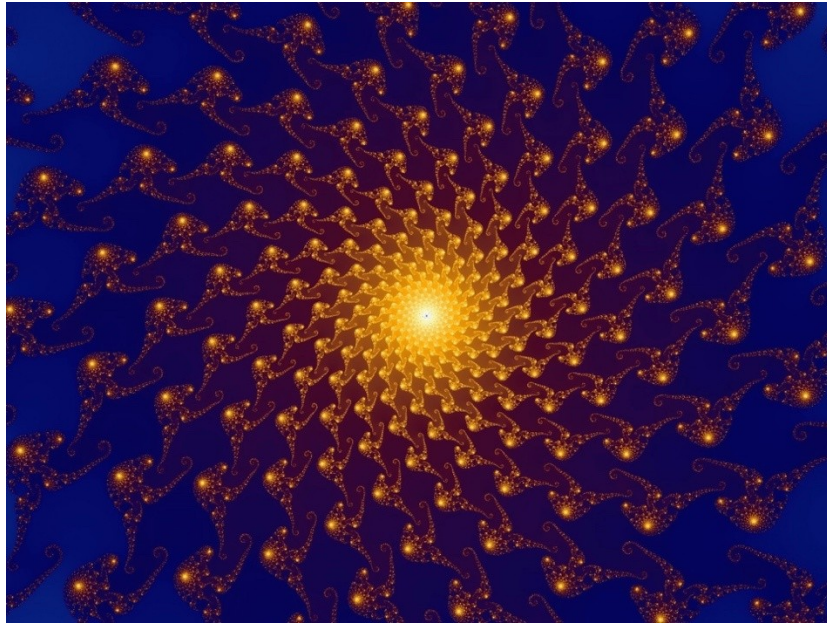


# Uniting Natural and Esoteric Sciences: Pathway to the Deep Secrets of the Universe

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## Introduction

It has become increasingly clear that the mechanistic view of the world and of life is literally killing the Earth as it was configured at the time of our birth as a species, and that we urgently need to transform our relationship with our planetary home. This entails not merely developing 'clean green' technologies to mend our ways, but we must also restore our ancient covenant with the spiritual body of the Earth, sometimes called Gaia or *anima mundi*. Environmental science has been slow to embrace or even acknowledge this latter need, largely because of widespread rejection of spiritual principles and realities in mainstream science.

James Lovelock was perhaps the first scientist to speak of a living Earth, in the form of his Gaia hypothesis. His critical insight was inspired by the geological fact that the proportion of oxygen in Earth's atmosphere has remained roughly constant at habitable levels for the last 300 million years. Perhaps life was somehow involved not only in making the atmospheric gases, but also in regulating their quantities so as to maintain levels suitable for life itself over vast periods of time. A second insight was that life must also have regulated our planet's temperature. In other

words, the planet appeared to be a huge living organism with its own remarkable emergent capacity for self-regulation.

Our modern civilization's one-sided divorce from the spiritual reality of the Earth and the Cosmos has had disastrous consequences, and the need for reconciliation is now urgent, lest we destroy ourselves and countless other species. The traditional peoples of the world have long believed in an Earth Mother who bestows life and receives the dead into her body. The ancient Greeks called her Gaia, the earthly presence of *anima mundi*, the soul of the world. Long before the classical Greek period, Gaia was considered to be the most powerful of all deities, far more important than Zeus and the Olympian pantheon. The gradual shift to mind-based abstract philosophy, and its offspring, science, led to an almost 4,000-year exile of Gaia from human consciousness, except among indigenous cultures and many of the world's spiritual traditions. Science has largely rejected religion, in part because religious beliefs and practices appear arbitrary, culture-bound, and mutually contradictory.

In this article we begin by borrowing on Einstein's relativity theory to explore the possibility of universal spiritual truth, akin to the 'perennial philosophy.' We then draw insights from quantum physics and fractal geometry to shed further light on the ontological superstructure of major world religions, which points to an ultimate shared spiritual reality that is common to them all. Next we summarize the need for science to embrace the spiritual dimension of reality, which underpins all religions despite their differences.

### **Relativity Theory and Universal Spiritual Truth**

Einstein's special relativity theory is derived from just two simple postulates: (1) The laws of physics should be the same in all reference frames, and (2) the speed of light is universal in all inertial frames of reference. The first postulate is Einstein's personal conviction of the universal applicability of scientific laws, and the second was the unexpected (at that time) experimental finding from the Michelson-Morley experiment. Taken together these two postulates proved to be powerful medicine, and launched the profound revolution and paradigm shift of relativity theory at the turn of the twentieth century.

If we "extrapolate" Einstein's two postulates to spirituality, my sense is that a parallel revolution in spirituality and religion is indicated, and is now beginning to emerge. Specifically, analogous to Einstein's postulates, let us propose: (1) the laws of spirituality, whatever they are, should be essentially the same in all (legitimate) religious frames of reference. And (2) spiritual light is universal across the religions. For this second postulate, if we read the scriptures and mystics, we find that the phenomenon of divine light is evidently universal. All religions speak of a supreme Light, which functions in virtually identical ways across the religions, both theistic

and non-theistic. So analogous to the Michelson-Morley experiment, this is an 'experimental fact,' observed across all religious frames of reference.

Some examples will illustrate: This Light is called *Jyothisam* in the Bhagavad-Gita, the one Illuminator of all other lights. In the Brahmarahasya Upanishad, "God is Supreme Light. By God's Light all else shines." In the Qur'an, "God is the light of the heavens and the earth," and this light is referred to as *Nur an Nur* (Qur'an 24:35), or Light upon light. In the Jewish Torah it is also referenced, "In Thy Light, we see light" (Psalm 36:9). In Christianity, "God is light" (1 John 1:5), and from Jesus, "I am the light of the world" (John 8:12), and even more importantly, "*You* are the light of the world" (Matt 5:14). Finally, in Buddhism, "Thine own consciousness ... is the Immutable Light" (Amitabha Buddha). So the second postulate (derived from scriptural foundations and mystical experience) is: there exists a universal spiritual Light, which goes by different names in different religions, and it functions essentially identically in all of them.

With these two postulates, we can glimpse the basis for an emerging revolution in spirituality and religion that parallels the earlier revolution in physics. This could help to resolve (or *dissolve*) the fruitless conflicts between diverse religious theologies and dogmas that characterize what we might call today's "classical religion." The essence of this spiritual revolution is this: there is *one* dynamic spiritual Truth or Reality, and there are many religions and spiritual traditions that express this *Oneness* in different ways. Thus the world's religions are not mutually contradictory, but mutually complementary.

Einstein's relativity theory showed that the seeming absolutes of space and time are not absolute; so too with many of the seeming "absolutes" of theological doctrines and dogmas within the various religions. What is "absolute" is the divine Light that shines through them all, and although it goes by different names in different traditions, this universal Light is the glue that binds the religions together in a radiant illumination of a single ultimate spiritual reality. The disparate religions can be viewed as different rays of this universal Light and Truth. Each ray has a unique color, is true and complete unto itself, and takes its place within the larger spectrum of the one supreme Light. No color is omitted, and no ray is superior to any other ray.

This is not to deny the rich and vast differences between the various religions, nor would a universal spirituality ever replace the particular religions, with all their unique teachings, liturgies, and specific practices. On the contrary, such a universal spirituality would *uplift and celebrate* the rich diversity of religious and spiritual faiths, while also simultaneously revealing them to be fundamentally *united* at their core in a kind of universal spirituality that is common to them all. To posit that one religion is ultimately truer than another would be tantamount to saying that blue

light is better than yellow light, when both are simply emanations of one and the same universal light.

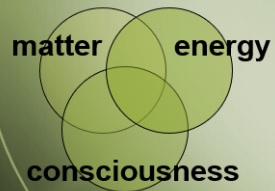
Closely related to this are striking parallels between mystical spirituality and Einstein's general relativity, which incorporates gravity and accelerated frames of reference. For example, Einstein showed that space-time does not exist independently, but only as an emergent structural quality of the gravitational field. A key implication is that space and time depend for their existence on matter. Take away matter, and space and time also disappear. So what remains in that case? Nothing remains, according to Einstein. Yet this state of nothingness is not mere emptiness, for it contains latent potential for matter, space, and time to reappear. This is in precise accord with the pioneering theory of the "implicate order" outlined briefly below, which unifies physical and spiritual domains, and was developed by physicist David Bohm who was a colleague of Einstein.

This nothingness, out of which time and space emerge, bears close similarity to the realms of nonbeing or nonexistence spoken about by mystics across many traditions. Referred to by different names—such as *shunyata* in Buddhism, *nada* in the mysticism of St. John of the Cross, *fana* or annihilation in Sufism, or the "dazzling darkness"—this realm of nonexistence is fundamental to the spiritual domain. As the Naqshbandi Sufi master Radha Mohan Lal puts it, "There is nothing but nothingness." Indeed, nonexistence is more fundamental than existence, for all existence emerges from nonexistence. Similarly, Bohm's invisible implicate order described below is more real and fundamental than the 'explicate order' that comprises the physical universe.

### **Bohm's holomovement and the Implicate order**

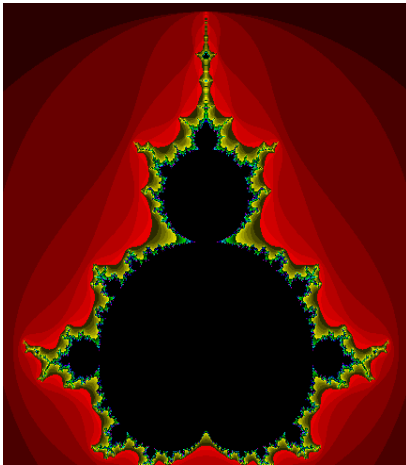
David Bohm developed a unique 'ontological interpretation' of quantum physics, which is today enjoying much renewed attention in the physics community. Bohm characterizes the fundamental nature of reality as the "holomovement," to suggest a dynamic holographic structure of reality. He had an important insight, I think long before many others did, that there are *three* fundamental components to reality (**Slide 2**), not just two. Not only energy and matter, but there is a *third* essential component of reality that Bohm called "meaning" or "consciousness" (he used the terms synonymously). The point he emphasized was that consciousness is an *inherent* part of reality and not just an abstract or ethereal quality, having its existence only in the mind. Bohm proposed that energy, matter, and consciousness are the three irreducible elements of reality, each of which contains or enfolds the other two.

## *Three Foundations of Reality*

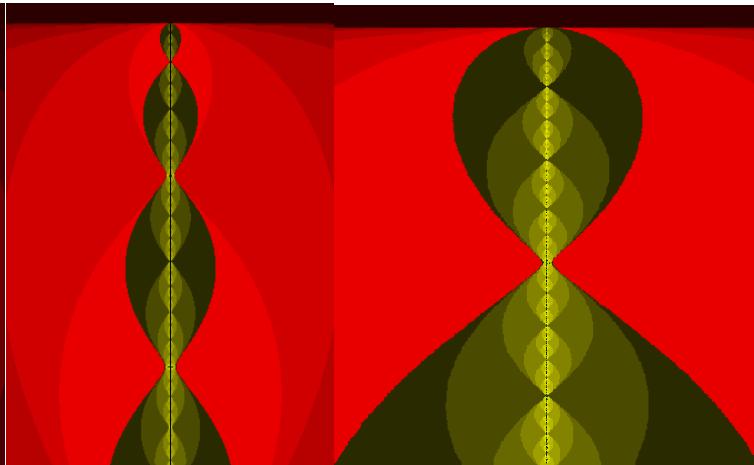


- Beyond  $E=mc^2$
- Reality consists of matter, energy, **AND**
- **meaning, or consciousness**

Slide 2

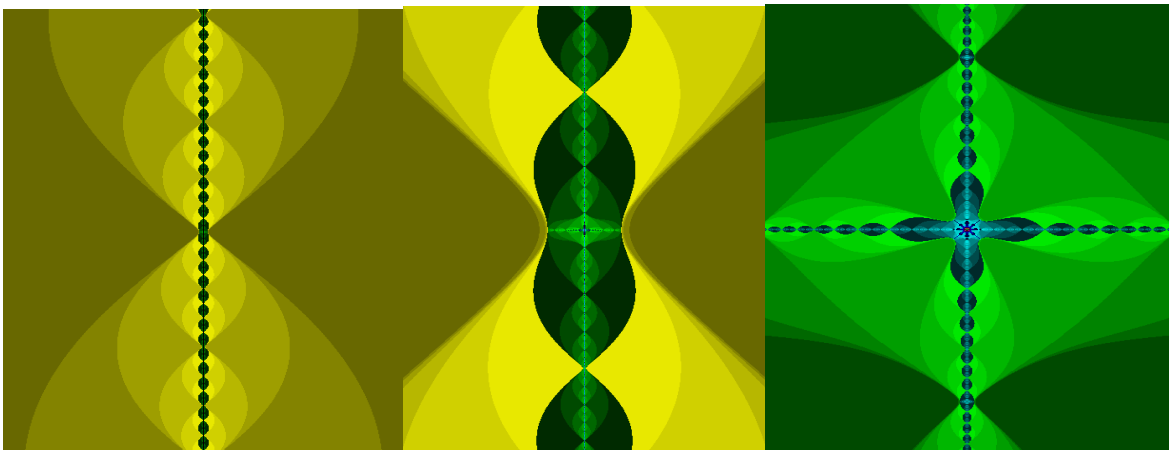


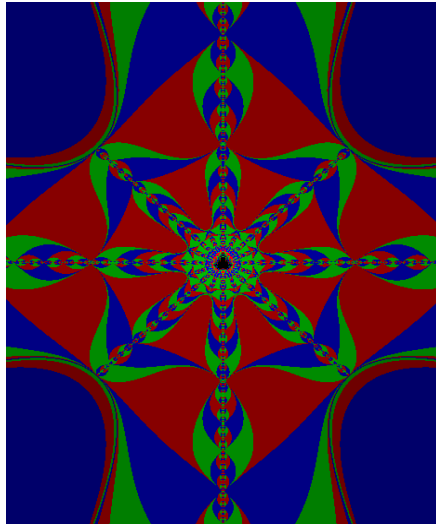
Slide 3



Slide 4

Slide 5



**Slide 6****Slide 7****Slide 8****Slide 9****Slide 10**

Bohm developed a theory of what he called the “implicate” and “explicate” orders. The explicate order is essentially the physical universe, and the implicate order is the rest of reality from which matter, space, and time emerge. It’s tempting to assume that the explicate order is the primary reality, with its 100 billion galaxies, each of which has 100 billion stars, whereas the implicate order is a secondary, invisible subtle energy field of some sort. For Bohm it was precisely the opposite, which he illustrated with an analogy: the explicate order (physical universe) is analogous to the foam on the waves of the ocean, whereas the implicate order is the ocean itself.

To unpack Bohm’s holomovement, one of the great recent discoveries in modern physics is that the universe has a fractal-like, or holographic structure. The simplest example of this is the Mandelbrot set, an extremely elegant mathematical figure generated in the complex plane from the nonlinear iterative process ( $Z_{n+1} = Z_n^2 + Z_0$ ). This set is shown in (**Slide 3**) (It is rotated 90° from how it is usually depicted, so that it looks more like a Buddha sitting in meditation, as a metaphorical resemblance).

The Mandelbrot set exhibits self-similarity on different scales, as exhibited in Slides 4 through 10, each of which is zoomed in from the previous slide. Reaching slide 10, we find the same structure as the original, on a vastly smaller scale, 136 million times smaller. But it has all of the intricacy and complexity of the original, and if we delve into this structure, it has all of those same self-similarities embedded within it. In these images, the Mandelbrot set itself is colored black, and the boundary of the set is printed a different color for each pixel, depending on how rapidly a trajectory originating in that pixel diverges to infinity.

Fractal patterns are found throughout the natural world, as illustrated in Slides 12



through 16, showing a fern, Romanesque broccoli, tree branches, lightning, and blood vessels in a human eye. In each case, if a small part of the figure is magnified, or zoomed in, it has the same or nearly identical structure to the larger form. The technical term for this is “scale invariance,” or self-similarity. Intricate examples of fractal forms are also found in the human body, including the respiratory, circulatory, and nervous systems, all of which exhibit branches that divide, and then subdivide again and again. The entire circulatory system of the human being has a fractal structure as does the trachea in the lungs. Once self-similarity or scale invariance is recognized, one can readily recognize fractal patterns in many natural phenomena.



**Slide 11**



**Slide 12**



**Slide 13**



**Slide 14**



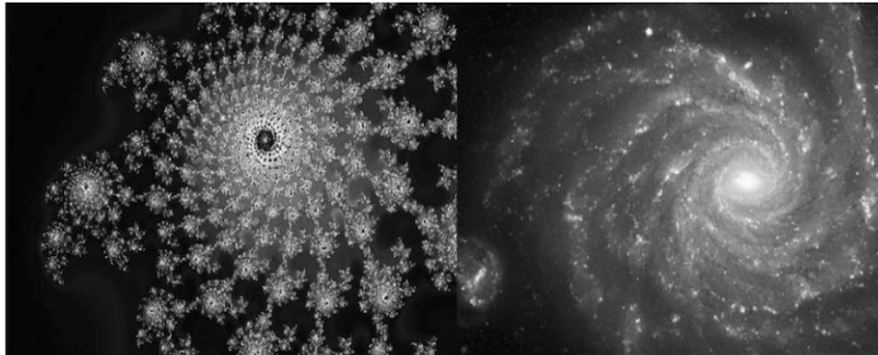
**Slide 15**



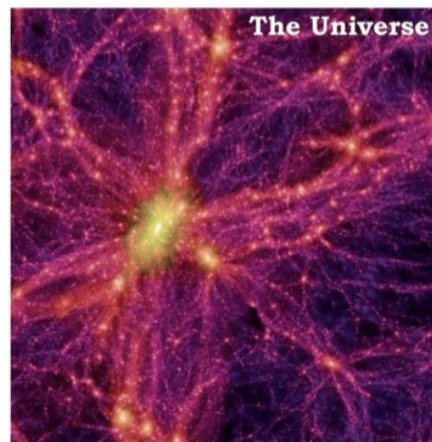
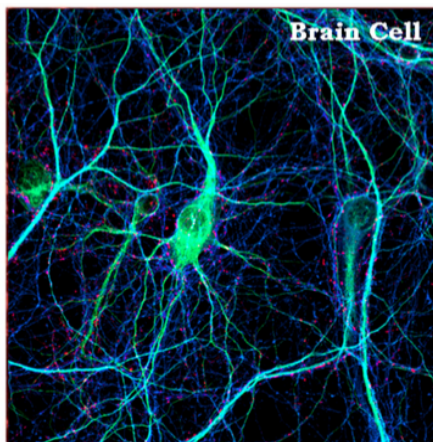
**Slide 16**

*Spiral from  
Mandelbrot Set*

*Photograph of  
Grand Spiral Galaxy*



**Slide 17**





### Slide 18

Fractals clearly possess a remarkable power to simulate the creative process in nature in some way. Other fractal examples are shown in (**Slides 17 and 18**). In Slide 18, on the left side is an image of neurons of the brain, with a scale of a few microns; the right side is an astrophysics image of the universe, with a scale of billions of light years across. The structural similarity is readily apparent at these vastly different scales.

### Consciousness has a fractal structure

What has been said up to this point here is accepted mainstream science, but now I want to apply it to the spiritual and consciousness dimension. What I propose is that fractals are a modern scientific discovery of the ancient hermetic “Principle of Correspondence,” sometimes articulated by the ancient mystics, “As above, so below.” “As within, so without.” The microcosm replicates the macrocosm. In particular, I propose is that *human spiritual consciousness itself has a fractal structure* of some kind, and that mathematical fractals are a consequence of that larger, grander fractal structure of human or spiritual consciousness.

Fractals came into existence with the beginning of numbers; they are a natural property of numbers. We discovered them only because we finally developed the computing power to be able to observe them, but fractals were there all along. They were ‘born’ or created at the moment of the Big Bang (if we entertain that hypothesis)—at the very moment that oneness came into multiplicity. So fractals predate humanity, and they predate the creation of the Earth. They are inherent in multiplicity itself.

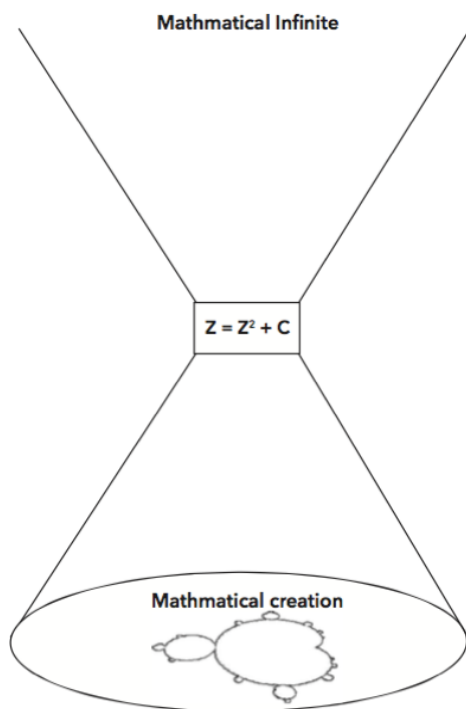
Rumi, the great mystical poet, says “The secret turning in your heart is the entire universe turning.” Rumi is pointing to a subtle cosmic process that is fully replicated in the depths of the heart. This is the essence of a core insight we find across the spiritual traditions: the inmost essence of the human being is one with the infinite, transcendent essence of the supreme reality (called ‘God’, or ‘Dharmakaya’ in Buddhism). The infinite divine is contained within the seemingly finite human being.

What I want to suggest is that fractals are a kind of signature or ‘foot print’ of divinity. There is a direct analogy to divine consciousness, of which the fractal is an example: at microscopic scales we find self-similar structures that are virtually identical to the macroscopic structure. The essence of the entire structure is then infinities within infinities within infinities, ad infinitum. This is analogous to how divine consciousness works, and a fractal structure of consciousness elegantly explains why mystics can rightly claim they have experienced the full divinity of God, revealed within the depths of their own being.

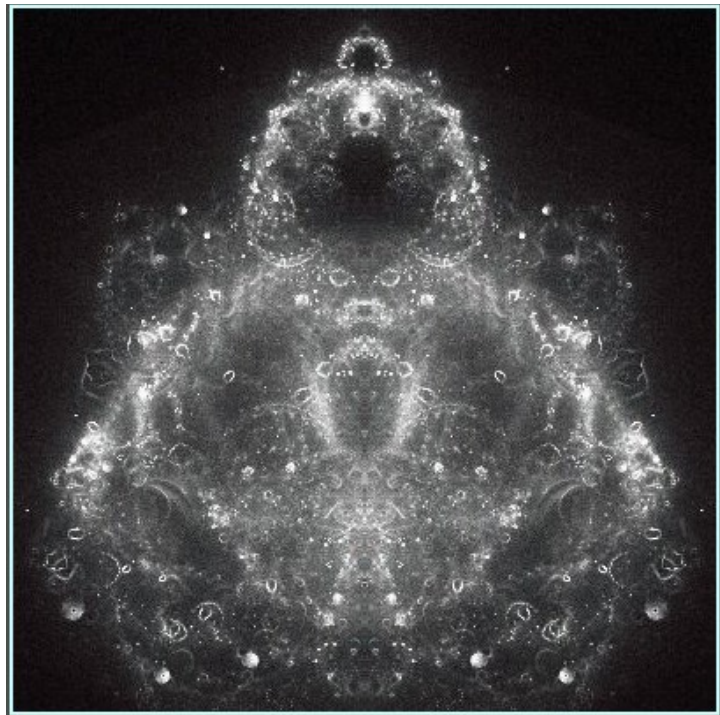
The fractal process in mathematics is illustrated schematically in Slide 23. At the top is the “mathematical infinite” representing all possible mathematical

formulas. From this infinite set, we narrow down to one particular formula—in this case, the iterative equation of the Mandelbrot set, as shown in the box in the center. This results in the magnificent, complex mathematical structure of the Mandelbrot set, shown at the bottom of the figure.

Another depiction of the Mandelbrot set is shown in (**Slide 24**), using a different plotting algorithm. Here, instead of plotting the rapidity of the divergence to infinity, each pixel is plotted by how often it is visited by various trajectories. This gives an entirely different visual image of the same Mandelbrot set. It has an amazing kind of resemblance to a kind of shimmering, Eastern deity.

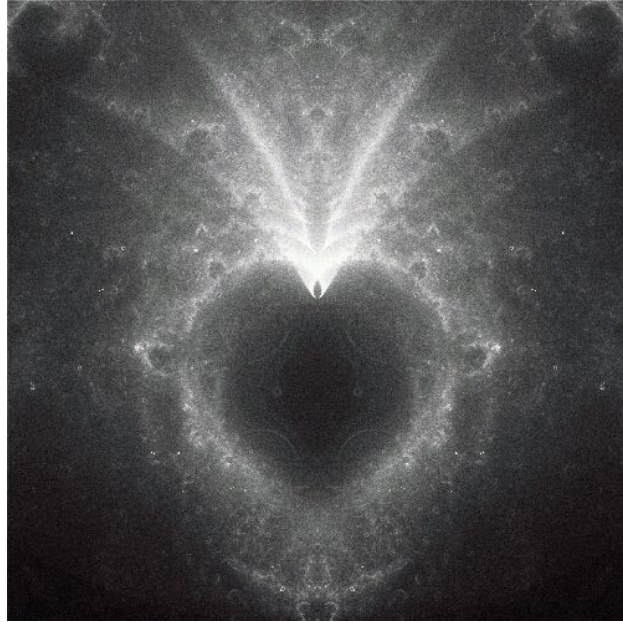


**Slide 23**

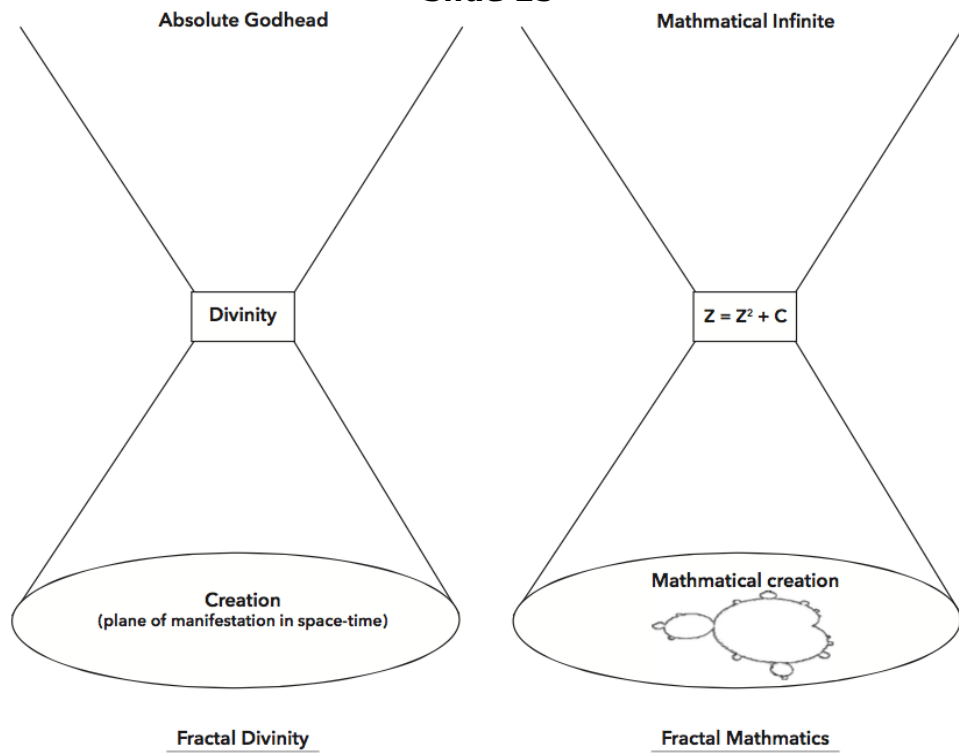


**Slide 24**

Note that if we zoom in to the area that appears like a “third eye” of sorts, we find something that looks quite like a cosmic heart (**Slide 25**). Orthodox scientists will say this is just a coincidence, or a psychological projection on our part, but perhaps we should be at least open to symbolic mysteries here. In any case, this figure is simply a mathematical plot of the Mandelbrot set, and it is visually striking.



**Slide 25**



## Fractal consciousness across the world religions

Let us compare the creative process of divinity with fractal mathematics, as illustrated schematically in (**Slide 25**). On the right-hand side, we see the mathematical fractal process reproduced from above (Slide 23). On the left, we have a schematic of the spiritual creative process. The Absolute, infinite Godhead is

depicted at the top, which self-effuses into some particular expression of divinity. In Christianity, for example, this is called the *Logos*, or divine Word; “In the beginning was the Word, the Word was with God, and the Word was God.” There is an effusion of the Absolute Godhead or infinite Dharmakaya into a particular ordering principle of divinity, and this in turn gives rise to a particular emanation of divinity, with its corresponding religious tradition. In Christianity the Logos manifests as the Christian Trinity. In Hinduism we see a similar Hindu trinity. In Islam, we see Allah plus the 99 names. In Buddhism we see the Samboghakaya. They are different structures, yet all made of Light on the plane of divinity, and they give rise to the different religions—which form a kind of spectrum.

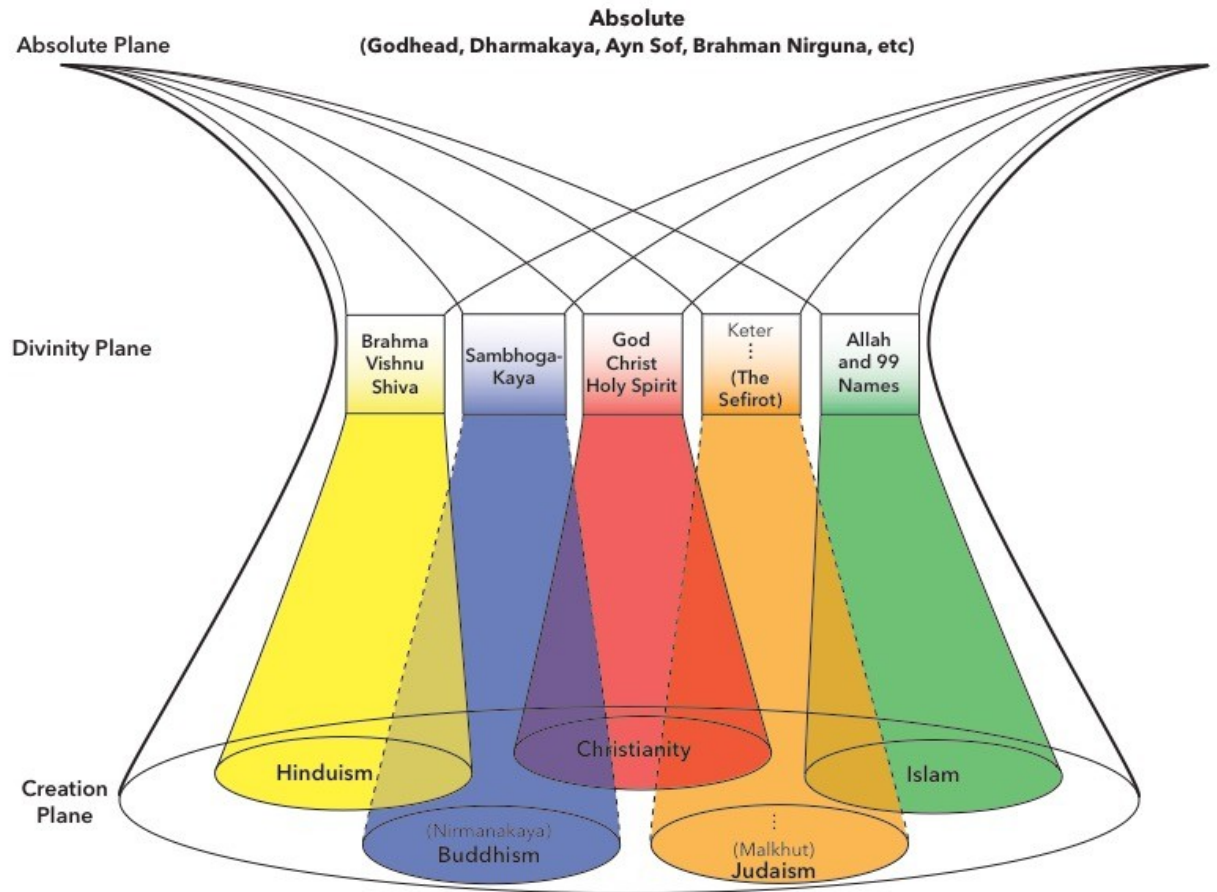
This leads to this schematic diagram of the ontological superstructure of the major world religions. In each case there is a divine utterance or Word of some kind, which creates on the plane of divinity. Each one is like a particular refracted ray of divine light into a particular color and expression of divinity. A version of this principle is found in every mystical tradition, expressed in various forms. For example, in Buddhism and Hinduism, it appears as the concept of Indra’s Net, which is described in the Buddhist Avatamsaka Sutra as follows:

Far away in the heavenly abode of the great god Indra, there is a wonderful net which has been hung by some cunning artificer in such a manner that it stretches out infinitely in all directions. In accordance with the extravagant tastes of deities, the artificer has hung a single glittering jewel in each “eye” of the net, and since the net itself is infinite in dimension, the jewels are infinite in number. There hang the jewels, glittering like stars in the first magnitude, a wonderful sight to behold. If we now arbitrarily select one of these jewels for inspection and look closely at it, we will discover that in its polished surface there are reflected all the other jewels in the net, infinite in number. Not only that, but each of the jewels reflected in this one jewel is *also* reflecting all the other jewels, so that there is an infinite reflecting process occurring.<sup>i</sup>

Indra’s Net offers an exquisite image of infinities within infinities of profound interconnectedness, characterized by self-similarity on multiple scales. This fractal structure of Divinity is exquisitely articulated by Plotinus in the third century A.D.:

There everything is transparent, nothing dark, nothing resistant; every being is lucid to every other, in breadth and depth; light runs through light. And each of them contains all within itself, and at the same time sees all in every

other, so that everywhere there is all, and all is all, and each is all, and infinite is the glory. Each of them is great; the small is great: stars and sun. While some manner of being is dominant in each, all are mirrored in every other.<sup>ii</sup>



**Slide 26**

## **The Holographic principle**

In recent years, Bohm's holomovement is receiving a new level of validation in several ways. Not only have physicists have continued to develop what is now called Bohmian Mechanics, but in the longstanding attempt to reconcile quantum physics with relativity theory, several new theoretical developments have emerged. The most important of these for our purposes is the "holographic principle," which states that our three-plus-one dimensional universe (space + time) is *itself* a holographic



projection from a two-dimensional hyperspace, or “nonlocal pre-space”, which lies beyond our universe. This can be simplistically visualized as a 3-d spherical shape evolves over in time, plus a 2-d plane some distance away (or perhaps a series of 2-d planes). The sphere represents the entire universe, and the plane represents the non-local 2-d “holographic plate” that produces, via high frequency energy interactions, the sphere as its holographic projection. In mathematics, the 2-d space is called a brane (from membrane), not to be confused with ‘brain’ of course, but there are symbolic parallels, because the brane contains all the requisite information that creates the entire universe, which is its “brane-child” hologram. The energy interactions between brane and universe occur at such a high frequency that they cannot be detected by today’s scientific instrumentation. The universe does not exist independently, but rather is created and sustained in its entirety from moment to moment. If the energy interacting with the brane were to cease for any reason, the entire universe would vanish instantly.

This view has come through the physics of black holes, and the recognition that all the informational content of all the objects that have fallen into a black hole are entirely recorded or preserved in surface fluctuations of the [event horizon](#). In short, every aspect of the 3-d interior of the black hole is fully described by the information on its 2-d surface. This has provided a mathematical breakthrough that directly links quantum gravity theories (formulated in terms of string theory or M theory) with conformal field theories that describe elementary particles, thereby providing the long-sought link between general relativity theory and quantum mechanics.

According to physicist Leonard Susskind, one of the leading pioneers in this field, “This whole holographic story is the most radical thing that has happened to our understanding of space, time, and matter, since the invention of QM and relativity. It is something very, very different. Where it’s going, what does it explain, how do we explain it? We don’t know. We are on the cusp of a major paradigm shift about how the world works.”

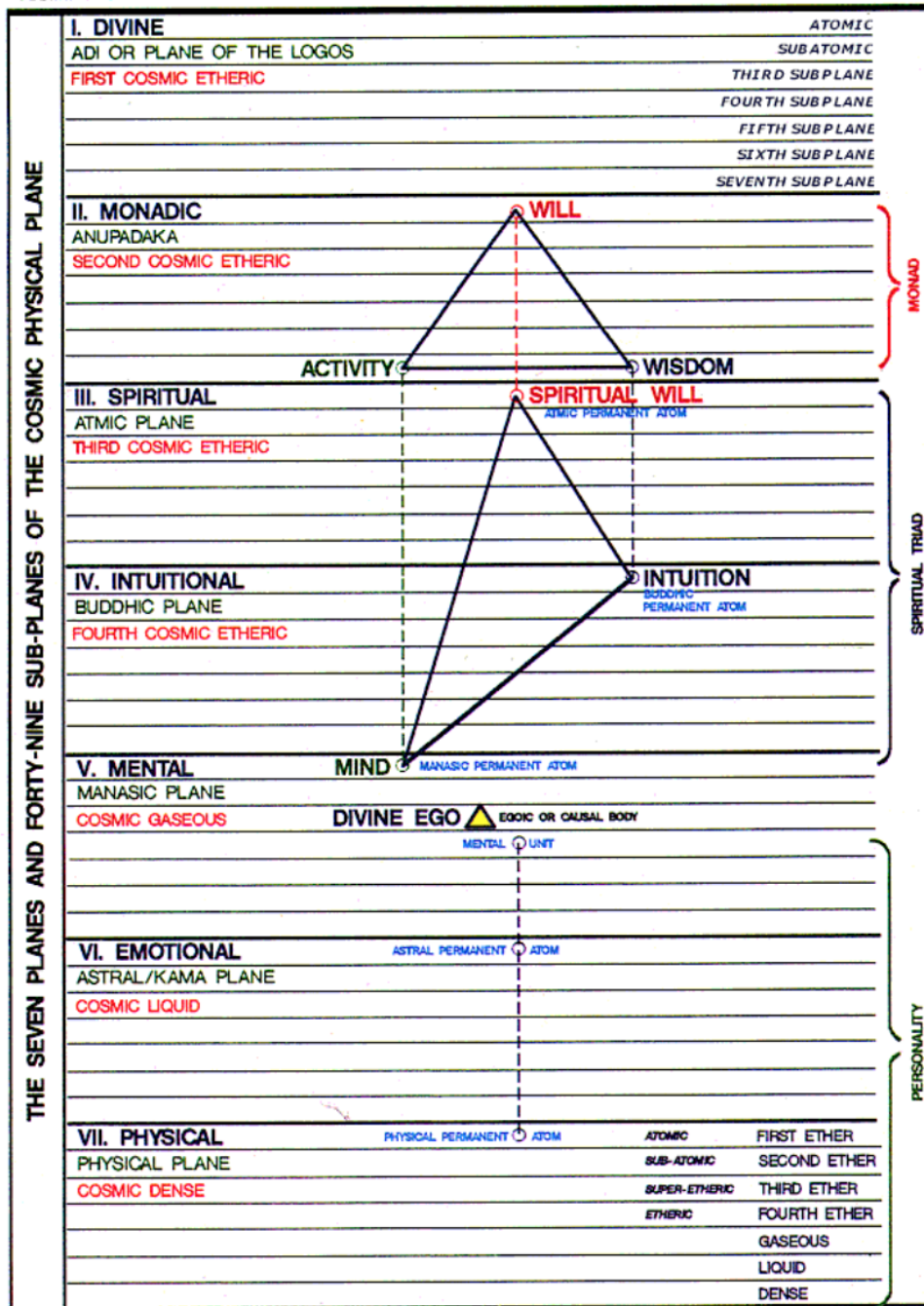
### **Spiritual implications and higher realities**

Although physicists are loathe to give this a spiritual interpretation, this view of the cosmos resembles almost uncannily the descriptions of creation from leading spiritual masters, which is that the templates of “heaven” create the world. A few examples (among many others) will illustrate:

“These heavenly realms, vibratory and transcendent, are only figuratively “above” the gross vibrations of the earth “below”: they are in fact superimposed one on the other.” — Paramahansa Yogananda

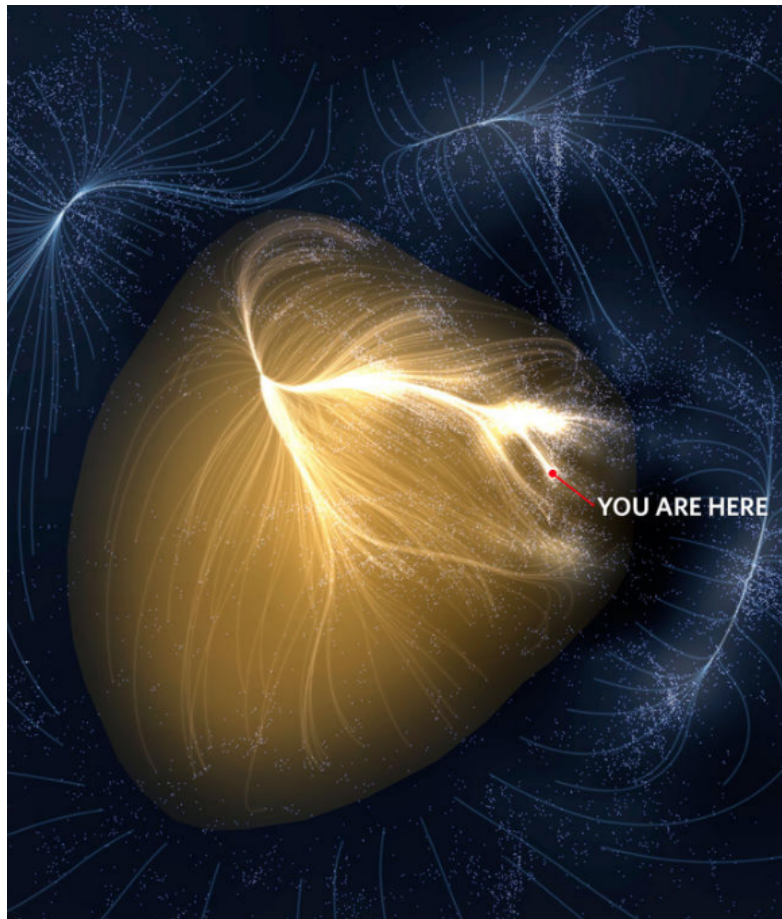
“God is creating the entire universe, fully and totally, in this present now. Everything God created ... God creates *now*, all at once.” — Meister Eckhart

These various planes of reality are described differently in different esoteric systems, and today's science may still be only scratching the surface. For example, the esoteric structure of reality is said to have at least seven multiple levels. Below is one example according to the theosophical tradition (**Slide 27**). This figure comes from the work of Djwal Khul, as articulated in the writings of Alice Bailey. It shows seven levels of reality, each of which has seven sublevels, so there are 49 levels of reality altogether. The physical domain is at the bottom, depicted by the lowest three sublevels at the bottom; solids, liquids, and gases. These are the physical states of matter. In science today, the attempt is to explain the whole of reality by reference only to these very lowest levels. The bottom three or four sublevels are where most of science is focused, struggling to explain all of reality. The higher levels are revealed through meditation and other forms of spiritual practice, and are found more or less consistently across diverse spiritual traditions. In meditation, these different dimensions of human consciousness are revealed, which include intuition, will, and all of the subtle dimensions and revelatory experiences that take place in spiritual life. The orthodox scientist and the strictly materialist view effectively reduce the human being to a mere "biological robot," stuck on the ground floor of this multi-dimensional cosmos.



## Slide 27

Coming back to ecology, part of the price we pay for all this is the loss of our direct spiritual connection with our planetary home, with Gaia herself. Our understanding of ecology has been limited to merely physical aspects, and our 'modern' civilizations are profoundly impoverished as a result. It is time for science to embrace these higher dimensions of reality, and thereby help humanity to reclaim our covenant with the soul of our planetary home.



### Slide 28

Let me close with this image (**Slide 28**), which was published on the front cover of *Nature*, September, 2014. This is called the Laniakea Supercluster. It is an image of composite data from telescopes across the planet, plus the Hubble telescope, and it shows the trajectories of the nearest 100,000 galaxies. Every point on this image is a galaxy, and each white thread is the trajectory of a particular galaxy through space. The scale here is big, 532 million light years across. Note our position in the Milky Way ("you are here" point). Note that the galaxies are all moving towards an attractor which is glowing in the center, called the "Great Attractor." Perhaps it is no mere accident that this looks strikingly like a great cosmic heart.

iQuoted in Francis H. Cook, *Hua-Yen Buddhism: The Jewel Net of Indra* (University Park, PA: Penn State Press, 1977).

iiRaimon Panikkar, *Christophany* (New York: Orbis, 2009).