The Science of Intuition

The purpose of this paper is to explore what intuition is and to deliver some scientific understanding of how it is even possible. What is the nature of a reality that would enable such a capability to exist? Recognising that reality, how would we develop and make use of an intuitive capacity?

What is intuition?

It is always best to begin with a shared understanding of what a key word means, and more so than usual when the concept is poorly understood. I will begin with two definitions:

1. The power or faculty of attaining to direct knowledge or cognition without evident rational thought and inference; and
2. Spiritual insight or immediate spiritual communication.

In this paper I will focus primarily on number 1. However, it will become evident that the analysis crosses boundaries into the realms to which a word such as "spiritual" may be applied. If there is some discomfort that such a word is showing up in a paper with "science" in its title, I invite you to bear with the analysis.

A sceptical beginning

The current scientific paradigm is so strong that scepticism pervades the territory of this analysis, most particularly because its methodology is oriented exclusively towards what can be proved objectively, and wherever possible, what can be detected by apparatus. Intuition, on the other hand, appears to be a subjective experience.

However, the boundaries are not that clear. Much of science depends on observation of limited data, in which we attempt to discern patterns and from them make extrapolations into theory. We could not discuss evolution or ethology otherwise and the entire discipline of psychology straddles the boundary, attempting to make sense of subjective experience with MRI scans.

What is the origin of this paper? In order to explain why I am engaging with this topic and also to provide some more concrete, less conceptual indication of the territory, I will introduce my own experience into this narrative. I do not offer this as evidence but as background sense-making.

I was raised as an atheist and trained as a scientist. I had no interest in spirituality and if I had thought about intuition at all, I would have described myself as having none. Then I found myself on a training course for (I thought) stress reduction and creative thinking. It emerged that it was more than that and I went along with it in an open-minded and curious way.

Personal experience

On the last afternoon we each went through exercises, using the techniques we had been taught. In these exercises we would be given the name, age and approximate location of an individual, known to one other of the participants who had written down some basic facts about that individual. This information was in the hands of a third person so no "prompting" was possible.

My experience during the exercise was of "tuning in" to the subject individual (David, a 27-year-old male living in Devon) using the techniques we had practiced. For a long time I was getting nothing, until I tried a particular approach in which, rather than trying to "see" the person or "hear" information about them in my mind, I visualised what it would be like to be that individual. The effect was instantaneous. I had the strong sense of there being pain in the rear left side of my head

and spontaneously grimaced and twisted my neck. Without any real thought, I asked the observer if the person had pain from some condition like a brain tumour and was told that this was exactly what was written down. I used other techniques to attempt to send healing (this being another purpose of the training) before bringing my attention back and participating in the experiences of other students.

Of the twenty or so people in the room, all but two had some kind of success in this kind of detection – enough that they knew with confidence that they had detected something that they could not have known by any "normal" means. I therefore had to acknowledge not just my own experience but that of several others, none of whom had given any indication of previous development or gifts in such areas.

For a while, this experience was merely a curiosity; later it began to bother me a lot. All my scientific training told me:

- that there was no known mechanism by which such things can happen;
- there was no physical medium by which such information is known to pass;
- there was no way known to science in which the information itself is "published" and available;
- there was no way to understand in any scientific terms how I could have "located" the correct individual based on just a name, age and location;
- feeling directly what someone else was experiencing was simply not in the frame, not catered for.

My unavoidable conclusion: the science I had been taught had to have been flawed in some way. I subsequently observed other courses in which larger numbers of people went through a similar experience. Then, having trained as a teacher for the method and seen those whom I taught having similar success, I added two more features to the list above:

- every normal individual has the potential for similar capability; and
- this is a trainable skill.

All seven of these points are significant. Each of them individually challenges the scientific status quo. My mind could not let this go, and I spent many years exploring the territory in order to construct a science that would remain consistent with all that was already known, but also encompass the reality in which all of the above could happen. This paper presents the key features of that new scientific viewpoint, and a small sample of the data that support it as published in my 2013 book The Science of Possibility.[1] In order to do this, we join the dots to link the following elements:

- The physics of energy and matter; what governs the shapes that energy can take?
- The part played by information, connectedness and time.
- What does it mean to speak of a field of information?
- How do our bodies and minds engage with the realm of information? The cellular coordination that provides the levels of sensitivity and coherence for sense-making and consciousness.
- How do the activities of our minds carry out that sense-making and how can that affect our bodies?
- How does the connectivity between us and our external world show up? Some evidential challenges to our conventional perceptions of ourselves and nature.

- Presenting an alternative narrative for creation based on a scientific model of autopoiesis (self-creation), which makes sense of the evidence and meshes conventional material reality with the non-ordinary realm of connected consciousness and spiritual experience.
- Acknowledging the nature of human experience as a reality-creating process.
- Discussing the realm of the "non-dual" and the boundary across which our intuition operates.
- The potential implications for individual identity and the stories we make of our existence.
- Application: Presenting many of the ways in which intuition and connection are used, leading to the potential choices for development.

That is our route-map, so let us begin the journey.

The nature of reality

What does it take for intuition to be possible? Our earlier definition refers to direct knowledge; so, what is it that we know? The simplest answer is information, facts or data about the world we inhabit.

If asked what the world is made of, a typical answer would be given in terms of physics and would say matter and energy. Since the days of Einstein's $E=MC^2$ equation, we have known that energy comes first. Matter is something that energy can be formed into. The story of the "Big Bang" describes our universe as having begun from an inconceivably large quantity of energy compressed into an incomprehensibly small amount of space. In that sense the New-Age expression "Everything is Energy" can seem to be an accurate description of the cosmos.

However accurate it may be, it explains nothing and fails to satisfy as an answer to the most fundamental of all scientific questions, such as "who are we?" and "where do we come from?". We can also see that even when energy is shaped into the other basic component, which is matter, there is still nothing for intuition to engage with. There is no information.

Energy and matter fit into the model of objective science because both are measurable. In that model, it is the process of measurement which supplies us with information. As a result, it appears that information is not something that is part of the universe itself. Instead, it seems to be part of the human world, so that in the absence of humans to ask questions, information would not exist. There are many more complicated versions of this question, as with Plato's enquiry about the falling tree in the forest. "If there is no-one there to hear it, does it make a sound?" he asked, drawing Bishop Berkeley's response that "God" would hear it. In this analysis I am strongly inclined to avoid millennia of epistemological debate. Even so, the problem remains; what is information?

The challenge deepened with Werner Heisenberg, who, when examining the relationship between energy and matter, concluded that we could never be certain. If we look at the energy (a wave), we can determine how fast it is moving. If we look at matter (a particle), we can locate it. But it is impossible for us to know both. Worse than that, the act of measuring changes that which is measured. The choice of which measurement to make determines whether we are observing a wave or a particle. This is not just a theory. In attempting to unravel this paradox with a key experiment known as the double-slit, physicists came up with an even more uncertain result. It demonstrated that light and matter can simultaneously display characteristics of both classically defined waves and particles. It is proven that what is taking place is not certain, but probabilistic. It is in a state of quantum uncertainty or flux.

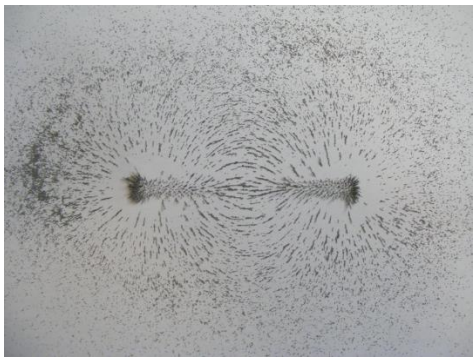
If this makes it seem that the information is indeed only in the human realm rather than in the universe itself, this is also untrue, and once again that is experimentally provable. Initially a thought-experiment by three physicists, Einstein, Podolsky and Rosen, the EPR paradox questioned what would happen if a pair of particles, whose states were known to be a complementary pair (for ease think of them as left-handed and right-handed) but where it was unknown which was which, became separated over a large distance. What would happen if we measured just one of them?

The result, as determined in an experiment by Nicolas Gisin, turns out to be that the instant one particle's status is determined (e.g., right-handed), the left-handed status is known to the other. This takes place regardless of the distance between them, a phenomenon known as "entanglement". It is as if the information has travelled faster than the speed of light, but is more likely an indication that the information, rather than travelling, is simply present everywhere. The answer to Plato's question is that when the tree falls, the forest hears it.

One indication that information is everywhere comes from data on precognition. An illustration of this was given in the 1927 book by physicist and aeronautical engineer J.W. Dunne. He had repeated instances of dreams in which he experienced something that happened later. One vivid example was a dream about the Burntisland train derailment of the "Flying Scotsman" mail train. He reported the dream in the autumn of 1913, of specifically and vividly seeing the location, and described a repeated image of the train and carriages at the bottom of the embankment. He gathered that this event was to occur at some time in the following spring and it subsequently took place on April 14th. More than half of Dunne's book contains a full investigation of the physics, presented in the context of Einstein's relativity theory that was relatively new at the time. He subsequently conducts a brief experimental investigation to determine whether others can produce similar experiences. He is rigorous in his criteria and the number of subjects, seven including himself, is small. Nevertheless, out of 88 recorded dreams, he classifies five correlations with the future as "good" and another six as "moderate". One of the subjects (not himself) he describes as a startling success, with three good correlations. Even five correlations are a potentially significant result, when zero might be expected.

The field

The notion that information is present everywhere, and independent of time or space, leads to the concept of information being a "field". There are numerous expressions of such a concept in the literature on consciousness, including Dr Ervin Laszlo's "akashic field",[2] Gregg Braden's "zero-point field" and Lynne McTaggart's simple "the field", and all of these have resonance to more ancient expressions, many of them from oriental religions.



The notion of such a field in relation to consciousness is regularly challenged by sceptics for being vague. But it is in the nature of a field that you cannot pinpoint the thing itself, only its effects. If you think of your school science demonstration where you watched iron filings reorganise themselves around a magnet, the field itself remains invisible. You cannot see it around the magnet. You can only see its effects on filings. By extension, all of electromagnetism is founded on the measurement of its effects on other things.

A field of consciousness is not different in principle. The evidence challenge it creates is that human beings are the detectors. There are some experimental results with the use of certain specific crystals (metaphorically slightly reminiscent of the earliest cat's-whisker radio receivers), but so far

these have not been validated other than by reference to human experience. More independent systematic results may not be available for years.

As in many areas of science we rely in the meantime on accumulating volumes of sample data using multiple subjects in order to produce statistically reliable numbers. Subjectivity is reduced or eliminated by creating viable patterns of aggregate data. Much of biology and medicine begins this way, because intervening in order to measure living systems carries greater risk of damage and may also disrupt the data.

Note that there is a probable difference between the electromagnetic field and the one that governs intuition. While some information may be electromagnetic in character, it is difficult to frame either my intuition story or a precognitive dream solely in terms of electromagnetic frequency. Many intuitive experiences involve whole pictures, or movie-like sequences, or verbal narratives. The field, whatever it may be, appears content rich. What does that take? What is in the field and what is in our experience of it?

The biology of sensing

The narrative so far engages with questions of what is it that we are having knowledge of, and how is information carried. Our eyes see what is in their range of vision and sound has to be very loud (like an aeroplane engine) to carry any distance. In contrast we are encountering information that is accessed over long distances even while being very subtle. What is it about our biological make-up that makes this possible?

The answer is more complex than might be expected. You might assume that it is something that is happening in the brain, but this would be a mistake. Similarly, while we are accustomed to think of our eyes as seeing, ears as hearing, and so on, intuition is a whole-body event. This is not to say that the brain is not important; in the end, everything that we experience is interpreted and delivered to our awareness through that apparatus. However, the experience as a whole involves coherence, connection, communication and sensitivity across our entire system. There are many pieces to the puzzle, so we will look at some of them in detail and then examine what is involved in assembling them to form a picture.

A good place to begin is with the heart. Conventional science looks on the heart as a pump, its sole function being to get blood around the body. In reality, the heart itself has 40,000 neurons and there is a direct neural pathway from it to the brain, sending more information than it receives. The heart pulse is present in the foetus before the brain is formed and it creates a wave through the body, synchronising electrical activity.

The heart is the strongest source you have of bio-electricity, creating a field that extends 3 meters around the body. It produces hormones, chemical messengers such as dopamine and noradrenaline, and it regulates oxytocin levels. In positive emotional states, the field around the heart becomes coherent; the reverse happens under negative emotions. In his TED talk,[3] neurophysiologist Alan Watkins demonstrates in a matter of minutes how simply by regulating our breathing, we can generate that coherence so that it shows up in the smoothness of our pulse and he describes how this can be a key to improved performance of both physical and mental tasks. In this he confirms what people knew long before such scientific measurement, and what yogis taught for millennia. Regulating our breathing is one key to our internal connectedness.

It is normal for you to think of yourself as a singular entity. Here I am in my biological wholeness. Even if you know that you are made up of forty trillion cells, you do not give that much consideration, nor do you pay any attention to your spleen, your lymph glands or your liver (unless

you have recently drunk too much alcohol). The underlying reality is that all of these components are co-ordinated and regulated together. You run and your heart and lungs speed up. You spend time in hot conditions and you sweat to keep your temperature within a safe range.

There are many mechanisms that support that cellular co-ordination. Here are a few of them:

- Your body has many chemical messengers that circulate throughout it. When our adrenal glands produce adrenaline, that hormone delivers messages to millions of cells that have to be activated in your fight-or-flight response. It is one of over fifty such messengers that regulate activity, sometimes short-term like that example and others long-term, like reproductive cycles.[4]

- In her article "The Tao of Biology",[5] Dr Mae-Wan Ho described macromolecules which "…. *associated with lots of water, are in a dynamic liquid crystalline state, where all the molecules are macroscopically aligned to form a continuum that links up through the whole body, permeating through the connective tissues, the extracellular matrix, and into the interior of every single cell. And* ***all the molecules, including the water, are moving coherently together as a whole. The liquid crystalline continuum enables every single molecule to communicate with every other****. The water, constituting some 70 percent by weight of the organism, is also the most important for forming the liquid crystalline matrix, for intercommunication and for the macromolecules to function at all."* (My emphasis in bold.)

- Bruce Lipton, in his book The Biology of Belief,[6] describes the complexity of a physiological system in which each individual cell has many processes, both interior and interactive with their environment. *"Each eukaryote (nucleus-containing cell) possesses the functional equivalent of our nervous system, digestive system, respiratory system, excretory system, endocrine system, muscle and skeletal systems, circulatory system, integument (skin), reproductive system and even a primitive immune system, which utilises a family of antibody-like 'ubiquitin' proteins".* He then describes the connectivity through the system, showing how the activity at cell boundaries functions similarly to junctions (logic gates) in transistors. The result is that in-between cells and their environment are membranes, connecting cells like microprocessors.

- Fritz-Albert Popp,[7] following an accidental observation that plants could communicate with each other when their roots were contained in glass, but not in silicone pots, investigated the nature of photonic (light) communication in biological systems, including humans.[8] The results gathered over 25 years by him and others indicate that there are phase-locked loops and oscillations in coherence that resemble the laser-light characteristic that removes scattering. In multiple arenas he and others showed that light is a co-ordinating function both within the organism and between organisms. These emissions are detectable using photomultipliers and led Popp to say, "We know today that man, essentially, is a being of light."

- Looking closely at the microtubules that surround neurons, Professors Stuart Hameroff and 2020 Nobel Prize winner Roger Penrose observed their crystal-like lattice structure, hollow core and organisational capacity. Their size appears well-fitted to the transmission of photons in the UV range. As described, "*Theoretical models suggest how conformational*

states of tubulins within microtubule lattices can interact with neighbouring tubulins to represent, propagate and process information as in molecular-level 'cellular automata' computing systems".[9] This led them to propose the "Orch OR" model for consciousness.[10]

The above paragraphs are extremely abbreviated summaries of extensive and complex bodies of work. There are many more. The intention here is not that you should understand them, and certainly not in any detail. The point being illustrated is that there are several different mechanisms by which our bodies are capable of detecting very small interactions with our surroundings, and that there are ways to create coherence across these systems so that even extremely small shifts in the field can produce enough of a signal for us to recognise their combined informational content.

This is an emerging field and very little yet is academically robust or formed into a higher-level picture, but it is no longer "wacky" or weird. The field that is now referred to as "quantum biology" arguably began over ninety years ago with a lecture from Niels Bohr. It has been gaining traction in the last few decades, supported perhaps by the availability of very fine low-energy research tools, as indicated by the establishment of a doctoral research centre at the University of Surrey, led by Professors Johnjoe McFadden and Jim Al-Khalili, a regular BBC documentary creator.[11] Here are a couple of illustrative quotes from Al-Khalili about living open quantum systems:

"You are no longer solving the Schroedinger equation because your quantum system of interest is surrounded by an environment that is playing a very important role." Note the clear resonance of this statement to Bruce Lipton and epigenetics referred to below. And in answer to the challenge regarding how it is even possible for such delicate and ephemeral effects to have a functional role in biology: *"There are hints that life has evolved the ability to maintain these quantum effects for biologically significant periods of time".*[12]

The theme of relationship between the very small and ephemeral and higher levels of coherence/observability is as relevant to the realm of information itself as it is to the underlying biology. There is significant potential for direct connection between the two.

What happens internally?

"When Timmy drinks orange juice he has no problem. But Timmy is just one of close to a dozen personalities who alternate control over a patient with multiple personality disorder. And if those other personalities drink orange juice, the result is a case of hives.

The hives will occur even if Timmy drinks orange juice and another personality appears while the juice is still being digested. What's more, if Timmy comes back while the allergic reaction is present, the itching of the hives will cease immediately, and the water-filled blisters will begin to subside." [13]

Our bodies are more complex than we are yet able to know. The relationship between information, thought, emotion and physical response is something we have not yet fathomed. The story quoted in the article comes from psychiatrist Daniel Goleman, who has since become very well-known for opening up the field of emotional intelligence.

In re-telling this story in his 1989 book Quantum Healing: Exploring the Frontiers of Mind/Body Medicine, Dr Deepak Chopra points out (p117) how it shows that consciousness cannot be located. Timmy's response indicates that the "intelligence" is in the cell, and Chopra goes on to say "*[The cell's] intelligence is wrapped up in every molecule, not just doled out to a special one like DNA, for the antibody and the orange juice meet end-to-end with very ordinary atoms of Carbon, Hydrogen and Oxygen. To say that molecules make decisions defies current physical science – it is as if salt*

sometimes feels like being salty and sometimes not."

This also connects to the core message of Bruce Lipton's Biology of Belief. His title refers to the understanding that what conventional science has presented as responses driven by the genes, frequently are not. In what has since become known as the study of epigenetics, it is increasingly apparent that our development and our biological responses are influenced by a sophisticated interplay between the blueprint (DNA) and the environment. The blueprint metaphor is relevant. The precise character of a timber-framed house would be different depending on the use of different species of pine, or even oak.

Our internal information processing is taking place in many different layers, from emotions to beliefs to unconscious responses (like allergies) to fully conscious choices and discriminations. We are not passive, but actively interacting, sometimes intentionally and often without any cognitive awareness of what we are doing.

So before moving on let us remind ourselves that the puzzle we are assembling is constructed from pieces that illustrate the ways in which communication could be happening beyond the realm of our conventional senses. At this point we are continuing the parts of that picture that are relevant to living systems and to biological function. The keys continue to lie in the areas of communication, coherence, sensitivity and detection.

What happens externally?

This is a rich area, and so crammed with stories that the anecdotal material could be almost endless. Bearing in mind that we are trying to bridge the gap between subjective experience and data which is in some degree measurable or externally validated, the examples that follow will emphasise those aspects. Even so, before doing so, it is appropriate to talk briefly about the very wide geographical commonality and long-term consistency that is present in such stories.

Our modern viewpoints struggle to understand the way in which traditional and indigenous cultures function. We have centuries of reporting, starting with early explorers and developing into more embedded studies by professional anthropologists adopting formal academic distancing. In more recent years, travellers like Bruce Parry[14] have engaged with tribes they are visiting and participated directly in their ceremonies. A few westerners such as Eliot Cowan[15] and Alberto Villoldo[16] have spent the years necessary to become acknowledged by their indigenous teachers as "qualified" shamans. Carlos Castaneda[17] similarly wrote an extensive series of books in which he did his best to communicate to the Western mind, the nature of reality as seen by the mystic "Don Juan" through the non-ordinary, peyote-induced consciousness. Michael Harner,[18] an investigator based in Britain, continues to do direct research from within our Western context. Conversely, Malidoma Somé,[19] a West African with three master's degrees and a PhD from the Sorbonne, documents his own initiation into the shamanic culture of the Dagara.

All of these examples might be mere anecdotes, were it not for the deep continuity that runs through them. They are not a faulty side-effect of the way human brains are constructed. Michael Harner quotes historian of religion Mircea Eliade's conclusion[20] that shamanism underlies all other spiritual traditions on the planet. Some such cultures use drugs to achieve altered states of consciousness, which easily attracts dismissal or suspicion from scientists who desire an easy excuse to treat their experiences as psychotic. Many cultures do not use drugs, though. Some induce altered states through ritual and chanting. However, these are not essential either and the engagement with other fields of information sits very close to the intuitive realm we are investigating; others such as Findhorn founder Dorothy Maclean[21] and Perelandra garden creator

Machaelle Small Wright[22] who have engaged in direct relationship with nature do so through a more meditative approach. A full reading of such examples compels the conclusion that there is worldwide commonality across cultures and no discernible boundary between shamanism and intuition. They are different applications of the same technology.

There are many who dismiss “animism”, the idea that other parts of the living world have some kind of “spirit” that we can communicate with, as “magical thinking” – a term which places the experience in the same context as a child’s belief in the tooth fairy, or their imaginary friend. The descriptions that follow should be regarded as strong indications that the shamanistic reality is far from being some kind of childish fantasy practiced by “primitives”. What all these people across the globe have been experiencing is built into the universe.

Let’s look at one investigation of communication in the world of living systems and a few illustrative descriptions.

The story begins in 1966, concerns America’s foremost lie detector examiner, Cleve Backster, and stars a houseplant called Dracaena massangeana.

You may know that a lie detector works by measuring how much electricity the skin will conduct. Backster decided on impulse to attach this device to his potted Dracaena and see how it responded to being watered. You might expect as Backster did that more water means more current will pass. However, the trace on the paper showed a fluctuation that was in the opposite direction – downwards, with a kind of saw-tooth motion that resembles what happens when a human being experiences an emotional stimulus.

He decided to investigate further. When working with humans, police examiners like Backster watch the responses to stress under questioning. One of the most effective ways to get a response in humans is to threaten their well-being. Backster decided to try this on the plant and dipped its leaf in hot coffee. Nothing happened. So, he thought of a worse threat. He decided to burn the leaf to which the electrodes were attached. The very instant he got the picture of the flame and the action in his mind, the plant responded with a strong upward sweep.

He left the room to get some matches, and found that while he was away, the plant had responded with another upward surge. Reluctantly, he set about burning the leaf, and got a reaction, but less than before. Later Backster went through the physical motions of pretending he would burn the leaf, and got no reaction at all. The plant seemed to be able to tell the difference between real and pretended intention! These findings were confirmed by other collaborators on other species. He set up a lab and extended the study.

During one demonstration to a journalist, Backster hooked up the galvanometer to a philodendron, and then interrogated the man about his year of birth. He named seven years in succession, from 1925 to 1931, to which the reporter was instructed to answer “no” in each case. From the galvanometer chart of plant responses, Backster then selected the correct year of the reporter’s birth. That is, the philodendron detected when the “no” was a lie.

To see if the plant would show memory, he set up an experiment where six volunteers from among his police students drew a piece of paper from a hat. Five were blank, but the other told one of them to totally destroy one of two plants in the room. Each in turn entered the room. No one but the person with that piece of paper knew who was responsible for the destruction of the plant. This was

followed with a kind of identity parade, in which each of the volunteers went into the room again, with the remaining plant now wired to the galvanometer. The plant showed no reaction to five of them, but the reading went wild when the "culprit" entered the room.

The plant subsequently showed a reaction to simple cellular organisms. On one occasion it reacted to Backster mixing jam with his yoghurt, which he believed to be due to the preservative in the jam killing some of the live cells. This belief was later supported by witnessing a similar reaction when boiling water was running down the waste pipe in the sink and killing bacteria.

Because Backster was interested in this reaction, he invented ways to attach his electrodes to single celled creatures such as amoeba, yeast, blood cells and sperm. All were capable of producing similar results to plants. Sperm cells, for instance, would respond to the presence of their donor. In more recent work, reported in Ervin Laszlo's book Science and the Akashic field,[23] Backster took cheek-cell swabs from various subjects and took them several miles from their donors. In one of his tests, he showed his subject, a former navy gunner who had been present there, a television program depicting the Japanese attack on Pearl Harbor in 1941. When the face of a navy gunner appeared on the screen, the man's face showed an emotional reaction—and at that precise moment, the lie detector's needle seven and a half miles away jumped, just as it would have had it been attached to the man himself.

Some of this work has been repeated, often unsuccessfully – a point made by sceptics in the Wikipedia entry about Backster – but there is a video[24] of one "mythbusting attempt" where you can see results for yourself. I do not propose to labour this area here, which I cover in much more depth in my book (chapters 5 and 6) to show the cumulative evidence that is there. Experiments which fail to replicate the results may have been poorly conducted. They are not sufficient to demonstrate that the successful ones did not happen and there is a false argument presented about lack of control subjects which irrelevantly applies human contexts to non-human investigations.

Last in this context, I would encourage interested readers to look at two books. In one, Peter Wohlleben's The Hidden Life of Trees,[25] he describes how we have failed until recently to see the way in which forests function as entire living systems, demonstrating a combination of competition and collaboration in the ecosystem such that trees do not function individually, but rather as a collective, sharing resources and self-managing their common environment. In Entangled Life,[26] Merlin Sheldrake delves into the essential part played in that story and in numerous other parts of life by mycoproteins, fungi and lichens. While this paper is focusing on the non-material connectivity in the field, the correspondence between the presence of underlying physical mechanisms for coherence as described for our human bodies and an equivalent presence within wider ecosystems shows just how much the non-material and the material realities function seamlessly. It is essential that we take a holistic perspective if we are to see clearly what the I Ching describes as "The Taming Power of the Small". A field of consciousness is fundamental, but it does not have power on its own. This is the liminal space we are exploring.

So what is going on?

The stated intention of this paper is to understand the nature of a reality in which such phenomena exist, and while the title refers to "intuition", it is by now apparent that something larger and more fundamental surrounds this territory.

We have looked at the physics of quantum entanglement and the demonstration that particles in the universe "know" about each other. We have looked at the emerging science of quantum biology

and seen the complex relationship between information and human energy systems, including cells which seemingly “choose” their response to a stimulus. And we have briefly looked at the indications that something underneath all of this holds not only current information, but memories. More than that, for precognition to be possible, our communication with the matrix of memory operates beyond our normal concepts of linear time. The universe in which all this takes place is conceptually different from the one that we have generally believed in.

At this point, we need to turn the conventional view upside down, or perhaps inside out. That view offers us a concept of consciousness that it is created by the human mind. Whatever you experience, however you experience it, is a product of activity in your brain, something that starts with a physiological process of receiving data (light, sound chemical, etc.) from your surroundings and is then assembled into patterns in your neurons. That data is incomplete, though. You cannot see infrared or hear the high frequencies that a bat can. The pheromones that cause moths to fly long distances to find a mate are imperceptible to you. In turn, pattern creation may or may not be reliable – first, at the simple level of optical illusions; second, in our meaning-making; and then, in our evident ability to invent and imagine scenarios beyond what is there. That capacity to re-imagine is as powerful a shaper of human development as our opposable thumbs have been. The person who invented the wheel saw it first in their mind’s eye.

All of the above is true, but it is also limited. It does not allow humans to sense what the Dracaena could sense and it does not explain what the Dracaena was sensing. What does nature know and what does the universe itself know that is not explained by a mind-located model of consciousness? This is where the model turns inside out, and to grasp how that works we must revisit the relationship between energy and matter to ask the very simple question of what governs the process by which energy becomes matter?

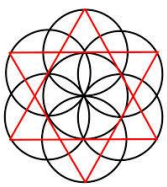
The nature of creation

The conventional description is that from the moment when there was only energy, prior to the “Big Bang”, the universe as we know it erupted into existence, creating particles that coalesced into matter, randomly collecting into the forms that we know. Again, this image way well be true but, as before, it is limited. The phenomenon of quantum entanglement indicates what is missing; it introduces the element of information, a capacity for the universe to know itself.

What follows can only be a speculative narrative, but it provides an explanation for what we know now.

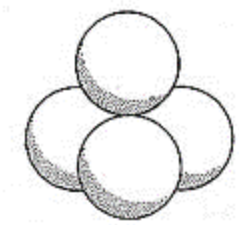
As I said, it is simple. I would like to take you on a short imaginary journey.

Imagine that there was once nothing but energy, a whole universe of it. If you like the Big Bang story, think of it like that, but that’s just an option. Think of it as if the energy were just there, vibrating with potential, but no structure, no meaning, no significance, no form.



Imagine that all that vibrating energy kept making shapes and patterns. These were mathematical patterns, and sometimes the patterns were not stable, so they came and went in the way that ripples on a pond do.

At some point, the mathematics worked in a way that created patterns where something came but did not go. Something was formed that was the first matter, the smallest particle that was possible. Picture it this way: the energy had a memory and made a note of what it had done, so it could do it some more.



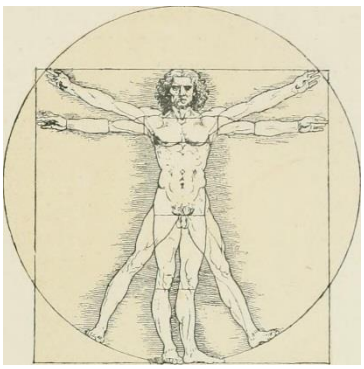
Now step forward and scale up that activity. Imagine that many different forms of stable matter came into being, the ones that we now call electrons, neutrons and protons. Imagine that the energy-memory made a note of them all, and did more of that too.

Sooner or later, the particles bumped into each other and formed larger patterns. We call these atoms, such as hydrogen, oxygen and uranium. The atoms also bumped into each other and formed molecules. As before, some patterns did not last and were not remembered. The ones that were remembered became the building blocks of the universe.

The rest of the story, in conventional terms, takes about 14 billion years. Gravity packed matter together and it fused into stars, spinning galaxies full of them and also spewing off planets and rocks.

On one of those cooled-down planets, there was a very special stable molecule called water that covered a lot of it. In the water, molecules joined up to make amino acids. Amino acids created patterns that could reproduce. Part of the universe's memory was now chemical, like what we call DNA. This organic chemistry became living cells, probably starting with algae. Early bacteria were the prokaryotic components that merged to form more complex eukaryotic cells. All of the knowledge of how that worked was retained in the information bank of energy-memory. It was retained for every particle and every larger structure. The Universe does not lose track of anything. It does not know how. Everything that it is, is patterns in its memory.

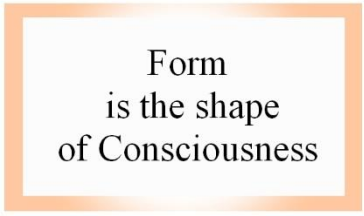
Some cell patterns survived and some didn't. Over time, successful cell patterns clumped together and made multi-celled creatures. Everything was remembered and became part of the cosmic pattern. Species were formed, and they came and went too, like the dinosaurs, one of the most successful patterns that lived on Earth for a hundred million years – much longer than we humans have done yet.



Eventually mammals, and this one mammal called *Homo sapiens* showed up, the one that we think is rather special. And in a way it is. Most of the coming story is about what it means to be our kind of being.

You don't need to remember any of the detail of what you have just read – not that there was much detail there. All that you need to know about the picture we have just painted is that the Universe is a kind of living experiment, with a memory. That memory contains information about everything that it has ever done or created. This means it holds the formulae for all that exists right now.

Physically, the Universe has memory of all of the patterns for making particles, atoms, molecules, galaxies, organic chemistry and people. It also has the memory of where every one of them is, because it doesn't have a way to forget. The memory is built in to the fabric of everything that is. You might even say that it IS the fabric of all that is, since it is before matter, and shapes everything that is energy INTO matter. Form is the shape of consciousness.[27]



It also has all the other patterns for all the unseen beings, the ones which are only patterns of energy information, the nature spirits and the non-incarnated beings (whatever you might conceive those to be), like "entities" and the person who used to be Great-Aunt Agatha.

What you need to take first from this picture is that the field of information is everywhere, in everything, and has no boundaries. It is in you and around you, between you and your family, you and your pets, between you and everything that you think of as "not you". And if you have ever played that consciousness game where you expand YOU way out, beyond the limits of your body and any geographical limits, that is the reality that you are engaging with. In case you thought that it was imaginary, it isn't.

This the field we have been putting forward since the start of this paper. More than being the invisible shaper of an arrangement of iron filings, it is first a memory store of everything that the universe has come to know about itself, but secondly and much more, an active space of continuing creation. There is a process that evolutionary biologist Elisabet Sahtouris calls "autopoiesis", or self-creating,[28] according to which we can view life as endlessly self-organising. Within it, dynamic balances are maintained between what benefits individuals and what benefits collectives. Similarly, ecosystems evolve from the blend of competition for resources to enable survival of one species with the collaboration that maximises the energy flow through the system as a whole and increases both richness and stability. While that dance as referenced in the title for Sahtouris's book Earthdance is beyond our scope here, it provides the picture of how the field is built and what we find there.

Humberto Maturana and Francisco Varela prefigured this biological perspective in the realm of knowledge itself, going beyond the history in which philosophy has argued its various points of view based largely on pure reasoning and analysis. In their beautifully argued book The Tree of Knowledge,[29] they extend the story as told here, reaching the conclusion that cognition is a "bringing forth of the world through the process of living itself". In common with Elisabet Sahtouris, they use the term "autopoietic" which Maturana had previously conceptualised in 1980 in Autopoiesis and Cognition. They provide thorough evidence and analysis that human reality is not "out there", and neither is it simply an internal construct that individuals develop. Rather it is a world in which they suggest that any individual who understands what they have said

> *"will be impelled to look at everything he does – smelling, seeing, building, preferring, rejecting, conversing – as a world brought forth in co-existence with other people."*

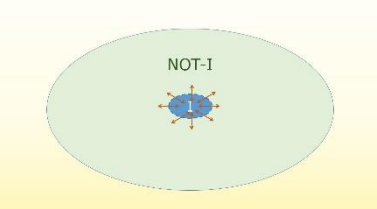
In consequence, reality has no independent point of reference. There is no external certainty available to validate our descriptions and assertions. The reality that humans live in is something we have constructed together and there is no absolute Truth. It is the biological basis of social life, a biological dynamic with deep roots leading to operational coherence in the social realm.

This is key to the realm of intuitive experience. As humans we are engaging with the field of information that the universe has constructed into its living systems materiality/physicality. At the same time, we are exploring the field of what is collectively believed. We are bumping into what Mummy, Daddy or Great-Aunt Agatha believed and into the entire collectivised constructs of Islam, Catholicism, Trumpism or Socialism. Everything is equally real and nothing at all is real, including you. This is not the territory of Descartes' "I doubt, therefore I think, therefore I am". Who you are is an informationally constructed entity in a realm of other such entities, but also an entity seemingly individualised as a physical body, with the appearance of separateness.

Beneath that appearance are unceasing exchanges in the realm of matter, electrons, photons and other particles that flow between your body and its environment. Several thousand million of your skin cells will have replaced themselves during the time it takes to read this paper. The you that you think is you has changed in the time taken to read this sentence, perhaps even as a result of reading this sentence.

There are numerous mystical, spiritual or religious perspectives regarding the notion of one-ness, from Buddhism through St. Theresa of Avila to more modern presentations with New Age or quantum consciousness frames. They have in common the perception that humans can experience their sense of self-vanishing so that they perceive themselves as embedded in or at one with all that is. Some call it non-dual reality. Some frame it as the only reality, saying that our experience of the dual is an illusion.

Buckminster Fuller takes the definition of "universe" in its literal sense, as with union or unity, as being a single entity, but points out that within it we immediately have the possibility of division into the "I" and the "Not-I". This is the human reality that we operate from whenever we cross the street. A non-dual experience with traffic returns us rapidly to the realm of the disincarnate. It is also the human reality that we function from when we engage with intuitive inquiry. The "I" seeks information from the "Not-I" that it is embedded in. And then Fuller has a further definition, that "*Universe* is the aggregate of all humanity's consciously apprehended and communicated nonsimultaneous and only partially overlapping experiences".[30] [My emphasis in italics.]



It is not possible in a paper such as this to disconnect science from its philosophical or metaphysical context. There are epistemological and existential questions – what can we know and who are we? – that humans have asked themselves for as long as writing has existed. In framing the above I felt it necessary to deal explicitly with such questions, albeit principally in order to set them to one side and focus on the application of this view of reality to our living experience.

Never before has the world been so aware of its interconnected wholeness in the material realm, and never more aware of systemic turbulence, sometimes encapsulated as VUCA conditions.[31] For these conditions, our previous ways of thinking regularly show themselves as inadequate with their linear cause-and-effect logic, binary right-wrong polarities and deliberate subdivision into fragments rather than understanding of systemic wholes. More intuitive ways of decision-making are becoming an essential survival tool. I note in passing that while Artificial Intelligence can do a great deal more than human brains to find larger systemic relationships, since AI does not have access to the information field itself, we should not assume that we can rely on its conclusions. Besides which, as several scary movies have portrayed, an AI system might rapidly conclude that the problem the planet is dealing with arises from the excessive numbers of human beings.

The purpose of this paper is therefore to encourage us to make use of our intuitive connection, and to bring these applications alongside of our rational, cognitive, intellectual brilliance in order to add both to the quantity of data available and to our ability to include it in our choice-forming processes. The thinking which generated our belief that we would reduce risks by establishing completely objective and reliable ways of knowing – i.e., scientific materialism – is the level of thinking which got us into this mess. That recognition should lead us now to Einstein's famous conclusion that solving such problems demands a new level of thinking. The problem-solving methods which have emerged from the intuitive world view meet with distrust from those who demand objective proof. By definition they are not part of the solution. Inevitably, mechanists who deny the existence of consciousness are unable to make use of its tools.

As the satirical documentary presenter Philomena Cunk (Diane Morgan) might put it, humanity stands at a fork in its crossroads. Whatever you make of that image, we do not have the option of living in both worlds and a choice of reality is being forced on us. We already know that there is no "new normal"; we are dealing collectively with the stress of that shift and with its consequences for us as individuals. In reviewing the nature of reality, we are also obliged to reconsider what all of this means for our view of ourselves.

Heisenberg's uncertainty principle prompted many questions about the nature of observation and the effect on what is observed. The territory being explored here straddles the boundary between human awareness and the remainder of reality – between the I and the Not-I. We need to take our existential and metaphysical questions a little further.

Who are you?

Consider for a moment these questions:

Are you a human being having a consciousness (spiritual) experience?

or

Are you a (spiritual) being of consciousness having a human experience?

I suggest that when the question is asked in that fashion, it is difficult to be both. Have you made your choice? Seeing yourself as a human may make it more difficult for you to regard yourself as fully embedded in the field. It leads to potentially greater separation from the flow. If you see yourself as a conscious being functioning as a human, it is easier to view yourself as a part of the All. However, it also may set up some challenges to your material conception of the world, to any pre-existing views you have about God (or whatever term you prefer for a "Higher Power") and to some of the more tricky parts of alternative reality such as ghosts and mediums. The choice has consequences, some of which might take further time and effort to resolve.

There are many theories about how humans think, and how we construct our world-view. Earlier I aligned with Maturana and Varela's view that we develop it through the process of living itself. I would like to extend that perspective with the psychological theory that human beings construct their reality. "*These authors believe that the* [cognitive] *core network may support self-projection: the ability to mentally project oneself from the present moment into a simulation of another time, place, or perspective."*[32] Cutting a long story short, Raymond Mar concludes, "*There is substantial overlap in the brain networks used to understand stories and those used to navigate interactions with others — in particular, interactions in which we're trying to figure out the thoughts and feelings of others."*

The bottom line is that humans tell stories. We tell them to ourselves. Our engagement with the world is all framed in terms of the stories that we have about it. We do this because to thrive psychologically as well as biologically, we have to reduce uncertainty. We do not function at the level of raw data, which would be self-evidently overwhelming. We make meaning of the world, weaving factual data into patterns, associating contexts and episodes. We create constructs – labels that we use in those narratives,[33] we make maps[34] and we organise our reasons why, the priorities that drive our choices.[35]

So what is your story and in what way does it support or undermine a belief that intuition exists, that you personally can be intuitive and the ways in which you might be effective in using it?

I suggest that in addition to the two options offered above – that you might define yourself either in terms of your human form or in the frame of some belief that consciousness itself is primary – that you consider the possibility that you are neither of these. Who you are is the experience itself, the story-teller and the story. And as Maturana and Varela suggest,[36] you create them by the process of living.

This paper is a story too, which you can believe or not believe. You are free to choose any of the options or reject all of them. The first purpose of the questions was to make you think. But what creates the greatest possibility? I offer the suggestion that you allow yourself to simply be the story. This is because I believe that it is easier to understand and engage with both the concept of intuition and with its practical use if you set yourself and your "I" as free as possible in your relationship with the "Not-I". Doing so helps reduce the sense of having to be "right" or "accurate". More important, it opens your inner space and all of the resonating detector processes – regardless of whether I have described these or not – to receive the flow of information without preconceptions, constraints and filters. It is a space of allowance and non-judgement. It allows what is to be what it is and it allows you to be who you are, free of any impulse to make the Universe or yourself wrong.

How do you use the tools?

This question could be the subject of a later paper; here the goal is only to provide a high-level sense of what the tools are and how to engage with them.

Since providing the earlier two definitions of intuition, the journey of this investigation has widened the territory to include some more forms of awareness. While they might seem to be something other than intuition, their use of similar forms of connection prompts me to include them.

I also wish to make a distinction between two other ways of viewing intuitive experience. It is common for the word to be used in the same way as a "hunch" or something else which conveys a spontaneous and unlooked-for awareness that I will describe as passive. There are other ways of using intuition that are active, involving an intentional inquiry or investigation or a deliberate choice to connect. My own first experience was an example of such active intention.

Here is an incomplete but indicative list, roughly increasing in active engagement. The first three may be more comfortable to people who view consciousness as being internal, but are willing to accept that their inner awareness, unconscious processes or "higher self" are capable of recognising things that their everyday cognitive mind would not, or may detect patterns in the data that would not show up analytically.

I am intentionally offering no judgement about any of these examples. All are consistent with the view of an information field as all such phenomena are possible and I know of no criteria by which to determine what is or is not real. They are included in order that you can consider what they mean to

you, and which you experience as stretching your own constructs or taking them beyond their breaking point. You may also find one arena prompts particular curiosity.

1. *Information that you notice.*
   Sometimes ideas simply come into your mind which you might notice, or might not. Sometimes it will happen that a later event will trigger your awareness, perhaps in an "if only I had paid attention to that" way.
2. *Noticing what you notice.*
   Some individuals, and some quasi-shamanistic training processes, lead to an intentional choice to consistently scan one's own field of awareness and notice what it is drawn to. This covers not only the stream of internal narrative, but observation of the things, messages or events that attract your attention. Perhaps you find yourself looking at a particular advertising hoarding, or a song lodges in your head, or you are unusually aware today of the colour orange. Someone might say something, or you might overhear a comment that sticks out, as if somehow highlighted. You might equally notice that there is an emotional undercurrent, have a sudden unexplained sense about a person, like something not being spoken or a lie being told. There could be a repeated "pop-up" feeling that is not part of your regular repertoire, maybe a simple sensation that something is "off", without any apparent explanation. These may or may not be significant and the task is to develop the practice of noticing. Be aware too, of how many different ways there are for information to be revealed.
3. *Asking for something to "show up".*
   This can be a practice such as requesting a dream experience that will answer a question that you have, or holding a question when you go to sleep with the request that your first thought on waking will tell you something relevant that you need to know. This can be combined with number 2, asking to notice something that may offer a clue.
4. *Meditative scan.*
   This is like an extension of mindfulness techniques where you settle your inner mind and then "open up" to receive. I believe it can work for some people, but my view in general is that the Universe responds to questions.
5. *Programmed guidance.*
   There are many products and I don't pretend to be familiar with them. Often they support a more focused form of number 4 – leading your enquiry with suggestions and questions. They may have a specific direction of focus, such as work on your own health issues, or relationships or financial challenges and they may extend more into "create your reality" concepts which I have not covered here. I have other materials on that topic. [37]
6. *Intentional Inquiry.*
   My training colleague, Maiken Piil, uses this technique a lot, for example to tune in to a coaching client prior to a session and as a life guidance tool. It is perhaps the most widespread of active techniques because it can be oriented to just about any question, which makes it powerful and more or less unlimited in application. Intuition is not a "gift", as all humans have it, but it is possible to be gifted, like a Federer, a Ronaldo or a great musician. In either case, development to high levels takes time, practice, consistent intention and effort, but even novices can get results.[38]
7. *Shamanism.*
   As described briefly in the text above.
8. *Energy healing, whether hands-on or remote.*
   There are so many forms of this. The Silva Method was the first I learned and the source of

a profound experience with the healing of a person with AIDS. I tell this in The Science of Possibility and in my short book Your Access to Possibility. However, perhaps the most widely known of these techniques is Reiki.

9. *Gardening with the spirits of nature.*
   Exemplified by the work at Findhorn and Perelandra as mentioned above.
10. *Divination.*
    The ability to tune in to an object and sense information about its history, where it has been, and who has been in contact with it.
11. *Constellations work.*
    Developed by Dr Bert Hellinger, a method of working with the ancestral influences in families[39] and the contextual relationship shapers in organisations.[40] Based on what he learned from 16 years as a missionary with the Zulu people in South Africa.
12. *Entity work.*
    Practitioners who work with the way in which non-incarnated information energy systems may affect individuals.
13. *Space clearing.*
    Working with residual information and flows in buildings.
14. *Geopathic and land energy work.*
    Specialising in the informational field content that governs the health of energy systems in the land.
15. *Mediumship.*
    Most people have heard of mediums – those who specialise in connecting with individuals who are no longer in their bodies and have "crossed over".
16. *Channeling.*
    This is connection with an individual intelligence, or sometimes a collective, that are located somewhere in the field of consciousness and who seemingly choose to make themselves available to communicators on Earth. There have been some famous examples of such intelligences, such as Seth and Kryon, and whether you believe in them or not, they have some very interesting messages and perspectives. In this category I include some of the more generic identities, such as the "Ascended Masters".
17. *Homeopathy.*
    This is a field-based use of information signatures from substances as a basis for low-energy triggers to the body intelligence in awakening its own healing capabilities.[41]
18. *Trauma-based therapy.*
    Crossing the boundary between information in the field of families or societal systems and the individual internal beliefs and embodied flows affecting human addiction, anxiety, depression and relationships, among many other conditions, and the causation of physical illness.[42]

Note that the last two items in this list relate to the aspects of this science (as with Timmy's story) where the science of intuition transitions into the areas directly affecting human physiology. At this point, the list could include hundreds of modalities both ancient and modern in the arena of complementary medicine and embodied psychotherapy. Since the information field itself has no boundaries and we are operating in the context of one-ness, this transition space should be recognised. In particular, many of the practitioners of these modalities use intuition as part of their toolset, hence their inclusion here.

In all the above practices, the way that information comes to you will be specific to the individual. I don't propose to cover this in detail, but please understand that there are conventional beliefs and

assumptions that are not true. The common word “clairvoyance” implies a visual event and people who are learning to develop intuition may start looking for pictures when perhaps only a third of people function this way. There are just as many who are “clairaudient” – the information comes like an internal narrative. Another large group simply have ideas, concepts show up and others have some kind of bodily response – there is a reason why our language has the expression “gut-feel”. Please understand that any of ones senses, or all of them, in any combination may be involved.

Closing summary

The intention of this paper was to present the science that would explain intuitive capability. It will have become obvious that intuition is one thread in a tapestry with much wider implications. Nevertheless, I would like to end with a focus on the key elements of the scientific narrative.

- There has been a polarisation between views of the Universe as a material/energetic entity and as a place of consciousness and spirit.
- It is possible to bring these two aspects of reality together when information is seen as a determinant of the way that energy is shaped when it becomes matter.
- This process of shaping has been active from the very beginning of the Universe’s formation
- The process is autopoietic; that is, it is self-organising and emergent, building from its own resources.
- The process can be tracked through the mathematics and physics of energy relationships in the formation of particles.
- It can be seen in the way that, over extended periods of time, matter built larger and more complex inorganic structures (atoms and molecules) and subsequently organic ones (amino acids, proteins and nucleotide replication mechanisms) that were the basis for cellular life.
- As cellular life developed, the self-organising processes embraced the dynamics of competition and collaboration to create increasingly complex ecosystems containing larger species of organism.
- Larger organisms such as mammals are members of ecosystems; they also contain within them ecosystems of cells that function in a coordinated way as collections of organs. (Note that those ecosystems are supported by large numbers of cohabiting and collaborating cells such as probiotics).
- There are several mechanisms that co-ordinate those trillions of cells which operate at a variety of cycle speeds (down to femto-second and quantum level) and are highly sensitive to very small changes, internally and externally.
- The mechanisms involved are not closed but are continually exchanging particles, energy and information with the surroundings. They are sensitive to the field, able to “read” and potentially also “write”.
- These mechanisms provide the aspects of human consciousness that enable intuitive communication and extend also into spiritual experience and to the many other ways in which humans can work with information-field based applications.
- The universe described here is one that fits the term “panentheistic”; its frame for the context of divinity is one in which the field itself holds omnipresence, omniscience and omnipotence. It is entirely open regarding personal framing for anything that might be called “God”.
- This cosmology also leaves the personal space open for how one might frame such aspects of existence as “soul” or “higher self”, and for any considerations of individual spirit regarding reincarnation, past lives, life-after-death or the many other possible ways that people describe and experience those possibilities.

Links to more information and resources

There is more information about The Science of Possibility here.

For more information about Spiritual Intelligence (SQ21), visit www.deepchange.com/index.

If you are interested in online intuition trainings, you can find it at https://maikenpiil.com/reading-the-field/.

My intuition training packages and reality-creation materials can be found via the Access to Possibility Facebook group.

With huge thanks to Petra Pieterse for her brilliant editorial support

Jon Freeman
July 2021

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[15] Eliot Cowan, Plant Spirit Medicine. https://plantspiritmedicine.org/.
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[17] Carlos Castaneda: A Separate Reality. https://drive.google.com/file/d/0BxcFZf7w4hnBMmQyMjYwMzItYTEyMi00ZjM0LThiN2YtMmQ0OW

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