The Voice of Experience

Paul Hague

July 2018

Abstract. This essay is my contribution as an adviser to the Galileo Commission, which is seeking to promote a spiritually informed science, beyond a materialistic worldview. It outlines how I have applied Self-reflective Intelligence and the semantic modelling methods of information systems architects in business to solve the ultimate justification problem, called *Letztbegründungsproblem* in German. Rather than starting with the assumption that valid scientific method cannot avoid assumptions, the creative power of Life and the Logos have guided me to develop a nonaxiomatic, holotropic, and holographic system of thought that emerges directly from the Divine Origin of the Universe, providing the Cosmic Context, Gnostic Foundation, and coordinating framework for all knowledge in all cultures and disciplines at all times.

The justification for what I call Integral Relational Logic as sound rational science is based on the intuitive human experience of conducting a thought experiment in which I imagine that I am a computer that switches itself off and on again, so that it has no programs within it, not even a bootstrap program to load the operating system. Starting from a *tabula rasa*, this computer then has the task of integrating all knowledge into transcultural and transdisciplinary Wholeness without an external programmer telling it how to perform this task. This experiment in coherent learning, healing my fragmented mind and split psyche, thus shows that we humans have the potential to awaken our intelligence far beyond any level that machines with so-called artificial intelligence might aspire to attain.

In *The Voice of Experience*, R. D. Laing wrote, "The scientific objective world is not the world of real life. It is a highly sophisticated artifact, created by multiple operations which effectively and efficiently exclude immediate experience in all its apparent capriciousness from its order of discourse."[1] And in *The Politics of Experience*, he wrote, "In a world where the normal condition is one of alienation, most personal action must be destructive both of one's own experience and that of the other."[2]

Similarly, a central theme running through Erich Fromm's *The Sane Society*, as a successor to his wartime *The Fear of Freedom*, is alienation, from Latin *alius* 'other', defined in this way:

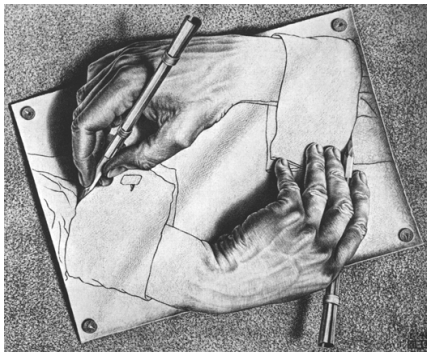
> By alienation is meant a mode of experience in which the person experiences himself as an alien. He has become, one might say, estranged from himself. He does not experience himself as the center of his world, as the creator of his own acts—but his acts and their consequences have become his masters, whom he obeys, or whom he may even worship. The alienated person is out of touch with himself as he is out of touch with any other person.[3]

Under these circumstances, if we see each other as separated beings, fighting for a slice of the finite monetary cake, rather than interrelated as cooperating cells in the body politic,[4] how can I effectively do my job as an information systems architect in business? For the primary purpose of such 'master builders', as generalists working with specialists, is to design and develop coherent business systems that are in harmony with the fundamental laws of the Universe, experienced as Consciousness, turning evolutionary divergence into convergence, much as Pierre Teilhard de Chardin prophesied in *The Human Phenomenon*.

But political institutions, including those like the Royal Society of London for Improving Natural Knowledge, are lagging far behind, not awarely (intelligently and consciously) adapting to our rapidly changing environment, which we scientists and technologists are creating. So while our inventions have given us the most amazing creature comforts, they are also damaging our health and well being, not helping us to prepare wisely for near-term extinction.[5] Because of our cultural conditioning and widespread alienation from the True Nature and Authentic Identity that we all share, for the most part we are failing to realize our fullest potential as humans, far beyond the capabilities of machines, like computers.

I raise this issue because in order to obey the economic imperative of our times, replacing as many jobs performed by humans by machines as possible, one task of information systems architects is to develop

models of dynamic business processes, such as designing, manufacturing, marketing, ordering, and invoicing, and their relationships to each other, as well as integrated models of static classes of information in enterprises, such as employees, customers, products, locations, and deliveries. At first, these are very abstract models, not concerned whether humans or machines perform business processes. This distinction is only made at the implementation stage of systems development.



However, in general these mapmaking methods are not deep and broad enough to produce a complete map of the psychodynamics of business enterprises. To develop a comprehensive, all-inclusive conceptual model or cognitive map, information systems architects need to awarely model their own mapmaking processes. Intelligently thinking in this healthy way is rather like a television camera filming itself filming, which looks impossible, brilliantly illustrated by M. C. Escher's famous lithograph 'Drawing Hands'.[6] For which comes first, the territory or the map?

The conventional scientific view is that the territory comes first. For instance, in 1931, when commemorating the centenary of James Clerk Maxwell's birth, Albert Einstein wrote, "The belief in an external world independent of the perceiving subject is the basis of all natural science."[7] Similarly, at about the same time, Alfred Korzybski made the famous assertion, "A map *is not* the territory it represents, but, if correct, it has a *similar structure* to the territory, which accounts for its usefulness."[8]

Yet, by 1945, Einstein wrote in a letter to Jaques Hadamard that words and others symbols in his external world only appear at a secondary stage of creativity, after the inner combinatory play of conceptual elements emerges in consciousness.[9] Similarly, David Bohm pointed out in *Wholeness and the Implicate Order*, which unified quantum and relativity theories, "The word *theory* derives from the Greek *theoria*, which has the same root as *theatre*, in a word meaning 'to view' or 'to make a spectacle'. Thus it might be said that a theory is primarily a form of *insight*, i.e. a way of looking at the world, and not a form of *knowledge* of how the world is."[10]

But who or what is doing the looking? How can we resolve our sense of alienation by including our cognitive mapmaking in the territory being mapped? Well, Bohm and J. Krishnamurti attempted to do so in a series of dialogues in the 1960s and 70s, being attracted to each other by the principle that the observer and observer are one.[11] The pre-eminent Christian mystic Meister Eckhart expressed this resolution with these words: "The eye with which I see God is the same as that with which he sees me."[12]

For myself, I call our human ability to see ourselves seeing—sometimes called the Witness in spiritual circles—Self-reflective Intelligence, the Divine quality that distinguishes humans from the other animals and machines, like computers with so-called artificial intelligence. In my terminology, Intelligence—the ability to see both sides of any situation—is the eyesight of Consciousness, which provides the coherent light to view the Totality of Existence holographically, somewhat like a laser.

So to develop a spiritually informed science, beyond the prevailing materialistic and mechanistic worldview, scientists and technologists need to engage in self-inquiry, exploring the final frontier of human discovery. For in the words of Kabbalah—the mystical heart of Judaism—there is a curtain that divides our reality into two realms, 1% being our physical world, while the other 99% "is the source of all lasting fulfilment. All knowledge, wisdom, and joy dwell in this realm. This is the domain that Kabbalists call *Light*."[13] And to map this inner domain, we need "a Humanistic Science of Man as the basis for the Applied Science and Art of Social Reconstruction", which Erich Fromm called for in *To Have or To Be?*[14]

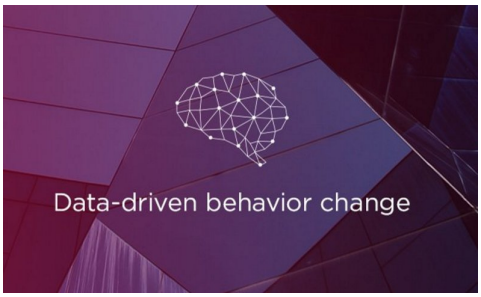
At the heart of such a transcultural and transdisciplinary science of humanity lies the fundamental concept of data, which has been a critical topic since the 1970s, when sociologist Daniel Bell pointed out that we were then entering a post-industrial era, which he called the 'Information Society',[15] and when IBM in the UK had a marketing slogan 'Manage data as a corporate resource'. It thus became recognized that *information is data with meaning*, a distinction that Norman Lindop made in his 1978 *Report of the Committee on Data Protection*, which led to the UK's Data Protection laws:

> So far, in this chapter, we have used the word *information* because that is the word and the concept with which most people are familiar. The computing community make much use of the word *data* (the Latin word *datum*, of which *data* is the plural, literally means that which is given) using it to mean raw material which is put into data processing systems. A primary function of data processing is to collect and relate items of data and to operate upon them to produce outputs which are meaningful to the users of the systems in the fulfilment of their purposes. It is these outputs which inform and which are rightly described as information.[16]

In recent years, data has become an even greater hot topic with technological titans like Alphabet (Google's parent company), Amazon, Apple, Facebook, and Microsoft taking over the world. This issue much concerned *The Economist* magazine in a leader and briefing on 6th May 2017 titled 'The world's most valuable resource is no longer oil, but data'[17] and 'Data is giving rise to a new economy.'[18]

This is not a new issue, as Daniel Bell pointed out in 1979: "Yet we have no economic theory of information, and the character of information, as distinct from the character of goods, poses some novel problems for economic theorists."[19] The reason is that information is not a physical object, giving it some rather strange properties in conventional economic terms. This is because money is a type of information and so can be represented in the semantic models developed by information systems architects. But this is not possible the other way round. The meaning of information, and hence its value, cannot be satisfactorily represented in the quantitative financial models of accountants, bankers, and economists.

Furthermore, when I buy a loaf of bread, the object passes from the storekeeper to me in exchange for money, viewed as a *commodity* with value, rather than a unit for the *measure* of value, like grams and metres. However, when a teacher gives pupils some information, nothing is exchanged. Both teachers and pupils have the information. As Tom Stonier said in *The Wealth of Information*, "Whereas material transactions can lead to competition, information transactions are much more likely to lead to cooperation—information is a resource which can be truly shared."[20]



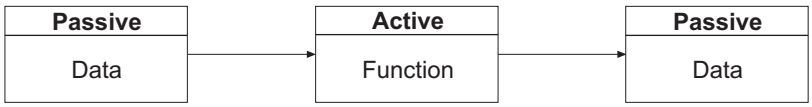
Yet, while there is an increasing willingness to cooperate for the benefit for all humans in some quarters, basic human decency is not universal, as malware, trolling on social media, governmental and non-state cybercrime, and companies like Cambridge Analytica demonstrate. For this controversial company, which rose and fell in just five years, was engaged in data-driven behaviour change for exploitative political purposes, as this graphic indicates.

Nor is this all. Another major social issue at the moment is the threat of algorithmic machines with artificial general intelligence taking over the workplace, potentially breaking the cycle of humans as both workers and consumers in the global economy, the fundamental principle of both capitalism and communism. For as Adam Smith wrote in 1776 in the opening words of *The Wealth of Nations*: "The annual labour of every nation is the fund which originally supplies it with all the necessaries and conveniences of life which it annually consumes, and which consists always either in the immediate produce of that labour, or in what is purchased with that produce from other nations."[21]

Many scientists and technologists are working avidly towards this complete breakdown of our dysfunctional, unsustainable economic system, which is not as calamitous as it might sound. For such an apocalypse, as a revelation of what is generally ignored and denied, would enable us to joyfully cocreate a harmonious system of governance, making the most radical change in the work ethic since our forebears settled in villages to cultivate the land and domesticate animals some 10,000 years ago.

For instance, Hans Moravec forecast in *Robot* in 1998 that our 'mind children' "could replace us in every essential task and, in principle, operate our society increasingly well without us."[22] Martin Rees, the Astronomer Royal and former President of the Royal Society, picked up this viewpoint by writing in *Our Final Century: Will the Human Race Survive the Twenty-first Century?*, "A superintelligent machine could be the last invention that humans need ever make."[23] And again, Stephen Hawking told the BBC on 2nd December 2014, "The development of full artificial intelligence could spell the end of the human race."[24]

Yet, is this going to happen? Well, to answer this question, we need to recognize that data is not only something that can be interpreted as information and knowledge. Ever since the first stored-program computers were built at the Universities of Manchester[25] and Cambridge[26] in England in 1948 and 1949, respectively, following a draft design that the eminent mathematician and polymath John von Neumann had proposed in 1945,[27] programs that process 'raw' data have been stored alongside numbers and strings of characters, as themselves data as strings of zeros and ones. So there are two types of data in computers, active and passive, as programs and the data that they process, illustrated here:



Furthermore, there are two types of active data in computers: generated programs, like the browsers and most other programs that we have on our desktop or laptop computers, tablets, and smart phones, and program generators for many different programming languages, called assemblers, compilers, and interpreters. These we can call active-passive and active-active, respectively, dependent on whether their inputs are active data or not, as expressions or statements, written as strings of characters in some programming language, understood by humans.

Now mechanisms exist in some interpretative languages like LISP—the first programming language to study the possibility of artificial intelligence in machines—to modify themselves in mid-flight, even to create new functions which have never existed before, called metaprogramming. Indeed, such a function-writing function could be written within another function-writing function and so on *ad infinitum*. So could a computer overcome the problem of infinite regress and write such a program independently of human involvement?

In terms of compiled programs, including compilers, every program that we use on our computers today has come into existence through the execution of a previous program through a long mechanistic cause-and-effect chain going right back to the first programs that were ever written in the machine language of the early computers. So where did these first programs and indeed computers come from?

We can approach the answer to this question by observing that passive and active data are also present in humans as the facts we know and the skills we need to perform various tasks. As Gilbert Ryle pointed out in *The Concept of Mind*, human knowledge, discounting Gnosis for the moment, can be considered as we 'know that' and we 'know how'.[28] Furthermore, like computers, we have generated skills, like playing the piano or chess, and generating skills, called learning or thinking.

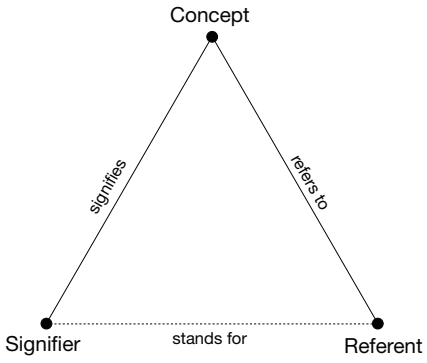
So can we answer the question that Alan Turing asked in 1950, "Can machines think?"? Ada Lovelace, the daughter of Lord Byron and his wife Anne, a poet and mathematician,[29] respectively, did not think so. In a brilliant memoir on Charles Babbage's Analytical Engine in 1843, the first design for a general-purpose computer, she wrote:

> The Analytical Engine has no pretensions to *originate* anything. It can do whatever we *know how to order it* to perform. It can *follow* analysis; but it has no power of *anticipating* any analytical relations or truths. Its province is to assist us in making *available* what we are already acquainted with.[30]

Turing, the founder of the theory of automata, disagreed with her, saying, "I believe that at the end of the century the use of words and general educated opinion will have altered so much that one will be able to speak of machines thinking without expecting to be contradicted."[31]

Well, this hasn't happened and never will do. To see and experience why, we need to understand that data structures don't underlie just society, as we communicate with each other and our computers. Meaningless data elements and the relationships between them also underlie the physical universe of mass, space, and time before these data patterns are interpreted as information and knowledge.

Initially, such conceptual models emerge in the psyche before they are expressed externally in symbols and signs, a distinction lying at the heart of semiotics, which Ferdinand de Saussure[32] and Charles Sanders Peirc[33] cofounded around the turn of the twentieth century. Specifically, they showed that the maps of the territory we build consist of an inner and outer map. These relationships are illustrated in what J. F. Sowa of IBM calls the 'meaning triangle' in *Conceptual Structures*,[34] inspired to do so by *The Meaning of Meaning* by C. K. Ogden and I. A. Richards,[35] where the referent includes the Cosmic Psyche, not only the external hylic, spatial, and temporal cosmos.



Looking at the entire Cosmos as a gigantic ordered network of hierarchical data patterns—rather like a mathematical graph, such as that in Cambridge Analytica's logo, or Indra's Net of Jewels in Huayan Buddhism[36]—enables us to reinterpret an observation that Aristotle made in Book VIII, Section 4 of *Physics*. He saw that everything that changes is changed by something and in Section 5 that there is a first agent of change that is not changed by anything.[37] Thus the notion of an Unmoved Mover entered Western philosophy, expressed in *Metaphysics* in this way: "Now since that which is moved must be moved by something, that the prime mover must be essentially immovable, and eternal motion must be excited by something eternal."[38] In *Summa Theologiæ*, Thomas Aquinas then took Aristotle's mechanistic cause-and-effect chain as the basis for his five proofs for the existence of God, as the Unmoved Mover.[39]

But where do all these meaningless data patterns come from? Well, the answer is buried deep in the roots of our language, the study of which Bohm aptly called the archaeology of language. For the root of *etymology* is Greek *etumos* 'real, true'. The Unmoved Mover is the Datum of the Universe, from Latin *datum* 'that which is given', from *dare* 'to offer, give', from Proto-Indo-European (PIE) base *dō* 'to give', also root of *donor*. So everything that exists in the world of form, including our bodies, minds, and souls, is a gift of the Datum, as the Divine. Latin *dare* could also mean 'to cause', from PIE base **dhē-* 'to set, put', also root of *do*, through a Germanic path, and a host of words from Latin *facere* 'to do, make', such as *affect*, *efficient*, and *faculty*. So the Datum of the Universe is the Absolute, the Supreme Cause of everything that exists in the manifest world of form.

The systems philosopher Ervin Laszlo calls the Datum *Akasha*, corresponding to Greek *aither* 'pure, fresh air' and Latin *æther*, "the pure essence where the gods lived and which they breathed", the fifth element, from which we get *quintessence*. He was inspired to use *Akasha* to refer to the Universal

Quantum Field by Vivekananda's *Raja Yoga*: "Everything that has form, everything that is the result of combination, is evolved out of this *Akasha*. … Just as *Akasha* is the infinite, omnipresent material of this universe, so is this *Prana* the infinite, omnipresent manifesting power of this universe."[40]

We have now revealed the mystical worldview underlying the materialist worldview, which I describe in the next two paragraphs, which Anne Baring quotes on her website under the rubric 'Awakening to the New Story: the Great Challenge of Our Time':[41]

> It is from the Formless Absolute—as the Divine Datum of the Cosmos—that the entire relativistic world of form emerges, like waves and currents on and beneath the surface of an ocean, never separate from the ocean itself. This union of form and Formlessness is the Ocean of Consciousness, the centre of which is Love, the Divine Essence we all share, providing the Cosmic Context for all beings in the Universe, including all of us human beings.
>
> Consciousness is Ultimate Reality; physical universes and their components, including the brain, emerge from Consciousness; all beings in the manifest Universe are related to each other, never separate from God, Nature, or any other being for an instant.

To understand how Western civilization has become cognitively and experientially separated from Divine Reality, we need to go back a few thousand years, to the first civilizations at the dawn of recorded human history. We can contrast the Sumerians living in Mesopotamia and the Egyptians living in the Nile valley with the Rishis living in the Indus valley. All would have had a pristine view of the night sky, unsullied by the light pollution most of us suffer from today, but they developed quite differently. On the one hand, the Babylonians and Egyptians gazed at the stars in wonderment, finding many patterns in what at first sight looks like a bewildering muddle, thus founding the science of astronomy, often called astrophysics today. On the other hand, the Rishis ignored the night sky and looked inwards, discovering an utterly different Universe, one in which there is no division between humanity and Divinity.

We need to embrace the mystical worldview in consciousness to answer many unanswered questions in science and business, the most critical being: *What is causing scientists and technologists, aided and abetted by computer technology, to drive the pace of scientific discovery and technological development at unprecedented exponential rates of acceleration?*

I began my investigation into this problem in April 1980, when I suddenly realized in an apocalyptic eureka moment that synergistic active and passive data are forms of energy, not unlike kinetic and potential energy in mechanics and quantum physics. For *apocalypse* derives from Greek *apokalupsis*, from *apokaluptein* 'to uncover' or 'to reveal', from the prefix *apo* 'from, away' and *kaluptra* 'veil'. So *apocalypse* literally means 'draw the veil away from', indicating the disclosure of something hidden from the mass of humanity.

What this is was revealed to me eight weeks later, after I had resigned from my influential job with IBM, teaching and marketing innovative decision support systems[42] at courses and customer executive seminars in Europe. When attempting to develop a nondeductive mathematical logic by exploring the dualities in Boolean algebra, the propositional calculus, set theory, and projective geometry, I suddenly had the idea that opposites are never separate from each other in Reality. I had been given an irrefutable, universal truth, which cannot be proven from any set of axioms or assumptions. This is the fundamental law of the Universe, which I call the *Principle of Unity*: *Wholeness is the union of all opposites*.

As this unifying data pattern lies in the depths of the Cosmic Psyche, it is not a new idea. For instance, Heraclitus of Ephesus aptly called it the Hidden Harmony[43] and Nicholas of Cusa, paradoxically both a mystic and Catholic cardinal, called it *coincidentia oppositorum* 'coincidence of opposites'.[44] Then in the twentieth century, Carl Gustav Jung, much influenced by the alchemists and

Cusanus, well understood that unifying opposites is the key to sound mental health,[45] in 1959 calling syzygy the androgynous union of *anima* and *animus*,[46] at the centre of his psychospiritual goal of individuation—the development of an undivided being, both within oneself and with one's external social environment.

Thirty years earlier, Jung had written in his *Commentary* to Richard Wilhelm's translation of *The Secret of the Golden Flower*, "The Chinese have never failed to recognize the paradoxes and the polarity inherent in all life. The opposites always balance on the scales—a sign of high culture. Onesideness, though it lends momentum, is a mark of barbarism."[47] And as Jung said in 1935 to his fellow psychotherapists, "The greatest danger that threatens psychology is one-sidedness."[48] As Cary Baynes said in her 1931 English translation of Jung's *Commentary*, "the East creeps in among us by the back door of the unconscious."[49]

Jung also made extensive use of mandalas in his psychotherapy, as he describes in an extensive case study of the process of individuation first published in 1934.[50] For a mandala, a Sanskrit word meaning 'disk, circle', is a circular figure representing Wholeness or the Universe in Hindu and Buddhist symbolism.

Similarly, when I participated in a stirring holotropic breathwork session with Christina and Stanislav Grof in 1992 at a conference in Prague titled 'Science, Spirituality, and the Global Crisis', organized by the International Transpersonal Association, we were asked to draw a mandala at the end of our breathing exercise to depict our experiences. For *holotropic* means 'turning towards the whole', modelled on *heliotropic* 'turning towards the sun', from Greek *ὁlos* 'whole' and *tropos* 'turn', from *trepo* 'to turn', cognate with *tropē* 'transformation'. However, *trepo* has two meanings, as in English: 'to change direction' (as in 'turn into a side-road'), and 'to change form' (as in 'turn into a frog').[51] So *holotropic* can be said to have two meanings, the second being 'transforming the Whole', using *-tropic* in the same sense as *entropic* 'in transformation'.

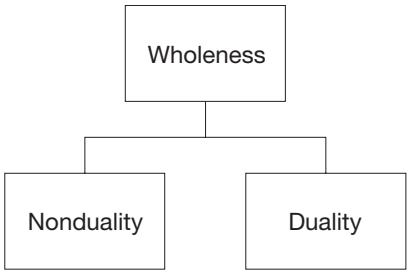
This second meaning of *holotropic* is vitally important as scientists and technologists drive the pace of change faster and faster, as Vimala Thakar highlights in the opening paragraph of *Spirituality and Social Action: A Holistic Approach*: "In a time when the survival of the human race is in question, continuing with the status quo is to cooperate with insanity, to contribute to chaos." She therefore asks, "Do we have the vitality to go beyond narrow, one-sided views of human life and to open ourselves to totality, wholeness?" For as she says, "The call of the hour is to move beyond the fragmentary, to awaken to total revolution."[52]

Now to express the mystical worldview in a sound scientific system of reasoning, where do I begin? To say that I begin at the beginning doesn't make sense, for a beginning implies an end and Ultimate Reality transcends all such categorical opposites. Indeed, as Pseudo-Dionysius the Areopagite said in the final chapter of *Mystical Theology*, the supreme Cause of every conceptual thing is not itself conceptual: "It is not soul or mind, nor does it possess imagination, conviction, speech, or understanding. Nor is it speech per se, understanding per se. It cannot be spoken of and it cannot be grasped by understanding. It is not number or order, greatness or smallness, equality or inequality, similarity or dissimilarity. It is not immovable, moving, or at rest." [53]

Similarly, Thich Nhat Hanh tells us that Shakyamuni Buddha (sage of the tribe of Shakya) said to Ananda, his most devoted disciple, "Ananda, the teaching on the emptiness of self is meant to guide our meditation. It is not to be taken as a doctrine. If people take it as a doctrine, they will become entangled by it. I have often said that the teaching should be considered as a raft used to cross to the other shore or a finger pointing to the moon. We should not become caught up in the teaching."[54] And, the well-known

opening words of Laozi's *Tao Te Ching* are "Tao can be talked about, But not the Eternal Tao. Names can be named, But not the Eternal Name."[55]

As there is no separate self in Reality, I also cannot say that there is a disconnected being named Paul Hague, with social security identity numbers in Sweden and the UK, who experiences Totality, viewed as a seamless continuum with no borders or boundaries anywhere. The ultimate experience is one where there is no experiencer. I first read such words in the late 1980s, when they meant cognitive sense, but not experiential sense. In the event, it has taken me some thirty years of profound self-inquiry to realize the True Nature of Ultimate Reality in my own 'experience', which I am endeavouring to voice in this essay.

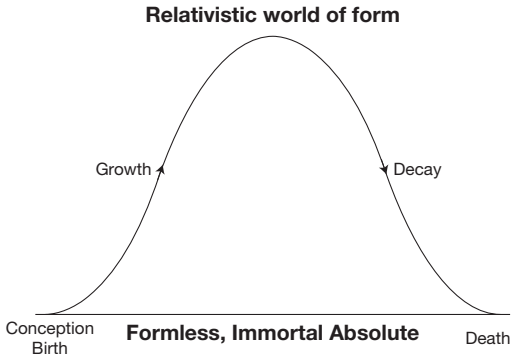


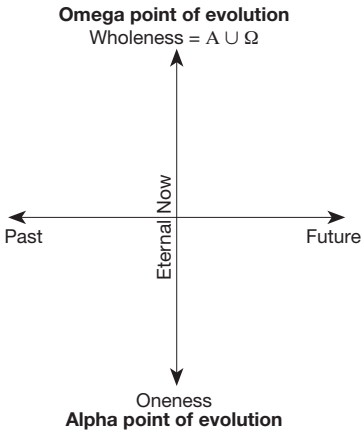
So, in effect, I begin my reasoning at the end and end at the beginning, in conformity with the Principle of Unity, which I use to discern the first bifurcation in the Cosmos, illustrated in this diagram. This shows that Wholeness embraces both Totality, in itself, as the Nondual Absolute or Supreme Being, and as an aggregate of all beings in the relativistic world of form. Again, this is not a new idea. For instance, in Mahāyāna Buddhism *Nirvāna* 'extinction' and *samsāra* 'journeying' are never separate from each other.[56]

Now, if my reasoning is to lead to an authentic map of the Universe, including the mapmaking process, the entire learning experiment needs to follow what Joseph Campbell called the 'Cosmogonic Cycle': "Redemption consists in the return to superconsciousness and therewith the dissolution of the world. This is the great theme and formula of the cosmogonic cycle, the mythical image of the world's coming to manifestation and subsequent return into the nonmanifest condition."[57]

From his in-depth studies of the myths and fairy tales of multiple cultures through the ages, Campbell calls the universal spiritual journey the 'monomyth', in which "A hero ventures forth from the world of common day into a region of supernatural wonder: fabulous forces are there encountered and a decisive victory is won: the hero comes back from this mysterious adventure with the power to bestow boons on his fellow man."[58]

In my case, the boon is the Principle of Unity, enabling us to come fully alive while facing death in all its forms. For all beings in the Universe are born to die, or in the case of humans and other creatures are conceived to die, depicted in this schema. This naturally includes our planet, species, and civilizations, the global economy, and our individual body-mind-soul organisms. In this instance, the base line represents the mystical and formless transfinite, out of which the entire world of form arises.





Now it is important not to be confused by the apparent temporality of this schema. To be free from the mechanistic chain of cause-and-effect, depicted in the diagram of the data-processing function on page 4, and so rise above the level of algorithmic computers, I have needed to turn the horizontal dimension of time into the vertical, as this diagram illustrates.

However, my experience of the vertical dimension has varied considerably over the years, as I have lived day by day in the horizontal for mundane 'worldly' purposes. In the early 1980s, the upward movement was predominant, carrying me into what Christina and Stanislav Grof call a

spiritual emergency,[59] as Spirit emerged far faster than my body-mind-soul organism could assimilate. At the time it felt as if a dam had burst in my psyche, releasing an abundance of energy that had been stultified since before my birth, as I explain in a 2017 extended essay titled 'The Psychodynamics of Society: From Conception to Death'.

To handle this explosion of creative energy, set free of cultural constraints, in 1985 I began a twenty-five-year programme of psychospiritual practices, much helped by many psychotherapists, spiritual teachers, modern mystics, and friends and associates. So, during this last decade, when my writing has reached a reasonable level of maturity, I have been doing my best to maintain a constant balance, moment by moment, between the upward and downward movements in the vertical dimension of time.

So how can I explain the spiritual emergency that I experienced in the early 1980s in sound scientific terms? And more generally, how can I explain what is causing scientists and technologists to drive the pace of change in society at exponential rates of acceleration? Well, to do so, I have needed to be free of the entire history of Western thought, as I explain in my 2014 book *The Theory of Everything: Unifying Polarizing Opposites in Nondual Wholeness*, intended to answer this 'advertisement' on the front cover of the *New Scientist* magazine on 30th April 2005.

In particular, the three scientific methods of deduction, induction, and abduction, introduced by Aristotle,[60] Francis Bacon,[61] and Charles Sanders Peirce,[62] respectively, do not help, just as they are. Nevertheless, there is one feature of scientific method that can help us. In *Objective Knowledge*, Karl Popper, the foremost philosopher of science during the twentieth century, suggested "that it is the aim of science to find *satisfactory explanations*, of whatever strikes us as being in need of explanation." By *explanation*, he meant finding the unknown but true causes (the *explicans*) that logically entail that which is to be explained (the *explicandum*). "Thus, scientific explanation … will be *the explanation of the known by the unknown*."[63]

Now the ultimate unknown *explicans* is the Datum, which gives birth to the entire world of form through the action of the Logos, the "immanent conception of divine intelligence" signifying "the rational principle governing the cosmos", as Richard Tarnas interpreted Heraclitus' mystical use of *Logos*.[64] So the Datum logically entails our scientific explanations if we look at entailment from the creative vertical dimension of time rather than the mechanistic horizontal dimension, providing the Gnostic Foundation for all our learning.

Furthermore, whenever we form concepts, we need a conceptual context within which to do so, with each conceptual context requiring a higher-level conceptual context within which to form concepts. In traditional science and religion, concepts are formed within the overall context of the physical universe and the Judeo-Christian concept of God, in whose image humans are supposedly created.[65] So to reconcile the incompatibilities between these putatively all-inclusive contexts, we can regard the Datum as the single, unifying Cosmic Context for all our theories, as cognitive maps and conceptual models. I have thereby solved a problem that I began to investigate as a seven-year-old, seeking to find Love and Peace by ending the long-running war between science and religion, not very successfully during my formal education in the 1950s and early 60s.

To develop a spiritually informed science, able to explain everything that is potentially explicable, the Datum is thus naturally the Immanent and Transcendent starting point. For *nature* derives from Latin

nātūra 'birth', from *nātus*, past participle of *nāscī* 'to be born', from PIE base **genə-* 'to give birth, beget', also root of Greek *genesis* 'origin, birth', from which *genetics* and many similar words are derived. And *physics* derives from Aristotle's treatise *Physics*, a translation of Greek *ta phusika*, literally 'natural things', the neuter plural of *phusikos* 'of nature', from *phusis* 'birth, origin; nature, inborn quality' and *phuein* 'produce, bring forth; grow, be born', from PIE base **bheuə-* 'to be, exist, grow', also root of *be*. So mystics are the true physicists, living in union with the Divine Origin of the Universe, regarding what is often called supernatural as entirely natural.

Having established the Gnostic Foundation and Cosmic Context as the *explicans* for the Grand Design of the Cosmos, we now need to explore that which is to be explained (the *explicandum*), creating the coordinating framework for all knowledge. This is a little tricky because the narrative I use to describe this system of coordinates contains words that denote concepts before I describe the egalitarian way I form concepts from the data patterns of experience.

Euclid's *Elements*, which laid down the foundations of axiomatic, deductive reasoning and mathematical proof contains a similar weakness. He first stated twenty-three definitions of mathematical objects, like point, line, and circle, and five postulates, such as a straight line can be drawn between any two points. However, the definition for *line* states, "A **line** is breadthless length." So to define a line, Euclid first needed to have intuitively formed the concepts of length, breadth, and none. Nevertheless, with these assumptions, he was able to prove his first theorem that an equilateral triangle can be constructed from a finite straight line with just ruler and compass.[66]

Furthermore, the domain I am mapping is not Euclidean space, for which René Descartes formed an algebraic system of coordinates,[67] as an example of his method for "the unification and the illumination of the whole of science, even the whole of knowledge, by one and the same method: the method of *reason*".[68] Rather, I am endeavouring to map my psyche in order to discover how my influential job as an information systems architect in the late 1970s could have changed people's lives without them understanding what was happening to them.

But what language can I use to voice my experiences, in English or any other language? Jung faced a similar difficulty in developing his analytical psychology. He wrote mainly in German, which has no unambiguous word for the English *mind*, as R. F. C. Hull, the principal translator of Jung's *Collected Works*, has pointed out.[69] The German words *Geist* 'spirit' and *Seele* 'soul' can both be translated as 'mind', and Jung used these words interchangeably in the 1920s. We also see this dual meaning of *Geist* in Hegel's *Phänomenologie des Geistes*, which is translated as both *Phenomenology of Spirit* and *Phenomenology of Mind*.

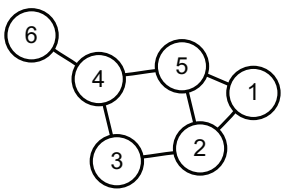
However, by 1933, in an essay titled 'The Real and the Surreal', Jung exclusively used the word *psyche* to denote the 'real' subject of psychology, completely ousting the older, ambiguous philosophical concepts of mind, soul, and spirit. Then in 1935, Jung was bold enough to call psychology the 'science of consciousness' in the first of a series of five lectures he gave on the theory and practice of analytical psychology to the Institute of Medical Psychology (Tavistock Clinic). He added, "[Psychology] is the science of what we call the unconscious psyche," a science that he said had not yet left the cradle.[70] Indeed, as Jung wrote in the introduction to *Psychology and Alchemy* in 1944, the proper domain of psychology must embrace all aspects of our inner worlds, including religious experience, not projected outwards, as is customary in the West.[71]

To solve these difficulties, being free of the assumption that valid scientific method must begin with assumptions, called *Letztbegründungsproblem* in German, which Google translates as 'ultimate

justification problem', I embark on a thought experiment, not unlike those that Einstein used to develop the special and general theories of relativity.[72] To escape from the constraints that materialistic, mechanistic science places on our learning, on 20th May 1980 I embarked on a thought experiment in which I imagined that I was a computer that switched itself off and on again, so that it was a *tabula rasa*, with not even a bootstrap program to load the operating system. With no preconceptions, this computer then had the task of integrating all knowledge in all cultures and disciplines into a coherent whole.

Such a coherent body of knowledge is the solution to the ultimate problem of human learning, which thinkers from Roger Bacon and Francis Bacon, through Johannes Kepler, René Descartes, Isaac Newton, Charles Sanders Peirce, Albert Einstein, Carl Gustav Jung, and David Bohm, to Stephen Hawking and Ken Wilber have attempted to solve over the years, as I outline in my book *The Theory of Everything*.

So to get started, I need a way of pulling myself up by my bootstraps, loading the operating system that provides the system of coordinates for all knowledge, which I call *Integral Relational Logic* (IRL). To distinguish the bootstrap program from the words that provide the narrative, I make them **bold** in my writings. These boldened words thus denote bootstrap or primal concepts. In this simple way, my reasoning is free of any assumptions or axioms that might inhibit me from seeing the world just as it is, rather than how I might wish it to be, whoever this 'I' might be.



The primal primal concept is naturally **Datum**, denoting the Divine Origin of the Universe, giving birth to meaningless **data elements** and the **relationships** between them. The holistic, integral picture or mental image that thus emerges in consciousness forms a **mathematical graph** of **nodes** and **links** between them, like this, introduced by Leonhard Euler in 1736 to solve a problem relating to the bridges of Königsberg, the capital of East Prussia, today Kaliningrad, a Russian exclave.[73]

The mathematical graph is the basis of my meditation practice. First, I view such a **structure** just as it is. I then view each node as a structure, consisting of a deeper level of data elements, as **forms**, and the links connecting them. Continuing, these forms, as structures, disappear at deeper and deeper levels and I am just left with relationships between singularities. Eventually, even these disappear through the practice of *neti neti* in *Jñāna Yoga*, 'path of wisdom and abstract knowledge' in Advaita, and I reach the Origin of the Universe, as **Oneness**, which is the **Immanent** aspect of the Datum.

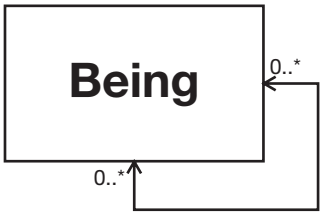
Conversely, any one structure is a node in a higher-level structure of forms and relationships. Eventually, these creatively expand to such an extent that they become a seamless continuum with no borders or divisions anywhere, which I call **Wholeness**, the **Transcendent** aspect of the Datum. It is in this involutionary and evolutionary way that my individual consciousness deepens and expands to such an extent that it becomes coterminous with **Consciousness** itself, as the union of Cosmic and Unity Consciousness, which etymologically means 'knowing together'.

To turn this meditation practice into a rational system of thought, these data elements and relationships, called **data patterns**, are first looked at as **beings** in the Totality of Existence, the central concept of Aristotle's ontology. As he said in *Metaphysics*,

> There is a science which studies Being *qua* Being, and the properties inherent in it in virtue of its own nature. This science is not the same as any of the so-called particular sciences, for none of the others contemplates Being generally *qua* Being; they divide off some portion of it and study the attribute of this portion, as do for example the mathematical sciences.[74]

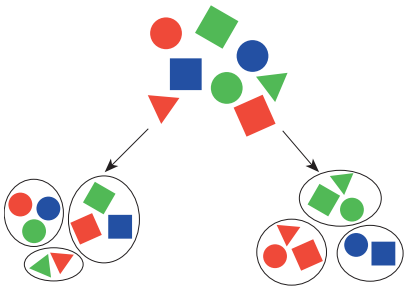
Being is a concept of the utmost generality, denoting any thing, object, event, process, system, organism, state, feeling, form, structure, relationship, field, concept, class, character, symbol, religion,

discipline, ism, ology, osophy, theory, language, culture, civilization, or any other way that I, or any other knowing being, can perceive, conceive, or imagine. Being is thus all-inclusive, denoting everyone's theories, opinions, points of view, beliefs, ideas, concepts, values, principles, propositions, theorems, etc., in all cultures and disciplines at all times, past, present, and future.



This diagram provides a simple map of the Totality of Existence, showing that all beings in the Universe are related to all other beings, including themselves, in zero to many different ways, some of which can be classified and some of which defy categorization and must remain a mystery. We can thus draw a complete map of the Universe with just one node and relationship in the notation of the Unified Modeling Language (UML), which Grady Booch, James R. Rumbaugh, and Ivar Jacobson developed in the 1990s at Rational Software, now a division of IBM.

Now to give **meaning** to the meaningless mathematical graph underlying the Totality of Existence, interpreting it as a meaningful **semantic network**, I use the mathematical concept of **set**, which Georg Cantor defined in this way: "By a set we mean the joining into a single whole of objects which are clearly distinguishable by our intuition or thought."[75] To form concepts in consciousness, I use Bohm's very general way of perceiving order in quantum physics: "*to give attention to similar differences and different similarities*", a notion of order that the artist Charles Biederman gave him.[76] In other words, I carefully examine the **similarities** and the **differences** in the data patterns of my experience, putting my interpretations into various sets as appropriate.



The concept of set is central to egalitarian concept formation and pattern recognition, and hence conscious evolution, as a group of mathematicians in the USA and UK recognized in the 1960s, introducing sets and associated Venn diagrams into primary and elementary schools,[77] attended by eight to eleven year-olds. For instance, as children, when we began to form concepts, we learned to distinguish colours, shapes, and numbers, as in this illustration. This transcultural, transdisciplinary interpretative process is the basis of all our learning.

As the authors of *The 'New' Maths* pointed out, the new maths was intended to bring meaning to mathematics and hence to all other disciplines.[78] This was critical, because as Bertrand Russell realized around the turn of the twentieth century, it is not possible to form the concept of number 3, for instance, until the concept of set is formed. So number is not a bootstrap concept in Integral Relational Logic. Sadly, however, it seems that the new maths was abandoned because children were not developing the numeracy skills required by business and science, illogically putting second things first.[79]

To bring universal order to all these interpreted data patterns, I have been inspired to do so by the relational model of data that Ted Codd of IBM introduced in 1970 to unify the hierarchical and non-hierarchical approaches to database management systems that appeared in the 1960s.[80] Unbeknownst to most, he introduced a nondeductive mathematical logic, the greatest revolution in Western thought since Aristotle laid down its foundations with the concept of syllogism. We can see the immense power of the relational model from the fact that you cannot order a book or airline ticket on the Internet without invoking the relational model behind the scenes, apparent in the multibillion-dollar database industry that has since emerged.

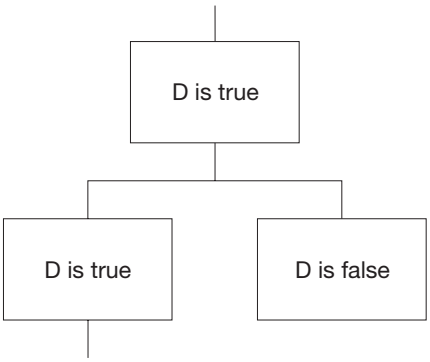
In terms of IRL, I first organize my thoughts in **tables**, called **relations** in the relational model of data. These lead to the primal concepts of **class**, **entity** (as **instance** of class), and **attribute**, which correspond

to Plato's universals and particulars and Aristotle's subjects and predicates. Universals and particulars are present in object-oriented modelling methods, which evolved from the Simula programming language, as classes and objects, developed by Kristen Nygaard, Ole-Johan Dahl, and Bjørn Myhrhaug, at the Norwegian Computing Center in the mid 1960s.[81] So it is not true that universals are eternal, as Plato believed.

Associated with each attribute in a class is a **domain of values**, which acts as a **dimension** or **measure**, which is both **quantitative** and **qualitative**. In this respect, mass, space, and time are treated no differently from any other measure and so are not bootstrap concepts in IRL, freeing science of its materialistic worldview and framework. With these key primal concepts, I am then able to define a few others, such as **nonhierarchical** or **associative** and **hierarchical** relationships, which exist as **generalization**, **aggregation**, and **evolutionary**. At the apex of the generalization hierarchy is the superclass **Being**, with all other concepts being subclasses, corresponding to the superclass **Object** in object-oriented modelling methods and programming languages. I can thus see that the underlying structure of the Cosmos and hence all cultures and disciplines is an infinitely dimensional network of hierarchical relationships.

Now, although I intuitively begin my reasoning by applying the Principle of Unity to discern the first bifurcation in the Cosmos between Nonduality and duality, illustrated on page 8, I actually use the primal concepts of Integral Relational Logic to form this irrefutable, universal truth as a bootstrap concept in a thoroughly rational manner.

I begin to do this by generalizing the principle of duality in inversive and projective geometry, succinctly described in *Geometry Revisited* by H. S. M. Coxeter and S. L. Greitzer.[82] The **Principle of Duality** in IRL is proposition D, stating: *A complete conceptual model of the manifest Universe consists entirely of dual sets*. But is D true? Well, sometimes yes and sometimes not. For instance, a collection of entities without a common attribute do not form a set, which we usually call miscellaneous. But now something quite incredible happens!



Those occasions when D is false are the opposite of those occasions when D is true, confirming that D is true. In the terms of Georg Wilhelm Friedrich Hegel's dialectical logic, if 'D is true' is the thesis and 'D is false' is the antithesis, then 'D is true' is the synthesis. There is thus a **primary-secondary relationship** between the truth and falsity of the Principle of Duality, illustrated in this diagram. So it is impossible to deny the truth of the Principle of Duality, for any denial confirms its veracity. D is thus a self-verifying proposition, true in all possible worlds, an instance of a class in IRL with general attributes A and $\neg A$, called a paradox or self-contradiction. As E. F. Schumacher said, "Our task is to look at the world and see it whole", which requires us to follow the fundamental maxim of mapmaking, "Accept everything; reject nothing."[83]

I then apply the Principle of Duality to form the concept of the **Absolute** in exactly the same way as I form concepts in the relativistic world of form: by carefully observing the similarities and differences in the data patterns of my experience. Conceptually viewing the Absolute as a unity, I see that it differs from all its parts, for all these parts are limited in some way. In contrast, the Absolute cannot be defined, for to do so would be to give it boundaries, to say what it is and what it is not. This is obvious from the word *define*, which comes from the Latin *dēfīnīre* 'to limit' or 'to end'. The Absolute is thus indefinable and unanalysable, qualities that are Transcendent with respect to a knowing being.

On the other hand, when I view the Absolute as an aggregate of all beings in the Totality of Existence, I see that the structure of its parts is exactly the same as the structure of any of its parts, for the Universe has an underlying, unified structure, independent of and prior to interpretation by a knowing being, as we have seen. The relationships that form this holographic web of life lie within everything there is; they are the glue that holds the entire Universe together. From this perspective, we can say that the Absolute possesses the property of Immanence with respect to all beings in the relativistic world of form,

This is a rational cognitive or conceptual way of viewing the Absolute. However, there is also an experimental perspective, which I 'sense' through my meditation practice, described on page 11. Curiously, the properties of Transcendence and Immanence are reversed experientially. So, in conformity with what I call the **Cross of Duality**, where two or more duals relate to each other, there are two pairs of dual ways in which I understand and experience the Absolute, given in this matrix, thus establishing God as a scientific concept.

	Oneness	**Wholeness**
Conceptual	Transcendent	Immanent
Experiential	Immanent	Transcendent

So having intuitively begun my reasoning at the Datum of the Universe, I have rationally returned to the Source, whence I began. Many before me have described the birth-and-death process that we could go through while we are still alive in our bodies in the most beautiful, poetic language. Here are a couple of examples, the first from the *Taittiriya Upanishad* and the second from 'Little Gidding', the final poem in T. S. Eliot's *Four Quartets*: [84]

Bhrigu meditated and found that bliss is Brahman.
From bliss are born all creatures,
By bliss they grow,
And to bliss they return when they depart.

We shall not cease from exploration
And the end of all our exploring
Will be to arrive where we started
And know the place for the first time.

By consistently looking at the similarities and differences in the data patterns of my experience, I have thus derived the fundamental law of the Universe, as the **Principle of Unity**, the last primal, bootstrap concept to be formed, taking me back to the first: the **Datum** of the Universe. I also call this irrefutable truth the *Cosmic Equation*, the simple equation able to explain everything, which Einstein and Hawking sought at the heart of their own attempts to solve the ultimate problem of human learning:

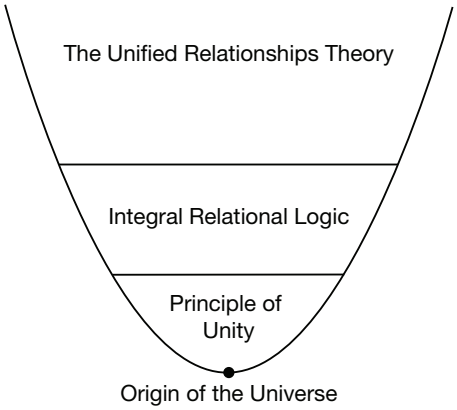
$$W = A = A \cup \neg A = 陰陽 = \text{ॐ}$$

Here *W* is any whole, including Wholeness, *A* is any being, including the Supreme Being and all human beings, ∪ is union, and ¬ is not. The Chinese characters denote *yin* and *yang*, as inseparable dark and light, moon and sun, female and male, etc., unified in the symbol for OM or AUM, the union of *Brahman* and *Atman* in the *Mandukya Upanishad*.

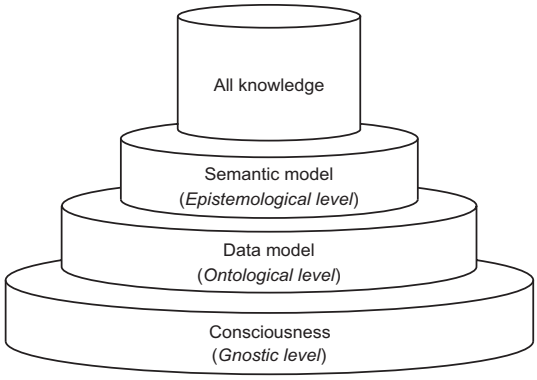
While developing and describing Integral Relational Logic as the commonsensical science of thought and consciousness we all implicitly use to form concepts and organize our ideas, the details can get in the way, inhibiting us from seeing the Big Picture. This is an unavoidable consequence of evolution becoming fully conscious of itself in 'scientific man', as Julian Huxley predicted in a visionary essay in 1959 titled 'Transhumanism',[85] and Teilhard prophesied in *The Phenomenon of Man*, for which Huxley wrote the Preface.

So standing outside myself to see what is going on, I draw the next diagram showing how Integral Relational Logic provides the Gnostic Foundation, Cosmic Context, and coordinating framework for all

knowledge, which I call the Unified Relationships Theory (URT), a generalization of Einstein's unified field theory, for fields, such as electromagnetic and morphogenetic fields, are a special case of relationships, all grounded in the Unified Field.



As the Unified Relationships Theory transcends and embraces all cultures and disciplines, I also call it *Panosophy*, a word that Jan Ámos Komenský (Comenius), the 'father of modern education', made famous in the 1600s with a slightly different spelling, modelled on *philosophy*, from Greek *pan* 'all' and *sophia* 'wisdom'. The ancient Greeks used the word *pansophos* to mean 'very wise', literally 'all-wise'. Comenius' *A Reformation of Schooles*, in its 1642 English title, was a prospectus for a universal cyclopædia, *pansophy*, occasionally spelled *pantosophy*, coming to mean 'universal or cyclopædic knowledge; a scheme or cyclopædic work embracing the whole body of human knowledge'.[86] Pansophy formed the basis of Pansophia, 'a dream of science', the vision of a Utopian society, to this day still not realized, as Frank E. and Fritzie P. Manuel point out in their scholarly tome *Utopian Thought in the Western World*.[87]

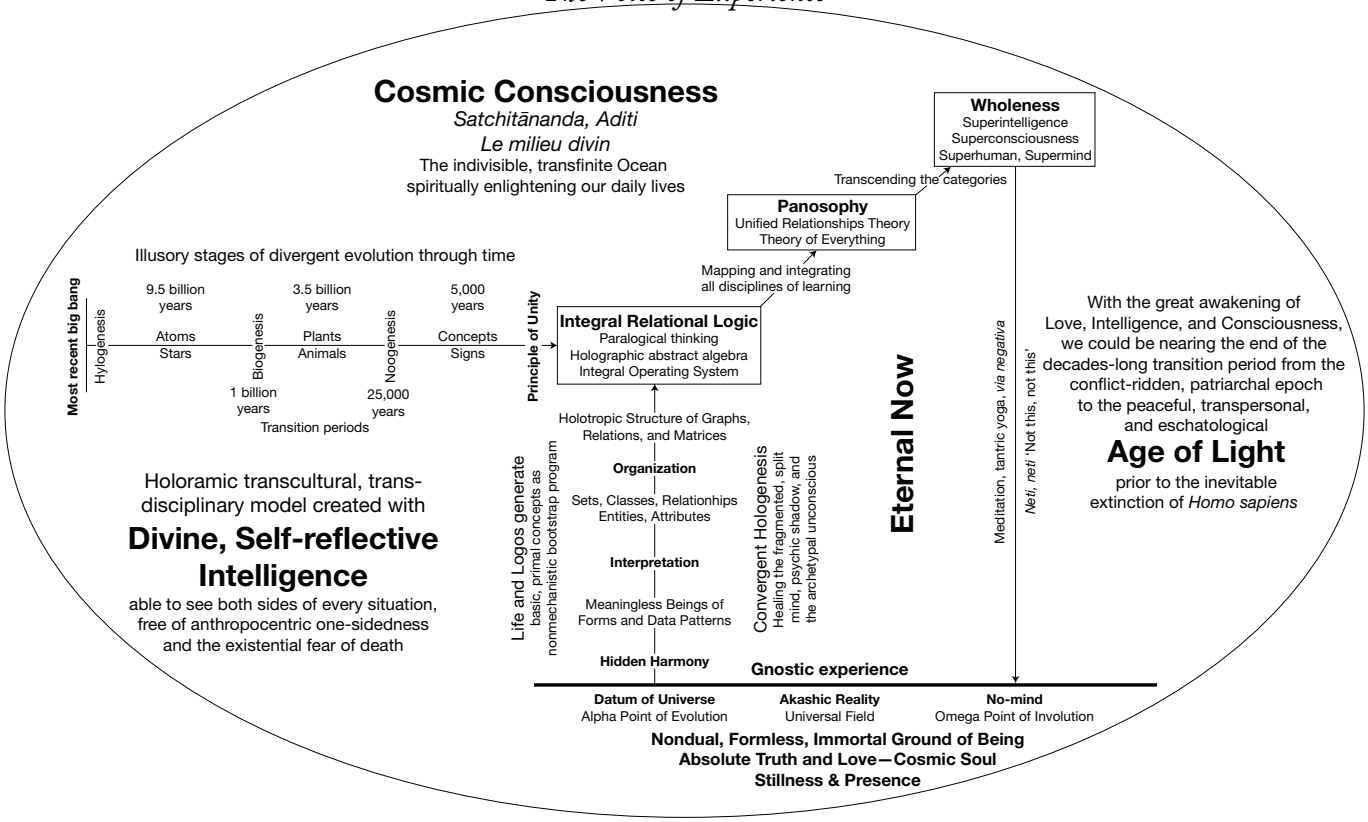


This diagram is another way of showing the relationship of Integral Relational Logic to the Unified Relationships Theory, as all knowledge. The semantic model corresponds to class models in object-oriented modelling methods and the systems catalogue in relational database management systems, expressible as relations, avoiding the problem of the infinite regress of metadata, data about data. This level corresponds to Aristotle's epistemology 'the science or study of knowledge'. For *epistemology* derives from Greek *epistēmē* 'knowledge'.

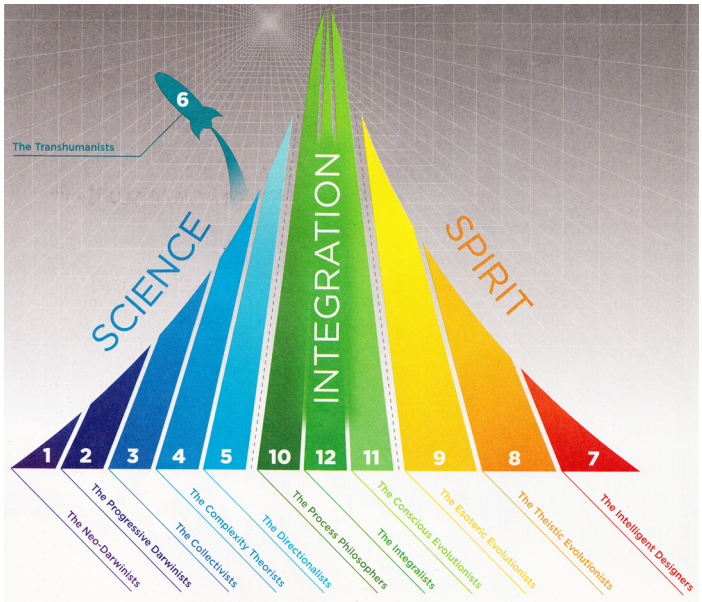
The ontological level is tiny, consisting of one thing that can be said about data elements and the relationships between them prior to interpretation by a cognitive being, described on page 11: *The underlying structure of the Cosmos is an infinitely dimensional network of hierarchical relationships*. The Principle of Unity lies in the mezzanine level between the ontological and Gnostic levels.

It is vitally important to remember here that the Unified Relationships Theory, as the much sought-for Theory of Everything, is a form of insight, expressible externally in all the encyclopaedias, books, and other writings and speeches that have ever been published or not, electronically or in printed form. This coherent insight has evolved directly from my function as an information systems architect in business, which is why I sometimes call myself a Panosopher or integral, holistic visionary, able to view the Cosmos from a Holoramic 'Whole-seeing' vantage point, a little like astronauts viewing the Earth as an undivided whole from the Moon.

Yet, such a perspective and holistic experience is innate in each and every one of us. No one can return Home to Wholeness for nobody has ever left Home. But how can I reveal this Cosmic Vision to others without them meeting me or studying my many books, essays, and articles as a mirror of their own inner worlds? Well, in April 2017, I managed to do just that, drawing the diagram on the next page, depicting the Cosmic Context, Gnostic Foundation, and coordinating framework for the Grand Design of the Universe, revealed by evolution becoming fully conscious of itself.



The line on the left of this diagram shows the conventional view of evolution in the horizontal dimension of time, extended from the biological into Teilhard's first three stages in his four-stage evolutionary model, following his law of complexity-consciousness, the greater the complexity the greater the consciousness. My books *The Four Spheres: Healing the Split between Mysticism and Science* and *Through Evolution's Accumulation Point: Towards Its Glorious Culmination* provide a more detailed description of this comprehensive theory of evolution, integrating all these that the *What is Enlightenment?* magazine identified in 2007, bringing the transhumanists back into the fold.



The latter book shows how we can apply the logistic map in nonlinear systems dynamics to mathematically model evolution under constraint, showing why the last fourteen billion years of evolution are accelerating exponentially into chaos right now, with a few oases of self-similar order amongst the turmoil.

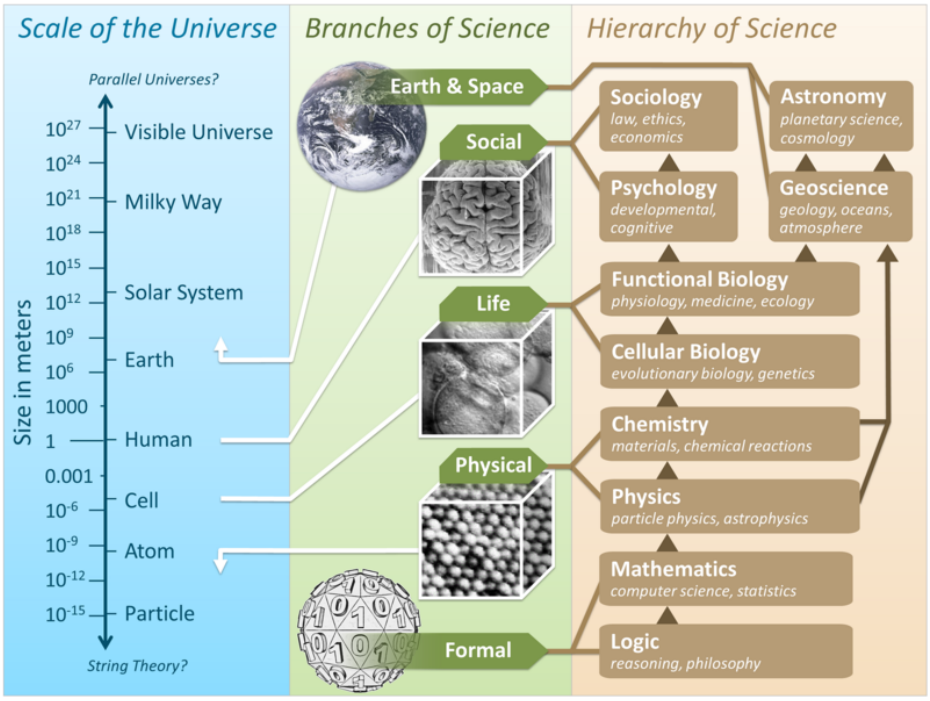
To cope with all the social turbulence that is arising as evolution passes through the most momentous turning point in its long history, the two vertical lines denote my meditation practice, described on page 11. The downward, involutionary, dying movement on the right is familiar to millions of spiritual seekers engaged in self-inquiry to discover their Authentic Self and Genuine Identity, which we all share, from Latin *idem* 'same'. However, the upward, creative, evolutionary movement is less familiar, even to leading evolutionaries,[88] distinct from more conventional evolutionists, which is why I have spent a few pages in this essay describing it as well as I am able.

So what next? Well, from the perspective of Wholeness, there is no next, no past or future. However, abstracting time and humanity from this vast Ocean of Consciousness, never actually separate from the Ocean, for many years I have dreamt that one day we humans could collectively make the transition from what we could call the mental-egoic age (the self-centred me-epoch, focused on conflict and competition) into the age of universal spirituality (the socially centred us-epoch, focused on peace and cooperation).

We would then enter the eschatological Age of Light, governed by what Henryk Skolimowski aptly called Lumenarchy,[89] realizing Teilhard's prophecy: "The way out for the world, the gates of the future, the entry into the superhuman, will not open to some privileged few, or to a single people, elect among all peoples. They will yield only to the thrust of all together in the direction where all can rejoin and complete one another in a spiritual renewal of the Earth."[90]

Inspired by this vision, I have long been seeking to attract people to join me in rebuilding our education and economic systems within and on the Cosmic Foundation and framework of Integral Relational Logic, recognizing that the Principle of Unity is the fundamental law of the Universe. For, like my local doctor, who calls herself a 'specialist in general medicine', as a retired information systems architect, I could work with specialists in various disciplines to rebuild the infrastructure of society.

The most significant of these specialist disciplines is depth psychology, which we need to establish as the primary discipline of science, replacing physics and biology, sometimes the former's usurper. We can see what this would mean to academia from this Wikipedia diagram. Psychology, as the science of mind and consciousness, and mathematical logic, as the science of mind and reason, are almost as far from each other as they could be. Bertrand Russell and Gottlob Frege much influenced this split in an exchange of letters in 1903, when they absurdly agreed that logic and psychology have nothing to do with each other.[91]



In contrast, Integral Relational Logic unifies nonlinear mathematical logic and depth psychology, thereby establishing mystical psychology as the most fundamental of all the specialist disciplines. We can thereby fulfil George Boole's dream, which he stated in the opening paragraph of *Laws of Thought*, which laid down the foundations of linear mathematical logic: "The design of the following treatise is to investigate the fundamental laws of those operations of the mind by which reasoning is performed," with the purpose of exploring "the nature and constitution of the human mind".[92]

Then using this universal system of thought to map the psychodynamics of society as a whole, we can reveal the root causes of what Erich Fromm called our sick society, and thereby find a cure and apply the remedy, not unlike the Four Noble Truths of the Buddha, who we can consider the first mystical psychotherapist.[93]

The most significant cause of our psychosocial malaise is the split between humanity and Divinity, revealed in the roots of these words. First, *human* derives from Latin *humus* 'ground, earth', from PIE base **dhghem-* 'earth'. And secondly, *divine* derives from Latin *deus* 'god', from PIE base **dyeu* 'to shine', indicating the brilliant light of Consciousness that radiates through all of us once what an anonymous fourteenth-century English mystic called 'clouds of unknowing'[94] are dispersed. These etymologies show that our forebears some 5,500 years ago conceived of humans as earthlings in contrast to the divine residents of the heavens, as Calvert Watkins explains in *The American Dictionary of Indo-European Roots*.[95]

So the cognitive and experiential split between humans and the Divine—as Reality—lies deep in the collective psyche, especially in cultures based on the Abrahamic religions of Judaism, Christianity, and Islam and atheistic, materialistic science. Humanity's separation from Divinity—as our Immortal Ground of Being—has led to the existential fears that sub- and unconsciously drive human affairs today.

To assuage our fear of death, people have created immortality symbols, the most significant of which is money. As Ernest Becker, the Pulitzer prize-winning author of *The Denial of Death*, shows in *Escape from Evil*, we have used our cultures for this purpose throughout history.[96] For cultures, like families, have longer lifespans than those of our bodies. So they have provided immortality systems and symbols to give people a sense of security and identity in life, albeit rather precarious, for such symbols are based on delusion, on a false sense of Reality.

The second root cause of our collective mental disorder is perhaps even more difficult to deal with, given the way most have been educated. David Bohm highlighted the central problem in the opening paragraphs of *Wholeness and the Implicate Order*:

> Fragmentation is now very widespread, not only throughout society, but also in each individual; and this is leading to a kind of general confusion of the mind, which creates an endless series of problems and interferes with our clarity of perception so seriously as to prevent us from being able to solve most of them.
>
> Thus art, science, technology, and human work in general, are divided up into specialities, each considered to be separate in essence from the others. … Each individual human being has been fragmented into a large number of separate and conflicting compartments, according to his different desires, aims, ambitions, loyalties, psychological characteristics, etc., to such an extent that it is generally accepted that some degree of neurosis is inevitable, while many individuals going beyond the 'normal' limits of fragmentation are classified as paranoid, schizoid, psychotic, etc.

We should not blame academics for the mess that the education system is in today, for this is a product of some fourteen billion years of evolution since the most recent big bang. And this has been more divergent than convergent through its long history. First, large and small material objects were formed, such as stars, galaxies, atoms, and electrons in a process we can call hylogenesis, from Greek *ὑlē* 'matter'. Then during the last three and a half billion years on Earth, we have seen the wondrous diversity of the species evolve. Biogenesis then gradually gave way to noogenesis—the evolution of the mind—about 35,000 years ago, the analytical mind becoming predominant at the dawn of history about 5,000 years ago. As a result of our fragmented minds, society has become divided into religious and national factions, academic specialization, and the division of labour in the workplace.

So what to do? I have written this introductory essay on the 'Voice of Experience' because I have been invited to be an adviser to the Galileo Commission, answering these four questions, also making other observations that I might have:

- In your own field, and in general, what do you consider to be the major limitations of science, as it is currently understood and practised?
- How would you like to see these limitations addressed?
- What new methodologies and ontology would you propose?
- What differences do you think an extended science would make to your own field, and in general?

And on the Commission's website, the general public is invited to answer these six questions:

- Why do you think an expanded science is necessary?
- What would its core assumptions be – its ontology?
- What would its rules of evidence be – its epistemology?
- How would an expanded science be done in practice – its methodologies?
- What would be included in a training in expanded science?
- How would any resistance to expanded science be overcome?

However, I'm not sure how to answer these questions within the social environment in which they are posed. During the past eight years, as my awakening has matured, I have written seven books, including a trilogy on *Wholeness*, and many other essays and articles explaining how we could bring Love, Life, Light, and Spirit into science and business. These writings are summarized in a bibliographical essay I wrote in the winter of 2018.

This latest essay also addresses many of the Commission's questions, not from the vantage point of any specialist field but by taking a transcultural, transdisciplinary perspective, which is generally considered to be impossible. For instance, Ken Wilber wrote in *A Theory of Everything: An Integral Vision for Business, Politics, Science and Spirituality*:

> This book is a brief overview of a Theory of Everything. All such attempts, of course, are marked by the many ways in which they fail. The many ways in which they fall short, make unwarranted generalizations, drive specialists insane, and generally fail to achieve their stated aim of holistic embrace. It's not just that the task is beyond any one human mind; it's that the task is inherently undoable: knowledge expands faster than ways to categorize it. The holistic quest is an ever-receding dream, a horizon that constantly retreats as we approach it, a pot of gold at the end of the rainbow that we will never reach.[97]

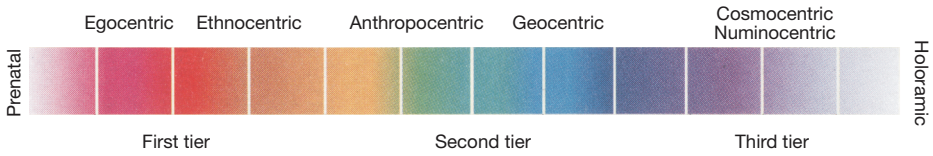
Christian de Quincey expressed a similar view in 2001, when the managing editor of the *Noetic Sciences Review*, the journal of the Institute of Noetic Sciences (IONS). In a critical appreciation of Ken's *Collected Works*, he wrote that the genuine theory of everything is impossible:

> Because you cannot create a model or a map that contains itself. Where, for example, would the four-quadrants model fit into the four-quadrants model? Mathematical and logical proofs developed by Bertrand Russell and Kurt Gödel—along the lines that no set of all sets can itself be a set of the same logical category, type, or level—invalidates the claim. Both Alfred Korzybski and Gregory Bateson immortalized this dilemma with the phrase "the map is not the territory." In this case (Wilber's TOE), not only the map, but more crucially, the consciousness that created the map, cannot be found in its own creation. To attempt to make room for it would involve us (and Wilber) in a logical infinite regress. This meta-critique applies to any TOE, of course, not just Wilber's.[98]

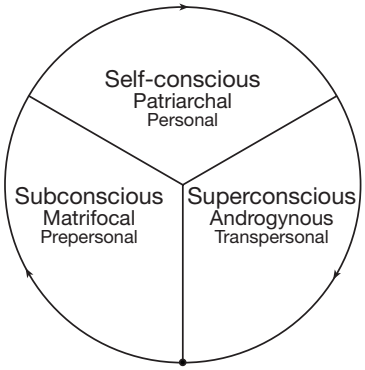
Nevertheless, I can use Ken's integral philosophy to explain why what he and many others consider to be an impossible architectonic is quite feasible. IRL is an example of what he calls an 'Integral Operating System', or IOS, "a neutral framework" that "can be used to bring more clarity, care, and comprehensiveness to virtually any situation". Ken's basic IOS is called AQAL, short for "all quadrants, all levels", which is short for "all quadrants, all levels, all lines, all states, all types".[99] AQAL is thus a two-dimensional example of the multidimensional Cross of Duality, and therefore not all encompassing. IRL is more like a virtual machine operating system, such as IBM's Virtual Machine (VM), which can run many different operating systems including itself, than Microsoft's Windows or Apple's MacOS.

Since April 2014, AQAL has been called a Superhuman Operating System, which Ken has been teaching in a ten-module Internet course, intended to "Install a Revolutionary New Operating System for

Your Mind to Illuminate the Full Spectrum of Your Human Potential, and Become the Greatest Possible Version of Yourself". I did this course in the winter of 2018, learning of some differences between his books and the course, focused mainly on what he calls the second tier of the spectrum of consciousness, involving around 5% of the population, in contrast to 95% in the egocentric and ethnocentric first tier.



The third tier indicates "an identification with all life and consciousness, human or otherwise, and a deeply felt responsibility for the evolutionary process as a whole … an emergent capacity, rarely seen anywhere," as Ken defined it in a conversation with Andrew Cohen in the *What is Enlightenment?* magazine in 2007.[100]



Formless Alpha/Omega Point of Evolution

With the vast majority of the seven and half billion souls living and dying on Earth at the present time still in the first tier of the spectrum of consciousness, it is not easy to see how the awakening second tier could be guided into the third tier, helping the first tier to evolve into the second, at least. So what proportion of the human populace will be able to complete the transition from the second to the third phase in the three-phase model of human phylogeny, which Ken visualized in *Up from Eden*,[101] and from the third to the fourth stage of evolution in Teilhard's four-stage model, is most unclear at the moment.

Nevertheless, over the years, I've maintained my optimistic nature even as I have been studying what Nick Bostrom calls existential risks, described in such books as John Leslie's *The End of the World: The Science and Ethics of Human Extinction* and his own *Anthropic Bias: Observation Selection Effects in Science and Philosophy* and *Global Catastrophic Risks*. Nick is the Director of the Future of Humanity Institute at Oxford University—founded and funded by James Martin, a fellow IBM alumnus—and author of *Superintelligence*, in which he calls computers that can beat humans at games like chess, Jeopardy!, and Go superhuman.

Of course, they are nothing of the sort. As I have outlined in this essay, no computer could integrate all knowledge in all cultures and disciplines into a coherent whole without Divine involvement. This task can only be accomplished by superintelligent, superconscious humans, free, as much as possible, of their mechanistic scientific, economic, and religious conditioning. For we cannot get to where we are going as a species starting where we are today. We have no alternative but to start afresh at the very beginning, cocreating nurturing social institutions where it is safe to question the beliefs and assumptions of the prevailing cultures.

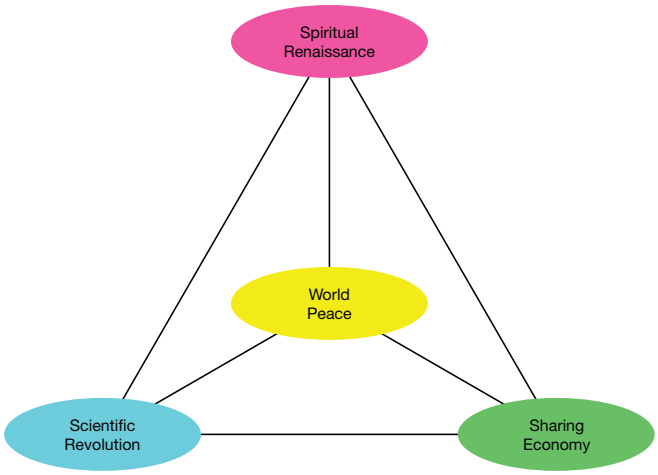
Now while studying the root causes of the exponential rate of change in society has been my primary focus since I resigned from my marketing job with IBM, during the last couple of years a far more urgent issue has caught my attention. Despite knowing since 1982 that one day a generation of children would be born who would not grow old enough to have children of their own, I have hoped that the Age of Light could last a few generations, maybe for 250 years, a vision I depicted in a poster presentation on 'The Two Dimensions of Time' at the Science and Nonduality (SAND) conference in the USA in 2011.

However, all this has changed in the last couple of years with increasing psychological turmoil in politics, as fear and ignorance mostly governs human affairs, not knowing why scientists and technologists are driving the pace of change in society at unprecedented rates of acceleration. I have been especially woken up by *Extinction Dialogs: How to Live with Death in Mind*, which Andrew Harvey asked Guy McPherson and Carolyn Baker to write in 2014. I met Guy, Professor Emeritus of Natural Resources at the University of Arizona and the foremost authority on abrupt climate change, in Oslo in December 2017, when he explained to me why the inevitable collapse of industrial society would actually accelerate climate change because of a reduction in global dimming and the rapid release of methane gas trapped in the Arctic, making our beautiful planet Earth uninhabitable.

Under these circumstances, we all need to find our own way to come to terms with the imminent extinction of our species, no matter how and when this might occur. As Matthew Fox said in the Preface to Andrew Harvey and Carolyn Baker's *Savage Grace: Living Resiliently in the Dark Night of the Globe* from 2017, "Ours is a time not only for scientists and inventors but also mystics and contemplatives to join hands so that our action flows from being and from a deep place of return to the Source."[102]

Such a network of networks is what I have been endeavouring to set up with the Alliance for Mystical Pragmatics during the past few years with the motto 'Harmonizing evolutionary convergence'. For *Pragmatics* derives from Latin *prāgmaticus* 'skilled in business', from Greek *prāgmatikos* 'active, business-like, versed in affairs, relating to fact', from *prāgma* 'deed, action, fact', from *prāssein* 'to do, make, manage', also root of *practical*. So we can regard pragmatics as the science or study of our practical business affairs, extending the conventional linguistic and semiotic meanings of the word, encapsulated in Charles Sanders Peirce and William James' philosophy of pragmatism.

The purpose of the Alliance is to integrate four major global movements in the world today into a coherent whole: Spiritual Renaissance, Scientific Revolution, Sharing Economy, and World Peace, as this diagram indicates. The Alliance would thus fulfil Comenius' vision in 1642 for a Pansophical College, as an academy of Universal Wisdom and Light, which the founders of the Royal Society rejected a couple of decades later.[103]



We can see why from some observations that Uta Frith, emeritus professor at the Institute of Cognitive Neuroscience, University College London, made in an interview in *The Guardian* on 30th November 2015 under the rubric 'Where next for the Royal Society?' to mark Venki Ramakrishnan taking over as the President of this august institution. She pointed out that the scientific establishment is very far from accepting psychology in any form as a valid science, saying,

> My own field, call it psychology, or cognitive or behavioural neuroscience, still leads a rather shadowy existence in the hallowed halls of science. Although nearly 100 years old, it is far from maturity. There is as yet no Newton. Many would agree that one of the biggest scientific challenges this century is to understand the mind-brain. So I dare hope that it will be possible to increase the number of outstanding scientists in this field, currently representing less than three per cent of the Fellowship.
>
> This would lead to an increase in the prestige of mind-brain studies and attract more brilliant young researchers. One reason for the currently poor reputation of psychology is the obstinate belief that we already know what goes on in our mind, and that we can explain why we do what we do. This naïve belief will be overcome by improved

communication of empirical findings, and especially of those that go against ingrained folk psychology. It's not rocket science. It's a lot harder than that.

It is perhaps not surprising that the Alliance has not taken off and maybe never will do. For much-needed changes in society are generally brought about more through 'who we know' than 'what we know.' Yet to heal my fragmented mind and split psyche, shattered by a cataclysmic prenatal trauma, I have inevitably needed to spend most of my life on my own, even when married and working reasonably successfully in the data-processing industry.

For as Anthony Storr says in *Solitude*, "The majority of poets, novelists, composers, and, to a lesser extent, of painters and sculptors, are bound to spend a great deal of time alone," quoting Edward Gibbon as saying, "Conversation enriches the understanding, but solitude is the school of genius; and the uniformity of a work denotes the hand of a single artist."[104] And, as he said in *The Dynamics of Creation*, a study of the pathology of genius, Newton and Einstein needed to distance themselves from the 'real' world of their contemporaries in order to develop their new models of the universe: "Newton's discoveries, like Einstein's, depended on an extreme scepticism of authority combined with a powerful drive to make a new synthesis which would make sense out of the universe."[105]

Now while I haven't completely given up hope of completing the final revolution in science, just as Newton completed the first in 1687 with the publication of *Mathematical Principles of Natural Philosophy*, I would be extremely foolish to base my plans for the remainder of my life on the expectation that this might happen. As Andrew Harvey said in a YouTube video with Guy McPherson, in today's apocalyptic situation, we need to act with peace and joy and compassion, giving up the fruits of action, come what may.[106] 'Giving up the fruits of action' comes from an exhortation in the final chapter of *Bhagavad Gita*, which much inspired Mohandas Gandhi to write these words: "He who … is without desire for the result and is yet wholly engrossed in the fulfilment of the task before him is said to have renounced the fruits of his action."[107]

For myself, I have one final book to write in order to feel complete with the final revolution in science. On 27th July 1980, the *Observer* newspaper published a review by Danah Zohar of Bohm's *Wholeness and the Implicate Orde*r in which she said that he was seeking to develop an algebra of algebras to establish his synthesis of relativity theory and quantum mechanics, which he said should really be called *non*-mechanics,[108] in a sound scientific manner.

Bohm and I did not talk about this possibility during our meetings in the 1980s because I was endeavouring to understand the nature of the comprehensive system of reason that was beginning to emerge in consciousness, directly from the Divine Origin of the Universe. We were drawn to each other because the business modelling and management problem that I was wrestling with at IBM during the winter of 1980 was essentially the same as that which Bohm needed solve to reconcile the incompatibilities between relativity and quantum theories. To look at the business world and universe from the perspective of Wholeness, we both needed to include our mapmaking in the territory being mapped.

But now Integral Relational Logic has reached a high level of maturity with the application of Self-reflective Intelligence, I can apply it to map mathematics as a whole, just like any other specialist discipline. Because this universal science of reason and consciousness can be seen as a generalization of abstract, modern algebra, which began to evolve in the 1800s, and mathematical category theory, it can be regarded as an algebra of algebras, lying beneath the foundations of mathematics as they have been understood since 1900, and, indeed, all specialist disciplines of knowledge.

So during the next nine months I'm planning to write a book titled *Unifying Mysticism and Mathematics: To Reveal the Contextual Foundation and Framework for All Knowledge*. Rather than viewing mathematics as an axiomatic, deductive proof system, which eschews self-contradictions, this book will show how to welcome paradoxes into our reasoning by experiencing mathematics as a generative science of patterns and relationships emerging directly from the Divine Origin of the Universe.

It will therefore show the equivalence of God and the Universe—known today as pantheism or panentheism—rather like Baruch Spinoza's *The Ethics* from 1677. Inspired by Euclid's *The Elements*, Spinoza began with some definitions and axioms and proceeded to 'prove' a sequence of propositions or theorems, beginning with the substance and essence of God and continuing to study the origin and nature of the mind and emotions, before exploring what this means for human behaviour, free of bondage to the emotions.

Unifying Mysticism and Mathematics will thus show how all opposites can be unified, completing a short sequence of cosmologies that each unified a pair of opposites. Johannes Kepler set the ball rolling with the publication in 1609 of *New Astronomy*, which laid down the foundations of modern astronomy with the first two laws of planetary motion,[109] ignored by Galileo. Kepler found these laws by unifying the split between causal physics and mathematical astronomy, which Aristotle had opened up in *Physics*.[110] Isaac Newton produced the second term in this series in 1687 by unifying Kepler's celestial physics with Galileo Galilei's terrestrial dynamics.[111]

Albert Einstein introduced the next two terms in this series with the special and general theories of relativity. First, in 1905, he developed the special theory of relativity by reconciling the incompatibilities between the principle of relativity, which states that physical phenomena run their course relative to different coordinate systems according to the same general laws, and the observed constancy of the speed of light.[112] Einstein did this by replacing Newton's absolute framework of space with a relativistic space-time continuum, in which the notion of simultaneity is relativistic. In the general theory of relativity, published in 1916, Einstein went on to show the equivalence of gravitational and inertial mass during acceleration,[113] and in so doing abandoned the Euclidean-Cartesian rectilinear model of space, replacing it with the view that space-time is curved.

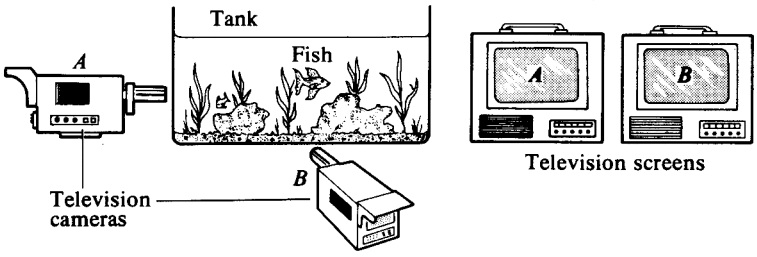
In 1980, David Bohm continued this unifying process by showing how we can unify the incompatibilities between quantum physics and relativity theory. For the theories of relativity and quantum physics display opposite characteristics, the former having the properties of continuity, causality, and locality, with the latter being characterized by noncontinuity, noncausality, and nonlocality.[114]

Inspired by the process thinking of Heraclitus and A. N. Whitehead, Bohm reconciled these incompatibilities by recognizing the existence of a continuous power underlying the surface of the material universe, accessible to our five physical senses, which he likened to a flowing stream, called the holomovement, whose substance is never the same. As he said, "On this stream, one may see an ever-changing pattern of vortices, ripples, waves, splashes, etc., which evidently have no independent existence as such. Rather, they are abstracted from the flowing movement, arising and vanishing in the total process of the flow."[115]

Bohm thus went much deeper than most physicists do, even today, even when they recognize the necessity for doing so. For instance, Martin Rees has said, "Einstein's theory and the quantum theory cannot be meshed together: both are superb within limits, but at the deepest level they are contradictory. Until there has been a synthesis, we certainly will not be able to tackle the overwhelming question of what

happened right at the very beginning." As he goes on to say, "Interpretations of quantum theory today may be on a 'primitive level', analogous to the Babylonian knowledge of eclipses: useful predictions, but no deep understanding."[116]

As well as using a river as a metaphor for what underlies the material universe, Bohm used the metaphor of a fish swimming in a tank with two television cameras filming it to show how relativity and quantum theories could be unified. The television screens would then display opposite characteristics of this single, underlying reality, illustrated here:



But what is the fish to make of all this? Well, the Sufi poet Kabir wrote in the fifteenth century, "I laugh when I hear that the fish in the water is thirsty,"[117] using water as a metaphor for Consciousness, as the Numinosphere. But that is not how astrophysicists understand our Environment, or the Arena in which we live, leaving much to be understood. For instance, Martin Rees has said, "In the twenty-first [century], the challenge will be to understand the arena itself, to probe the deepest nature of space and time," going on to say, "A fish may be barely aware of the medium in which it swims."[118] For as Kabir the weaver says in the fish poem, "You do not see that the Real is in your home, and you wander from forest to forest listlessly."

In the words of the popular Sufi poet Rumi, "Love is the sea of not-being and there intellect drowns."[119] For me, this sea is the Ocean of Consciousness, a multidimensional generalization of Bohm's one-dimensional holomovement, which we first experience in the womb. As Stanislav Grof says in *The Holotropic Mind*, our early experiences in the womb "have strong mystical overtones; they feel sacred or holy. … In this state of cosmic unity, we feel that we have direct, immediate, and unlimited access to knowledge and wisdom of universal significance." This rapturous period in our lives, a reminder of "Gardens of Paradise in the mythologies of a variety of the world's cultures", can be referred to as 'oceanic ecstasy'.[120]

This is the voice of experience of countless folk today, reflected in *Consciousness Speaks* by Ramesh S. Balsekar, formerly an Advaita sage and President of the Bank of India. As Wayne Liquorman, its editor, wrote in the Introduction, "All there is, is Consciousness. If that is understood completely, deeply, intuitively then you need read no further. Put the book down and go on joyously with the rest of your life."[121]

Such a realization of Wholeness has brought me great joy and sadness over the years, as I have passed through many dark nights of the soul, interspersed with moments of rapturous ecstasy, beautifully encapsulated in these two groups of four lines in William Blake's visionary poem *Auguries of Innocence*, flowing continuously, not normally broken into stanzas.

To see a World in a Grain of Sand
And Heaven in a Wild Flower
Hold Infinity in the palm of your hand
And Eternity in an hour

Joy & Woe are woven fine
A Clothing for the Soul divine
Under every grief & pine
Runs a joy with silken twine

[1] R. D. Laing, *The Voice of Experience: Experience, Science and Psychiatry*, London: Allen Lane, 1982, p. 15.
[2] R. D. Laing: *The Politics of Experience* and *The Bird of Paradise*, London: Penguin Books, 1967, p. 29.
[3] Erich Fromm, *The Sane Society*, original edition, 1956, London: Routledge & Kegan Paul, 1963, p. 120.
[4] Bruce H. Lipton, *The Biology of Belief: Unleashing the Power of Consciousness, Matter & Miracles*, Carlsbad, CA: Hay House, 2008, pp. 6 and 60.
[5] Carolyn Baker and Guy McPherson, *Extinction Dialogs: How to Live with Death in Mind,* Foreword Andrew Harvey San Francisco, CA: Next Revelation Press, 2014; Andrew Harvey and Carolyn Baker, *Savage Grace: Living Resiliently in the Dark Night of the Globe*, Foreword Matthew Fox, Bloomington, IN: iUniverse, 2017.
[6] M. C. Escher, *The World of M.C. Escher*, edited by J. C. Locher, Netherlands: Meulenhoff International, 1973, p. 102.
[7] Albert Einstein, 'Maxwell's Influence on the Evolution of the Idea of Physical Reality', in *James Clerk Maxwell: A Commemorative Volume*, Cambridge University Press, 1931, reprinted in Albert Einstein, *Ideas and Opinions*, based on *Mein Weltbild*, edited by Carl Seelig, translated by Sonja Barmann, original edition 1954, London: Condor, Souvenir Press, 2005, p. 266.
[8] Alfred Korzybski, *Science and Society: An Introduction to Non-Aristotelian Systems and General Semantics*, fifth edition, original edition, 1933, Englewood, NJ: Institute of General Semantics, 1994, p. 58.
[9] Jacques Hadamard, *The Psychology of Invention in the Mathematical Field*, original edition, Princeton University Press, 1945, Reprint, New York: Dover, 1954, pp. 142–143.
[10] David Bohm, *Wholeness and the Implicate Order*, London: Routledge, pp. 3–4.
[11] Evelyne Blau, *Krishnamurti*: *100 Years*, New York: Stewart, Tabori and Chang, 1995, p. 159.
[12] F. C. Happold, *Mysticism: A Study and an Anthology*, revised edition, original edition, 1963, Harmondsworth, England: Penguin, 1970, p. 72.
[13] Yehuda Berg, *The Power of Kabbalah: This Book Contains the Secrets of the Universe and the Meaning of our Lives*, Hodder Mobius, 2004, pp. 14 and 19.
[14] Erich Fromm, *To Have or To Be?* original edition, 1976, London: Sphere, Abacus, 1979, pp. 171–172.
[15] Daniel Bell, *The Coming of Post-Industrial Society*, Basic Books, 1973.
[16] Norman Lindop, *Report of the Committee on Data Protection*, London: Her Majesty's Stationery Office, 1978, para. 18.28, p. 154.
[17] https://www.economist.com/leaders/2017/05/06/the-worlds-most-valuable-resource-is-no-longer-oil-but-data.
[18] https://www.economist.com/briefing/2017/05/06/data-is-giving-rise-to-a-new-economy.
[19] Daniel Bell, 'The Social Framework of the Information Society' in *The Computer Age: A Twenty-Year View*, edited by Michael L. Dertouzos and Joel Moses, Cambridge, MA: MIT Press, 1979, p. 173.
[20] Tom Stonier, *The Wealth of Information: A Profile of the Post-Industrial Society*, London: Methuen, 1983, pp. 18–19.
[21] Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations*, edited by Kathryn Sutherland, original edition, 1776, Oxford University Press, 1998, p. 8.
[22] Hans Moravec, *Robot: Mere Machine to Transcendent Mind*, Oxford University Press, 1998, p. 125 and Hans Moravec, *Mind Children: The Future of Robot and Human Intelligence*, Harvard University Press, 1990.
[23] Martin Rees, *Our Final Century: Will the Human Race Survive the Twenty-first Century?*, London: Arrow Books, 2004, p. 19.
[24] http://www.bbc.com/news/technology-30290540.
[25] http://www.computer50.org/mark1/new.baby.html. *See also* F. C. Williams and T. Kilburn, 'Electronic Digital Computers', reproduced in Brian Randell, editor, *The Origins of Digital Computers: Selected Papers*, third edition, Berlin: Springer-Verlag, 1982, pp. 415–416.
[26] M. V. Wilkes and W. Renwick, 'The EDSAC', reproduced in Randell, *Origins of Digital Computers*, pp. 417–421.
[27] John van Neumann, 'First Draft of a Report on the EDVAC', Contract No. W-670-0RD-4926. Between the United States Army Ordnance Department and the University of Pennsylvania. Moore School of Electrical Engineering, University of Pennsylvania. June 30, 1945, reprinted in Randell, *Origins of Digital Computers*, pp. 383–392.
[28] Gilbet Ryle, *The Concept of Mind*, original edition, Hutchinson, 1949, Harmondsworth, England: Penguin, 1963, pp. 28–32.
[29] Benjamin Woolley, *The Bride of Science: Romance, Reason and Byron's Daughter*, Pan Books, 2000.
[30] L. F. Menabrea, 'Sketch of the Analytical Engine Invented by Charles Babbage' with notes on memoir by translator, Ada Augusta Lovelace, *Taylor's Scientific Memoirs*, London, Vol. III, 1843, pp. 666-731, reprinted in Philip Morrison and Emily Morrison, editors, *Charles Babbage and His Calculating Engines: Selected Writings* by Charles Babbage and Others, New York: Dover, 1961, p. 284.
[31] Alan Turing, 'Computing Machinery and Intelligence', *Mind*, LIX, No. 236, 1950, reprinted in Douglas R. Hofstadter and Daniel C. Dennett, eds., *The Mind's I: Fantasies and Reflections on Self and Soul*, Harmondsworth, England: Penguin, 1982, pp. 53–67.
[32] Ferdinand de Saussure, *Course in General Linguistics*, tr. Wade Baskin from *Cours de linguistique générale*, ed. Charles Bally and Albert Sechehaye in collaboration with Albert Reidlinger, 1916, New York: Philosophical Library, 1959, pp. 66–67.
[33] Charles Sanders Peirce, *Collected Papers of Charles Sanders Peirce: Volume II, Elements of Logic*, ed. Charles Hartstone and Paul Weiss, Cambridge, MA: Harvard University Press, 1932, para. 227–228.
[34] J. F. Sowa, *Conceptual Structures: Information Processing in Mind and Machine*, Reading, MA: Addison-Wesley, 1984, p. 11.
[35] C. K. Ogden and I. A. Richards, *The Meaning of Meaning: A Study of the Influence of Language upon Thought and the Science of*

Symbolism, first published 1923, London: Routledge & Kegan Paul, Ark, 1985, pp. 11 and 279.
[36] Francis H. Cook, *Hua-yen Buddhism: The Jewel Net of Indra*, Pennsylvania State University Press, 1973, pp. 1-2.
[37] Aristotle, *Physics*, Oxford Paperbacks, 2008, 254b7–255b40, pp. 195–200, and 256a4–258b8, pp. 200–207.
[38] Aristotle, *Metaphysics*, Books I-IX, tr. Hugh Tredennick, Cambridge: Harvard University Press; London: William Heinemann, 1933, 1073a27, p. 153.
[39] Thomas Aquinas, *Summa Theologiæ*, a concise translation by Timothy S. McDermott, originally published, 1265–1273, Allen, TX: Christian Classics, 1989, pp. 12–14.
[40] Ervin Laszlo, *The Akasha Paradigm in Science: (R)Evolution at the Cutting Edge*, Worthy Shorts, 2012, p. 52, in full in Vivekanda, *Raja Yoga*, ed. Richard Cockrum, Shards of Consciousness, p. 28.
[41] http://www.annebaring.com/anbar68_newstory.html.
[42] P. G. W. Keen and M. S. Scott Morton, *Decision Support Systems: An Organizational Perspective*, Reading, MA: Addison-Wesley, 1978.
[43] Osho, *The Hidden Harmony: Discourses on the Fragments of Heraclitus*, second edition, Cologne: The Rebel Publishing House, 1992, p. 1.
[44] Nicholas of Cusa, *Nicholas of Cusa: Selected Spiritual Writings*, tr. and intro. H. Lawrence Bord, pref. Morimichi Watanabe, New York: Paulist Press, 1997, pp. 5 and 206.
[45] Ann Casement, 'Psychodynamic Therapy: The Jungian Approach', in Dryden, *Individual Therapy*, pp. 77–102 in Windy Dryden, ed., *Handbook of Individual Therapy*, London: Sage, 1996.
[46] C. G. Jung, *Aion: Researches into the Phenomenology of the Self*, second edition, with corrections, 1968 and 1978, first published 1959, Princeton University Press, 1979, Chapter III, 'The Syzygy: Anima and Animus', *Collected Works* Volume 9, Part 2.
[47] C. G. Jung, Commentary on *The Secret of the Golden Flower*, tr. from Chinese by Richard Wilhelm in *Das Geheimnis der goldenen Blüte: Ein chinesisches Lebensbuch*, 1929, tr. from German by Cary F. Baynes, originally published 1931, San Diego, CA: Book Tree, 2010, p. 82. Also in C. J. Jung, *Alchemical Studies: Collected Works, Volume 13*, para. 7, p. 9.
[48] C. G. Jung, Editorial Note to *Zentralblatt für Psychotherapie und ihre Grenzgebiete* VIII:2 in *Civilization in Transition: Collected Works, Volume 10*, para. 1053, p. 552.
[49] Cary F. Baynes, Translator's Preface to *The Secret of the Golden Flower*, p. vii.
[50] C. G. Jung, 'A Study in the Process of Individuation' (1934/1950), in *The Archetypes of the Collective Unconscious, Collected Works, Volume 9, Part I*, pp. 290–354, paras. 525–626.
[51] Letter from Oxford English Dictionary Word and Language Service (OWLS) in 1993.
[52] Vimala Thakar, *Spirituality and Social Action: A Holistic Approach*, Vimala Programs California, 1984, pp. 3–4.
[53] Dionysius the Areopagite, *Mystical Theology* in *Pseudo-Dionysius: The Complete Works*, Paulist Press International, 1993, p. 141.
[54] Thich Nhat Hanh, *Old Path White Clouds: Walking in the Footsteps of the Buddha*, tr. Mobi Ho, Berkeley, CA: Parallax Press, 1991, p. 465.
[55] Lao Tzu, *Tao Teh Ching*, tr. John C. H. Wu, original edition, 1961, Boston: Shambhala, 2005, ch. 1, p. 3.
[56] Ingrid Fischer-Schreiber, Franz-Karl Ehrhard, Kurt Friedrichs, and Michael S. Diener, *The Encylopedia of Eastern Philosophy and Religion: Buddhism • Hinduism • Taoism • Zen*, tr. from German, original edition, Bern and Munich: Otto-Wilhelm-Barth Verlag, 1986, Boston: Shambhala, 1989, article on ***Samsāra***, p. 298.
[57] Joseph Campbell, *The Hero with a Thousand Faces*, second edition, original edition, 1949, Princeton University Press, 1968, p. 259.
[58] Ibid., p. 30.
[59] Christina Grof and Stanislav Grof, *The Stormy Search for the Self: A Guide to Personal Growth through Transformational Crisis*, New York: Jeremy P. Tarcher, 1990/1992, and Stanislav Grof and Christina Grof, eds., *Spiritual Emergency: When Personal Transformation Becomes a Crisis*, New York: Jeremy P. Tarcher, 1989.
[60] Aristotle, *Categories, On Interpretation, and Prior Analytics*, tr. Harold P. Cooke and Hugh Tredennick, Cambridge: Harvard University Press; London: William Heinemann, 1938.
[61] Francis Bacon, *The New Organon*, ed. Lisa Jardine and Michael Silverthorne, original edition *Novum Organum*, 1620, Cambridge University Press, 2000, p. 17.
[62] Charles Sanders Peirce, 'Deduction, Induction, and Hypothesis', *Popular Science Monthly*, Vol. 13, August 1878, pp. 470–482, reprinted in *The Essential Peirce: Selected Philosophical Writings*, Volume 1 (1867–1893), eds. Nathan Houser and Christian Kloesel, Indiana University Press, 1992, pp. 186–189.
[63] Karl R. Popper, *Objective Knowledge: An Evolutionary Approach*, revised edition, original edition, 1972, Oxford University Press, 1979, p. 191.
[64] Richard Tarnas, *The Passion of the Western Mind: Understanding the Ideas That Have Shaped Our World View*, New York: Harmony Books, 1991, p. 45.
[65] Genesis 1:27.
[66] Euclid, *The Thirteen Books of the Elements*, second edition, 3 volumes, original edition, Cambridge University Press, 1908, translated by Thomas L. Heath, New York: Dover, 1956, Vol. I, Book I, pp. 153–155 and 241–242.
[67] René Descartes, *Discourse on Method, Optics, Geometry, and Meteorology*, tr. Paul J. Olscamp, Hackett Publishing, 2001, pp. vii–ix.

[68] Philip J. Davis and Reuben Hersh, *Descartes' Dream: The World According to Mathematics*, London: Penguin, pp. 3–4.
[69] R. F. C. Hull, translator's note, in C. G. Jung, *The Structure and Dynamics of the Psyche*: *Collected Works, Volume 8*, 2nd ed., 1st ed. 1960, London: Routledge, 1969, p. 300.
[70] C. G. Jung, *Analytical Psychology: Its Theory and Practice* (*The Tavistock Lectures*), first published 1968, London: Routledge, Ark, 1986, pp. 5–6.
[71] C. G. Jung, *Psychology and Alchemy: Collected Works, Volume 12*, tr. from German by R. F. C. Hull from *Psychologie und Alchemie* (Zurich, 1944; 2nd ed. revised, 1952), second edition, 1968, para. 9, pp. 8–9.
[72] Walter Isaacson, *Einstein: His Life and Universe*, London: Pocket Books, 2007, pp. 26 and 145.
[73] W. W. Rouse Ball and H. S. M. Coxeter, *Mathematical Recreations and Essays,* 1st ed. *Mathematical Recreations and Problems*, 1892, 13th ed., Mineola, NY: Dover, 1987, pp. 241–254.
[74] Aristotle, tr. Hugh Tredennick, *Metaphysics, Books I-IX*, 1003a21–23, p. 147.
[75] Valentin Turchin, *The Phenomenon of Science*, translated from Russian by Brand Frentz, New York: Columbia University Press, 1977, p. 283.
[76] Bohm, *Wholeness*, pp. 115–116 and 216n.
[77] Charles M. Barker, Helen Curran, and Mary Metcalf, *The 'New' Maths for Teachers and Parents of Primary School Children*, 1964, *The 'New' Math for Teachers and Parents of Elementary School Children*, London: Arlington Books, 1965.
[78] Charles M. Barker, Helen Curran, and Mary Metcalf, *The 'New' Maths for Teachers and Parents of Primary School Children*, London: Arlington Books, 1964, p. v.
[79] http://en.wikipedia.org/wiki/New_Math.
[80] Ted Codd, 'A Relational Model of Data for Large Shared Data Banks' in *Communications of the ACM*, Vol. 13, No. 6, June 1970, pp. 377–387.
[81] Naomi S. Baron, *Computer Languages: A Guide for the Perplexed*, original edition, Anchor Books, 1986, Harmondsworth, England: Penguin, pp. 346–355.
[82] H. S. M. Coxeter and S. L. Greitzer, *Geometry Revisited*, Washington, D.C.: The Mathematical Association of America, 1967, pp. 108–111 and 132–136.
[83] E. F. Schumacher, *A Guide for the Perplexed*, original edition, Jonathan Cape, 1977, London: Abacus, 1978, pp. 22 and 15.
[84] T. S. Eliot, 'Little Gidding', *Four Quartets*, available on the Web.
[85] Julian Huxley, 'Transhumanism' in *New Bottles for New Wine*, London: Chatto & Windus, 1957, pp. 13–17.
[86] **pansophy**, *Oxford English Dictionary*.
[87] Frank E. and Fritzie P. Manuel, *Utopian Thought in the Western World*, Harvard University Press, 1979, pp. 205–213.
[88] https://www.evolutionaryleaders.net.
[89] Henryk Skolimowski, *Let There Be Light: The Mysterious Journey of Cosmic Creativity*, New Delhi: Wisdom Tree, 2010, and *The Song of Light: Meditations on Lumenarchy*, Michigan: Creative Fire Press, 2013.
[90] Pierre Teilhard de Chardin, *The Human Phenomenon*, tr. from French by Sarah Appleton-Weber, orig. pub. *Le phénomène humain*, 1955, Sussex Academic Press, 2003, p. 173.
[91] Jean van Heijenoort, ed., *From Frege to Gödel: A Source Book in Mathematical Logic, 1879–1931*, Cambridge, Mass.: Harvard University Press, 1967, pp. 124–125.
[92] George Boole, *An Investigation of The Laws of Thought on Which Are Founded the Mathematical Theories of Logic and Probabilities*, original edition, 1854, reprint, New York: Dover, 1958, p. 1.
[93] Fromm, *To Have or To Be?*, p. 165.
[94] Robert Way, tr. and ed., *The Cloud of Unknowing* and *The Letter of Private Direction*, first published between 1349 and 1395, Trabuco Canyon, CA.: Source Books and Wheathampstead, England: Anthony Clarke, 1986, pp. 12.
[95] Calvert Watkins, ed., *The American Heritage Dictionary of Indo-European Roots*, revised second edition, first edition, 1985, Boston: Houghton Mifflin, 2000, language and culture note for *dhghem-*, p. 20.
[96] Ernest Becker, *Escape from Evil*, New York: Free Press, 1985, Ch. 6, 'Money: The New Universal Immortality Ideology', p. 65.
[97] Ken Wilber, *A Theory of Everything: An Integral Vision for Business, Politics, Science and Spirituality*, Boston, MA: Shambhala Publications, 2000, p. xii.
[98] Christian de Quincey, 'A Theory of Everything? A Critical Appreciation of Ken Wilber's *Collected Works*', *Noetic Sciences Review*, March-May 2001, No. 55, p. 15.
[99] Ken Wilber, *Integral Spirituality: A Startling New Role for Religion in the Modern and Postmodern World*, Boston, MA: Shambhala Publications, 2006, pp. 30–32.
[100] *What is Enlightenment?* magazine, Issue 38, October-December 2007, p. 88.
[101] Ken Wilber, *Up from Eden: a Transpersonal View of Human Evolution*, originally published 1981, Wheaton, IL: Quest Books, 1996, pp. 12.
[102] Fox in Harvey and Baker, *Savage Grace*, p. 4.
[103] Margery Purver, *The Royal Society: Concept and Creation,* Introduction by H. R. Trevor-Roper, London: Routledge and Kegan Paul, 1967, pp. 101–127 and 206–234.
[104] Anthony Storr, *Solitude*, first published in 1988 as *The School of Genius*, London: HarperCollins*Publishers*, p. ix.
[105] Anthony Storr, *The Dynamics of Creation*, Harmondsworth, England: Penguin Books, 1976, pp. 97–98.

[106] https://youtu.be/mKkJb6IrV_U, January 2015.
[107] Eknath Easwaran, tr., *The Bhagavad Gita*, Harmondsworth, England: Penguin, Arkana, 1986, p. 35.
[108] Basil Hiley, 'Infinite Potential: The Legacy of David Bohm', conference on 21st November 2009 at Queen Mary College, London, organized by the Scientific and Medical Network.
[109] Johannes Kepler, *New Astronomy*, trs., William H. Donahue and Owen Gingerich, first published as *Astronomia Nova*, 1609, Cambridge University Press, 1992.
[110] Aristotle, *Physics*, translated from Greek by Robin Waterfield, Oxford Paperbacks, 2008, 193b22, p. 36.
[111] Isaac Newton, *The* Principia: *Mathematical Principles of Natural Philosophy*, trs., I. Bernard Cohen and Anne Miller Whitman, originally published as *Philosophiæ Naturalis Principia Mathematica*, 1687, University of California Press, 1999.
[112] Albert Einstein, *Relativity: The Special and the General Theory*, tr. Robert W. Lawson, original edition, 1920, London: Methuen, 1960, pp. 19–20.
[113] Ibid., p. 66.
[114] Bohm, *Wholeness and the Implicate Order*, p. 176.
[115] Ibid., p. 49.
[116] Martin Rees, *Our Final Century: Will the Human Race Survive the Twenty-first Century?*, London: Arrow Books, 2004, pp. 145 and 148.
[117] Kabir, *Songs of Kabir: A 15th Century Sufi Literary Classic*, tr. Rabindranath Tagore, 1915, Boston, MA: Weiser Books, 2002, p. 91.
[118] Rees, *Our Final Century*, pp. 148–149.
[119] Rumi, *Rumi • Fragments • Ecstasies*, tr. Daniel Liebert, originally published c. 1244, Cedar Hill, Montana: Source Books, 1981, p. 31.
[120] Stanislav Grof with Hal Zina Bennett, *The Holotropic Mind: The Three Levels of Human Consciousness and How They Shape Our Lives*, New York: HarperSanFrancisco, 1990, pp. 38–39.
[121] Ramesh S. Balsekar, *Consciousness Speaks: Conversations with Ramesh S. Balsekar*, ed. Wayne Liquorman, Redondo Beach, CA: Advaita Press, 1992, p. i.