

Information and Energy

Paul Hague

March 2021

On 27th February 2021, the Scientific and Medical Network posted a video on its YouTube channel under the auspices of the Galileo Commission, which is seeking “ways to expand science so that it can accommodate and explore important human experiences and questions that science, in its present form, is unable to integrate.” In the video, Steve Minett gave a presentation on his recent book *Consciousness as Feeling: A Theory of the Nature and Function of Consciousness*, after which there were many questions.

The first came from Bernard Carr, who said that physicists are now considering information as being more fundamental than energy. He therefore posed this question: “If physics ends up concluding that information is more fundamental than energy in some sense, would you infer that you need to go beyond normal physics?” Steve replied, “We probably have a century to go before we have a conclusion like that.”

This brief interchange illustrates that individuals and organizations seeking to transcend the materialism and mechanism of modern science still have a very long way to go before we can heal our deep wounds in the collective psyche. For these opened up thousands of years ago, long before Isaac Newton completed the first revolution in science with *Mathematical Principles of Natural Philosophy* in 1687, following René Descartes’ *Meditations on First Philosophy* in 1641, in which he described a split between *res cogitans* ‘thinking substance, mind, or soul’ and *res extensa* ‘extended substance’, by which Descartes meant an object with breadth, width, and height occupying space.

Nevertheless, it is not necessary to wait a hundred years to transcend Cartesian dualism and scientific materialism and mechanism. It is quite possible to develop a rational cosmology that can explain all human experience from the mystical to the mundane, for such a cosmology already exists in a dozen books and many essays written this century, as a coherent, holistic, integral expression of our collective inner experiences. For evolution is becoming increasingly conscious of itself, as Pierre Teilhard de Chardin and Julian Huxley foresaw in the 1950s in *The Human Phenomenon* and an essay titled ‘Transhumanism’, respectively.

What we need to solve the ultimate problem of human learning is Method, inspired by Descartes’ own attempt to develop such a method. For, in 1619, when returning home to France from fighting in the Thirty Years’ War, he had a dream in the Bavarian village of Ulm, where Albert Einstein was to be born 260 years later, of “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*”.

In the event, it took Descartes until 1637 before he was able to publish *Discourse on the Method of Properly Conducting One’s Reason and of Seeking the Truth in the Sciences*. To demonstrate the power of his method in practice, Descartes also wrote three other works, on *Optics*, *Geometry*, and *Astronomy*, the most important of which was *Geometry*, in which Descartes laid down the fundamental principles of analytical geometry in Euclidean space, known today as the Cartesian system of coordinates.



For myself, I began exploring the relationship between information and energy during the winter of 1980, when developing an innovative marketing programme for Decision Support Systems for IBM in

Information and Energy

London, following the publication two years earlier of Michael S. Scott Morton and Peter G. W. Keen's *Decision Support Systems: An Organizational Perspective*.

Scott Morton and Keen described the way that computers could assist humans making decisions through interactive programming and information-retrieval methods on both mini computers and timesharing systems on mainframes, such as IBM's. I became interested in this quite new way of developing information systems in 1974, when I was the systems engineering manager responsible for the acceptance tests for a British Post Office (now British Telecom) timesharing computer.

Six years later, I joined IBM's Information Systems Support Centre (ISSC), which was promoting IBM's marketing strategy 'Manage data as a corporate resource' with a five-year timeframe, in contrast to the three-month perspective of chief financial officers. For data (used as an uncountable noun) is the fundamental resource of the data-processing industry. But what exactly is it? The words *data* and *information* are often used synonymously. However, this is not how information systems analysts and designers use these words, as Norman Lindop explained in 1978 in *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.

Similarly, in the 1990s, my sixteen-year-old niece took a two-year course in information technology for nonprogrammers in which her textbook gave these definitions for data and information:

Data may consist of recorded facts, events or transactions.

Information is data that has been processed into a form that is useful, or data that has been given a meaning by putting it into context.

However, data in computers is not just numbers and strings of characters, encoded in binary digits. Since the late 1940s, when the first stored-program computers were built at the Universities of Manchester and Cambridge in England, the instructions in programs, which tell the computer how to function, could also be considered as data. There are thus both active and passive data structures in computers, which correspond to cognitive faculties in humans. For, as Gilbert Ryle pointed out in *The Concept of Mind* in 1949, human knowledge can be considered both as the facts we know and the skills we know how to perform; we 'know that' and we 'know how'.

Most significantly, thinking is a skill, corresponding to functions in computers that can dynamically 'program' other functions. But could a machine 'think' for itself without human intervention? In a landmark paper in *Mind* in 1950, Alan Turing said, "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," of monumental social consequences if it were true.

When I joined the ISSC, at the dawn of what the social scientist Daniel Bell called the 'Information Society', I was particularly concerned with Turing's belief that it was possible to build a Universal Machine that could perform any cognitive task that a human could do, which I intuitively did not believe, but could not rationally prove. At the time, point-of-sale terminals were being introduced into supermarkets and department stores, which was giving the retail industry quite new challenges, as I learned when giving keynote presentations at customer executive seminars at IBM's European Education Centre in Belgium. In particular, the function of the buyer was changing, as computers could take over the job of inventory management, with the more creative aspects of the job being performed by humans.

Information and Energy

But with skills profiles changing in the workplace, to what extent could computers perform tasks being performed by humans? Is artificial general intelligence possible and if so what would be the long-term psychological and economic consequences of humanity's growing dependency on information technology? Could machines take over the workplace, creating mass unemployment, bringing the inherently unstable global economy crashing down? For, if they could, this would break the cycle of humans as both workers and consumers, the fundamental principle of monetary economic systems, as Adam Smith pointed out 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.

On the other hand, if the human potential for the awakening of intelligence and consciousness is far greater than machines could ever have, how could this great transformation of consciousness come about? Clearly not in the workplace that existed at the time, which I was finding increasingly authoritarian and constricting, not understanding the relationship between information and money. For 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.

To address these critical issues, I turned to IBM's Business Systems Planning (BSP), which was much influenced by Jay W. Forrester's *Industrial Dynamics* in 1961, Robert N. Anthony's *Planning and Control Systems: A Framework for Analysis* in 1965, and Sherman C. Blumenthal's *Management Information Systems: A Framework for Planning and Development* in 1969. The main purpose of a BSP study, which some of my colleagues in the ISSC were using with their customers, was for information systems architects, as master builders, to build a comprehensive model of all business processes and entities, and the relationships between them. For, relationships synergistically convey meaning, just as much as data elements themselves.

A BSP study thus produced a model 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 were very abstract models, not concerned whether humans or machines perform business processes. This distinction is only made at the implementation stage of systems development in the more advanced business modelling methods being used today, within the framework of model-driven architecture.

At the heart of such a BSP model was a process-entity matrix, showing the relationships between processes—like procedures in procedural manuals, accredited through the ISO 9000 quality management system, and functions in programming languages and mathematics—and the entities that they process. However, I realized in the winter of 1980 that such models were not comprehensive. First, they omitted the data-processing function, such as interactive personal computing, when the distinction between functions and the data that they process could change in nanoseconds. Secondly, and most significantly, business modelling methods do not include the very process of business modelling, itself. Doing so is rather tricky, for such a mapmaking exercise is like a television camera filming itself filming.

While I was wrestling with what appeared to be an intractable problem, I was very well aware that my colleagues and I in the data-processing industry were causing fundamental changes in the way that businesses were being run and hence in people's lives, but which we did not understand. So, I set out to answer the most critical unanswered question in science: *What is causing scientists and technologists, aided and*

*Information and Energy
abetted by computer technology, to drive the pace of scientific discovery and technological development at unprecedented exponential rates of acceleration?*



In the event, I was given the key to the solution to this problem in an apocalyptic epiphany that I experienced at 11:30 on 27th April 1980, as I was strolling across Wimbledon Common in London to the pub for lunch. In a life-changing eureka moment, when puzzling about what is causing us humans to behave in such an ignorant fashion, I realized that data is not only synergetic, it is energetic and causal. In a dazzling flash of inspiration, I saw that active and passive data in computers and humans are rather like kinetic and potential energy in mechanics. There are nonphysical, mental energies at work in the Universe, as well as the material ones I had learnt about in physics at school.

Three weeks later, I abandoned my business career and began an exercise in self-inquiry to develop a cosmology that would integrate the psychospiritual energies within us with the four physical energies recognized by materialistic, mechanistic science: electromagnetic, gravitational, and the strong and weak nucleic forces. Although I had no funding for this great endeavour, being free of the constraints of the culture I lived in gave me the opportunity that summer to write my first attempt to describe the function of data energy in society in an essay titled 'The Future of Computers and Society'.

Despite having abandoned academia after graduating in mathematics in 1964, I sent a copy to two professors of cybernetics and one professor each of mathematics, machine intelligence, computer science, and physics, all in the UK. David Bohm, professor of theoretical physics at Birkbeck College in London, a former friend and colleague of both Einstein and J. Krishnamurti, was most interested in the revolutionary idea of data energy and kindly invited me to meet him.

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 to 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 by standing outside ourselves, with Self-reflective Intelligence.

There was just one question I wanted to ask Bohm when I first met him: "What is the source of the data energy that exists in humans and computers?" He replied, "Energy does not have a source, it is contained within structure." I now know in my own experience that the first part of this reply is not true. Data energy emerges directly from the Datum of the Universe, its Divine Origin. For *Datum* derives from Latin *dare* 'to give; cause', cognate with *donor* and *do*. However, the notion of structural energy, deriving from meaningful relationships between forms, was just the answer that I needed to unify the physical and psychospiritual energies at work in the Cosmos. For fields, whether they be electromagnetic, morphogenetic, or whatever, are special types of relationship, and relationships make the world go round in our interconnected Universe. For myself, I view and experience the Totality of Existence as Consciousness, as Ramesh S. Balsekar, formerly President of the Bank of India and an Advaita sage, taught in *Consciousness Speaks*.

To realize our potential to evolve into Universal Humans, far beyond Turing's Universal Machine, I reversed his imitation game, devised in 1950 to prove that one day machines could think for themselves, as mentioned in his biopic *The Imitation Game*, which won an Oscar in 2015. Being free of cultural constraints on my learning, I embarked on a thought experiment, not unlike those that Einstein used to develop the special and general theories of relativity. 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. Starting afresh at the very beginning, this computer then had the task of developing the Theory of Everything, the

Information and Energy

title of a biopic of Stephen W. Hawking, which also won an Oscar in 2015. For, Hawking, like Einstein, was mistaken that the ultimate problem of human learning could be solved within physics.

I call the Method that has enabled me to integrate all knowledge in all cultures and disciplines Integral Relational Logic, which is transcultural and transdisciplinary, not within any specialist discipline of learning, such as mathematics, physics, or psychology. Nevertheless, this universal science of reason shows that we need to regard mystical, depth psychology as the primary science on which all others are built, as William James and Eugen Bleuler sought to do around the turn of the eighteenth and nineteenth centuries. As Sonu Shamdasani tells us in his introduction to Carl Gustav Jung's monumental *The Red Book*: "It was held that by turning psychology into a science through introducing scientific methods, all prior forms of human understanding would be revolutionized. The new psychology was heralded as promising nothing less than the completion of the scientific revolution."

However, such revolutions in science have historically had a hard time being understood and accepted. Of the five great scientific revolutionaries of the past four hundred years, only Newton, Charles Darwin, and Einstein were recognized in their lifetimes. In contrast, Galileo Galilei ignored Johannes Kepler's celestial physics, with its three laws of planetary motion, and even today, over forty years after the publication of *Wholeness and the Implicate Order*, Bohm's reconciliation of the incompatibilities between quantum and relativity theories is mostly ignored.



However, here is not the place to describe the commonsensical system of thought that we all implicitly use to form concepts and organize our ideas in any detail, for I have done so many times in my writings, most recently in the first two chapters of my final book titled *Unifying Mysticism and Mathematics: To Reveal Love, Peace, Wholeness, and the Truth*.

All that needs to be said is that the Method not only provides a system of coordinates for understanding the psychodynamics of society, in the context of evolution as a whole, since the most recent bang some fourteen billion years ago. Integral Relational Logic also contains a rational worldview that provides the Cosmic Context and Gnostic Foundation that can help to explain many phenomena that Wikipedia calls 'pseudoscience', such as psi effects, discarding much New Age confusion.

While I am well aware of people's longing to explain such psychic experiences, my major concern, as a human being, is the imminent extinction of *Homo sapiens* 'wise human'. I have known since 1982, when I was helping to design and implement an advanced management accounting system for the Kuwait Institute for Scientific Research (KISR) in the middle of the Falklands War, that one day a generation of children will be born who will not grow old enough to have children of their own. For the next thirty-five years, I hoped that this inevitability could be delayed by a few generations, and that an awakened species could live in peace and harmony in the eschatological Age of Light for two or three hundred years, transforming the conflict-ridden, either-or thinking of the patriarchal epoch into a harmonious, both-and approach to life.

However, after meeting Guy McPherson, Professor Emeritus of Natural Resources at the University of Arizona, for lunch in Oslo in December 2017, I realized that I had been far too optimistic. Guy explained to me that the inevitable collapse of industrial society would actually accelerate climate change because of the aerosol masking effect, also known as a reduction in global dimming, and the exponential growth of positive feedback loops, making our beautiful planet Earth rapidly uninhabitable.

I first came across Guy's scholarly insights in *Extinction Dialogs: How to Live with Death in Mind*, which Andrew Harvey had asked Guy to write with Carolyn Baker, a Jungian psychologist, in 2014. In 2017, Andrew and Carolyn then co-authored *Savage Grace: Living Resiliently in the Dark Night of the Globe*, for

Information and Energy

which Matthew Fox said in the Foreword, “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.”

I have had a dream of cocreating such a network of networks since marrying a Norwegian meditation teacher and social activist in 1986. I rather ingenuously thought that by completing the final revolution in science, just as Kepler and Newton had completed the first in the 1600s, this would help us to rebuild the education and economic systems, leading to World Peace. But despite the development of four websites since we separated, this initiative has not borne fruit.

For, as I can now see, becoming free of our cultural conditioning, as Krishnamurti and Vimala Thakar urged us to do in *Education and the Significance of Life* in 1953 and *Spirituality and Social Action: A Holistic Approach* in 1984, respectively, is too big a task even for the most advanced evolutionaries, still working within the framework of what Erich Fromm called our sick society in *The Sane Society* in 1956. For, as Krishnamurti wisely said, “It is no measure of health to be well-adjusted to a profoundly sick society.”

Nevertheless, we all share the Ineffable Divine Essence of Being, which we can most simply call Love. Although no concepts are needed to communicate with each other directly from the heart, there is one that has helped me, at least, to resolve the existential crisis that we all face today. This is the fundamental law of the Universe, which I call the *Principle of Unity*, which states *Wholeness is the union of all opposites*. Heraclitus of Ephesus called this irrefutable, universal truth the *Hidden Harmony*, which Aristotle rejected in *Metaphysics* with his Law of Contradiction, the implicit axiom for algorithmic mathematical logic.

Most significantly, the Principle of Unity has enabled me to heal the split between humanity and Divinity, as the Immortal Ground of Being, opened up at least 5,500 years ago. More generally, living in



tune with the fundamental law of the Universe, which I denote with this logo, has helped me to rebuild the entire world of learning on conceptual clarity, simplicity, consistency, and integrity, thereby transcending Cartesian dualism in Nonduality and Wholeness.

In this way, many of the questions that people asked in the SMN video on Steve Minett’s book *Consciousness as Feeling* could be simply answered. Should this be of interest, this blog post on my eponymous website contains links to three short reflective monographs I have written this year: <http://paulhague.net/communicating-with-each-other/>. And these web pages contain links to my most mature writings during the past couple of years: <http://mysticalpragmatics.net/articles-2019> and <http://mysticalpragmatics.net/writings-2020>. My email address is paul at mysticalpragmatics dot net.

(Since a friend designed the Mystical Pragmatics website in 2014, some of his code no longer works, relating particularly to the menus. I have found a workaround to this problem. However, as he has since died, it would much help to find a Drupal developer who could help me to repair the website.)

Despite the unlikelihood of completing the final revolution in science in the collective before our inevitable demise, as a species, maybe there is still an opportunity for some, at least, to support each other to come to terms with the greatest existential crisis that the human race has faced in its short history. For, as Guy often says at the end of his YouTube videos, “At the edge of extinction, only Love remains.”

Nevertheless, all that really matters at the end of time is to rest in Solitude in Ineffable Stillness in the Presence of the Divine in the Eternal Now, free from the sense of a separate self. For to realize that Wholeness is the True Nature of all beings is the ultimate purpose of life on Earth, an understanding that takes no time at all, for it is ever present.