous scale of spacetime](#).

(Added July 2014)

Matter - Energy - Life ([Teilhard de Chardin](#))

Bound electromagnetic energy (atomic matter) - free electromagnetic energy (light) - Information ("[Tetrahedron Model](#)")

"**Information**" is the connecting idea between *life* and *spirit* - between science (biology) and religion (metaphysics). Princeton physicist John Archibald Wheeler famously characterized the ontological role of information: "it from bit".

"Spirit in nature" is the "information" content of nature, as found in the great repository of the 92 elements of the Periodic Table, and elaborated by the living, reproducing molecules of RNA/DNA in biological organisms. While the ultimate source of information is the Multiverse (the scientific stand-in for "God"), in our cosmos information begins with the asymmetric creation of matter via [weak force symmetry-breaking](#) during the "Big Bang". Antimatter is annihilated, while a residue of matter composed mostly of hydrogen and helium atoms is left to form our stars and galaxies. Information creation continues in stars and supernovas through the creation of all 92 natural elements (following a 4x3 fractal pattern - as embodied in the "alpha particle" (helium nucleus), the "brick" or building block of the [nucleosynthetic pathway](#)).

We revere the sun and stars not only for their heat and light, but because they are creators (factories) of information. Information is stored in atoms primarily as charge and spin in two linked systems: 1) as orbital parameters of the electron shells (low energy information useful to life); 2) the configurations of its nuclear constituents (protons and neutrons - high energy information useful to stars). Even the geometry and shape of

large molecules may contain biologically significant information (as in the proteins). The concept of "Information" allows us to produce a General Systems bridge between a religious/spiritual vs a scientific/material view of the Cosmos.

[Teilhard de Chardin](#) was the great expositor of this view, although he did not use the concept of "Information" (he used "spirit" instead), as "information" was only just coming into general use as a recognized physical parameter during his lifetime.

What connects life and information? Life begins and evolves from information contained in specific molecular forms (combinations) - RNA/DNA - that "know how" to reproduce and maintain themselves, and successfully compete with other living forms (even those of its own kind), retaining this information for its own use and passing it on to its offspring. While these complex chemical systems begin as purely "mechanical" forms of information replication, storage, and processing, competition and evolution (even at the molecular level of organized chemical systems) soon favor "individuals" (specific molecular combinations) with an aggressive "personal" agenda for survival and reproduction - resulting in "self-interest", "identity", and "personality" - even in very early living systems. (Later, social organisms will find they must adhere to a more altruistic behavior.) (See: "[The Fractal Organization of Nature](#)".)

A 4x3 fractal algorithm is involved in the evolution of information, from helium to carbon to DNA to the genetic coding for the amino acids of proteins, seamlessly connecting the atomic and biologic realms. Finally, we note that the astonishing Biblical assertion that Man is created "in the image and likeness" of God, is best understood as a statement of the fractal organization of the Cosmos from top to bottom. (See: "[Nature's Fractal Pathway](#)"; See: "[Newton, Darwin, and the Abundance of Life in the Cosmos](#)".)

The universe explores, knows, and enlarges itself through the "[Information Pathway](#)" of life and humanity. Our role is to help the universe understand and appreciate itself, and develop its creative powers, productions, and expressions of beauty.

Chardin - "Inner" vs "Outer" realm of atoms = information/spirit vs force or energy field. What Chardin referred to as the "inner" essence of the atomic world we would refer to as the "information" content of atoms. It is this information content that eventually produces the emergent property "Life". In religious terms, we might identify information with the "Holy Spirit" and the information content of humanity as the "Divine Essence" of humanity ("God incarnate").

Chardin saw man as the natural culmination of evolution. Man is necessary to understand, explain, and control evolution - as well as to see and review its whole history in the fossil record. Man's control of evolution is the fractal iteration that demonstrates the end of one fractal cycle and the beginning of another in the physical world - natural selection giving way to artificial selection of various sorts - not only plant and animal breeding but genetic manipulation via gene spicing, etc. From physical genetics/genes to the abstract theory of genetics and human control of genetic evolution.

The most amazing emergent phenomenon is human consciousness and creativity. But all life is an emergent phenomenon. What is an emergent phenomenon? Look in the mirror. You are "star stuff", you are composed of trillions of cells, myriad species of bacteria, multiple organ and sensory systems of great sophistication (although you lack one-half of a complete reproductive system), you encompass incredibly complex biochemical pathways and mechanisms, and yet (if you are a normal, healthy individual) you have a single integrated body, identity, personality, agenda, and action.

Emergent phenomenon are exclusively a characteristic of the information domain. Man is successful to the extent that he recognizes and utilizes the information content of Nature ("Science").

Beethoven (and other geniuses) are emergent phenomena of the human species and human social organization (human level of natural organization). Human intellectual abstract mental activity and creativity is an emergent phenomenon of the human brain - language, art, science, religion, etc. Mind is an emergent phenomenon of brain.

The atom, composed of a linked system of electron shells and nuclear particles, presents a most remarkable example of hierarchical information domains, the nucleus containing information useful to stars and the process of element-building, the electron shells containing information useful to biology and the process of species-building. Thus are the planetary and celestial domains united from the beginning by the information architecture of their constituent particles: the Microphysical, Biophysical, and Astrophysical realms of physical reality. Human consciousness adds an emergent 4th domain: the Metaphysical. (See: "[The Fractal Organization of Nature](#)".)

There is a spiritual/physical Platonic duality operating in the universe. In physics it manifests as the "virtual" particle vs "real" particle duality, and additionally in my work as the principle (derived from Noether's Theorem) that *the charges of matter are the symmetry debts of light*.

I think of God as the Principle of Creativity and Life in the cosmos, containing all forms of energy and information, utterly eternal and conserved, manifesting through beauty, natural law, the periodic table of the elements, the fractal organization of nature, and quite probably the "Multiverse". Humans have an inborn appreciation for beauty and the spiritual realm - due to the abstracting ability of our highly evolved brains.

The universe is the body of God and natural law is God's law. God is in every atom of the cosmos and the void between. Humans are, like all other life forms, children of the universe. Our role, unique on earth, is to carry forward, expanding and enlarging, the creative activity of God into new realms and dimensions (art, science, technology, information, biology, evolution, space travel, etc.). Through mental creativity, humans distinguish themselves from the animals and become God-like. Humans therefore represent a new (symbolic, intellectual) fractal iteration or domain of creative activity, manifesting through the abstracting ability of our minds. For example, almost every creative act of nature has been copied and enlarged by humanity - from the creation of elements to the creation of species, including the creation of society, culture, language, and formal moral code. And - uniquely again - we are becoming citizens of our solar system (perhaps eventually of our galaxy) through our space programs.

The innovative human is indeed a true child of God - created (evolved) in the "image and likeness" - at least in the sense of fractal resonance. We have become the means by which the universe knows itself, and rises to self-consciousness.

Religious Symbolology: Several times a year when visiting my son and his family, I attend Sunday services at the Greek Orthodox *Cathedral of the Ascension* in Oakland, California. This church uses a marvelous variation of the common Christian Cross symbol, one that features three circles or spheres on each of the four ends of the cross, converting the usual simple orthogonal cross symbol into a more complex but nevertheless universal 4x3 General Systems symbol ([see figure](#) below). This emblem now has a scientific interpretation in addition to the usual religious one (of the Son embedded in the Trinity): to the eye of the astrophysicist, this is indeed a "sun" symbol representing four protons, each composed of three quarks, converting to an "alpha

particle", or helium nucleus - the process of solar hydrogen fusion, the first step up the [nucleosynthetic pathway](#) toward carbon and the complete Periodic Table of the elements. The combining of the religious and scientific interpretations of this symbol is philosophically interesting, as it continues a long tradition of conflating pagan sun worship with Christianity (indeed, Christ has always been identified with "light"). Furthermore, we know that this first step along the "Information Pathway" is necessary to all the others that follow - the alpha particle is the nuclear "brick" used to build carbon and all the heavy elements; from carbon and the periodic table we pass to biological life forms; and eventually through evolutionary time humanity emerges. Obviously, Christ cannot appear in human form until humanity itself is evolved; hence in Christian religious terms, the fusion process that fuels the sun is not just the first step along a universal [Information Pathway](#), but also the first step in the long evolutionary upward climb toward life, humanity, spiritual awareness, Christ, and finally, the social expression of his namesake religion. This is a typical example of General Systems symbology working on, cross-referencing, and illuminating multiple information domains and significance levels simultaneously. I don't know how ancient the Orthodox cross symbol is, but one could make the case that the solar hydrogen fusion process had been intuitively grasped - quarks and all - long before science explained its detail.



(See: ["The Symmetry Groups of Light"](#))

References:

Books by my late father Prof. John Curtis Gowan

["Trance, Art, Creativity" An Investigation of the Numinous Element and the Metaphysical Realm. A Book by Prof. John C. Gowan, Sr.](#)

["Operations of Increasing Order" Further Investigations of the Numinous Element and the Metaphysical Realm. A Book by Prof. John C. Gowan, Sr.](#)

["Development of the Psychedelic Individual". A Book by Prof. John C. Gowan, Sr.](#)

["Development of the Creative Individual". A Book by Prof. John C. Gowan, Sr.](#)

[Stewart C. Dodd's 4x4 Mathematical General System Matrix](#)

Pierre Teilhard de Chardin : *The Phenomenon of Man*. French: Editions du Seuil, Paris, 1955. English: Harper and Row, New York, 1959

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