

# INTELLIGENT EVOLUTION

## Glossary of Technical Terminology

Most of these terms can be explored further in the books of the IE bibliography, or in the online reference source Wikipedia.com.

- ☉ Actualize  
*Actualization is an act of local, special creation. To actualize a possibility is to cause it to change from potential / ideal / formal thought-object into a present / real / physical material-object.*
- ☉ Anthropic Principle  
*A Man-oriented law of nature. ~ Evidence from many different fields of science supports the astounding realization that we live in a surprisingly finely-tuned, bio-friendly, and mind-inclined universe. Since divine design is not an orthodox axiom of modern science, scientists have been trying for years to devise an alternative mechanical (i.e. non-teleological) answer to the obvious question raised by the "appearance" of rational design: how can life and mind arise from random (i.e. irrational) processes? The most common answer today is the Multiverse Theory: that we inhabit just one of myriad worlds in an eternal and infinite regression of evolutionary experiments in world-making. Most of these "other worlds" are un-inhabitable for various reasons. So our universe is just the lucky winner in a cosmic jackpot, where our unplanned awakening to consciousness reveals that this is the only place to be, if we want to live and think. Most of those alternative realities are losers in the life lottery. ~ The various Multiverse hypotheses cannot be considered scientific theories though, since we have no way to test or falsify them except via pure reasoning. So the plurality of God hypotheses are on the same footing with M theory, as non-empirical, philosophical conjectures. Hence your choice between the **teleological theories** and the **illogical theories** comes down to a matter of taste---or faith. Which makes more sense to you: life-from-life & mind-from-mind, or life & mind from eternal chaos & conflict? Which is more believable, Man is an accident, or a design? ~ See Front-Loaded Design.*
- ☉ Artificialism  
*A complementary view of evolution. ~ Naturalism is essentially Physics plus Darwinian Evolution. Artificialism is Metaphysics plus Memetic Evolution. ~ See Informationism.*
- ☉ Autopoiesis  
*Literally, "self-creation". ~ Evolution works by transmitting information from one generation to another, permitting the new organism to "create" itself from within, without external guidance. ~See Self-Organization. ~See Morphogenesis. ~See In-Form-Action.*
- ☉ Big Bang Theory  
*Prior to the 19<sup>th</sup> century, most western philosophers, and theologians believed that the temporal universe was created by an eternal deity at a certain point in the past, and then continued essentially unchanged, except for the routine cycles of nature. Secular scientists gradually began to question the idea of divine creation, yet they retained the view of an orderly but static world, replacing the eternal creator with an eternal cosmos. Then, Darwin's theory of evolution introduced the idea of progressive change over long expanses of time. And around the turn of the 20<sup>th</sup> century, Einstein brought forth the concept of Relativity, which challenged the absolute perfection of Newton's cycling cosmos, and even Einstein's own assumption of an eternal, static universe. He even added an arbitrary corrective "constant" to his equations to make his calculations agree with his pre-conceptions. Later, that same "cosmological constant" was shown to be directly related to the expansion of the universe. Cosmologists eventually traced the observed expansion back to an ultimate temporal and spatial point of origin: the "day without yesterday". But because of the undesirable theological implications, Einstein and others only grudgingly gave-in to the accumulating evidence that the universe was rapidly expanding. By the turn of the 21<sup>st</sup> century, the Big Bang Theory was a well-established scientific concept. But the logical necessity for an ultimate origin is still considered unorthodox science; so new work-arounds (multiverses, many worlds, bubble universes, etc) are still being proposed to avoid the necessity of dealing with the phi-*

philosophical problem of a Time Zero (implying creation ex nihilo) for the universe. ~ **Intelligent Evolution is instead an attempt to deal directly with the question of origins**, without straying too far from orthodox science, and without bowing to the taboos of traditional religions. ~See Intelligent Evolution.

☉ Butterfly Effect

According to chaos theory, a butterfly in Brazil could, theoretically, initiate a chain of events resulting in a hurricane in Miami. This metaphor illustrates the surprising sensitivity of chaotic systems to initial conditions. ~Small causes yield great effects. ~A microscopic singularity causes a macroscopic universe. ~See Chaos Theory.

☉ Chance

**Chance is the cause of Change. No chance, no change.** But it is an unreliable agent of change, subject to serendipity and whimsy. However its anomalous effects emerge from a little-known natural law called Fuzzy Logic, which is locally unpredictable, but still ultimately deterministic. In the logic of Mathematics it goes by the name of Statistics or Probability. ~ Chance is a randomizing, maverick "force" in Evolution opposing the orderly, but rigid, cause & effect laws of Determinism. In ancient cultures it was often personified as a trickster god or demon, who disrupted orderly processes just for the fun of it. Sometimes it was thought to even change the course of Fate or the Will of God. ~ But in the Intelligent Evolution theory, Chance is a necessary component of a progressive evolutionary process. Pure Determinism leaves no opportunity for change or novelty. For the purposes of IE, Chance might be defined as deliberately adulterated Determinism, which opens the door to unplanned possibilities and fortuitous contingencies. Hence, random Chance is not necessarily a sign of poor planning, but instead a sign of a cleverly designed, automatic creative process. It allows for an element of freedom within determinism. ~ See Fuzzy Logic. ~See FreeWill. ~ See Contingency. ~ See Clinamen.

☉ Chaos

In Greek philosophy "Chaos" was a raw, formless, primordial state of the universe, equivalent

to the "Abyss" in Jewish cosmology. ~ That sea of unformed, fluid potential was envisioned as something like the "plasma" of modern physics, which is a primitive-but-potent state of matter. Some physicists estimate that 99% of the "matter" in the universe is dematerialized plasma. In Thermodynamics, Chaos is equivalent to maximum Entropy. ~ The Greek "First Cause", like a potter shaping clay, imposed order on disorderly Chaos, and fashioned the universe as a suitable container for material beings. ~ **In IE, Chaos is the term used to designate the infinite potential of Eternity.** In its raw state Eternity, which is an attribute of the Creator, has ultimate potential but nothing actual—no forms, no things, just possibilities. The act of creation was essentially a change in the state of mind of the Creator, who (unlike the Greek Demiurge) metaphorically formed the physical Cosmos out of He/r own meta-physical body: protoplasmic Chaos. ~See Chaos Theory. ~See Entropy. ~See Eternity.

☉ Chaos theory

Greek "Chaos" was characterized by **unpredictability** as the antithesis of orderly "Cosmos". ~ Complex systems, such as the weather, are logically deterministic, but not practically determinable. They appear to be chaotic, but obey the cause & effect laws of physics, and they are extremely sensitive to tiny variations in initial conditions. ~See Butterfly Effect

☉ Clinamen

According to Roman poet/philosopher Lucretius, it's a **cosmological principle of creation**, denoted as a random "swerve" from a predestined original course. ~ In IE the term is used to refer to a slight eccentricity or asymmetry in initial conditions that resulted in all subsequent novelties as the creative process unfolded along a slightly erratic path. What originally happened seemingly by Chance (the swerve) is the source of unpredictable random Changes within an otherwise orderly and reliable process of increasing organization. ~ But in IE the Clinamen was a deliberate divine design decision: a **Choice** to allow **Chance** and **Change**, in order to permit a bit of freedom within a process governed by Natural Laws. Hence, Chance is not a corruption of the Will of God, but a **necessary imperfection**

*in the design of a temporal world that introduces the possibility of Change over time (Evolution), as opposed to the unchanging perfection of timeless Eternity. ~ See Chance. ~See Butterfly Effect. ~See Chaos Theory.*

☉ Co-Evolution

*No man is an island, entirely self-sufficient. And nothing evolves in isolation. **Evolution is a uniformly distributed force: it happens everywhere at once.** My evolution is influenced partly by my own inherent properties, and partly by the properties of the environment around me. Some biological entities are so intimately intertwined that they seem to evolve together, almost as one organism.*

☉ Collective Behavior

*This is the scientific study of complex aggregations of individuals that somehow seem to act in concert without centralized control. ~ Schools of Fish, flocks of Birds, and swarms of Bees are typical examples of "Swarm Theory". ~ The "Hive Mind" of ants and bees is another example, sometimes called a Super-Organism. ~ Human "mob" behavior also illustrates the principle of "**collective consciousness**" where the group dynamic seems to have a will apart from the individuals, referred to as "Group-Think". ~ All of these are examples of **emergent holistic properties** related to the statistical phenomenae of Information Theory. ~See Co-Evolution. ~See Information Theory.*

☉ Complexity Theory

***A mathematical understanding of group behavior, which is statistical rather than particular.** ~ Individuals are unpredictable, but large numbers of individuals are predictable. **Orderly group behavior emerges from chaotic individual behaviors.** ~See Chaos Theory ~See Law of Large Numbers.*

☉ Contingency

***Contingency is the opposite of Necessity.** ~ In a cause and effect relationship, the effect may be contingent (dependent) on multiple causes. So in a complex system, a particular effect may not necessarily follow from a particular cause. In such cases, **cause and effect bear only a statistical relationship.** Therefore absolute determinism in chaotic states and at quantum scales is limited by the laws of probability*

*rather than necessity. ~ Philosophers and cosmologists debate whether human life was a necessity or contingency in evolution. In the IE hypothesis, some kind of intelligent life was necessary, but life-as-we-know-it may be contingent.*

☉ Consciousness

***Consciousness is a wholistic, emergent property of a physical body.** ~ Just as electrical phenomena arise from the relations and interactions of atoms, Mind arises from the organization and dynamic relationships of matter and energy. ~ According to 20<sup>th</sup> century Information Theories, a fundamental property of matter---and of energy---is Information, which is a quality arising from the essential order and organization of the fundamental constituents of matter. Hence Consciousness (symbol C) is inherent in the informed structure of physical things. C is a meta-physical property of all physical systems. The informational "structure" is composed of immaterial ratios, configurations, and relationships. C enables a specific configuration of atoms to exhibit the behavior we call "consciousness". ~ At the elemental level such consciousness is limited to **yes/no** or **1/0** ratios. But as complexity is compounded, C evolves to "values" of **pain/pleasure** or **good/bad**. Eventually, in humans and higher animals, those basic values diversify into a wide range of "**emotions**" that serve evolutionary survival functions. Ultimately, our pre-verbal emotions are organized into verbally-articulated "**feelings**". ~ The path of emergence was roughly as follows: random physical accidents built-up into inter-related **organizations** of raw matter; then rudimentary input-output **generic consciousness** evolved into sentient input-know-output **sub-consciousness** (perception); then into input-know-choose-output **consciousness** (conception); and finally into input-know-choose-know-output **self-consciousness**. ~ Sub-consciousness is our auto-pilot that we have in common with all higher animals. Consciousness is the captain/pilot of the body. And Self-Consciousness is like ground-control as it relates self to other bodies in the vicinity. ~ Sub-C and Consciousness were prior to language, but Self-Consciousness co-evolved with language and abstract thought, and is hosted by the brain as the center of sensory*

activity in the body. ~ Consciousness is a tool by which organisms relate to the environment. Culture is an extension of personal C into a tool with many handles. Memetic (cultural) Evolution is currently a reductionist science of Mind, with parallels to atoms and energies and entropy, but it has wholistic implications. ~ Consciousness is no more mysterious than gravity and electricity--if we assume that it is a fundamental property of the world. C and Sub-C can perceive the external environment. But Self-C can only observe itself. So C in other brains can only be deduced from circumstantial evidence, just as we detect Black holes and Dark Matter. ~ Presumably, Consciousness continues to evolve as the physical universe changes in the direction of complexification. Only Entropy can destroy the Mind, but then it only reverts back into its fundamental elements: matter, energy, and information. ~ See Information. ~ See Complexity. ~ See Emergence. ~ See Meta-Physics.

#### 🕒 Consilience

An old philosophical term used by E.O. Wilson in his book, CONSILIENCE: The Unity of Knowledge. It literally means "jump together" in the sense of "coincident" or "concurrent". But EOW intended the term to mean **the opposite of Fragmentation and Reductionism**, which he saw as an obstacle to further progress in science. ~ Wikipedia: <<consilience . . . has its roots in the ancient Greek concept of an intrinsic orderliness that governs our cosmos, inherently comprehensible by logical process, a vision at odds with mystical views in many cultures that surrounded the Hellenes. The rational view was recovered during the high Middle Ages, separated from theology during the Renaissance and found its apogee in the Age of Enlightenment. Then, with the rise of the modern sciences, the sense of unity gradually was lost in the increasing fragmentation and specialization of knowledge in the last two centuries. The converse of consilience in this way is Reductionism.>> ~ I use it in reference to **the trend toward Holism** found in the 21st century sciences such as Cybernetics, Chaos/Complexity, and Information theories. ~ See Holism. ~ See Reductionism.

#### 🕒 Creation

**Creation is both a verb and a noun.** ~ The Big Bang was not just a one-act play; it is a long-running creative process. In the IE thesis **Creation is an ongoing improvisational collaboration**. God created the characters, but the actors work together to write the words and actions. ~ To an eternal deity this creation may be just a pass-time, or a day-dream. But to us creatures, it's Life--it's all we've got. ~ Is this the one and only creation of an eternal deity? I don't know, but I doubt it. What I do know is, this is the only creation that includes Me as a character with a speaking role. ~ As an actor in the play, I have creative license (freewill) to ad-lib my lines and my actions like a jazz ensemble riffing off each other's riffs. ~ See Universe. ~ See Pointlessness.

#### 🕒 Critical Mass or Critical State

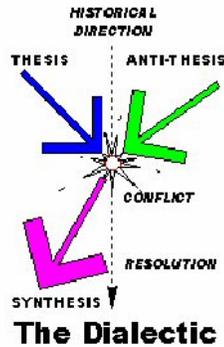
**A chaotic situation where a complex system must either jump to a higher state of organization, or fall back to a more stable level.** ~ When the mass of a lump of uranium is artificially increased beyond a certain critical point, it becomes unstable, and results in an atomic explosion. ~ See Tipping Point. ~ See Phase Transitions

#### 🕒 Deism

**A philosophical worldview that accepts the logical necessity for a Creator, but not the historical veracity of human scriptures.** ~ It differs from Monotheism in that the deity is impartial, and does not show favoritism for certain persons, tribes, or nations. It differs slightly from Pantheism in that the deity is not viewed as just the body or soul of the natural universe, but rather as the pre-existing creator of it. Deism differs from Paganism and Polytheism in that **the deity has no natural or humanoid features**. ~ Deism is compatible with scientific skepticism, but not with faith, or with superstition, or with magical thinking. ~ See G\*D. ~ See Panendeism.

☉ Dialectic

*A simple vector diagram of the chain or web of Cause and Effect.* ~ Anti-Thesis (new force or idea) crashes into Thesis (old paradigm) and results in a blend of both forces proportional to their power called Syn-thesis. Surprisingly, the same force-vector diagrams that are used in Physics and structural design can be used to illustrate the course of history and the creation of a novel idea. ~ Dialectic is simply how the world works: **the logic of creation.**



☉ Doubt

*A self-protective mental reflex in cases of ambiguity or uncertainty.* ~ Since metaphysical concepts are harder to confirm than physical objects, they are more often doubted. Doubt, in the form of methodical skepticism, is a necessary tool for science to separate opinions from facts, and to defend against deliberate fraud, or un-conscious delusion. ~ **Doubt is not an end in itself, but a means to the end of truth.**

☉ Dualism

*A reductionist worldview emphasizing the contrasts and dichotomies of the world instead of the similarities and unities.* ~ Ignoring the continuities, it focuses on the polar oppositions such as Good/Evil, Black/White, Mind/Matter, Us/Them. ~ A Holistic view looks at the commonalities and connections between the parts that make-up a whole thing or category. Ultimately, God is the whole of which everything in creation is a part. **But the physical world is inherently dualistic and discontinuous** (symbolized by the 1s and 0s of computation), because of the division and replication within the totality of God. ~ Only the metaphysical mind can see the invisible bonds (relationships) that compose a set of parts into a whole. ~ Dualism can be dangerous when it is used to justify extremist behavior. Monism can be dangerous when it ignores the reality of plurality and symmetry. ~See Holism.

☉ Emergence

*A natural creative function of evolution.* ~ The appearance of novel properties that cannot be predicted from properties of components that make-up the system. Ex: Fire-quenching H<sub>2</sub>O is composed of two flammable gases. ~ The whole is greater than the sum of the parts. The pieces have a role to play in their context, **but the function of the whole only becomes apparent in a higher level context.** ~ The Ah-Ha experience of grasping meaning. Ex: In a visual paradox, two meanings are inherent in a picture, but the mind can only "see" one at a time. Each mental image emerges from the same set of raw data. What makes the difference is interpretation of information. ~ Emergence is a continuous process that appears to be sudden only because the mind reaches a tipping-point of understanding between an old meaning and a new meaning, causing a phase-change from one logical category to another. ~ **Rational Inference occurs when Meaning emerges from a meaningless pattern of data.** ~See Holism. ~See Organization.

☉ Energy

*Energy is defined as "the potential for causing change".* ~ We now know that matter is ultimately made of energy, but what then is energy made of? ~ The Greek term for energy means "divine action" or "magical operation". Even the scientific term "potential" simply means powerful. But where does the power come from, ultimately? Is generic Power self-existent, or is it generated by a powerful Being of some kind? ~ IE theory postulates that God is infinite potential which, by an act of will, is actualized in the form of energy, which in turn takes on the various forms of matter, which eventually complexify into the form of ideas. ~ **In effect, energy is the Will of God, and ideas are the Word of God.** ~See God. ~See Information.

☉ Enformy

*noun: The organizing principle of the universe.* ~ A postulated natural force that opposes Entropy in that it causes an evolutionary tendency toward organization, and away from randomness. ~ Energy is the physical cause of all Change; but the Power principle specifically causes Work; the Mass principle causes

Matter; moreover the randomizing Entropy principle causes Disorder or Disintegration, and the organizing Enformy principle causes Order or Integration. Ultimately, each of these principles is an instance of the more general principle of In-Form-Action, so each manifestation is merely one actualization of a protean (shape-shifting) potential. According to the theory of Informationism, the ultimate Cause of all these power principles is the Will of the God-Mind. Purposeful Will-Power transforms potential into actual. Fortunately, the finite human mind is able to recognize divinely-informed patterns (gestalts, holons) in natural systems. ~ Modern science recognizes Energy and Matter as the fundamental constituents of the material universe, and it accepts Entropy as an inevitable tendency toward death and decay. But due to a Reductionist bias in science, it has overlooked **the mysterious creative power within Energy that causes the gradual emergence of novel forms and functions, including Life and Mind**. Yet the new theory of Enformy "provides a conceptual framework for integrating the physical, biological, and psychological sciences". ~ Evolution is known to be expansive and progressive despite the regressive forces of Entropy (to turn inward). Hence the countervailing force of Enformy (to shape from within) is necessary to permit complex entities to self-assemble from simpler stuff. ~ verb: "**To en-form**" is to give form to the formless, or to transform one thing into another--as a sculptor molds clay into a bowl. ~See Information (Generic). ~See In-Form-Action. ~See website [www.enformy.com](http://www.enformy.com)

#### ☉ Entropy

**Entropy is what happens when you blow stuff up.** ~ The Big Bang started with a super-high concentration of energy & information and blasted it into a giga-zillion little meaningless bits. Fortunately for us, local pockets of organized energy and matter can hang-together long-enough for life and mind to emerge from the chaos. Entropy is a measure of uncertainty in message transmission. Thermodynamic entropy measures the weakening of energy, which is a form of information. ~See Information Theory.

#### ☉ Eternity

Contrary to popular belief, Eternity is not a long, long time, **it's the absence of time**; It is one long Now. Likewise, Infinity is not a far, far distance; it's the absence of space; It is one big Here. ~An eternal being is not old; S/he is timeless. Such a being is not located in heaven; S/he exists everywhere, all at once. It is one really big Being. For an immaterial entity, time and space have no meaning. An eternal, infinite entity is ultimate potential; everything that is, was, or ever will be. ~See GOD.

#### ☉ Evolution

The Greek roots mean "unrolling" or "rolling out" as a scroll. This seems to imply a pre-determined, but hidden, script which is revealed to humans only moment by moment, then rolled back up into vaguely-remembered history. ~ Modern theories use the term to mean simply "change over time". But a medieval version of the evolutionary concept was called "The Great Chain of Being", with the emphasis on divine design of a fixed hierarchy. The IE thesis though is more like "**The Great Chain of Becoming**". The latter view avoids the problems of predestination by allowing the patterns (chain) to emerge gradually over a long period of time. Hence any foreknowledge by the Creator is statistical rather than deterministic; thus allowing for the possibility of Free Choice by intelligent creatures. ~ Darwinian evolution was portrayed as a simple, rigid mechanical process with new species squeezing forth from the mindless meat grinder. Neo-Darwinian evolution became more complicated after the discovery of chemical DNA as the repository of information from one generation to the next. Now 21st century Darwinism is even less mechanical, and more informational, as Memetics has developed into a promising theory of cultural evolution. ~ In the Intelligent Evolution essay, the unrolling of the divine blueprint involves mechanical, chemical, and informational processes. In effect, God organized existence (being) and then started the process of becoming (evolution). ~See Emergence. ~See Intelligent Evolution. ~See Memetics. ~ See The Logic of Evolution.

☉ Free Will

**The ability of self-conscious beings to freely choose options from among those that destiny presents.** ~ In the 3D network of cause and effect, a node with self-awareness is a causal agent. With multiple pre-determined inputs, and multiple potential outputs, it can choose from a range of possibilities and create local novelty within a globally-deterministic system: Freedom within determinism. ~ Freewill requires statistical Chance to provide options and detours from strict Determinism. ~ Freewill is compatible with divine creation, but not with divine predestination. ~ See [Probability](#). ~ See [Intelligent Design](#). ~ See [The Logic of Evolution](#)

☉ Front-Loaded Design

**Intelligent Design (ID) attempts to support the concept of direct design through intelligent intervention.** ~ Intelligent Evolution (IE) is based on the assumption of **indirect design** via front-loading of information. ~ "Front Loading" [ref. [The Design Matrix](#), by Mike Gene] creates laws and principles which in turn produce matter / energy and evolution. Hence, the design "emerges" or unfolds over time as the universe self-assembles into a place hospitable for beings similar in some ways to the original designer. ~ See [Anthropic Principle](#).

☉ Fuzzy Logic

**Fuzzy Logic is a computer age alternative to Classical Logic.** ~ Colloquially, "an educated guess". ~ Wikipedia: "Fuzzy logic is not any less precise than any other form of logic: it is an organized and mathematical method of handling inherently imprecise concepts." ~ Classical Logic has the same limitations that caused modern mathematicians to develop Non-Euclidean Geometry. The pure geometric forms of Euclid and the clearly-defined syllogisms of Aristotle, have been found to fit only an ideal world, not the messy real world we inhabit. ~ Where Classical Logic applied only to simple dichotomies such as Hot versus Cold, Fuzzy Logic is a statistical method for dealing with a variable range of parameters, such as Warm or Cool. ~ Since Deism is a theory based on an infinite and eternal Deity, it is not amenable to analysis by Classical Logic. Anything postulated to exist beyond Space-Time and Matter-Energy would also lie

beyond the logical boundaries of human reasoning: zero and infinity. So anything we say about G\*D, other than bare existence is only a guess, a hypothesis, a speculation, a myth. But all of those have their place in human discourse, as long as we don't mistake them for facts, established theories, observations, and revelations. ~ See [Logic of Evolution](#).

☉ G\*D

**The generic name for the origin and ground of all being.** ~ The First Cause of all physical existence. The Prime Mover who started the cause & effect process of evolution. The Creator of the universe. ~ G\*d is super-natural, in the sense that nature is a sub-category of G\*d. **G\*d is the whole of which the universe is a part.** G\*d can only be imagined in terms of analogies with features of the physical world. [like a king or a sculptor] ~ In the IE hypothesis G\*d is assumed to be an infinite and eternal entity with no human characteristics except Reason. God communicates with human minds only in the physical relationships (laws of physics, ratios, constants) of the created world. **G\*d cannot be known by the 5 senses, but only by the 6<sup>th</sup> sense of reason.** ~ IE portrays the all-encompassing Deity as a Mind without a physical body. Metaphorically, the substance of the deity's metaphysical "body" is **information**, formerly known as "spirit". ~ IE also pictures the perceivable universe as a "black box" (or the expanding sphere/horizon of the Big Bang) full of matter and energy, where everything outside the box is G\*d. But at the same time, there is nothing inside the box that is not part of G\*d. ~ One semi-materialistic way to think of G\*d is as the "empty space" that constitutes 99% of the universe—the remaining 1% being matter and energy. Within that space, quantum fluctuations of "information" create quantum "wave/particles" of matter and energy. ~ G\*d is one, singular, all, whole. The universe is dual, fragmented, discontinuous, and partial. ~ By analogy with quantum super-position, G\*d is good and evil, positive and negative, male and female, etc, all at the same time. G\*d is the sum of all dualities. ~ **The G\*d of IE is the ultimate impersonal principle of all philosophers and sages of all cultures of all times, but not the tribal god of any specific culture or religion.** G\*d is the eternal I AM; the infinite

TAO; the formless Brahma. ~ All human attempts to define G\*d—Monotheism, Atheism, Pantheism, Deism—are partly true and partly false, but totally inadequate. ~ This G\*d does not answer prayers or sign autographs. He/r phone number is unlisted.  
~See Spinoza's God.

#### ☉ The God Hypothesis

**A theory of evolution that incorporates a First Cause to get the creative process rolling.** ~ After that, Darwin's theory of Natural Selection describes the way necessity (laws) and contingencies (random accidents) combine to produce novel forms from older arrangements of matter and energy. ~ **The purpose of the God Hypothesis is not to know God, but to understand God's creation in its proper context.** The GH places the physical universe inside the black box surrounded by the meta-physical universe of G\*D. We can perceive the inner workings of the natural, material world, but we have no way of knowing what goes-on in the mysterious super-natural realm outside the box.

#### ☉ The God Function

Steven Hawking et al founded a new scientific discipline called Quantum Cosmology. Hawking simply took the basic concepts of Quantum Theory (describing the infinitesimally small fundamental constituents of the universe) and pushed them to their ultimate logical conclusion at the other end of the scale. ~ When a sub-atomic particle is about to decay into a different kind of particle, the theory says that the actual particle is "transfigured" into a "purgatory" of Quantum Superposition, where all potential future states are equally possible, and an arbitrary "choice" must be made before the transformation is completed. According to QC the same phenomenon could apply to the universe as a whole. ~ The "Wave Function" of a quantum wave/particle is a mathematical expression for the set of all potential states of that particle. **Therefore, the wave function of the whole universe is the set of all possible states of the Cosmos.** ~ Some Quantum Cosmologists have interpreted this incalculable expression as a multitude of coexisting universes, or an infinity of parallel universes, or an eternal regress of bubble universes. But the IE interpretation of the Cosmic Wave Function is simply that everything-that-could-possibly-

exist (the meta-universe or Omniverse) exists all at once—in superposition, to use a quantum term. **And some traditional terms for that timeless, limitless, all-encompassing state of affairs are "Eternity", or "Infinity", or "Deity".** So I will just take the next step and refer to the Wave Function of the Universe as "God". The uncreated "Creator" of IE is everything that ever was, and will be—including this Creation. ~ **The "God Function" is a metaphorical expression for the set of all past and future, actual and potential states of Being.** ~See Superposition. ~See G\*D.

#### ☉ Group-Think

A term coined by social-psychologist Irving Janus to describe how group dynamics limits the individual's ability to consider alternative options. Mob behavior is characterized by instant consensus and irrationality. ~See Swarm theory. ~See Tipping Point. ~See Collective Behavior.

#### ☉ Holism, Wholism

**Opposite of Reductionism.** ~ The philosophical method of treating a thing-of-interest as a "black box" of unknown contents. It is judged, not by its internal mechanism, but by its role, function, or interaction with the environment. ~ The whole is always greater than the sum of its parts. **That little something extra is known as "organization".** ~See Organization. ~ See Consilience.

#### ☉ Holon

Arthur Koestler coined the term to denote the building block of Holistic Theory. A "Holon" is a thing unto itself, but as an element of a larger whole it transcends its own limitations to go beyond self. **The Holon, then, is a part-whole.** ~ The word is a combination of the Greek "holos" meaning whole, with the suffix "on" which, as in proton or neutron, suggests a particle or part. Unlike the Greek "atom", which was supposed to be in-divisible, Koestler's "Holon" is infinitely and dynamically divisible, and additive. ~ A Holon can be viewed as a node in a hierarchy, which added together with other nodes constitutes a whole, which is also a node in a higher, more comprehensive, category. For example, neighborhood, district, city, county, state, nation. ~ A "Holarchy" is a system of systems, a hierarchy of hierarchies. ~ Spooky action-at-a-distance

is what Holons do in concert. For example, a 100 foot rope composed of 1' fibers can act on things beyond the physical reach of one fiber by acting together as a whole. A whole is at once transcendent and immanent. ~See Holism, Wholism. ~See Systems Theory.

#### ☉ Ideality

**Ideality is the part of ultimate Reality that we can't perceive with our physical senses; we can only conceive it with the mind's eye:** mundane things like "ratios" or sublime things like "love". ~ Until recently, Ideality was studied only by philosophers, and theologians. But we now have the technology for scientists to "see" cognition in action. Pure mathematics deals directly with Ideality. ~ The concept is related to Plato's doctrine of ideal "Forms", but a bit more grounded in science. **The philosophy of scientific Reductionism deliberately ignored anything that could not be seen, touched, tasted, or measured.** But 21<sup>st</sup> century science is beginning to expand into areas, such as Systems Theory, Information Theory and Complexity Theory, that can't be understood from a reductionist perspective. ~See Holism. ~See Information Theory. ~See Qualia. ~See Memes. ~See Metaphysics. ~See Redeality.

#### ☉ In-Form-Action

**A hypothetical divine power of creation, equivalent to the mythical "Word" of God. It is the ability of a meta-physical mind-being to create physical matter-beings. IFA organizes amorphous chaos by imposing "form", or design intent, or purpose.** ~ Chaos is represented by a meaningless carrier wave of radio energy. Meaningful data is added in the form of vibrations which oscillate between two extremes: up-down; positive-negative; existing-non-existing. This "informed" energy creates all of the various "forms" of matter and energy in the universe. IFA can transform energy into matter and vice-versa. It can also change matter and energy back into the information of communication. ~ IFA is equivalent to the ancient concepts of "spirit" or "essence". ~See Autopoiesis. ~See Generic Information. ~See Chaos.

#### ☉ Information (Generic)

**Information is almost always defined in terms of its context or container.** ~ Raw In-Form-

Action has few, if any definable, perceivable qualities. By itself, Information is colorless, odorless, and formless. Unlike colorless, odorless, and formless water though, **Information gives physical form to whatever is defined by it.** ~ Like DNA, Information shapes things via internal rather than external constraints. Like the Laws of Physics, Information is the motivating & constraining force of physical reality. Like Energy, Information is the universal active agent of the cosmos. Like Spinoza's God, **Information appears to be the single substance of the whole World.** Information is the divine, promethean power of transformation. Information is Generic in the sense of generating all forms from a formless pool of possibility. ~See In-Form-Action. ~See Substance.

#### ☉ Enformationism, Informationism

**A new post-postmodern paradigm proposed to supersede the obsolete modernist scientific worldview of Materialism / Determinism.** ~ In the 19th century, matter was considered to be the fundamental element of reality, space was nothingness, and the concepts of "energy" and "force" were still primitive. As the 20th century dawned, matter/energy and space/time were re-defined as various forms of the same underlying mathematical laws and principles. Then around the turn of the 21st century, the material essence of the world was diluted even further as computers and information theories began to open up strange new frontiers of virtual realities and multiple universes. ~ Back when Matter/Energy was supposed to be the stuff of reality, that pragmatic worldview excluded any need for intruding metaphysical considerations into physical science. However, as 20th century science evolved at an exponential rate, confidence in the reliability of Reality began to wane. Old-fashioned, stable, predictable materialistic/deterministic Science was repeatedly perturbed by the subatomic and cosmological discoveries of strange hidden realities where the ordinary laws of physics were watered-down by invisible particles, indeterminate probabilities, and interfering observer effects. ~ One way to reconcile the new postmodern sciences with the orthodox modern view was to interpret the bizarre new world in medieval terms where the appearance of solid reality is founded upon metaphysical spirituality. That new-wine-in-old-wineskins resolution was followed

by many religious thinkers in the form of New Age beliefs and Intelligent Design theories. ~ Most hard-nosed realists, though, simply dug-in their heels, and deflected any metaphysical implications of the new science as signs of a counter-enlightenment religious conspiracy. ~ However, a more progressive approach to consilience might be to update the archaic terms "spirit-soul-god-heaven" and "matter-energy-space-time" with **the 21st century vocabulary of Information Theory, and the post-modern sciences of Data Processing Systems.** This is how Informationism proposes to reconcile cutting-edge science with traditional wisdom, and to re-integrate practical science with theoretical philosophy. ~ See Artificialism.

#### ☉ Information Theory

**Information is a quality of physical patterns and processes that stimulates meaning in a mind.** ~ It communicates knowledge (thought objects) from one place to another in the form of abstract relationships. It can be relayed via energy and replicated in material form, but the transmission is only complete when the message is received by a conscious mind. ~ It is organization as opposed to chaos. Yet information is equivalent, not to perfect order, but to a moderate degree of disorder. Information patterns must be distinguishable from both a uniform [quiet] background, and a chaotic [noisy] backdrop. Information, like life, is only possible in the Goldilocks Zone: not too simple, not too complex; not too orderly, not too disorderly. ~ **Any collection of things that display the traits of organization:** order, pattern, function, purpose, inter-dependence, or shared knowledge. Information is what makes a collection of parts into a whole. ~ See Entropy. Holism. Thought Objects. Qualia.

#### ☉ Intelligent Design (ID)

**A modernized version of Creationism** that attempts to interpret the Biblical myth of creation in terms of modern science, including Evolution. ~ Intelligent Evolution takes just the opposite tack. It attempts to express the findings of modern science in the form of a myth that the average person can identify with. That way the story will be adapted to fit the scientific facts instead of bending the facts to fit an old storyline. ~ In both myths the Creation is assumed to be the miraculous result of divine

design, **but in IE everything since the Big Bang has been natural, requiring no divine intervention.** ~ The IE Creator designed the process, but not the final product. Thus, **there is an element of chance, and of freewill, of potential, and possibility, in the ultimate outcome.**

#### ☉ Intelligent Evolution (IE)

**Intentional Evolution with a mind of its own.**

The mutant offspring of an interspecies mating between Evolutionary theory and Information theory. ~ Darwin's 19<sup>th</sup> century theory was expanded and improved in the 20<sup>th</sup> century by incorporating Genetics, with DNA as the carrier of essential "design" information from one generation to the next. Natural Selection then removes the new design prototypes that don't "fit" the requirements of the current environment. ~ Now 21st century science has discovered that natural Evolution is also guided by artificial Memes. **Genes are information in physical form, while Memes are information in meta-physical form.** Human minds are now capable of transmitting information from one generation to another faster and farther than old-fashioned sex-organs. ~ Inadvertently though, Memetic Evolution—otherwise known as human culture—like a naïve student driver, has begun to steer the course of natural progression toward a dangerous downward spiral of Devolution. But we can't expect a hands-off deistic God to save us from our own stupidity. So it's up to us (homo sapiens) to collectively grab the wheel of Artificial Selection and get back on track: to put the intelligence back into evolution. ~ See Intelligent Design.

#### ☉ Intention

Information may be analyzed into at least three categories: A) "Mechanical" information is embedded in matter & energy and produces changes in other material objects (electromagnetism). B) "Inferential" Information is any recognizable organization in the natural or cultural environment that produces meaningful patterns in a receptive mind (logic, relationships). C) "Intentional" Information is a specially-coded pattern that must be interpreted by the receiving mind based on some knowledge of the sending mind (abstract ideas, emotions). Computers can process Mechanical info, but a conscious mind (AI???) is necessary to "infer" meaning. **And a "cultured mind" is necessary to infer the "intention" of**

*another mind. All of these can be called Memes, but only "Intention" is truly a transmission of "cultural" knowledge. ~ In the context of human behavior, Intention is an optional precursor and cause of physical action. The intended effect is selected by free choice from a range of possible outcomes.. ~See Memetics. ~See Intelligent Evolution.*

☉ Laws of Form

***The mathematics behind morphogenesis?***

*~ A theory that reveals striking connections among logic, Boolean algebra and arithmetic, and the philosophy of language and mind. ~ Physical Form arises from an original mental distinction (law) as a creative act of cognition.*

☉ Law of Large Numbers

*In statistics, the larger the sample, the more certain a prediction can be. Statistical mathematics cannot predict the behavior of single individuals, but for huge masses the calculated outcome is almost a sure thing.*

☉ Leap of Logic

***The key conjecture of the IE essay** is the hypothesis that **matter and energy**—even space and gravity—are **ultimately composed of immaterial information**. ~ That premise is derived from metaphoric descriptions of subatomic particles as "probability clouds" and of energy as "waves propagating thru empty space". Such poetic analogies seem to make real-world sense only in the light of Information Theory: the study of non-physical ratios, relationships, patterns, and probabilities. ~ The core concept of IE is that matter and energy are not the basic constituents of ultimate Reality, but Being and Reason: i.e. existence and consciousness. ~ If this untested axiom proves to be false, then IE theory is just a myth and a worthless waste of words. But, if it can be shown to be plausible, it could open new avenues of scientific research, revealing religion from a whole new perspective. ~ See Informationism. ~ See Information Theory. ~ See Metaphysics.*

☉ The Logic of Evolution

*Complex RealWorld systems & processes as contrasted to Idealistic, Classical Logic. ~ Human **freewill** does not contradict determinism; it complements the logic of evolution. ~*

*The ordering principles of natural Evolution are not simple and absolute like classical Aristotelian logic, but more like the messy approximations of **Fuzzy Logic**. Nature's deterministic Laws of cause-and-effect are contaminated with uncertainty and random chance. So in practice, they are probabilistic rather than absolute. Hence, you could say that they are more like flexible guidelines than divine commands. Which suggests to me that the Creator was not a rigid Dictator, but an open-minded Designer. Therefore, I conclude that the Chance element of Natural Law leaves room for a small amount of freedom for law-abiding citizens of the Cosmos. ~ Classical Logic, like classical geometry, is based on Ideal forms and perfect conditions. Fuzzy Logic however is based in Real things and complex conditions. For the same reason that Non-Euclidian Geometry is considered to be the true shape of Nature, Fuzzy Logic is more like the ordering principles of Natural processes. Over the last couple of centuries, scientists have learned that there are no straight lines in Nature; no perfect triangles or squares; and the shortest distance between two points in space may be a curved line. Reality seems to be somewhat less than Ideal. ~ Fuzzy logic is not sloppy logic, though; it's adaptable logic. It's no less logical than any other system of order, but instead a precise method for dealing with inherently imprecise natural phenomena, such as Warm rather than Hot or Cold measurements. FL is a special kind of Probabilistic mathematics suitable for such shaded values. It works on a continuum rather than a binary base. For example, a digital computer is inherently binary, but a quantum computer covers all the intermediate values between 1 and 0. The Universe has been compared to a quantum computer, and the analogy may be more than a metaphor.*

*~ In any case Evolution is guided by rules which incorporate feedback loops, for continual adjustments to changing conditions. And human freedom may have been intentionally designed into one of those loopholes. One way to think of those loops is to imagine them as the girth-ropes on a bucking bronco: it's a handle for grasping and controlling Destiny--- at least for a few seconds. ~ See Freewill ~ See Evolution. ~ See Fuzzy Logic.*

## ☉ LOGOS

Greek for “word”, “reason”, “logic”, and generally the *whole spectrum of information* from intention to arrangement to execution of an idea. Stoic philosophy used the term in reference to the divine **animating principle** of the universe. Other equivalents are : “hypothesis, thought, grounds for belief or action, meaning, proportion, principle”. Another implication was the divine **impulse** behind ordinary energy and work. ~ Philo of Alexandria used the term in a technical sense to distinguish between a material object and its perfect Platonic **Form** as a divine design concept. He may have indirectly inspired the early Christians to use the Greek nickname for a god of Divine Wisdom in reference to the Christ. ~ In IE the LOGOS may symbolically represent the whole extent and workings of the mind of G\*D. ~ See Mind-Field. ~ See Enformy.

## ☉ Memes

**Mememes are mental packages of information, similar to bits, and bytes, and words, and symbols.** ~ Metaphysical ideas and concepts may be compared metaphorically to physical genetic information. **Information in the form of “Mememes” follows basically the same logical rules as information in the form of genes** (chemical DNA). Ideas seem to evolve and replicate and mutate in a manner similar to a virus. Therefore, in IE theory, Mememes are a part of the ultimate “reality” that includes matter and energy and information. ~ See Ideality. ~ See Intelligent Evolution. ~ See Intention. ~ See Memetics. ~ See Thought Objects.

## ☉ Memetics

**Memetics is a post-genetic approach to evolutionary models of information transfer based on the concept of the Meme.** ~ A “Meme” is a hypothetical unit of cultural information, analogous to the Gene as a unit of biological information. Both forms of information are passed along from one generation to the next by means of replication. Conscious information is knowledge, and shared knowledge is the basis of human culture. ~ Memetics is a fruitful new way of looking at Cultural Evolution. Just as Genetics revolutionized biology by establishing the mechanism underlying Darwinian evolution, **Memetics promises to give us an understanding of the “mechanism” behind cultural changes over time.**

~ See Mememes. ~ See Intention.

## ☉ Meta-physics

**Literally “after” or “beyond” physics.** ~ Aristotle divided his treatise on science into two parts. The world as-known-via-the-senses was labeled “physics”. And the world as-known-by-the-mind, by reason, was labeled “meta-physics”. Plato called the unseen world that hides behind the physical façade: “Ideal” as opposed to Real. For him, Ideal “forms” (concepts) were prior-to the Real “substance” (matter). ~ **Physics refers to the things we perceive with the eye of the body. Meta-physics refers to the things we conceive with the eye of the mind.** Meta-physics includes the properties, and qualities, and functions that make a thing what it is. Matter is just the clay from which a thing is made. Meta-physics is the design (form, purpose); physics is the product (shape, action). The act of creation brings an ideal design into actual existence. The design concept is the “formal” cause of the thing designed. ~ I use a hyphen in the spelling to indicate that I am not talking about Ghosts and Magic, but about Ontology. ~ See Ideality.

## ☉ Mind/Brain Identity Problem

This is an ancient philosophical conundrum. Is the Mind nothing more than the activity (function) of the physical Brain? Or is Mind a separate spiritual entity from the material Brain? ~ The basic principle behind the IE theory is that **Mind and Brain are integral parts of the same overall reality.** ~ To keep rational science from intruding any further into the realm of religion, Descartes formally declared that Mind was a property of the divine Soul, and hence not subject to inspection by science which should only concern itself with the mundane body. Since then, scientists have tacitly agreed to place the Mind off-limits. ~ Yet in recent years, Neuroscience, Artificial Intelligence, and other new disciplines have been trespassing in forbidden territory. The Mind is no longer a mysterious, ethereal entity, or just a religious myth. It is instead both a function of the Brain, and the substance of it. On a quantum level, the brain is composed of the same fundamental patterns and ratios that later emerge as logic and reason on the macro level. Hence, **Mind and Brain are simply dif-**

*ferent forms of data*—different iterations of the same algorithms. ~See Information Theory.

☉ Mind-field

*The essence or substance of God imagined as an infinite field of mind-energy apart from any physical body.* ~ Like a magnetic field or a gravity field, the Mind-field is portrayed as an empty place in space where something mysterious happens to matter. ~ The term has been used by mystics and New-Agers in various esoteric ways to suggest that **all of apparent material reality is actually an idea in the mind of God.** ~ IE theory uses that concept to illustrate why the Reality studied by science is becoming more and more closely related to Ideality. In the human-scale middle-ground, reality appears to be solid and substantial; but on the Quantum scale and the Cosmic scale it seems to be ethereal and insubstantial, like empty space. ~See Substance.

☉ Morphogenesis

*Form-Maker.* ~ The uncanny ability of a living organism to create another similar organism from the inside-out, as if by following an invisible pattern or template. This “mystical” power is actually a result of simple natural laws that limit the options for growth guided by both internal and external forces. ~See Autopoiesis. ~See Laws of Form.

☉ Multiverse

A postulated eternal infinite regress of universes. Since our own one-verse has been found to be finite and temporal, cosmologists have sought a new alternative to the Big Bang creation event and its implied Creator. The theory is logical, but for all we know, it is counterfactual--possible, but not actual. As a replacement for the God hypothesis it also requires faith for evidence.

☉ Myth

*A myth is a metaphorical story illustrating some part of a culture’s general worldview regarding “the truth” about how everything really works, behind-the-scenes or below-the-surface, so to speak. It conveys truth symbolically, not literally.* ~ Ancient myths—**models of reality**—seem quaint to modern sophisticates, because the scientific understanding of the old bards and sages was primitive. What we now call “energy” or “force” was attrib-

uted to “spirits” or “gods” or “demons” in the technical terminology of the time. ~ But modern science still has its myths. Thomas Kuhn used the technical term “**paradigm**” to encompass the general consensus of a generation of scientists. He also pointed-out the obvious: like myths, paradigms evolve and change form over time—sometimes cataclysmically. For example, primitive Darwinism has evolved into Neo-Darwinism and Socio-Biology by incorporating genes and memes into the model. ~ Due to the careful methods of modern science, the depth and breadth of Human Understanding is expanding at a rapid pace. Yet, as a result of such dizzying change, our cultural and scientific belief systems have been destabilized. So we are forced to abandon older, more intuitive, myths—such as an atom represented as a tiny solar system—and to accept counter-intuitive concepts such as wave/particle duality. ~ Likewise, we must abandon primitive paradigms of dotting deities, in favor of modern myths told in the language of science and the rhymes of reason. ~ Intelligent Evolution is not the myth to end all myths; it is just an attempt to expand our concept of Reality to include the sphere of Ideality, as postulated by current Information Theory. ~See Ideality. ~See Redealism.

☉ Natural Law

Natural processes are generated by quantum-level computation of the original, simple creation algorithm. ~ See PROGRAMMING THE UNIVERSE. ~ The evolutionary equation has three components: Logic (and/or/not); Laws (constants); and Liberty (variables). **Logic is the syntax of evolution.** Laws are the parts that don’t change, but serve to limit options. Liberty or Chance is the various combinations of meaning and form that arise from randomly-associating (free) causes.

☉ Near-Equilibrium Thermodynamics

Classical Thermodynamics is a sub-category of Physics, specifically the science of mechanics regarding the flow of energy thru matter which produces heat and work. ~ Statistical Thermodynamics is a mathematical sub-specialty for modeling the mechanical behavior of microscopic and sub-microscopic systems. ~ Non-equilibrium Thermodynamics focuses on the study of matter in complex dynamic states. ~

*Near-Equilibrium Thermodynamics (NET) studies the flow of energy [information] in living systems. Life arises only when energy and matter are neither too static nor too dynamic, but in a "Goldilocks" state most conducive to the communication of information. ~See Information Theory. ~See Complexity Theory.*

#### ☉ Organization

*Greek "organon" referred to something useful, a tool. It has a function or purpose. It has **internal cooperation and coordination between parts**. Its elements are not loose and free, but bound together into an organic system. Cybernetic Theory studies the command and control function of organized systems. Internal organization is the key feature of a collection of parts that causes them to work together as a singularity or whole. ~See Holism. ~See Emergence.*

#### ☉ Panendeism

*A new version of Deism that distinguishes itself from "Panentheism", which means "All in G\*d." ~ The god-concept of Panendeism is a non-traditional creative force or principle or Mind, as contrasted with the mythical or scriptural concept of a more-or-less anthropomorphic entity who interacts directly with his creation and creatures. ~See Deism.*

#### ☉ Paradigm Shifts

*Historically, science and philosophy have evolved from primitive concepts of how the world works, to more sophisticated theories. But older worldviews, such as the flat earth concept, do not just voluntarily go away. Instead, newer, more comprehensive paradigms (mental models) are blocked by social inertia, causing a gradual build-up energy-of-frustration, which is suddenly released like an earthquake upon society. ~ The point in the evolution of a physical or social system when it changes character and/or behavior. ~ Thomas Kuhn mistakenly defined a paradigm shift as a "revolution". **Actually most dramatic shifts in worldview are "evolutionary" in the sense of gradual development and sudden emergence.** ~See Emergence. ~See Dialectic. ~See Phase Transitions*

#### ☉ Phase Transitions

*Emergent behavior of physical organizations is exemplified by sudden phase or form changes. As temperature rises, water transforms from a solid to a liquid, then to a gas. Each change results in a new arrangement of the original material patterns. ~ "Spontaneous symmetry breaking" is like a decision or tipping point. **Matter collectively and spontaneously acquires properties that were not present in the former arrangement.** ~See Punctuated Equilibrium. ~See Emergence*

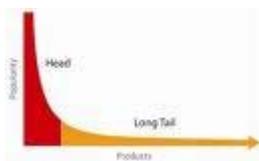
#### ☉ Pointlessness

*I think it was Steven Weinberg who said, "The more the universe seems understandable, the more it seems pointless." That also bothered me until I saw **that \*pointlessness\* might actually be The Point.** ~ IE theory differs from most God concepts in that it assumes, as a fundamental concept, **that God does not have any need, desire, or intention to predestine He/r creation.** The PREGO analogy in the essay may not be clear, but when I said "it's all in there" what I meant is that the Creator made **an autonomous universe** that can operate on its own like an internally-guided missile. All the necessary ingredients for a successful voyage of creation were in place from the beginning. ~ An omnipotent Creator shouldn't have to twiddle the dials of the universe to get things to come out right. Think of the Voyager spacecraft exploring the solar system. The scientists, back in the 70s, used state-of-the-art computers to allow it to operate with minimal guidance from home base. But thirty years later, computer technology is radically superior, yet Voyager is still trudging along with a brain equivalent to a pocket calculator. Voyager is out of our hands now; all we can do is wait and observe. But, and here's the point, Voyager is still doing what it was designed to do. ~ The Creator of our computer-universe had no such limitations, so our "spacecraft" was equipped with a "universal quantum computer" that is able to adapt and evolve to suit any exigencies that come up. ~ IE assumes that the whole point of the creation was to make an inherently unpredictable situation (a voyage of discovery, so to speak), and then sit back to see what happens. **Presumably, even God doesn't know how this little experiment will turn-out.** ~ The deity of IE is a creative*

Being, so we may be justified in thinking of the Creation as a work of art. Pure Art has significance without purpose. From God's point of view, a pointless creation is art for art's sake. ~See Prego Principle. ~See Creation. ~See Salvation.

☉ Power Laws

**Laws of probability that result in sudden hyperbolic changes.** ~ Earthquakes release their pent-up energy not in a simple straight-line arithmetic progression, but with an ever-increasing upward curve of acceleration. [2+2=4, but 2<sup>3</sup>= 8] ~ The principle behind compounding interest. Also called the Matthew principle, where Jesus says, "for unto everyone that hath shall be given, and he shall have abundance; but from him who hath not shall be taken away even that which he hath". ~ **The power law is an accelerator;** it results in an ever-increasing rate of change.



LONG TAIL GRAPH  
Power Law Distribution  
20% Head – the few  
80% Tail – the many

☉ The Prego Principle

The old spaghetti sauce commercial ("it's in there") is used as a metaphor to illustrate **how the universe can evolve autonomously without constant supervision by the Creator**. Mediaeval theologians, on up to Isaac Newton, assumed that anything that moves or changes with no visible signs of being pushed, such as the stars, must be directly propelled by God in some way. Newton's principle of Inertia has superseded that ancient rule of early science. ~ In a similar manner, the Prego Principle shows that once the universe was "pushed" by the Prime Mover, it continues to evolve as intended with no further intervention. Why? Because it (the universal program) was all "in there" from the beginning. I call that evolutionary persistence "**Information Inertia**" by analogy to physical inertia. ~ Unlike the Bible-God, the IE Creator got it right the first time. ~See Pointlessness.

☉ Probability

**Destiny as a game of chance.** ~ Sorry, Einstein, God does play dice with the universe.

☉ Proligion

**Literally, a link to the future.** ~ Religion is derived from the Greek terms for "link" or "connection" and "back" to the past. In other words **religion-in-general is essentially about cultural Traditions**, rather than any particular belief system. ~ Older religions had Tribal origins. Then their beliefs and traditions were expanded to suit National requirements, and later to serve Imperial functions. **But so far, we don't have any truly global religion to serve the "spiritual" needs of all tribes, all nations, and all beliefs.** ~ A Proligion will allow people of various traditions and beliefs to live together in peace. All that's required is the re-definition of "Faith" to a non-dogmatic sense as a "collective belief system" that can evolve as impartial science does, gradually rather than once-and-for-all. ~ A Proligion will not require unity of belief, but merely unity of desire for elusive truth. If adherents of Proligion, like those of Science, can agree to disagree on the debatable details, perhaps we can keep moving toward the enticing, but unattainable goal of absolute, Objective Truth, both physical and metaphysical. ~See Doubt.

☉ Process Theology

A 20th century religious philosophy, most closely associated with Alfred North Whitehead, co-author with Bertrand Russell of the *Principia Mathematica*. ~ It's theology is **Panentheism**, holding that God contains the physical universe within His Being, but is not identical with it, as in Pantheism. ~ It's metaphysics emphasizes the **creative process of Becoming** rather than the finality of once-and-for-all creation. ~ A corollary of the emphasis on process and change is that intelligent agents must have Freewill in order to participate in the self-determinism of the evolutionary process, as it unfolds from potential to actual via a series of random events and free choices. All phenomena in the process are experienced by God, including the personal experiences of individuals. Subjective personal immortality is not to be expected as an outcome of the process. But objective impersonal immortality is more likely as all personal

experiences will become a part of the history of God, who is the whole of what was, what is, and what is to come. ~ The Deity exists in two aspects: an eternal, unchanging essence, and a temporal, evolving existence in the form of His own creation. This view leads to the conclusion that God is always associated with a world of some kind--like a soul indwelling a body. ~See Panendeism.

#### ☉ Punctuated Equilibrium

Darwinian evolution was assumed to be a slow, but steady progression from simple aggregations to more complex organizations. Neo-Darwinian theory allows for a more dynamic process. Evolution goes along in fits and starts. Some stages result in progress, but some actually digress to less complexity in favor of stability. A graph of PE evolution would show sudden jumps in form and function, followed by long periods of little change. The punctuations may be triggered by environmental cataclysms like Ice Ages, and comets. These peaks and valleys seem to be related to **physical phase changes**, such as boiling water turning to steam or ice. ~See Phase Transition. ~See Tipping Point.

#### ☉ Qualia

**Non-physical properties of things that can't be seen or measured, but are necessary to understanding the essence of the thing.** ~ Measurable **Quantities** are physical; Valuable (i.e. Good /Bad) **Qualities** are meta-physical.

#### ☉ Quantum Theory

Ancient philosophers debated if physical objects could be sub-divided infinitely (a continuum), or if there was an ultimate limit to division (an atom). Quantum theory weighs in on the side of dis-continuity. Things which seem solid to the eye (like a concrete wall) are actually made of discrete bits of matter or energy (like a brick wall) called "quanta". This scientific observation reveals **the basic duality of reality**. The most primitive quantum bits are 1s and 0s, representing the most fundamental logical division: existence (being) or non-existence (non-being). According to QT, even empty space has a statistical chance of producing a quantum of matter. ~See Superposition.

#### ☉ Redualism

**The overlapping area between the philosophical categories Idealism and Realism.** ~ Idealism is an extreme view that dismisses Reality as an illusion. Realism is the opposite extreme view which belittles Ideality as an illusion. Actually, both categories are imaginary "spheres of being" that exist only in the human mind. "**Reality**" is your subjective interpretation of the objective world, excluding what goes on in the mind. "**Ideality**" is your subjective view of the subjective world, which includes the objective world as just another idea. ~ IE assumes that both matter and our ideas about matter are included in the ultimate category of All Things Considered. ~See Ideality~ Memes.

#### ☉ Reductionism

**Scientific method of simplifying complexity by removing the hard parts.** ~ Analysis breaks big conceptual chunks down into more understandable small pieces. But at the same time, **characteristics of the whole are ignored**. Therefore a holistic synthesis is necessary to complete our understanding of the thing analyzed. ~Opposite of Holism. ~See Ideality. ~See Consilience.

#### ☉ Salvation

One thing my scientific god-hypothesis has taught me, is that "waiting for God to act" and to fix the errors in He/r Creation misses the whole point of creating an imperfect world. God didn't make a mistake. A dynamic world of oppositions and conflicts was exactly what S/he intended. Otherwise, there would be nothing for US to do. ~ Hence, **blaming the evils of the world on God is like blaming global warming on the sun**. It's true that the warming energy ultimately came from the sun, but the unequal distribution of it is caused by human behavior. We can't regulate the Sun, or God, but we can try to control our collective behavior. ~ Judaism, Christianity, Islam and most of the world's religions have also missed the point of this evolutionary exercise. Humans don't sin against "God", they sin against each other. God is not going to respond to our prayers for salvation. And Nirvana is not going to give us an exit visa from suffering. As Paul said in a completely differ-

ent context: "work out your own salvation".  
~See Pointlessness. ~See Creation.

☉ Self

An idea—a **virtual stand-in for me**—created by the sub-conscious mind to represent the person (subject) in relationship to other things (objects). ~ Like an Avatar in a computer game. ~ As far as my mind is concerned, the self-concept is the essence of who I am. ~ Equivalent to the religious term: **Soul**.

☉ Self-Organization

**Automatic emergence of new functions, forms, and arrangements**, caused by a change in the environment, but **guided by internal principles**, such as laws of physics. ~See Morphogenesis. ~See Autopoiesis. ~See Organization.

☉ Social Physics

**A mathematical approach to social analysis** based on the statistically-predictable behavior of large numbers of autonomous individuals. ~See Collective Behavior

☉ Spinoza's God

The 17<sup>th</sup> century philosopher Baruch Spinoza rejected traditional scriptural descriptions of God, and proposed instead a god-concept amenable to Reason and Science. **His rationalized deity is not a being, but Being itself; is not supernatural, but Nature herself; is not a superior consciousness, but Mind itself.** When Einstein was asked to be more specific about his frequent references to "God", he replied that "I believe in the God of Spinoza". Belief in such an immanent nature-god is often referred to as Pantheism. ~See GOD. ~See Deism.

☉ Superposition

**A counter-intuitive feature of Quantum Theory.** ~ An electron, for example, can exist simultaneously in two or more different states (positive/negative, up/down, and every state in between). In the macro world this is impossible, but on the quantum level it seems to be paradoxical, but natural and normal. Quantum computers take advantage of the almost unlimited range of possible values of this undefined state to calculate a million times faster than ordinary digital computers. ~ One possible explanation for the Many Worlds interpretation of String Theory is **that all things are**

**possible during superposition**, but there is only one reality after the superposition collapses. ~ Another way to look at it is, in metaphysics all things are possible, but in physics only one thing at a time is actual. ~ SP may also be the mechanism behind random chance and "potential" and "probability". ~ **The state of Superposition is equivalent to a potential or possible future state.** Observation of the superposed state changes it into Now, which immediately becomes Reality and then Past history. ~See Quantum Theory. ~See the God Function.

☉ String Theory

**An abstract, mathematical hypothesis which attempts to reconcile Quantum mechanics with General Relativity.** ~ The name refers to the hypothetical ultimate constituents of matter, envisioned as vibrating threads of some un-specified material, or possibly of space itself. The vibrating strings provide the necessary information to "create" energy and matter. ~ The theory does not yet fully account for Quantum gravity, and it requires up to 8 extra spatial dimensions in addition to the normal three. ~ An alternative theory is called Loop Quantum Gravity. ~See Quantum Theory.

☉ Substance

Philosophically, **substance is the essential element of a thing.** Other elements may be optional, but without the substantial aspect the thing itself would not exist. ~ In popular vocabularies, substance is usually equated with matter: i.e. something insubstantial is also immaterial. But in philosophy and in science, the term "substance" may refer to the Platonic "form" or design or purpose or meaning of a thing. ~ If the "thing" in question happens to be a Word, then even though the reference may be to something material (your household pet), the substance of the word itself is immaterial (cats in general). A word is made, not of matter, but of intangible ideas, meanings, thoughts, or concepts. Words and ideas clearly "exist" in some sense, but not in the form of matter. Thought objects exist only in an Ideal sense, not in the ordinary Real sense. Thought objects are abstractions from Reality, which is itself a concretion from Ideality. ~ **Ideas are called "substantial" to the degree that they have a significant impact on material**

**reality.** ~ Even the essence of material things has traditionally been considered to be an immaterial substance, such as soul or spirit. Until recently, Science has been able to ignore or deny essences, because they made no material difference in their experiments. But experiments in Quantum Theory and Information Theory are affected by ideas and attitudes as much as by matter and energy. ~See Thought Objects. ~See Ideality.

#### ☉ Symmetry

I envision the creation of this universe like a fertilized egg (the singularity) dividing down the middle into a **primordial duality** from which all other things have evolved into a multicellular being. But that original line of division is still embodied in every part of the physical universe. Physicists see Symmetry on the smallest levels of reality, such as wave/particle duality and matter/anti-matter opposition. Astro-Physicists see Symmetry on the largest levels of the universe in the equal & opposite functions of all forces, such as gravity and inertia. And ordinary people see duality in the male/female, left/right, good/evil dichotomies of the world around us. Yet all of these forces trying to pull things apart are balanced by the principle of complementarity, as pictured in the Yin/Yang symbol of Taoism. ~See Dualism. ~See Yin/Yang Symbol.

#### ☉ Swarm Theory

The apparently conscious, **single-minded behavior** of a crowd of individuals (such as bees, ants, and schools of fish) but which is actually governed by non-conscious natural laws of action and reaction. ~See Collective Behavior

#### ☉ Systems Theory

A method of understanding complex systems as a **dynamic, interacting whole** rather than a crystalline collection of isolated parts. ~ Cybernetic Theory focuses on the feedback loops of command and control that bind such systems together. **Inter-communication of information is what integrates elements into wholes.** ~See Holism, Wholism

#### ☉ Thought Objects

Descartes divided the world into two categories: “res cogitans” and “res extensa”, exemplified by soul and body, mind and brain. ~ The Latin terms literally mean “mental things” and “spatial things”. Extended things are made of matter and occupy space. **Thought objects are made of information and are beyond time and space.** ~ Knowledge consists of accumulated thought objects. Immaterial thoughts can be communicated in material form from mind to mind. But direct mind-reading (ESP), while theoretically possible, has not been empirically established. ~ The Cartesian dichotomy was useful at the time, to distinguish the proper subjects of science (matter) from those of philosophy and religion (mind or soul). ~ **Modern science is no longer bound by that artificial division between Reality and Ideality.** Quantum theory finds no logical boundary between physical objects and metaphysical objects, between observed and observer, between phenomena and noumena, between existence and consciousness. ~ Hence, **IE theory proposes that all things are composed of the same essential substance: information or data or thought or meaning or mind or spirit.** ~ Physical things are merely the manifestation of metaphysical ideas. ~See Memes. ~See Mind-Brain. ~See Metaphysics. ~See Redealism. ~See Information Theory. ~See Substance.

#### ☉ Theonomy

**Science of God** ~ A term coined by Paul Carus to replace Theology, which is associated with pre-enlightenment, medieval Christian dogma.

#### ☉ Tipping Point

The critical state of a complex social organization where behavior temporarily becomes unstable, and reorganizes on a new level of stability. ~See Phase Transitions

#### ☉ Universe

In the Intelligent Evolution theory this universe is a **purpose-driven vehicle**, even though human passengers are not aware of the ultimate goal. We set and pursue our own little purposes, even as destiny carries all of us to a universal destination. ~ The physical universe of modern Science is Mechanical, in the sense of Reductionism : all phenomena can be ex-

plained by the random collisions of zillions of inert particles driven by blind forces. But the metaphysical universe is Teleological (end seeking) in the sense of Holism : The behavior of higher-level entities or phenomena can ultimately be explained as the goal-oriented movements of zillions of complex organisms guided by "perceptions" (feedback loops) to maintain a steady internal state despite the random jostlings of the environment. Each organism responds to perturbations "as-if" it desired to reach a certain pre-set destination. ~ Because of its built-in feedback loops a non-sentient organism, like a guided-missile, can appear to be motivated by the desire for a particular end-state. In that same sense, the Universe itself is a very high-level organism pursuing a dream that only exists in a hypothetical future. To the universe as a whole, we willful humans serve the function of the inert particles and blind forces of physics. ~See Reductionism. ~See Metaphysics. ~See Intention. ~See Systems Theory.

☯ Yin/Yang Symbol

This glossary uses the ancient Taoist symbol of balance and harmony as a bullet. It symbolizes the **union of opposites** that characterizes the natural world. Symmetry is a founding principle of the physical universe. Every action has an equal and opposite reaction. Matter itself has its counterpart in anti-matter. Almost everything in this world has its mirror image: male-female, light-dark, black-white, up-down, good-evil, liberal-conservative. Separately these things are highly-charged and hostile polar opposites. But they can and do co-exist in neutral unions when one part complements and balances the other. ~ The symbol shows how opposites can intimately nestle together to complete the whole circle. It also indicates that in reality even extremes are seldom pure, but black has a spot of white and vice versa. Most males have some feminine characteristics. Even evil may contain some element of good. Even that which is good for me may be evil for another. The lesson of this symbol is "co-operation, co-existence, and co-evolution are the policies of peace and harmony". ~See Symmetry.