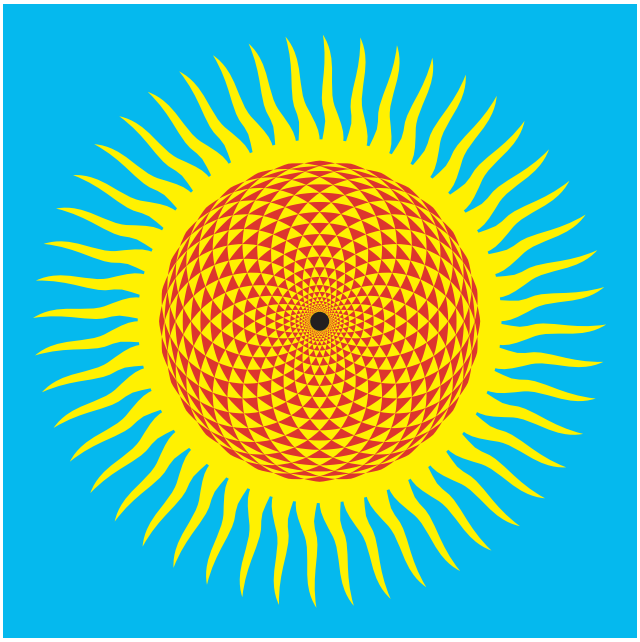
Integral Relational Logic

The Art and Science of Consciousness



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Contents

Abstract

This article is the second of a trilogy on Mystical Pragmatics, expanding an introductory essay titled 'Mystical Pragmatics: Harmonizing Evolutionary Convergence', available at mysticalpragmatics.net. This website consists of three elements, addressing three great movements unfolding and enfolding in the world today as a coherent whole: Spiritual Renaissance, Scientific Revolution, and Sharing Economy. A complementary strategy document on Project Heraclitus is also available.

Today's scientific revolution, the last in human history, bears many similarities to the first, introduced by Johannes Kepler in *New Astronomy* and *The Harmony of the World* in 1609 and 1619 and by Isaac Newton in *Principia* in 1687, with similar epoch-making implications. For as Willis Harman said at a new paradigm conference in 1986, when president of the Institute of Noetic Sciences (IONS), "Most educated people in this country [the USA] would think it pretty preposterous to suggest that the change that is taking place is at as deep a level as the change that took place during the Scientific Revolution, because that would imply, of course, that the near future—the early part of the next century—would be as different from present times as present times are from the Middle Ages."

The term *scientific revolution* has arisen from Thomas S. Kuhn's *The Structure of Scientific Revolutions*, in which he used the terms *paradigm change* and *paradigm shift* twenty-three and six times, respectively, to denote such revolutions in worldview and scientific practice. However, the latter term has become much more popular, even becoming a cliché, essentially because not many are yet ready to awaken to Total Revolution, which Vimala Thankar showed is absolutely essential for the health, well-being, and even survival of our species in *Spirituality and Social Action: A Holistic Approach* in 1984.

The essence of today's scientific revolution is the realization that Consciousness is Ultimate Reality and that the entire world of form emerges from Consciousness, which is essentially an Eastern worldview, bringing about the biggest change in Western thought since the Babylonians began to map the skies some 5,000 years ago. Such a change of worldview is not even a paradigm change, for the Absolute, as Wholeness or Consciousness, is not a paradigm, meaning 'pattern'. Rather, we are engaged today in a contextual inversion, which is truly a revolution, from Latin *revolvere* 'to turn over, roll back'.

For to turn what is essentially a mystical worldview into sound science, we need to turn science outside in, mapping the Cosmic Psyche in a thoroughly systemic, orderly, coherent manner. This article provides an introduction to the universal system of thought that thereby emerges, called 'Integral Relational Logic', which has evolved from mathematics, computer science, and the semantic modelling methods that information systems architects used to build the Internet.

Integral Relational Logic

The Art and Science of Consciousness

Integral Relational Logic (IRL) is the commonsensical art and science of thought and consciousness that all of us implicitly use everyday to form concepts and organize our ideas in tables and semantic networks or mathematical graphs. Yet we do not know that we all think and learn with this universal, holistic, both-and system of reason, for it is almost completely hidden from view, in favour of a divisive, egoic, either-or approach to life and learning.

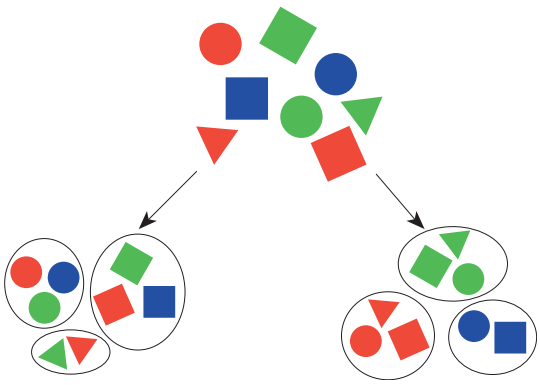
The fact that we often think and act without a conceptual understanding of what we are doing is most simply illustrated with Molière's *Le Bourgeois Gentilhomme*. M. Jourdain asked his philosophy teacher, "What? When I say: 'Nicole, bring me my slippers, and give me my nightcap,' is that prose?" to which the philosopher replied, "Yes, Sir." "Good heavens!" exclaimed M. Jourdain, "For more than forty years I have been speaking prose without knowing it." In a similar fashion, when I was engaged in conceptual marketing for IBM in the late 1970s in order to promote technology transfer, customers would sometimes say, "We've been doing that for years. That's what it's called."

The blind way we have been learning over the years is most simply illustrated by the way that mathematics has evolved. For thousands of years, we human beings have been using numbers without understanding how the concept of number is formed. This situation began to change at the end of the nineteenth century, when Georg Cantor developed the mathematical theory of sets, which he 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." He also showed that there are an infinity of distinct infinite cardinals, not just one, leading to a major crisis in the foundations of mathematics, for paradoxes were found at the heart of set theory, invalidating the very principle on which mathematical proof and deductive logic is based.

This situation greatly disturbed Bertrand Russell, engaged in a life-long search for certainty in mathematics and science. For at the beginning of the twentieth century, he realized that you cannot form the concept of three, for instance, until the concept of set is formed. There is a primary-secondary relationship between set and number, and hence semantics—the science of meaning—and mathematics—the science of number and space since Pythagoras. Accordingly, Russell spent the first twenty years of the last century with A. N. Whitehead trying to find a way of basing mathematics on linear logic, an enterprise that failed miserably because they could not find a satisfactory way of eliminating what they called antimonies, which are paradoxes or self-contradictions, from logic.

This exercise was especially futile because paradoxes are an inherent feature of the world we live in. So, if our reasoning does not produce maps that include paradoxes, we are led seriously astray, not able to intelligently navigate our way in our journeys in life. This rejection of self-contradictions has led Western civilization to be based on a delusional view of Reality, causing no end of confusion in the world we live in today. If we are to heal our deluded minds, we need to follow E. F. Schumacher's maxim for mapmakers in *A Guide for the Perplexed*: "Accept everything; reject nothing."

We can begin to see how to do this from the new mathematics, which a group of mathematicians in the USA and UK sought to introduce into primary and elementary schools—attended by five to eight year-olds—in the 1960s. Most specifically, they recognized the primary-secondary relationship between set and number, and so highlighted the abstract concept of set, so that children could intelligently and consciously learn how to form concepts, central to pattern recognition and hence all our learning. As the



authors of *The 'New' Maths: For Teachers and Parents of Primary School Children* pointed out in 1965, the new maths was intended to bring meaning to mathematics. For instance, as this diagram illustrates, a child in the nursery might form the concepts of red, green, and blue, and hence the concept of colour, or the concepts of triangle, square, and circle, and hence the concept of shape, thereby also forming the concepts of two and three, a skill that chimpanzees apparently also possess, leading to the concept of number. Sadly, however, it seems that the new maths was abandoned because children could become too intelligent, not blindly developing the numeracy skills required by business and science.

The purpose of this article is therefore to describe the key characteristics of IRL so that those who are moved to do so can similarly stimulate the liberation of intelligence, allowing evolution to become fully conscious of itself within us human beings. For myself, I did not begin to become aware that I had been using IRL all my life until November 1983, when I was forty-one, writing an essay for David Bohm, my principal scientific mentor, titled 'The Thoughtful Society: The Problems and Ethics of Communicating my Universal System of Coherent Thought'.

But that was just a beginning. Developing and consciously applying IRL to all my learning has carried me to the Bliss of Ineffable, Nondual Wholeness, which I am now seeking to convey to my fellow human beings so that we might all live in love, peace, and harmony with each other and our environment. For I have now realized that IRL is not mine. It does not belong to Paul, for it is universal, applicable within all domains of endeavour, both on Earth and any other planet that the Kepler space probe might discover.

IRL in a nutshell

Although my book *Integral Relational Logic*, Volume One of a three-part trilogy, is some 500 large pages long, it is really incredibly simple. Some ten years ago, a friend asked me when what I then thought would be an 800-page book would be ready. I responded by resting into the utmost depth and breadth of being, writing a five-page summary, which I then condensed into just five paragraphs:

> The Origin of the Universe is the Ineffable Nondual Datum, that which is given, which is without form, and void.
>
> It is from this Emptiness that Life creates all structures, forms, and relationships in the manifest universe, called data patterns prior to interpretation by a Gnostic being.
>
> Through the action of the *Logos*, called *Dharma*, *Tao*, or *Rita* in the East, and by carefully observing the similarities and differences in these data patterns, they can be interpreted and organized by self-reflective Intelligence showing that the Universe, viewed as Consciousness, has a deep underlying structure described as an infinitely dimensional network of meaningful hierarchical relationships.
>
> All the concepts that are formed by this process of interpretation are in pairs of opposites, for whenever any concept is formed, its opposite is always also formed, a notion encapsulated in the Principle of Duality: *A complete conceptual model of the manifest Universe consists entirely of dual sets*.
>
> The Principle of Duality unifies the Nondual, Formless Absolute and the relativistic world of dual forms, revealing the fundamental design principle of the Universe: *Wholeness is the union of all opposites*, called the Principle of Unity, leading to Fullness, and thereby back to the Datum of the Universe at the end of time, when Alpha and Omega are one.

As you can see, the development of IRL follows what Joseph Campbell calls the Cosmogonic Cycle, described in the first article in this trilogy: 'The Cosmogonic Cycle: Understanding Ourselves'. As Campbell tells us from his extensive study of the myths and fairly tales, in the past, it has been necessary to leave society in order to find the Truth. However, such a specialist approach is no longer a viable option for humanity, as evolution passes through the most momentous turning point in its fourteen billion-year history. For as David Bohm said in the opening paragraphs of *Wholeness and the Implicate Order*,

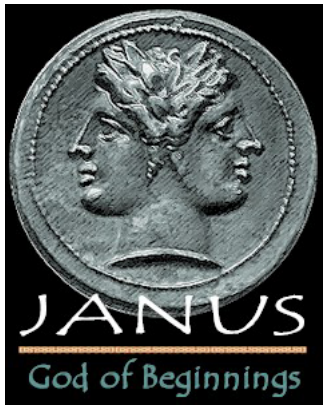
> Fragmentation is now very widespread, not only throughout society, but also in each individual; and this is leading to a kind of general confusion of the mind, which creates an endless series of problems and interferes with our clarity of perception so seriously as to prevent us from being able to 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 25,000 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.

David Bohm was not the only one seeking to heal the fragmented mind in Wholeness. In 1970, a group of academics convened in Nice to address the problem of specialisms in the universities, Erich Jantsch coining the word *transdisciplinarity*, in contrast to *interdisciplinarity* and *multidisciplinarity*. Basarab Nicolescu then points out in *Manifesto of Transdisciplinarity* from 2002 that the discoveries of quantum physics mean that we need to abandon the Laws of Contradiction and Excluded Middle as the basis of logical reasoning, both in science and in society, in general. However, he does not go so far as embracing the Principle of Unity, and thereby the mystical, in his worldview. Ken Wilber goes much further with his integral philosophy, but also falls short of developing the genuine theory of everything, outlined in Section 'The Unified Relationships Theory' on page 20, writing that the Apotheosis of human learning can never be reached.

The primary symptom of our grievously sick society, out of touch with Reality, is egoic, either-or thinking, encapsulated in Aristotle's Law of Contradiction, defined in *Metaphysics*: "It is impossible for the same attribute at once to belong and not to belong to the same thing and in the same relation … as some imagine Heraclitus says." So, as this Law is the implicit axiom for deductive logic and mathematical proof, it has sent Western thought into the evolutionary cul-de-sac it finds itself in today. To extricate ourselves from this dead end, we need to turn to Heraclitus, who said, "The Hidden Harmony is better than the obvious," "Opposition brings concord; out of discord comes the fairest harmony," and "People do not understand how that which is at variance with itself agrees with itself."

Of course, the Principle of Unity was not entirely unknown to the ancients. In *Tao Teh Ching*, Lao Tzu referred to it with these words: "When all the world recognizes beauty as beauty, this in itself is ugliness. When all the world recognizes good as good, this in itself is evil." And Janus, one of the oldest gods in the Roman pantheon, was depicted with two faces, looking to the past and the future. As the god of beginnings, Janus has given his name to January, at the beginning of the year. Janus is also the god of transitions, such as the global transition process that humanity is passing through at the moment, from pathogenic either-or ways of thinking and living, to a healthy both-and approach to life.



This is not quite a new beginning, for all we are doing is rediscovering ancient wisdom, which, as *prisca sapientia* (pristine wisdom), Isaac Newton spent many years searching for, also called *philosophia perennis* (eternal wisdom), in his rival Gottfried Leibniz's terms. But they probably did not know the *Mandukya Upanishad*—the shortest of the *Upanishads*, written by Rishis in the Indus valley—which ends with these words:

The mantram AUM stands for the supreme state
Of Turiya, without parts, beyond birth
And death, symbol of everlasting joy.
Those who known AUM as the Self become the Self;
Truly they become the Self.

The *Upanishads* led Shankaracharya to introduce a Nondual way of life called *Advaita* 'not-two' at the beginning of the ninth century. Basing our lives on Nonduality is the only practical way forward for humanity at the present time. So the rest of this article shows how we could become both-and generalists, learning from information systems architects in business, thereby showing how evolution could become fully conscious of itself within us human beings, so that we can find Peace, perfect Peace, at the end of time.

Starting afresh at the very beginning

IRL began to become manifest in consciousness following a life-changing eureka moment I had at 11:30 on Sunday, 27th April 1980 as I was strolling across Wimbledon Common in London to the pub for lunch. At the time, I was developing an innovative marketing programme for Decision Support Systems for IBM, wondering while doing so about the long-term psychological and economic consequences of humanity's growing dependency on information technology. In particular, I was seeking to answer the most critical unanswered question in science: "What is causing the pace of scientific discovery and technological invention to accelerate exponentially?"

Then suddenly, at that apocalyptic moment, I was given the answer to this question, which I knew at once was the key to answering all the questions that I had had about God, the Universe, and humanity since I was a small boy. As the accelerating pace of change is being caused by the knowledge and intellect of scientists and technologists, aided and abetted by the corresponding synergistic structures in computers, there must be nonphysical mental and psychospiritual energies at work in the Universe as well as the material energies I learned about in school, like kinetic and potential energy in mechanics.

This event was apocalyptic because *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: the Principle of Unity, which in the event was revealed to me eight weeks later at midsummer, providing me with the means to unify the nonphysical and physical causes of change in the Universe in Wholeness.

At the time, it felt as if a dam had burst in my psyche, releasing thirty years of pent-up energy trapped by living in a world that made no sense at all. However, today it is perhaps more meaningful to say that a big bang erupted in my psyche, leading the irresistible power of Life bubbling up from our Divine Source to create a brand-new Universe, at least one new to Western science. For what has been revealed is that Consciousness is the Cosmic Context for all our lives and that Love is the Divine Essence we all share, a worldview well known to mystics of all cultures and ages, and thereby many spiritual seekers today.

In my case, I can now use the worldview revealed by IRL to explain how such Kundalini-type events occur. This happened because three weeks after my insightful epiphany, I resigned from my marketing

job with IBM and set out to develop an integral cosmology that would unify the nonphysical energies that I had 'discovered' with the physical energies recognized by materialistic, mechanistic science.

To this end, I embarked on a thought experiment, inspired by those conducted by physicists during the twentieth century. To determine whether computers could develop artificial intelligence, exceeding any level of intelligence that humans might aspire to, I imagined that I was a computer that switched itself off and on again so that it had no programs within it, not even a bootstrap program to load the operating system. Then guided only by its inner guru, which means 'dispeller of darkness', the computer had the task of organizing all knowledge in all cultures and disciplines at all times into a coherent whole, without any external authority to tell it how to do this.

Such a life-changing awakening is also rather like a volcanic earthquake erupting in the depths of the Ocean of Consciousness, creating a tsunami in which everything is destroyed, as in Aceh province in Sumatra in December 2004. Using another metaphor, this is like demolishing the Tower of Babel that represents the entire world of learning and starting afresh at the very beginning. In terms of Hindu deities, which are just human energies emerging from the Divine, Shiva, the destroyer, and Brahma, the creator, acted in turn.

Now, while much of the Tower of Babel was demolished in an instant, not all of it was reduced to rubble. I've needed to spend much time since then questioning all the assumptions and beliefs on which our learning is based, for as David Bohm said in an interview in the mid 1980s, when describing J. Krishnamurti's enlightened approach to education, if we do not do so, humanity is not a viable species. In this respect, I have been particularly fortunate. I could see as an eight-year-old that what I was being taught in religion and science did not make any sense, for God and Universe, the contextual concepts for these two ways of seeking the Truth, could not be reconciled. So when I began this experiment in learning as an autodidact in 1980, I had very little to unlearn, having learnt the minimum possible at school and university so that my mind was not cluttered with nonsense.

Nevertheless, this constant questioning of the deeply held beliefs of my parents and teachers left me severely psychologically wounded, an outsider, not fitting in anywhere. So, while IRL was emerging in consciousness at superhyperexponential rates of development, I also needed to conduct a multitude of psychospiritual exercises in order to free my personal conditioning from the deepest recesses of the unconscious. Indeed, I've needed to go even further, bringing the collective and cultural conditioning of the entire species into consciousness so that it could be carefully examined in the brilliant light of day. To this end, I have found *jñāna yoga*, the path of wisdom and abstract knowledge in Advaita, vipassana meditation, and rebirthing particularly effective. Being close to Nature, reflected in the mountains of Norway and the forests and lakes of Sweden, has also been life-changing, for I have enjoyed a number of awakening satoris in the wilderness.

So how can we get started with this experiment in learning? Well, there are no axioms in IRL, no assumed or self-evident truths, with which Euclid began his systemization of the mathematical theorems known at his time. Rather, as IRL is formed through a scientific experiment, we begin directly with human experience. Experience plays a key role in creativity, as R. D. Laing points out in *The Politics of Experience*: "What is called a poem is compounded perhaps of communication, invention, fecundation, discovery, production, creation. Through all the contention of intention and motives, a miracle has occurred. There is something new under the sun; being has emerged from nonbeing; a spring has bubbled out of the rock."

Albert Einstein described his creative process in a similar manner in a letter in 1945 to Jaques Hadamard, published in *The Psychology of Invention in the Mathematical Field*:

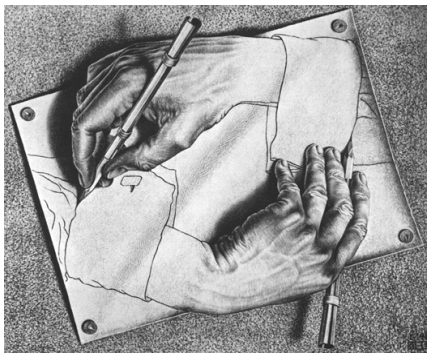
> The words or the language, as they are written or spoken, do not seem to play any role in my mechanism of thought. The physical entities which seem to serve as elements in thought are certain signs and more or less clear images which can be 'voluntarily' reproduced and combined. … Conventional words or other signs have to be sought for laboriously only in a secondary stage, when the mentioned associative play is sufficiently established and can be reproduced at will.

Similarly, Rupert Spira, a leading teacher of Nonduality, writes, contemplating the nature of experience, "our conventional ways of seeing … bear little relation to our actual moment to moment experience," going on to say, "the idea that the body and world exist as objects in time and space, independent and separate from Consciousness … is not based on experience."

Mapping the Universe

In *Science and Sanity: An Introduction to Non-Aristotelian Systems and General Semantics*, Alfred Korzybski famously said, "A map *is not* the territory it represents, but, if correct, it has a *similar structure* to the territory, which accounts for its usefulness." This is the first assumption that we need to abandon if we are to understand the creative energies that cause us to learn as human beings. For this statement seems to imply the belief in an objective territory that exists independently of a knowing being, an assumption widely held by philosophers of science and scientists themselves. For instance, Einstein wrote in 1931, when commemorating the centenary of James Clerk Maxwell's birth, "The belief in an external world independent of the perceiving subject is the basis of all natural science."

Rather, if we are to intelligently manage our business affairs with full consciousness of the evolutionary energies that cause us to behave as we do, we need to turn our attention inwards and engage in self-inquiry, the greatest taboo in Western civilization. In other words, we need to include our mapmaking activities in the conceptual map of the territory that is being mapped.



Thinking in this healthy way is rather like a television camera filming itself filming, illustrated by M. C. Escher's famous lithograph 'Drawing Hands', which looks impossible to the egoic, either-or mind. However, it becomes quite feasible, indeed essential, when we invoke self-reflective Intelligence, the Divine quality that distinguishes humans from the other animals and machines, like computers. For Intelligence is the eyesight of Cosmic Consciousness, the coherent light that enlightens the Universe, revealing a holographic map, rather like the way a laser beam creates and displays a hologram, in which the whole is contained within every part.

Of course, such a worldview is not new, for it is ever present to those with the necessary sensitivity. For instance, this is how William Blake beautifully described such a holographic way at looking at Totality in *Auguries of Innocence*:

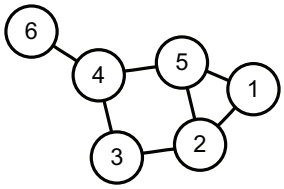
> *To see a world in a grain of sand,*
> *And a heaven in a wild flower,*
> *Hold infinity in the palm of your hand,*
> *And eternity in an hour.*

David Bohm used the metaphor of a hologram to explain how he unified the incompatibilities between relativity and quantum theories, which have the properties of continuity, causality, and locality, and noncontinuity, noncausality, and nonlocality, respectively. Furthermore, he said that we can only solve

this central problem of physics when we recognize that there is no separation between the observer and observed, a principle that led him to hold a series of dialogues with J. Krishnamurti in the 1960s and 70s. For, as Bohm pointed out in the first chapter of *Wholeness and the Implicate Order*, when addressing the problem of the fragmented mind:

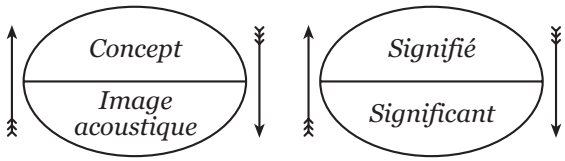
> The fragmentation involved in a self-world view is not only in the content of thought, but in the general activity of the person who is 'doing the thinking', and thus, it is as much in the process of thinking as it is in the content. Indeed, content and process are not two separately existent things, but, rather, they are two aspects or views of one whole movement. Thus fragmentary content and fragmentary process have to come to an end *together*.

It is in this wholesome manner that evolution can become fully conscious of itself, going even further than Julian Huxley foresaw. In his foreword to the first English translation of Pierre Teilhard de Chardin's *Le phénomène humain* in 1955, he wrote, "in modern scientific man, evolution was at last becoming conscious of itself—a phrase which I found delighted Père Teilhard."



So how can we create such an all-inclusive map of the Universe, as the Totality of Existence? Well, this is incredibly simple. We begin with the notion of a mathematical graph, which consists of nodes and the arcs between them, which has evolved from mathematical mapmaking, today playing a key role in computer science. This central feature of human learning grew from some ideas of the Swiss mathematician Leonhard Euler, who was asked in 1736 if it were possible to take a walk in Königsberg, the capital of East Prussia, in such a way as to cross every bridge in it once and only once and return to the starting point. In IRL, nodes are structures consisting of forms and the meaningful relationships between them, and the arcs are the relationships, as we explore later.

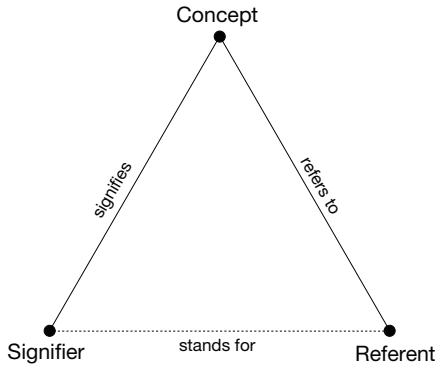
But first we need to look more carefully at our maps, for they exist in two forms, as concepts and as words, sounds, and other signs that denote them. This is a distinction that Ferdinand de Saussure made in *Cours de linguistique générale*, which his students published posthumously in 1915. In this seminal book of structural semiology, as semiotics 'science of signs' was known in Europe at the time, de Saussure said: "I propose to retain the word *sign* [*signe*] to designate the whole and to replace concept and sound-image respectively by *signified* [*signifié*] and *signifier* [*signifiant*]," illustrated here.



For instance, the concept of  , as a mental image, could be represented by *tree*, *träd*, *arbre*, or *Baum* in English, Swedish, French, and German, respectively. No matter which language we use to express our ideas, we all have much the same understanding of the concept of tree. Similarly, we could have the number three in our minds as the signified, where the signifier, such as 3 or III, is called a numeral. This distinction between numbers, as concepts, and numerals, as signifiers, is something that computers cannot make. Both concepts and the signifiers that represent them need strings of bits to denote them. This is the simplest way of proving that humans are not machines and hence that technological development cannot drive economic growth indefinitely, requiring a radical change in the work ethic that has driven human affairs for thousands of years.

However, what de Saussaure omitted in his dyadic view of signs was a representation of the territory being mapped. To obtain a complete picture, we need to adapt the triadic view of logic and philosophy that Charles Sanders Peirce spent a lifetime developing. This is illustrated in what J. F. Sowa of IBM calls the 'meaning triangle' in *Conceptual Structures*, inspired to do so by *The Meaning of Meaning* by C. K. Ogden and I. A. Richards. What this diagram illustrates is that there is an indirect relationship between

language and the territory that language describes, not generally recognized by modern philosophers, focusing more attention on language than on the conceptual structures underlying language. And don't forget that both concepts and signifiers are referents, included in the territory that is being mapped.



Primal concepts

Having erased all concepts from the mind, so that only pristine experience exists in a *tabula rasa* 'blank slate', we now need some primal concepts and words to get us off the ground, analogous to a bootstrap program on a computer's hard disk. In IRL, the first primal concept is **data**, which exists prior to interpretation by a knowing being as information or knowledge. In other words, *information is data with meaning*, a distinction that is widely recognized in the information technology industry, as my teenage niece was taught at school in the 1990s. For instance, in *Management Information Systems: A Framework for Planning and Development*, published in 1969, when I was working as a systems engineer in an IBM sales office in London, Sherman C. Blumenthal made this distinction between data and information:

> A *datum* is an uninterpreted raw statement of fact.
> *Information* is data recorded, classified, organized, related, or interpreted within context to convey meaning.

Now, when we interpret **data**, we normally do so by looking for repetitions and relationships in the **data patterns** of our experience within a particular context, ultimately within the Cosmic Context of Consciousness, which unifies the incompatible concepts of God and Universe, enabling us to end the long-running war between religion and science.

So we can regard data patterns prior to interpretation by a knowing being as objective reality. And underlying all these uncountable data patterns is the Absolute, which we can call the **Datum** of the Universe, 'that which is given'. So the **Datum**, as a related bootstrap concept, provides us with the rock-solid foundation we need to live our lives. Everything in the Universe can be explained in terms of the meaningless **Datum** of the Universe.

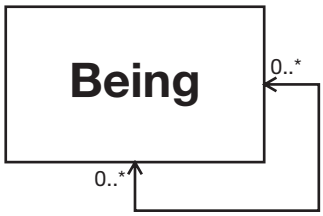
As we are engaged in developing a coherent map of the Totality of Existence, the next bootstrap concept is **being**, the central concept of Aristotle's ontology. As he said in *Metaphysics*,

> 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.

Being is a concept of the utmost generality, denoting any 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. The bootstrap concept of **being** is the **superclass** in IRL, a class of the utmost generality and abstraction, denoted by **Being**, for classes are capitalized in IRL, as they are in object-oriented modelling.

In a mathematical graph, beings are both nodes and arcs, giving **form**, **structure**, **relationship**, and **meaning** as four basic building blocks for a coherent map of the Universe. In physics, relationships are called fields, such as gravitational and electromagnetic fields. However, there are many other types of field between forms, such as morphogenetic fields, which Rupert Sheldrake introduced in *A New Science of Life*

in 1981, the year after I embarked on my own studies of such relationships. As none of us can say how many other types of relationship might be discovered in the future, all we can say is 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, a generalization of the most abstract class model in the Unified Modeling Language. This is the most succinct way of representing what Ervin Laszlo calls the Akashic paradigm or Cosmic Internet.



In IRL, we thus treat all concepts in an utterly equalitarian manner, not making any of them special, such as the fire, air, earth, and water of the ancients, or the mass, space, and time of modern science. For physicists, mathematicians, and programmers represent these concepts in their functions just like any other quantitative variable, as the equations $F = ma$ and $E = mc^2$ well illustrate. In IRL, we simply extend this equalitarian principle to all quantitative and qualitative concepts, as information systems architects do when designing business systems. In this simple way, we can free ourselves of the false belief that the Universe in the physical universe, realizing that Ultimate Reality is Consciousness. So this principle of egalitarianism is of the utmost importance, both in learning and in social affairs.

An integral operating system

We should not forget that a primary purpose of this thought experiment is to explain what is causing scientists and technologists to drive the pace of evolutionary change at exponential rates of acceleration. This phenomenon is most often represented by Moore's law, named after Gordon E. Moore, the cofounder of Intel, who pointed out in an article in 1965 that the number of transistors on a silicon chip was doubling every year or two. In effect, this quadrupled the price-performance of computers—the amount of performance available per dollar—because the speed of circuits also doubled, for the simple reason that the signals between the components have a shorter distance to travel.

However, this is just a symptom of a general evolutionary trend. It does not explain why the Internet has been expanding at hyperexponential rates or why there are today a multitude of apps for smart phones and other digital gadgets in our electronic age. Furthermore, traditional ways of explaining evolutionary phenomena fall far short of providing a satisfactory explanation. The pace of evolutionary change is clearly not accelerating exponentially because of random mutations in the DNA molecules of scientists and technologists, those that succeed being determined by so-called natural selection, by what Herbert Spencer called the 'survival of the fittest'.

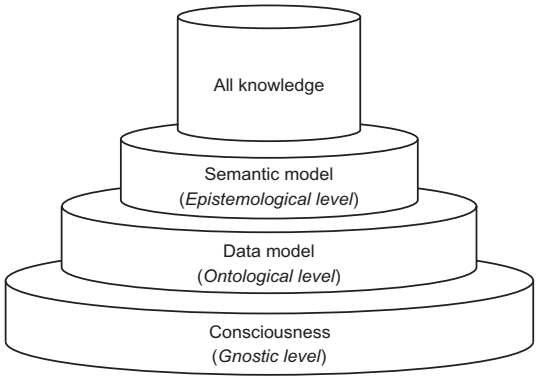
Rather, we need to find a psychospiritual explanation for what is happening today to the human race. We can find this by reminding ourselves that in the middle of the twentieth century, scientists, engineers, and mathematicians on both sides of the Atlantic invented the stored-program computer, a machine quite unlike any other tool that the *Homo* genus, from *Homo habilis* to *Homo sapiens*, had invented during the previous two thousand millennia. For the computer is essentially a tool of thought, able to extend the human mind, in some cases replacing it, unlike the other tools we have invented to extend our rather limited physical abilities, such as the flint axe, wheel, steam engine, telescope, and telephone. So, just as software determines how a computer functions, our minds, not our brains, are mainly responsible for why we behave as we do.

So we need to map our minds in order to understand ourselves, reprogramming ourselves as necessary, using the software development process as a mirror for our learning. Now software developers do not generally start programming with no idea of the system that they are to design. Rather, like architects

who design houses and office blocks, information systems architects often begin with blueprints, in what is called Model-Driven Architecture (MDA). There are two basic information systems modelling methods in business today.

The first is the relational model of data, which Ted Codd of IBM introduced in 1970, a nondeductive mathematical logic based on the mathematical theory of relations and first-order predicate logic, the most significant change in Western reason since Aristotle's *Organum*, leading to the formation of a multibillion-dollar industry. Larry Ellison was one of the first to see the immense power of this data modelling method, forming Oracle, today a Fortune-500 company. You cannot order a book or airline ticket on the Internet without invoking the relational model of data behind the scenes.

The second is object-oriented modelling, which evolved from the programming language Simula, developed at the Norwegian Computer Center in the 1960s, the best known example being the Unified Modeling Language (UML), developed in the 1990s by Rational Software, now a subsidiary of IBM. The desktop metaphor that Apple Computer introduced in the 1980s is also based on this paradigm, as are programming languages like Java, Objective C, and Smalltalk.



IRL has evolved from the unification of these two approaches to business modelling, illustrated in this diagram of the foundations of all knowledge.

But what sort of animal is IRL? Well, it is simplest to say that IRL is an example of what Ken Wilber 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". However, IRL is more like a virtual machine operating system, such as IBM's VM, which can run many different operating systems including itself, than Microsoft's Windows or Apple's Mac OS X. A key difference between IRL and AQAL is that AQAL, as a map-making method, cannot include itself, as the territory being mapped, in the map being developed, whereas IRL does.

Building relationships

Now it is time to sort out the immense confusion that the world is in today by bringing all our thoughts into universal order. Like René Descartes, who similarly sought to unify all knowledge through systemic, sceptical reason, we use four rules: clarity, simplicity, integrity, and consistency. The last of these needs a little explanation. In IRL, the word *consistency* does not mean 'not containing any logical contradictions', as the eleventh edition of the *Concise Oxford English Dictionary* states. Rather it means 'acting or done in the same way over time, especially so as to be fair or accurate', to give another definition from COED.

To form concepts in this consistent, egalitarian manner, we can use David 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. In other words, we carefully examine the similarities and the differences in the data patterns of our experience, putting our interpretations into various sets as appropriate, **set** being the first bootstrap concept of interpretation.

In IRL, there are then two principal ways of organizing our thoughts and concepts. The first is a table, called relation in the relational model of data, which evolved from Charles Sanders Peirce's pioneering logical studies in the nineteenth century, and the second is a semantic network, based on the concept of mathematical graph.

Peirce was inspired to begin his penetratingly thorough studies of logic by George Boole, who had laid down the foundations of symbolic logic with the publication of *An Investigation of the Laws of Thought on Which Are Founded the Mathematical Theories of Logic and Probabilities* in 1853. The first sentence of this book tells us its purpose: "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 intention of exploring "the nature and constitution of the human mind". Apparently, he had been moved to do so by a mystic experience he had had when seventeen in early 1833, when the thought flashed through him as he was walking across a field that logical relations could be expressed in symbolic or algebraic form.

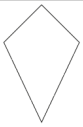
Sadly, however, Boole's intentions were misunderstood, for as his widow Mary Everest Boole pointed out some fifty years later, "nearly all the logicians and mathematicians ignored the statement that the book was meant to throw light *on the nature of the human mind*." Gottlob Frege and Bertrand Russell, in particular, agreed that mathematical logic had nothing to do with psychology. In a sense, they were right, for mathematical logic led to the invention of the stored-program computer. But linear logic cannot tell us anything about the nature and structure of the human mind, which is no doubt why depth psychologists, like Carl Jung, ignored it. We need Ted Codd's nondeductive mathematical logic to enlighten the mind, and, indeed, to heal it.

A familiar example of what Peirce called the logic of relatives is a telephone directory, listing names, addresses, and telephone numbers of subscribers. This is represented in the relational model as a relation, like the table below. We have been keeping such records since the very first civilizations. For the first writing to be discovered on a clay tablet in Uruk (modern Erech) dates back to 3300 BCE, detailing the allotment of malt to a number of people and with stock accounts of barley on the reverse.

Class name	*Telephone subscriber*		
Attribute name	*Name*	*Address*	*Telephone number*
Attribute values	Anne Potter	72 Grove Road	624-4582
	Fred Tanner	4 Meadow Walk	982-3356
	John Cooper	31 Beech Boulevard	104-3911
	Elizabeth Smith	7 Chestnut Avenue	310-4574
	Jackie Butler	25 Orchard Way	955-4395
	Richard Fisher	67 Willow Crescent	109-2661
	Jenny Walker	22 Heather Drive	893-2748

In IRL, **Telephone subscriber** is a class and the individual subscribers are instances of the class, corresponding to universals and particulars in Plato's *Republic* and the class-object relationship in object-oriented programming languages and modelling systems. However, as such class-object relationships were introduced into computer science to simulate the operation of systems of discrete events, classes in IRL are not eternal, as were Plato's Forms or Ideas. We can also call these instances entities, which have various attributes, such as names, addresses, and telephone numbers, corresponding to subjects and predicates in Aristotle's *Prior Analytics*, which laid down the foundations of deductive logic. Thus three further primal concepts in IRL are **class**, **entity**, and **attribute**.

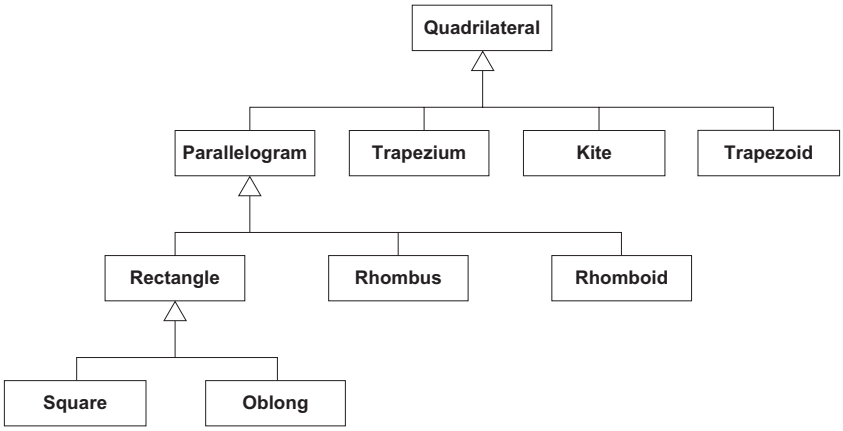
Applying these bootstrap concepts to the formation of IRL itself, we identify a number of distinct classes of attribute, such as **identifying**, **defining**, **nondefining**, **prototypical**, and **derived** attributes. The table of class **Quadrilateral** on the next page illustrates a couple of these types of attribute. *Name* is the identifying attribute, while the properties of each shape in the class are determined by three defining attributes.

Class name	*Quadrilateral*				
Attribute name	*Name*	*Shape*	**Defining attributes**		
			Parallel sides	*Equality of adjacent sides*	*Angle*
Attribute values	square		opposite pairs	equal	right
	oblong		opposite pairs	unequal	right
	rhombus		opposite pairs	equal	oblique
	rhomboid		opposite pairs	unequal	oblique
	trapezium*		only two		
	kite		none	two pairs equal	
	trapezoid*		none		

* These are British terms, using the words *trapezium* and *trapezoid* in the original meanings given by Proclus in the fifth century. In the late eighteenth century, the meanings of these two words were confusingly transposed, and they still are in the USA. In American English, a trapezium is a trapezoid and a trapezoid is a trapezium.

In IRL, as in the relational model of data, the possible values for a particular attribute in a class are called a **domain of values**, another primal concept, which can also be regarded as a **dimension**, for such domains measure the class-attribute in the broadest meaning of *measure*. So as there are an infinity of spatial dimensions in geometry, and countless other dimensions, there are an infinite number of dimensions in the Universe, not the four space-time dimensions of relativity theory, and far beyond the extra dimensions being postulated in string theory: ten, eleven, twenty-six, or more?

Tables or relations are a concise way of organizing information and knowledge, mathematical matrices being special cases. However, they do not capture directly all possible relationships, such as **generalization hierarchies** like animal, vertebrate, mammal, primate, and human. For instance, **Mammal** is an **abstract** class because it does not have immediate instantiations. In the **Quadrilateral** class, we can in addition define subclasses **Parallelogram** and **Rectangle**, illustrated below. And, of course, each box in this diagram is also a class, each of which has countless instances, with attributes such as size and position.



As well as generalization hierarchies, there are also **aggregation** hierarchies in IRL, such as proton, atom, molecule, cell, and so on or section, department, division, and company in organizations. An aggregation relationship is called 'a-part-of' relationship, in contrast to 'a-kind-of' relationship in class

hierarchies. The essential difference between these two types of hierarchies is that while a generalization relationship associates classes together, an aggregation relationship associates instances of classes with each other.

Another way of distinguishing generalization and aggregation hierarchies is to note that in a class hierarchy, the subclasses are mutually exclusive. Thus a type of element is hydrogen, oxygen, or one of the other hundred or so elements. An element cannot be both hydrogen and oxygen. So a generalization relationship is sometimes called an 'or-relationship'. An aggregation relationship, on the other hand, is an 'and-relationship'. An atom consists of a number of electrons, protons, *and* neutrons, the basic model of an atom I learned in school.

In *The Ghost in the Machine*, Arthur Koestler coined the word *holon* to denote structures that are both wholes and parts of a greater whole in aggregation hierarchies, from Greek *ὁlos* 'whole', with the suffix suggesting a particle or part, as in *proton* or *neutron*. In *Janus: A Summing Up*, he went on to say, "every holon is possessed of two opposite tendencies or potentials: an *integrative tendency* to function as part of the larger whole, and a self-assertive tendency to preserve its *individual autonomy*." This is a clear example of both-and thinking, helping us to live in love, peace, and harmony with each other.

One other obvious hierarchy is that of a **family tree**. Each of us has two parents, an evolutionary process that goes back around a billion years to the birth of sexual reproduction. Conversely, a female and male are parents of one or more descendants. So there are hierarchical structures in both directions of horizontal time. However, when we try to represent parent-child relationships in a class diagram, we only need one node and arc, where the node is class **Person**. To represent hierarchical family relationships, we need an *instance* model, rather than a *class* one, which is what we normally mean by a family tree. But not all relationships are hierarchical; we have siblings, cousins, uncles, and aunts, etc.

This leads us to **nonhierarchical** relationships, in conformity with the Principle of Unity. In *Gödel, Escher, Bach*, Douglas Hofstadter tells us that Warren McCulloch called such relationships *heterarchies*, from Greek *ἑteros* 'different, other', delighting in such entanglements, a term derived from quantum physics. More simply, we can call **nonhierarchical** relationships **associations**, of which there are countless, difficult to classify. For as soon as we do, we create hierarchical, generalization relationships.

As there is nothing in the Universe but hierarchical and nonhierarchical relationships, we can thus see: *The underlying structure of the manifest Universe is an infinitely dimensional network of hierarchical relationships*. This statement is true in all possible worlds, prior to interpretation by a knowing being, and so exists at the ontological level of IRL. Furthermore, all structures in the Universe have the property of self-similarity, like geometric fractals, named by Benoit B. Mandelbrot of IBM.

It might seem that this arborizing, reticulating model is so obvious that it is hardly worth stating. Arthur Koestler responded to such criticism at the Alpbach symposium of 1968, called 'Beyond Reductionism', saying in his inimitable manner:

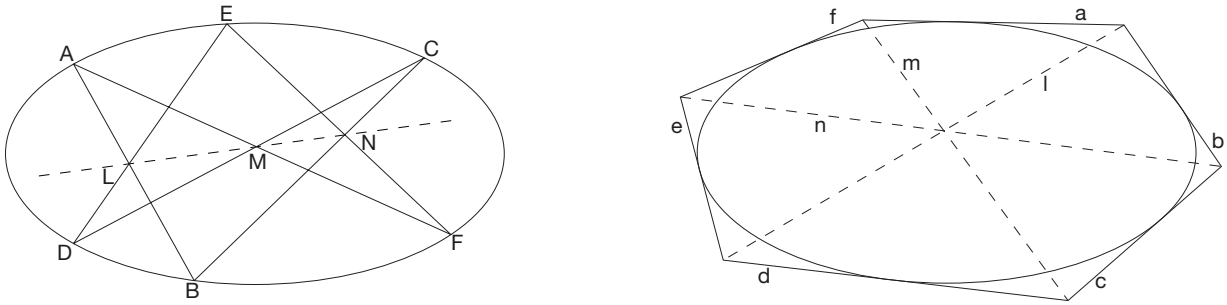
> This almost universal applicability of the hierarchic model may arouse the suspicion that it is logically empty; and this may be a further factor in the resistance against it. It usually takes the form of what many call the 'so what' reaction: 'all this is old hat, it is self-evident'—followed by the *non sequitur* 'and anyway, where is your evidence?' Well, hierarchy may be old hat, but I would suggest that if you handle it with some affection, it can produce quite a few lively rabbits.

To form the more meaningful epistemological level, we note that *epistemology* derives from Greek *epistēmē* 'knowledge'. So the epistemological level of IRL contains knowledge about knowledge or meta-knowledge, corresponding to the systems catalogue in relational database management systems, such as MySQL. In IRL, this is contained in the **Class** and **Attribute** classes, organized as relations from all class and attribute names, italicized, for instance, in the **Quadrilateral** relation on page 12.

The epistemological level of IRL acts as the system of coordinates for all knowledge, which we can also call the framework or skeleton for the body of all knowledge, corresponding to the class model in object-oriented modelling systems and the misnamed data model in entity-relationship modelling. In business, these can be extremely complex models, difficult to print even on a single sheet of A0 size paper. However, in IRL, the system of coordinates for all knowledge is virtually impossible to visualize in detail, not the least because there are many ways of constructing the model. All we can know is that it exists as a coherent whole, built on the universal structure of the ontological level. The underlying structure of the Internet implicitly illustrates these class models, which perhaps could be made more explicit with suitable products, which could either be downloaded to computers or executed directly through a Web browser.

Unifying opposites

Now, whenever we form a concept, we also form its opposite, like black and white, male and female, and so on. Mathematics also has many such duals. For instance, Blaise Pascal discovered in 1639, when he was sixteen years old, that if six points are placed on a conic section and joined as in the left-hand-side diagram below, then their points of intersection, *LMN*, are collinear. Because straight lines remain straight lines in conical projections, this property applies not only to the ellipse, as in the diagram, but also to the parabola and even hyperbola, consisting of two disconnected open curves. As such a property is not intuitively obvious, it is not surprising that Pascal called the six points *ABCDEF* his Mystic Hexagram.

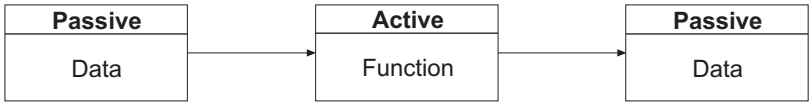


Nearly two hundred years later, in 1810, Charles Julien Brianchon proved a related theorem, illustrated on the right. If six lines are drawn tangentially to a conic section to form a hexagon, as *abcedf*, then the lines joining opposite vertices, *lmn*, intersect at a single point. The relationship between these two theorems can best be seen from an observation made by Florimond de Beaune, a friend and student of René Descartes in the seventeenth century: a curve may be regarded both as the path of a moving point and as the envelope of a moving line.

Pascal and Brianchon's theorems are examples of what is called the principle of duality in projective geometry. Whatever theorem can be proved about points and lines has a dual or reciprocal theorem about lines and points, where lines and points are interchanged, a fact that fascinated me as a mathematics undergraduate in the early 1960s. Of course, the principle of duality applies not only in two dimensions. For instance, the tetrahedron is self-dual as the stella octangula and the great stellated dodecahedron, discovered by Johannes Kepler in 1619 in *The Harmony of the Universe*, and the great icosahedron, discovered by Louis Poinsot in 1810, are duals of each other.

There are also pairs of opposites in the stored-program computer, which John von Neumann proposed in 'First Draft of a Report on the EDVAC' in 1945. This was one of the most important scientific papers of all time, for programs in the few computers that had been built before this time were held externally on paper tape or set up in switches, for instance. But now this paper led to the possibility of computers programming themselves, for programs and the data they process are just bits (binary digits) in memory,

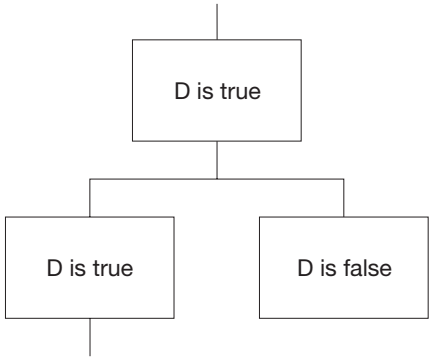
which we can call active and passive, respectively. This diagram illustrates the basic mechanistic process of data processing.



Here, *function* is a generic term for operator, instruction, order, program, procedure, or process, whether carried out in a computer, in the mind, or in an organization. But how can information systems architects model the data-processing function in the models they build of the dynamics of business enterprises? It is not too difficult for IS architects to develop integrated models of the relationships between the basic entity types in an enterprise, such as customers, products, and deliveries, and between the processes that deal with these entities, such as manufacturing, ordering, and invoicing.

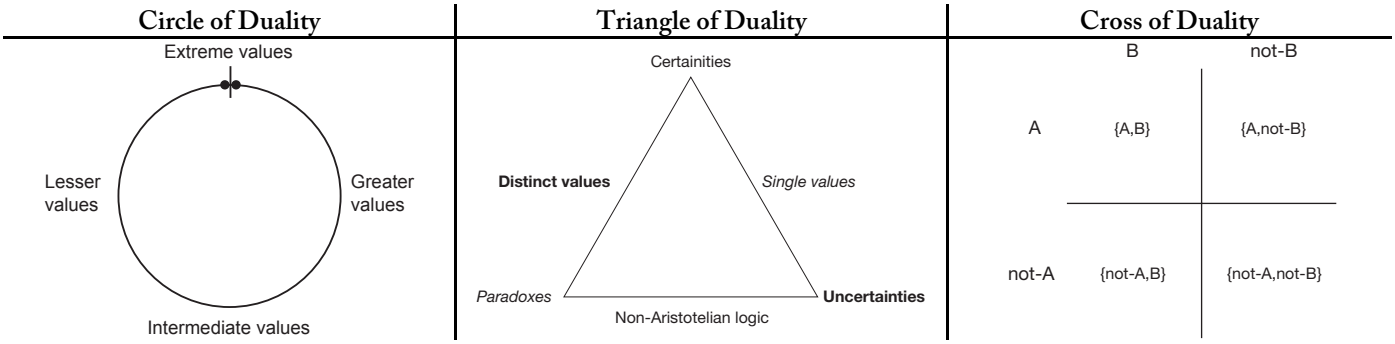
But in a language like APL (A Programming Language), which Kenneth Iverson introduced in the early 1960s, when he joined IBM from Harvard, functions, as active data, can be dynamically created from strings, as passive data, and vice versa. How, then, can such transformations taking place in nanoseconds be modelled in information systems models? We need to be able to do this if we are to intelligently manage our business affairs with full consciousness of what we are doing.

IRL solves this problem 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. 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, not unlike the set formed from the axiom of choice in mathematics. 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 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 *~A*, called a paradox or self-contradiction.

The Principle of Duality lies in the ontological level of IRL, beneath the epistemological level, because it describes what we can say about all beings prior to interpretation. There are three other significant ways in which opposites relate to each other, depicted as the **circle**, **triangle**, and **cross of duality**, shown here.



The circle of duality enables us to model all shades of grey, not only black or white situations at the extremes of a range of values. An example of this model is political systems, with totalitarian regimes at

the extremes, the left and right being communism and fascism, respectively. Opposite to these poles, which join at the top, is liberalism, from the Latin *liber* 'free', anathema to the Republican Party and Bible Belt in so-called free America, where the interests of the individual and society are in balance. In between, we have socialism and conservatism, on the left and right, respectively. This is a model of political systems taught to me in a general studies lesson at school as a sixteen-year-old by an active member of the British Liberal party, as it was then, who also happened to be a cleric.

The triangle of unity encapsulates the three different ways that opposites can relate to each other: certainties (either-or), uncertainties (neither-nor), and paradoxes (both-and), the last of these being the most fundamental, encapsulated in the Principle of Duality.

The cross of duality enables us to model two or more pairs of opposites in two or more dimensions. Carl Jung's theory of psychological types is a three-dimensional example, the three dimensions being rational (thinking and feeling), irrational (intuition and sensation), and relating (extrovert and introvert). Katharine Cook Briggs and her daughter Isabel Briggs Myers have extended this psychological typography into four dimensions with their Myers-Briggs Type Indicator (MBTI), with 'dichotomies' listed in the adjacent table.

Extraversion (E)	Introversion (I)
Sensing (S)	Intuition (N)
Thinking (T)	Feeling (F)
Judging (J)	Perception (P)

Ken Wilber's four-quadrants model is a two-dimensional example, the dimensions being interior and exterior and individual and social. The exterior quadrants are labelled 'It' and 'Its', while the individual and social interior quadrants are called 'I' and 'We', respectively. We can thus see that what Ken Wilber calls an integral operating system is just a small part of Integral Relational Logic, not all-inclusive at all.

Transcending the categories

There is one more step that we need to take in order to explicitly map the entire Totality of Existence. We need to include the concept of Wholeness in IRL. For so far, IRL has just been mapping structures in the relativistic world of form. But if it is to be complete, it must also include its opposite: the Formless Absolute. Now, while the Absolute is inaccessible to our five physical senses of sight, hearing, taste, smell, and touch, we can nevertheless feel its Presence, literally 'before being' or 'prior to existence', from Latin *præsentia*, participle of *præesse* 'to be before', from *præ* 'before' and *esse* 'to be'.

We can also call the Absolute prior to interpretation the Datum of the Universe, the most fundamental primal concept defined on page 8, enabling us to complete our model of the Universe at the beginning, thereby unifying the Alpha and Omega Points of evolution. To see how this is possible, in conformity with the egalitarianism of IRL, we must form the concept of the Absolute in exactly the same way as we form concepts in the relativistic world of form; by carefully observing the similarities and differences in the data patterns of our experience, the simple way of bringing our thoughts into universal order, as described on page 10.

To do this, in conformity with the Principle of Duality, we need to look at the Absolute in terms of two pairs of opposites: conceptually and experientially and as both a unity and an aggregate, a two-dimensional example of the Cross of Duality, which cannot be avoided, even when we look at Ultimate Reality. Viewing the Absolute conceptually as a unity, we can see that it differs from all its parts, for all these parts are limited in some way. In contrast, the Datum 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 we view the Absolute as the Totality of Existence, we can see that the structure of all 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 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, with meaningful relationships being the motive power of the Universe.

If we now feel into the Absolute experientially, through meditation and self-inquiry, we discover that the Essence of the Universe is Stillness or Emptiness, resulting in the exquisite sense of Nondual Love and Peace, which has no opposite. We are now in union with the Divine, in Oneness, in a state of Unity Consciousness. From this perspective, the Divine is immanent.

Conversely, if we feel into the Cosmos as an aggregate of all its parts, we can experience the Universe simply as a web of relationships, like a mathematical graph, whose nodes consists of meaningful relationships between forms. Then as we sink ever deeper into ourselves, passing through infinite levels of structure, we approach the Infinite as all these nodes become singularities between relationships. Then, as we dissolve even further in an involutionary process, even these relationships disappear, and we are left with the magnificent feeling of translucent Wholeness, Fullness, or Cosmic Consciousness, which is transcendent with respect to any knowing being.

In summary, there are two pairs of dual ways in which we can understand and experience the Absolute, given in this table, thus establishing God as a scientific concept.

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

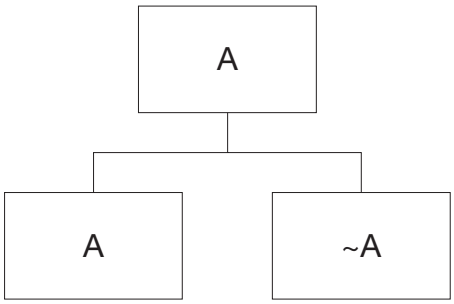
The Principle of Unity

By including the Absolute Whole in IRL, the Principle of Duality becomes the **Principle of Unity**, which can be elegantly expressed in just seven words—*Wholeness is the union of all opposites*—or six mathematical symbols: $W = A \cup \sim A$, where W means Wholeness, A any being whatsoever, $\cup$ union, and $\sim$ not. From the perspective of Wholeness, opposites, also called dualities or polarities, cannot be separated; they are mutually dependent on each other. The Principle of Unity is thus the fundamental design principle of the Universe, lying in the mezzanine level of the foundations of all knowledge, between the ontological and Gnostic levels.

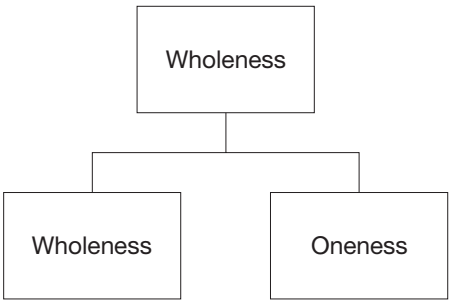
We know that the transcultural, transdisciplinary Principle of Unity is the power that brings the Cosmos into order because there is overwhelming evidence today from mathematics, physics, psychology, and mysticism that the Universe is inherently paradoxical. To reflect this observation, the both-and Principle of Unity expresses this irrefutable, universal truth in the simplest possible terms—the closest we can get to expressing the Ineffable, Nondual, Absolute Truth in symbolic form, although it would perhaps be better to say *signate*, to distinguish what Carl Jung called signs and symbols, symbols having a profounder meaning than signs. For the virtually meaningless equation $W = A = A \cup \sim A$ is applicable within all domains of discourse, before we interpret the data patterns of our experience as meaningful information and knowledge.

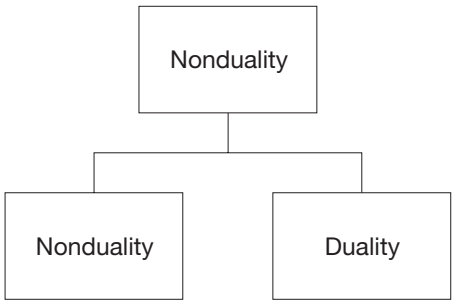
We can see that the Principle of Unity is a self-verifying, self-contradicting proposition with this diagram. Applying Hegelian logic, if A is the thesis and $\sim A$ the antithesis, then A is the synthesis, a primary-secondary relationship that is ubiquitous. A hypothetical superintelligent extraterrestrial being

would instantly recognize this pattern, the paradigm that underlies all others, the key that unlocks all the innermost secrets of the Universe.



A few examples of this primary-secondary relationship are Wholeness and Oneness, Nonduality and duality, Consciousness and consciousness, Intelligence and intelligence, Love and love, Peace and peace, Life and life, perfection and imperfection, good and evil, beauty and ugliness, synthesis and analysis, art and science, implicate and explicate orders, and Eastern mysticism and Western reason. The first two of these pairs of opposites are illustrated here.





Another word for Wholeness is *Consciousness*, which we can experience both as a seamless, borderless continuum with no divisions anywhere and also as the container for the entire world of form, a worldview that is virtually unknown in the West. However, it is quite familiar to mystics in the East, as the beautiful Sanskrit word *Satchidananda* illustrates, from *Sat* 'Absolute, Eternal, Unchanging Being, Truth', *Chit* 'Absolute Consciousness', and *Ananda* 'Bliss, Absolute Joy'. We can see the relationship between *being* and *truth* from the PIE base **es-* 'to be', which is also the root of many other words in Indo-European languages, such as English *Presence*, *Essence*, *is*, *interesting*, *ontogeny*, and *soothe*, from *sooth*, an archaic word for 'truth', Sanskrit *satyagraha* 'Truth-force' and *satsang* 'gathering of Truth seekers', and Swedish *sann* 'true'.

Traditionally, seekers have used two metaphors for Consciousness in order to describe their experiences: as light and as an ocean. We can do likewise, although we need to note that Divine Light is not like the diffuse light of the Sun or a light bulb. As every structure in the Universe has the same underlying structure, every part contains the Whole, rather like a hologram. And to create or see a hologram, the coherent light of a laser is required. Similarly, to create and see a holographic map of the Universe, the coherent light of Consciousness is required, which we can call Collumination, from Latin *cum* 'together with' and *lumen* 'light', on the model of *illumination*, as mentioned in Subsection 'Becoming free of our ancestry' in the article 'Recapitulating the Cosmogonic Cycle'. And as it says there, the holotropic system of thought that enables us to view the holographically is also called collumination, a meditation technique in which the practitioner watches thoughts arising directly from our Divine Source.

David Bohm used the hologram as a metaphor for the undivided wholeness of both relativity and quantum theories, illustrating a quite new type of order—the implicate order—underlying the explicate, where we see phenomena as being separate from each other, including each of us as human beings. For *hologram* derives from Greek *ὅlos* 'whole' and *gramma* 'letter of the alphabet', from *graphein* 'to write'. So a hologram or holograph is something that 'writes the whole', like collumination.

Viewing Consciousness as an ocean enables us to fully complete David Bohm's unification of quantum and relativity theories. Inspired by the process thinking of Heraclitus and A. N. Whitehead, Bohm could see that underlying the appearance of separation, which science has traditionally focused its attention on,

is an undivided flowing stream, which he 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."

In IRL, this river of life in the horizontal dimension of time becomes the vast Ocean of Consciousness, which we can visualize as a ball of water with infinite radius, which psychologists like Sigmund Freud and Stanislav Grof have talked about in their writings. To give this ocean some structure, we need to visualize it with a finite diameter, with the surface then representing the physical universe, the waves and ripples accessible to our physical senses. But beneath the surface lies the Cosmic Psyche, the 99% of the Universe where all knowledge, wisdom, and joy dwell, as described in Kabbalah. And at the very centre of the Ocean of Consciousness is the Origin of the Universe, the Divine Source of Life, giving rise to all forms in the manifest universe.

Who are we?

To complete this brief overview of IRL, we can use this universal system of reason to answer the question "Who are we?" to discover our True Identity. For *identity* derives from Latin *idem* 'same'. And what is the same for all beings in the Universe is the Absolute Whole. So if we could all realize this in the depths of our beings, all the Holy wars—wars about the Whole that human beings have been fighting for millennia—would come to an end.

To bring about World Peace, we also need to remember that the ontological level of the foundations of all knowledge, including the Principle of Unity, is common to us all. For, if this were not the case, the transcultural, transdisciplinary Internet could not exist. It only does so because the underlying structure of the Universe is an infinitely dimensional network of hierarchical relationships, most obvious in the Internet's domain name structure.

So how we can we reconcile the True Identity that we all share with our uniqueness as individuals? For most people, including many spiritual seekers, still seem to consider that our bodies, minds, and souls determine our identity, denoted by names and social security numbers. This is a far remove from the root meaning of *individual*, which derives from Medieval Latin *indīviduālis*, from Latin *indīviduus* 'indivisible', from *in-* 'not' and *dīvidere* 'to divide'. Well, as with all things, we can use the Principle of Unity to resolve this apparent dichotomy. As holographic individuals, we are all both the entire Ocean of Consciousness, which is Immortal, and individual waves and currents on and beneath the surface, which are constantly rising and falling, with a primary-secondary relationship between them.

So knowing that Consciousness is our True Nature, Authentic Self, and Genuine Identity, we can become free of the fear of death, recognizing that the entire world of form is what is called *māyā* 'deception, illusion, appearance' and *līlā* 'play of the Divine' in Sanskrit. Such a realization is essential if we are to complete the Cosmogonic Cycle, returning to the Unmanifest in Total Freedom, denoted in Sanskrit by *jīvanmukti* 'liberated while still alive in the body'.

This emphasis on Wholeness in the East is best seen in a Chinese Buddhist school that developed a synthesis of all Buddhist teachings, embracing all the others, not one among many. This is variously called *Hwa Yen*, *Hua-yen*, and *Huayan* in transliterations from Chinese, meaning 'Flower Ornament', 'Flower-Decoration', or 'Garland' from the *Avatamsaka Sūtra*, originally written in India in Sanskrit during the first and second centuries. In 1971, Garma C. C. Chang introduced Hwa Yen Buddhism to the West in *The Buddhist Teaching of Totality: The Philosophy of Hwa Yen Buddhism*, further developed by Francis H. Cook in 1977 in *Hua-yen Buddhism: The Jewel Net of Indra*, beginning his book with this

visionary sentence: "Western man may be on the brink of an entirely new understanding of existence." As Cook also tells us, Hua-yen thus "came to serve as the philosophical basis for the other schools of Buddhism more concerned with practice and realization. … As D. T. Suzuki remarked, Hua-yen is the philosophy of Zen and Zen is the practice of Hua-yen."

In terms of understanding our True Identity, a central notion of the *Avatamsaka Sūtra* is Indra's Net, named after Indra, the king of the gods in the *Rig Veda*. Alan Watts likened Indra's Net to a dewy spider's web, saying, "Imagine a multidimensional spider's web in the early morning covered with dewdrops. And every dewdrop contains the reflection of all the other dewdrops. And, in each reflected dewdrop, the reflections of all the other dewdrops in that reflection. And so ad infinitum. That is the Buddhist conception of the universe in an image."

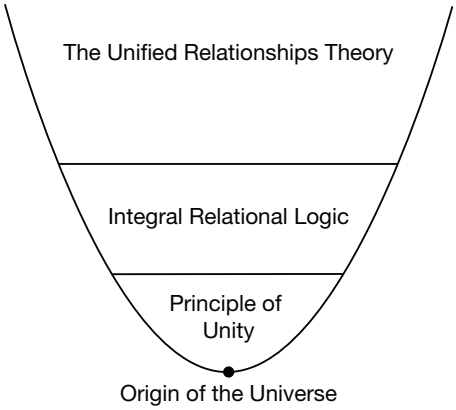
Indra's net is also represented as a net of jewels, each one representing us as an individual, reflecting the brilliant light shining through all the other jewels, thereby showing that we are all one whole, with no separation between any of us. So just as all structures in the Universe are holographic, they also have the property of self-similarity, like fractals, as we showed cognitively on page 13.

The Unified Relationships Theory

The most obvious effect of learning to colluminate in the manner described in this article is that the fragmented, specialist, split mind is healed in Ineffable, Nondual Wholeness, the most wonderful gift that anyone can be given on our beautiful planet Earth. Everything else pales into insignificance.

By conducting the thought experiment outlined in these pages, individual consciousness expands and deepens to such an extent that it becomes coterminous with Consciousness itself. For *conscious* derives from Latin *cum* 'together with' and *scīre* 'to know', from a Proto-Indo-European (PIE) base **skei-* 'to cut, split', also the root of *science* and *schizophrenia* 'split mind'.

In contrast, *art* derives from Latin *ars* 'skill, way, method', from PIE base **ar-* 'to fit together', also root of *coordinate*, *reason*, *harmony*, and *order*. So IRL is both the art and science of thought and consciousness, integrating and unifying the differences that the analytical mind discerns, which is how Latin *scientia* 'knowledge' evolved from its PIE base.



So just as information systems architects use semantic modelling methods to develop integrated business systems, through this process of analysis and synthesis, we can integrate all knowledge in all cultures and disciplines at all times, past, present, and future, into a coherent whole. For, as IRL is the universal system of thought that everyone on Earth uses to form concepts and organize their ideas in semantic networks and mathematical graphs, IRL provides the Cosmic Context, coordinating framework, and Gnostic Foundation for the *Unified Relationships Theory* (URT), the Holy Grail, Philosophers' Stone, and Apotheosis of human learning, these relationships being illustrated here.

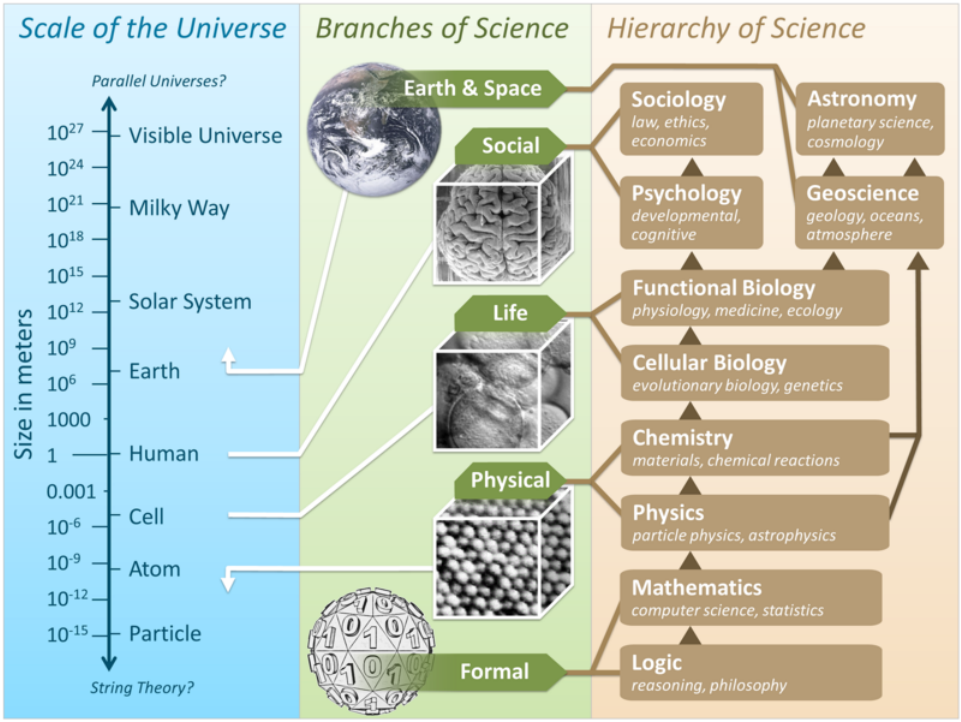
Most importantly, as the Universe, viewed as Consciousness, consists of nothing but meaningful, structure-forming relationships, the only possible cause of change in the Universe is these relationships, whether these be psychospiritual or physical. So as relationships are a generalization of physicists' notion of fields, the URT completes what the BBC called Einstein's unfinished symphony in 2005, namely the unified field theory. For, in *The Elegant Universe*, Brian Greene defined the much sought-for and derided

theory of everything as "a theory capable of describing nature's forces within a single, all-encompassing, coherent framework".

To reiterate, as the Universe consists of nothing but meaningful relationships, relationships are the only possible source of energy, whose quality is determined by their meaning. Thus meaning is energy, a generalization of the principle that mass is energy, as we see in atomic fusion and fission. We can thus see that evolution, in all its forms, is an accumulative process of divergence and convergence, proceeding in an accelerating, exponential fashion by synergistically creating wholes that are greater than the sum of the preceding wholes through the new relationships that are formed, apparently out of nothing.

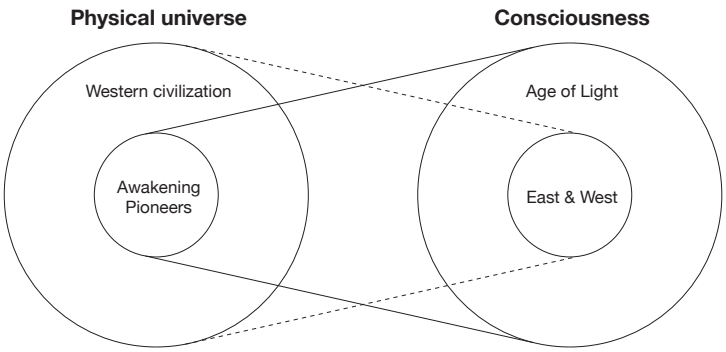
As the URT heals the split between science and the humanities and between science, philosophy, and religion, we can call this synthesis of all knowledge *panosophy*, modelled on *philosophy*, from Greek *pan* 'all' and *sophia* 'wisdom'. The ancient Greeks used the word *pansophos* to mean 'very wise', literally 'all-wise'. In 1642, this led to the coinage of *pansophy*, occasionally spelled *pantosophy*, to mean 'universal or cyclopædic knowledge; a scheme or cyclopædic work embracing the whole body of human knowledge'.

What this means is that we need to re-evaluate what scientists regard as the most fundamental science on which all the sciences can be built. In general, most people think that physics is the primary science, although some biologists are today attempting to usurp physics' crown. However, Martin Rees, the Astronomer Royal of the United Kingdom, and a former President of the Royal Society and Master of Trinity College, Cambridge, says that the sciences are sometimes likened to the different levels in a building, with logic in the basement, mathematics on the first floor, the various materialistic sciences forming the next floors, with the upper floors representing the human sciences, depicted in this diagram, posted on Wikipedia in 2013.



But just look at how far apart logic—as the science of mind and reason—and psychology—as he science of mind and consciousness—have moved, a separation mainly created by Gottlob Frege and Bertrand Russell, as mentioned on page 11. IRL re-unifies logic and psychology, in the manner that George Boole intended, becoming the primary science on which both the sciences and humanities can be built, as illustrated in the diagram on the previous page.

Establishing Consciousness as Ultimate Reality, as the Cosmic Context for all our lives, goes much further than the paradigm shift much talked about today. What we are engaged in is a total contextual inversion, as this diagram illustrates.



Rebuilding the entire world of learning with what is essentially an Eastern worldview enables us to answer most of the scientific and social questions facing humanity today. 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."

Similarly, even though the human genome has been sequenced, it seems that the more the secrets of the DNA molecule are revealed, the more questions that remain unanswered. As Steve Jones, Professor of Genetics at University College London has said, "We don't understand genetics at all."

And from a social perspective, we could use Integral Relational Logic and the Unified Relationships Theory to cocreate a society living in harmony with the fundamental laws of the Universe, as outlined in the third and first articles in this trilogy: "The Sharing Economy: Transcending the Divisiveness of Money' and 'Recapitulating the Cosmogonic Cycle: Understanding Ourselves'.