

FROM BEING TO BECOMING

THE END OF CERTAINTY



ALEXIS KARPOUZOS

FROM BEING TO BECOMING

THE END OF CERTAINTY

ALEXIS KARPOUZOS

Table of Contents

CHAPTER 1: The End of Certainty Chaos, Complexity and Self-Organized Systems.....	6
CHAPTER 2: Quantum Shift in the Global Brain How the New Scientific Reality Can Change Us and Our World.....	26
CHAPTER 3: Quantum Theory.....	40
CHAPTER 4: One Thought, Two Forms of Universal Spiritual (Unity- Diversity).....	56

Alexis karpouzos (born April 09, 1967, [Athens](#) city, [Greece](#)) is an Greek- born [philosopher](#), spiritual teacher and [psychological theorist](#). His work focuses mainly on creating an "universal theory of [consciousness](#)" in which the insights of eastern and [Asian mysticism](#), the Hegel's dialectical ontology, the post-philosophical thought [of Marx, Nietzsche, Freud, Husserl, Heidegger, also the modern physics and the higher mathematics come together to form a coherent](#) picture of the [Cosmos](#). In 1998 Alexis karpouzos founded the international center of [learning, research](#) and [culture](#), a [wisdom](#) forum for studying issues of [science](#) and [society](#) in an integral way. He has been a visioner in the [development of post-history sense of cosmic unity and the integral consciousness](#). ["I invite people to just remember that the world does not](#) consist of subjects and objects, the "subject" and the "object" are metaphysical abstractions of the single and indivisible Wholeness. Man's finite knowledge separates the Whole into parts and studies fragmentarily the beings. The Universal Wholeness is manifested in multiple forms and each form encapsulates the [Wholeness](#). All beings and things, visible and invisible are interrelated and inseparable, are the same and different forms of open [wholeness](#). You are not separate from that which you are intrinsically a part of, regardless of how distant other things seem to be from you. You are a part of all that appears to you, and they are all a part of you. You affect each other, because you are one another. The possibility of survival, passing through a generous and friendly relationship with the other man, with the other beings, the planet as a whole, the stars and the whole universe. As he says, 'We need a post-

ontological poetic thought, we need a sense of the unity of life and of humans for the sake of human welfare and for the survival of the planet. We need a sense of unity with the cosmos so that we can connect with [Reality](#). But we also need a sense of individuality, for the sake of our own dignity and independence and of the loving care for others. We need it to appreciate each natural form, each animal and plant, each human person in their uniqueness'.

CHAPTER 1

The End of Certainty Chaos, Complexity and Self-Organized Systems

The Newtonian mechanics was the model of classical science. In the classical science all the natural laws had an absolutely deterministic and descriptive character and defined the course and development of every phenomenon. The knowledge of these laws assured the human – observer the ability to understand not only the present but also the past and the future. In a deterministic and timeless universe, the arrow of time is nothing but a human illusion. Only the vision of the universe from the perspective of eternity ensures the truth of physical theories. In the deterministic universe of the classical science, the order always creates disorder and never vice versa! The scientific dream of a united (applying on the microcosm as well as on the macrocosm) and objective (i.e. independent of the observer) description of the natural world, would become the nightmare of the contemporary physics in the beginning of the 20th century. The quantum description and interpretation of the microcosm, which is regarded as the fundamental level in which all the natural phenomena are raised and explained, requires a radical review of not only the classical description but also of the metaphysical preconditions of

classical science.

The classical ideal in physics was to be able to predict with certainty the future development of a physical system. Newton's mechanics led to the triumph of the deterministic vision of the natural processes: if we know the initial conditions of a dynamical system, then the solution of the differential motion equations would allow us to know in certainty not only the past but also the future of that system. This, however, is not feasible for two reasons:

a) it is not possible to have the initial conditions of the system in absolute accuracy and b) the analytical solution is not feasible for the great majority of the systems. As far as the first reason is concerned, we have to mention that after the discovery of the unstable systems, it became clear that very neighboring orbits (which, namely correspond to initial conditions and whose values may differ slightly) after a certain period of time are removed exponentially. In this notion, the orbit is actually an idealization, since it is never possible to know the initial conditions in "infinite" accuracy. According to Heisenberg's uncertainty principle and Bohr's principle of correspondence, the neutral and deterministic description of the microcosm is impossible: discontinuity and indeterminacy are inherent characteristics of microphysical phenomena and in order to describe them we have to integrate the observer within his own observations!

Prigogine believed that the laws of nature and those of physics are not given a priori, nor are they entailed logically. They evolve in

the same way the various species evolve. Since things are becoming more multiple, bifurcations and aids occur and new laws appear. “How can you be talking about the laws of biology if there are no living systems?” This proves the creativity of life. Each level of organization produces something fundamentally new, something that is not found in the constituents or the "parts" of the previous level. For example, in a mixture of hydrogen and oxygen there is no water. The mixture gets a new identity, which, in practice, sacrifices the "parts", hydrogen and oxygen. The only way to get the parts back is to ruin the water. In other words, it was not obvious in the equations of quantum mechanics that a “quantum arrow of time” emerges. Prigogine notes that in the theory of relativity as well, time is irreversible and space and time are alternating mutually. This theory led to the formulation of the theory of Big-Bang, which in practice gives an irreversible sense to the history of the universe.

Prigogine’s first challenge concerns the phenomenon of irreversibility. The second challenge has to do with the sense of simplicity.

Since Democritus and Aristotle’s era, scientists believed that beneath the complexity of our world there should be simple objects and simple forces. Initially, scientists thought that the atoms are the simple structural stones. Later on, when it was discovered that the atoms consist of smaller parts, simple particles such as the proton and the electron became the structural stones. After that, when the quantum mechanics led to the unexpected discovery of an

impressive world of particles at the subatomic level, the physicists invented the grand unified theory and began to look for the unique, simple power - the "superpower" which is supposed to have given birth to that number of interactions of elementary particles. Prigogine points out that: "the idea of simplicity dissolves. Whichever direction we chose, there is complexity." Complexity is the key idea for the understanding of his theory. According to him, an organism is born, grows to its maturity and passes away, namely, it has a history... Both the classical Newtonian physics and the physics of the 20th century with quantum mechanics and the theory of relativity, are expressed by equations, which are symmetrical with respect to time, i.e. they are reversible and deterministic. In those theories there is no discrimination between the past and the future.

Thermodynamics, from approximately the half of the 19th century had posed the problem of the irreversible processes and the arrow of time. But the fundamentally nonlinear character of natural processes and the different behavior of natural systems, when they are away from the equilibrium state, were not yet recognized. The discovery, in the 19th century, of the non-reversible time – in evolution and entropy - did not change the belief of the physicists that in the most basic levels of matter, time is reversible, while the irreversibility we can see around us is a kind of an illusion, as Einstein once pointed out. As Prigogine mentions, "the study of systems away from the equilibrium state led me to the belief that this cannot be the right view. Irreversibility plays a constructive role. It creates a form. It creates human beings. How could our

simple ignorance of the initial conditions be the reason for this? Our ignorance cannot be the reason we exist." Prigogine goes on: "If we could raise the knowledge, i.e. create a computer powerful enough, in order to write equations for the motion of all reversible and probabilistic individual molecules that compose a system, then would our ignorance disappear, would the illusion of irreversibility remain vague, and would life, evolution, death and time itself disappear? This is weird."

This time paradox resulted in the development of physical theories during Newton's era and thereafter. Particularly the time paradox refers to the fact that while the classical equations are reversible with respect to time, from numerous physical data the arrow of time seems to exist. So, the question raised by Prigogine is the following: Does the arrow of time arise simply as a result of a phenomenological approach to the natural processes, or does it represent a fundamental element which we must incorporate in the descriptions of these processes? The claim of Prigogine is summarized:

"All laws of physics must be compatible to the existence of the arrow of time". This means that the laws have to be redrafted in order firstly to contain the arrow of time (i.e. not to be symmetrical with respect to time) and secondly, the various levels of description can lead to the same future state.

The Role Of The Dispersing Structures And Of The Bifurcations

According to the second law of thermodynamics, in an isolated system (i.e. which does not exchange matter and energy with its environment), the total entropy increases progressively, while the free energy decreases until the system reaches the equilibrium state, when its entropy acquires its maximum value. In thermodynamic equilibrium state, the system is homogeneous and idle. If we also suppose, as Clausius did, that the whole universe is an isolated system of gigantic dimensions, then, according to the second law, the progressive degradation of the energy, i.e. the maximization of entropy inevitably leads to the "heat death" of the universe. In classical thermodynamics the arrow of time, i.e. the decay, the disorder and the death, is introduced. Classical thermodynamics referred to isolated and closed-linear systems.

However, how can we explain the "weird" behavior of the open systems? These systems are located far from the equilibrium state and continuously exchange matter and energy with their environment. They do not tend to a state of minimum free energy and maximum entropy, but, on the contrary, they use some energy inputs and fluctuations not only in order to maintain their structural stability but also in order to evolve towards new dynamical states. The open thermodynamic systems are the rules, not the exception. Those systems contain not only the living organisms and the human societies, but also the greatest part of the "simpler" physicochemical systems. Prigogine proved that on conditions away from thermodynamic equilibrium state, the matter acquires new unexpected properties, organizes itself and produces complex structures from random fluctuations. He will name these structures

dissipative structures. Basically, we are talking about systems which consume energy. The dissipative structures are states which reflect their interaction with the environment, with which they interchange energy, sustained through an endless dynamic flow.

The simplest forms of dissipative structures are some rather simple physicochemical systems in which minimum disturbances and fluctuations in microscopic scale lead to the emergence of new unexpected macroscopic structures. The living systems are open systems, organization complexes that are far from the equilibrium state and Prigogine, as it is said, classifies them in the “dissipative structures.”

Prigogine mentions that these random (unpredictable) processes show that the open systems and therefore the greatest part of our universe are not mechanistic but random. He uses the idea of randomness in a more different manner than the other scientists do. For example, for Jacques Monod, author of the book “Chance and Necessity”, chance means a world governed blindly and implies a universe, which according to human terms, is meaningless, namely it is very close to the illogical world of existential philosophy.

However, for Prigogine, chance is a synonym for non-determinism, for spontaneity, for innovation and creativity. Prigogine’s universe is not far from being a living organism, just because it has got space for the random behavior. This allows the dissipative structures – which can be anything – from a chemical solution to a cloud, a brain or a human – to recreate themselves

according to unpredictable models. These new models are usually caused by small changes or disturbances. These small changes or disturbances create an unpredictable type of behavior which challenges a mechanical interpretation of entropy, as well as a conventional interpretation of the arrow of time.

This way, the dissipative structures introduce continuous creativity in nature. This means that nature is not something stable, inert molecules that are governed only by impulses and attractions, but something energetic and alive. In those open systems, the matter is not isolated, but on the contrary it is rewarding, and correlative self - changing, with respect to the activities of the rest matter. In those “out of balance” systems, the minimum change can "destabilize" the system and bring about a result that has not been foreseen by the logic of linear equations.

Examples of dissipative structures

The key to the answer to the time paradox is located in the study of systems that are far from the equilibrium state. In systems like that self - organizing processes as well as dissipative structures are possible to come out.

In order to understand this meaning, at first we shall refer to a system which is located close to the equilibrium state, e.g. a pendulum with frictions. If we remove it from the equilibrium state, after a certain period of time it will return to the above state. However, in systems which are not far from the equilibrium state, there are bonds which do not allow them to return to the

equilibrium state. Prigogine mentions the ecosystem on the surface of the earth as an example of the above phenomenon. As the ecosystem gets the influence of the solar radiation, it is removed from the equilibrium state and it is lead to the creation of complex structures. “The important thing”, Prigogine mentions, “has to do with the fact that away from the equilibrium state, when the system is disturbed, there is no guarantee that it will return again in its former condition. On the contrary, the system starts exploring new structures, new types of organization in space - time, which I named dispersing structure

Bifurcation: Window of divided routes

An important factor in the emergence of new structures is the contribution of fluctuations or disruptions, namely of sudden illusions that allow something new to appear, even there where the existence of entropy would exclude it. This happens because the dispersion structures are non linear systems, the order of which emerges from chaos. If we add only one fluctuation to other fluctuations, then this fluctuation will become so strong that it will manage to organize the whole system under a new model. These points are called by Prigogine Bifurcation points and they are points at which the deterministic description collapses and then the system follows one of the several possible Bifurcations of the road.

As an instant window into the whole, the strengthening of the bifurcations leads to order or chaos. In Prigogine's perception of things, the bifurcation – a word meaning Point of disunity or

division – is a basic notion. The bifurcation in a system is a moment of critical importance when something as small as a single photon, a slight butterfly in Hong Kong expands so much by repetition that a fork is created – and the system gets a new direction. As time goes by, the torrents of Bifurcation points makes the system either get fragmented resulting in chaos or stabilize a new behavior through a series of feedback loops (like self – abolition, cross catalysis and self – interception). If a system that has gone through a Bifurcation gets stabilized by its feedback, it can resist to other changes for millions of years, until some new critical disorder enhances the feedback and creates a new Bifurcation point.

At its Bifurcation points, the option to “choose” between different types of order is actually offered to the system. The inner feedback of some choices is so complicated that there is basically an infinite amount of degrees of freedom. In other words, the order of the choice is so high that we are talking about chaos. Other Bifurcation points offer options where the coupling feedback creates a lower degree of freedom. These choices can make the system seem simple and normal.

This, however, is a fraud because the feedback in obviously simple orders, such as a solitonic wave, is also very complicated. The pure effect of the Bifurcations in the evolution of the living cells was the creation of organic chemical reactions that have been created in a complex and stable manner in the cell environment. Prigogine by the notion “communication” means this exact creation

of feedback loops. Towards such communication the system remains unharmed. The Bifurcation points are landmarks in the evolution of the system and imprint its history. The historical record of the human Bifurcations is engraved on human fetuses. These undergo stages on which initially they look like fish, later like amphibians and finally like reptiles.

Thousands upon thousands of Bifurcation points that compose a vivid recounting of options, through which we evolved as a system from the initiative cell to our current being, can be found imprinted in all forms and processes – in our cell chemical reactions and in the form of our neural networks - that make us unique. In every Bifurcation point during the past of our system, there was a course in which there were several futures. By the repetition and the support that the system got, one future was chosen while the other possibilities disappeared forever. This way our Bifurcation points compose a map of non reversibility of time. The dynamic of the variation of the external temperature, a change in the density, or the fluttering of a Bifurcation points reveals that the time is irreversible but it is able to make summaries. It also reveals that the movement of time is not measurable. Every decision made in a Bifurcation point contains a support to something small. Although causality works every time, the Bifurcation occurs unpredictably.

Prigogine points out that: “This mixture of necessity and chance composes the history of the universe.” It also composes the creativity of the universe. The capability of a system to reinforce a

small change constitutes a creative lever. Only one bee which enters a beehive and interacts with thousand other bees can pull the beehive across the air by making small movements that indicate the location rich in pollen. The systems are also very sensitive near those parts which consist the crystallized "memory" of Bifurcations of the past. The nations evolved mainly due to Bifurcations which included heavy conflicts. As a result, they are very sensitive towards several types of information which reproduce those Bifurcations. A mere newspaper title can motivate a whole nation to go to war.

The role of the Bifurcations in the evolution of life.

The belief that the secret of the creativity of nature hides in the laws of unpredictability, chaos and time and not in the mechanistic laws of classical dynamics lies beneath Prigogine's claims. He mentions as an example of the creativity of the chaos and of the non reversibility, their role in the emergence of life. The dissipative structures arise as a result of processes in systems which are characterized as releasing systems, i.e. systems that show energy losses. In such systems, when they are away of the equilibrium state, interactions (long-range correlations), which have a long range and play a crucial role in creating new structures, take place. The appearance of life in our planet became possible through such natural processes.

Self – Organising And life

An example of self - organising is the appearance of currents

and eddies in fluids where we can see billions of particles “cooperate.” The matter is blind near the equilibrium state. However, far from the equilibrium state we have correlations of great range that are basic for the creation of new structures. Self organizing takes place because when we are far from the equilibrium state, the system has got lots of choices, of which, anthropomorphically talking, it selects one.

Self – organizing is closely connected to the phenomenon of life. The creation of complexity, which is necessary for the creation of life, is connected to the process of storing information in molecules of which the living cell is constituted. All living systems, either unicellular or multicellular organisms, are extremely complex systems compared to all the other species of the non living matter that exist in the Universe. Complexity is the result of effect processes, leading to systems with great organization, containing large information stocks. This organization of the molecules of a living organism, a result of accumulation of information, is what makes them able to produce useful work. The useful work involves both the fulfillment of basic biological processes, such as metabolism and reproduction, and the further increase in the information content that builds up in living systems. This last process is subject to the great chain of evolution of biological systems, this development is governed by the law of natural selection. The capability of reproduction, mutation and metabolism are necessary conditions for the latter.

A system which has got these properties automatically is able

to take part in the “game” of natural selection and evolution. The natural selection leads in forms of organizing, which are more effective, leaving the less effective ones at the process of disappearing. This way, a form of organizing which is stabilized dynamically in a system out of the equilibrium state, will disappear, if a an improved form of organizing appears. In this sense, progress means constant amelioration of the operational efficiency of the biological systems. A yet unsolved problem, associated to biological order is the way in which the transition from the molecular activity to the supermolecular order of the cell takes place. The biological order was usually considered as a natural condition which was created by enzymes playing a similar to the demon of Maxwell role, maintaining chemical differences in the system. However, today, it becomes understood that this role is ensured by the genetic information contained in the nucleic acids and is expressed by the creation of enzymes which ensure the perpetuation of life. The enzymes thus contribute to the prolongation of life and postpone death. Namely, life is not located out of the natural order, but appears as the ultimate form and expression of the self organizing processes.

Creative Chaos

By focusing on the role of chance and chaos at the creation of structure, Prigogine pictures a universe in which the objects are not defined as well as they are defined in classical or quantum physics. In Prigogine’s universe the future cannot be defined because it is subject to chance, fluctuation, and support. This is characterized by

Prigogine as the new “uncertainty principle”. According to the famous uncertainty principle, which was expressed by Heisenberg, it is impossible to know in absolute accuracy the position and the momentum of any subatomic particle. Prigogine’s new uncertainty principle teaches us that beyond a boundary point of complexity, the systems are directed to unpredictable directions.

The systems lose their initial conditions and cannot obtain them again or reverse their course. Their inability to look back in time is an “entropy barrier”. The discovery of the entropy barrier is similar to Einstein’s discovery that the human beings and the messages cannot travel faster than light, namely, beyond the “light barrier”. Prigogine’s uncertainty principle, just like Heisenberg’s uncertainty principle, is a damage against reductionism (raising all phenomena to simpler ones). But for Prigogine, this way of viewing nature does not reduce its capabilities, but it recognizes its creative possibilities. Even when we see a system moving to chaos, points – situations, in which order emerges, appear in that system. Similarly, inside chaos there are traces of a peculiar order. It is also possible that where the system has the shape of a stable system areas called “windows” or “islets” appear. These areas oscillate around a certain number of values. These islets of order, which are interposed into the areas of chaos, are called intermittencies. The importance of these “islets of order” is great because it indicates that there is a close relationship between order and chaos. The relationship between order and chaos must be due to a single process which is subject to the dynamics of nonlinear systems. Namely, there has to be a global chaotic attractor. Generally, the

correlation between order and chaos is taken for granted and reflects a holistic concept for the operation of Nature.

Is Time Ahead Of The Being? The Pre – Universe

Two of the biggest questions that preoccupied philosophers and scientists of all time, are the following: a) does the world (the universe) have a beginning or is it infinite? b) does time have a beginning? It is proved that these questions are not independent of one another. The second one refers to the topological characteristics of time. The problem of the nature of time is connected to the above. For Newton, time is absolute and independent of the history of the Universe. This abstention has now been rejected. Today we accept that the Universe was somehow created, namely it has got a starting point.

In this point Prigogine wonders: “However, how can we realize this starting point (of the time)? It seems more logical to me to suppose that the birth of our Universe is an event in the history of the world and as a result we owe to attribute to it (to the world) a time which comes before the birth of the Universe.” But how does he mean this birth of the world? “This birth could have been similar to a change of phase which leads from a pre – Universe (that is also called “quantum gap” or “next universe”) to the Universe that is being observed and surrounds us.” Prigogine goes further explaining the known theory of Big Bang: the Universe begun from a singularity, a point which enclosed all the mass and the energy of the current Universe. But we do not have a theory

able to describe this point abnormality.

However, many scientists consider the beginning of the history of the Universe, as the beginning of time. Subsequently, Prigogine poses the question: “Does actually time have a defined beginning or is it infinite?” and he goes on: “We cannot support that we hold the definite answer, but our phrasing of the laws of Nature, through probabilities and not certainties, can contribute towards this direction. Our research will follow a different way of the one followed by other scientists. We suppose that the Big Bang is an eminently irreversible process. This irreversibility would occur as a result of the instability of the pre – Universe, an instability which is caused by the interactions between gravity and matter. Inside this perspective, the universe would have been created with the characteristic of instability. Meanings, which we have mentioned, as self – organizing, would likewise be applied in the early stages of the Universe”. It is known that Einstein believed that the discrimination between the past and the future is an illusion because the equations of the, until then, known theories were symmetrical according to time. K.Godel extended this idea to the end, suggesting a cosmological model in which it was possible for someone to travel into his own past. Einstein, who was concerned a lot by this, eventually ended up in expressing his ideas on such an extreme thesis, supporting that it would oblige physicists reconsider their beliefs on the problem of non reversibility.

Hawking, on the other side, introducing the notion of the imaginary time, reached the point of expressing the belief that at

the first stages of Big Bang, space and time could not be discriminated from one another and time obtained the characteristics of space. Prigogine, however supports that “time is eternal. We all have an age, our culture has an age, the Universe has an age, time, however, has neither a beginning nor an end.” Namely, since the Being, the Existence is meaningful only from the moment the Universe started existing and since, according to Prigogine, time is eternal, then time came before the Being.

Einstein, by the General Theory of Relativity and the field equations, linked the measuring of space-time to the total amount of matter -energy of the universe, namely he showed that the geometry of space – time is affected by the matter – energy, and the moving of the material objects are defined by this geometry. solution of the field equations, which was suggested by Einstein, matched to a static Universe, thus a universe without a history, according to the classical ideal, which contained the reversibility of the processes, and therefore, the symmetry towards the time of the past and the future. Later on, Friedmann and Lemaitre showed that such a universe is exceptionally unstable and it may be damaged by the slightest disturbance. Eventually, we have reached the acceptable standard model of the Big Bang, which is firmly supported by critical experimental data, such as the experimental verification of the law of Hubble and the background radiation of 2.7 K. According to this model, as it is reported, the Big Bang began from a point defect, wherein the density and the curvature of space- time are infinite. The size scales involved in this history of the Universe, are measured according to the fundamental physical

constants, i.e. the world gravitational constant G , the speed of light c , and Planck's constant h .

The elementary aggregates calculated by those constants are the following:

- (1) Planck's length, which is 10^{-33} cm.
- (2) Planck's time, which is 10^{-43} sec.
- (3) Planck's energy, which corresponds to a temperature of 1 ~ 2 Kelvin grades.
- (4) Planck's mass which is 10^{-5} gr. It is huge compared to the mass of the elementary particles. (e.g. proton mass is 10^{-23} gr)

During the first moments of the Universe's life, what is called Planck epoch (or era), these orders of magnitude dominated. Prigogine, considering that in that epoch the quantum processes, along with gravity, should play an important role, introduces, in that point, the necessity of quantization of gravity, and consequently of space – time. This attempt has not yet delivered the expected results. Concerning the model of the inflationary universe, Prigogine underlines that “the results are very interesting. They show a possibility of an irreversible process that transforms gravity into matter. They also focus our attention on the pre – Universe, which would here be Minkowski's vacuum, a starting point of irreversible transformations. We shall stress that this

model does not describe a process of creation from the beginning. The quantum gap is already characterized by the universal constants, and hypothetically, we can attribute to these constants the values they have today.”

In an other point of his work, he writes: “the substantial point here is the fact that the birth of our Universe is not yet connected to an abnormality, but to an instability, similar to a change of phase or a bifurcation.” And by stressing on the ratio between geometry and matter, on the one side, and on the equivalence of the mechanical work and the heat on the other, he proves the importance of the second thermodynamic law, which “breaks” this notion of equality: the mechanical work can always be transformed into energy, but not vice versa. The case of space – time and matter is equivalent: the transformation of space – time into matter correlates to an irreversible release process, which produces entropy. The reverse process, which would transform matter into space – time is excluded. Namely, the birth of our universe happened due to the transformation of space – time into matter and is interpreted in an explosion of entropy.

CHAPTER 2

Quantum Shift in the Global Brain How the New Scientific Reality Can Change Us and Our World

The Newtonian mechanics was the model of classical science. In the classical science all the natural laws had an absolutely deterministic and descriptive character and defined the course and development of every phenomenon. The knowledge of these laws assured the human – observer the ability to understand not only the present but also the past and the future. In a deterministic and timeless universe, the arrow of time is nothing but a human illusion. Only the vision of the universe from the perspective of eternity ensures the truth of physical theories. In the deterministic universe of the classical science, the order always creates disorder and never vice versa! The scientific dream of a united (applying on the microcosm as well as on the macrocosm) and objective (i.e. independent of the observer) description of the natural world, would become the nightmare of the contemporary physics in the beginning of the 20th century. The quantum description and interpretation of the microcosm, which is regarded as the fundamental level in which all the natural phenomena are raised and explained, requires a radical review of not only the classical description but also of the metaphysical preconditions of

classical science.

The classical ideal in physics was to be able to predict with certainty the future development of a physical system. Newton's mechanics led to the triumph of the deterministic vision of the natural processes: if we know the initial conditions of a dynamical system, then the solution of the differential motion equations would allow us to know in certainty not only the past but also the future of that system. This, however, is not feasible for two reasons:

a) it is not possible to have the initial conditions of the system in absolute accuracy and b) the analytical solution is not feasible for the great majority of the systems. As far as the first reason is concerned, we have to mention that after the discovery of the unstable systems, it became clear that very neighboring orbits (which, namely correspond to initial conditions and whose values may differ slightly) after a certain period of time are removed exponentially. In this notion, the orbit is actually an idealization, since it is never possible to know the initial conditions in "infinite" accuracy. According to Heisenberg's uncertainty principle and Bohr's principle of correspondence, the neutral and deterministic description of the microcosm is impossible: discontinuity and indeterminacy are inherent characteristics of microphysical phenomena and in order to describe them we have to integrate the observer within his own observations!

Beyond the separation

The new cosmological paradigm

Science evolves through alternating phases of 'normal' science and radical shifts that create scientific revolutions. We saw this at the turn of the 20th century, when science shifted from a Newtonian worldview to Einstein's relativity paradigm, and again with the shift to the quantum paradigm. Now, as we recognize the non-local interconnection of all things in space and time, we find our scientific worldview shifting once again. The insight now emerging in the physical sciences, especially but not exclusively in quantum physics, highlights the role of interaction and interconnection in the diverse spheres of observation and experiment. The insight now emerging in the physical sciences, especially but not exclusively in quantum physics, highlights the role of interaction and interconnection in the diverse spheres of observation and experiment. The quantum theory holds that we live in a participatory universe - which is what we consider as an independent, external reality is linked to the way we observe. When making observations and measurements, the quanta which are everything in the universe, changing. It makes no sense to talk about the properties of quanta without an observer. The universe is connected by conscious observation instruments from the most elementary particles up to huge galaxies. Moreover, quantum theory gives prominence to the quantum vacuum, the vacuum that is prior to observable phenomena, such as atoms and molecules. Unlike the common sense notion of empty space, the quantum

vacuum is full of potential prospects. The quantum vacuum is essential in all aspects of physics, the quantum vacuum is an infinite set of "space-time foam" beyond which time, space - and physical - come to an end itself. Quantum theory has reached the point where the source of all matter and energy is a vacuum, a nothingness that contains all the possibilities of everything that has ever existed or could exist. These possibilities then emerge as probabilities before "collapsing" into localized quanta, manifesting as the particles in space and time that are the building blocks of atoms and molecules. The transcendental field of Cosmos is the total of all the possibilities that can occur in any part of the universal space- time. The quantum vacuum underlies the level of quanta and is a virtual- energy filled substrate rather than empty space) is the cosmic matrix in which the particles and systems that constitute the materials of the world arise. The quantum vacuum is an integration of what we used to think of as energy and information. It is a field of informed energy. The particles that appear as the material of the universe are entangled excitations of the ground state of this cosmic matrix. The systems that appear as objects composed of material particles are locally manifest yet intrinsically entangled configurations of excitations in that matrix. The particles and systems we observe emerged in the course of evolution in the cosmos. Following the Big Bang (which appears to have been a Big Bounce, a phase-change in the sequence of local universes in the multiverse) the first entities to emerge were photons, protons, neutrons and electrons, and other, more short-lived exchange particles. In processes of galactic and stellar

evolution the higher-order configurations we know as the atoms of the elements had emerged.

The current material of spacetime are superordinate configurations of the excitations of the cosmic matrix. Galaxies are composed of stars and stellar systems, and stars are composed of atoms and particles. All these systems are composed of particles, and particles are entangled excitations of the matrix. Atoms, molecules, cells, organisms—and on the macroscale planets, stars, stellar systems and galaxies—are in the final count superordinate quantum systems: various-level configurations of informed energy. On suitable planetary surfaces higher-order configurations of informed energy made their appearance. We call the self-maintaining and self-reproducing variety of these configurations living organisms. Life is not accidental or extraneous phenomena in the universe: the latest observations in astrophysics show that the basic building elements of life, including glycine (which is an amino acid), and ethylene glycol (a compound associated with the formation of sugars in organisms) are synthesized in the course of the physicochemical evolution of stars. The surface of planets associated with active stars are templates for the further complexification of these elements, building sequentially higher order configurations of informed-energy. Information is a paramount factor in the emergence and persistence of informed-energy configurations. In the absence of information the energies present in the universe would be a random concourse of excitations of its ground state. Information structures the energy-sea of the cosmic matrix, and coordinates interaction among the structures.

The Participatory Universe

Cosmology, which is based on the other successful theory that exists, meaning the theory of general relativity of Einstein, suggests that the universe emerged from the pressure of the quantum foam during the Big Bang and after that it has been developing for at least 13.5 billion years. Everything that we consider to be real, either through our senses or through scientific research, has initially being a state of the so-called Planck era (a tiny, short, and chaotic condition that cannot be penetrated, i.e. a mathematical representation that describes the boundaries of our knowledge). After that began the phase of the universal expansion, which created matter,energy,stars,galaxies,andlife.

Therefore, as there is no fixed limit concerning the space and time, science is confronted with the fact that the human brain works in this specific space and time. This should not discourage us, though. If the universe is indeed participatory, then the human brain should also be involved at a quantum level. Why is this happening? Because the quantum foam, which is the source of any particle that exists and also the source of its corresponding oppositely charged antiparticle, must be at the same time the foundation of the brain. The microcosm and the macrocosm have the same sources for billions of years during the past and the present. The reality is constantly arising from the quantum vacuum. The quanta are coming out of the quantum foam, while their vast majority falls back again to this foam. Thus, the creation, the maintenance, and the re-absorption of the virtual particles occur at

any time and at every point of space. Our senses though oblige us to see a sunrise at a time, a birthday party at a time, a face at a time. Without a doubt, the reality is not limited in a linear experience in time and space. One could argue that beyond our limited perception, the Big Bang is happening everywhere at the same time in an eternal now. The creation is an undivided and single process and we are immersed in it. Given that everything that exists depends on the quantum vacuum, including all living beings, our belief that we are living outside of this quantum vacuum is probably false. There is no rational way to run away from this phenomenon, so the key is to change the sense of reality. The 'transcendence' that is supposed to belong to the saints and the mystics actually applies to all people (and perhaps the saints and the mystics are those who realized it first) Our participation in the quantum vacuum makes the difference in the way life proceeds. Any strange phenomena can occur depending on our mental and intellectual involvement. Quantum theory arose from the scientific attempt to describe the behavior of atoms and their components. Therefore, it concerns primarily the microcosm. Physicists have long known that certain procedures, such as radioactivity, seemed random and unpredictable. While a large number of radioactive atoms obey the laws of statistics, it is impossible to predict the exact time at which a specific atomic nucleus will split. This fundamental uncertainty is extended to all individual and subatomic phenomena. The word "quantum" by itself means a small energy package, i.e a very small package (from the Latin word quantum). Thus, quantum mechanics, as quantum theory is

called, has to do with the basic keystones of matter. These are the basic elementary particles which build up everything in nature. These particles include atoms, molecules, neutrons, protons, electrons, quark, and also photons (the basic light units). All these objects - if we can really describe them as such - are much-much smaller than anything that can be seen and observed by the human eye. In the dreamy quantum world: the particles are waves and the waves are particles. That is, a beam light is both an electromagnetic wave propagating in the universe, and a flow of tiny particles directed with speed towards the observer. This arises from the fact that some quantum experiments or phenomena reveal the wave nature of light, whereas others reveal the particulate nature the same light. Note though that never both aspects of light are revealed simultaneously. Nevertheless, we suggest that before we observe a beam of light it is both a wave and a particle flow at the same time. In the realm of quantum physics everything is ambiguous: a feature of uncertainty dominates on all its entities, whether it is light, electrons, atoms or quarks. This uncertainty is known as the uncertainty principle and it states that we can only predict the most probable position of a particle and not the exact location. Moreover, we are never able to determine with exact precision nor the position or the momentum of a particle. Therefore, the scientific predictions on the results have a statistical and probabilistic nature. Moreover, there are no "hidden variables" (as Einstein would like), which, if were made known, would dispel the fog that surrounds the quantum world. Therefore, the magical, the obscure, and the hidden, are the integral features of the

quantum structure of the universe. For the interpretation of quantum mechanics there is a need for an ontological investigation and reflection: Because what explanation can be given for the mysterious superposition of the states of the quantum systems A photon (a quantum of light) or an electron (a negatively charged elementary particle) can be found in a superposition of two or more states. We can no longer talk about "here" OR "there". In the strange quantum world we can talk about "here" AND "there." A photon, a part of a flow of light, that falls on a film screen with two holes, instead of choosing one or the other hole as normally expected, can pass through both of the two holes at the same time. An electron that follows a curved path around a nucleus can be possibly located in multiple positions simultaneously. The phenomenon that creates the greatest wonder in the dreamy world of quanta is the phenomenon called Quantum Entanglement. Two particles that may be too far away from each other, even millions or billions of kilometers away, are strangely linked. The slightest variation that may occur in one of them immediately causes a change in the other.

The Science Behind The Statement “Consciousness Creates Reality”

The quantum double slit experiment is a very popular experiment used to examine how consciousness and our physical material world are intertwined. It is a great example that documents how factors associated with consciousness and our physical material world are connected in some way. One potential revelation

of this experience is that “the observer creates the reality.” A paper published in the peer-reviewed journal *Physics Essays* by Dean Radin, explains how this experiment has been used multiple times to explore the role of consciousness in shaping the nature of physical reality. In this experiment, a double-slit optical system was used to test the possible role of consciousness in the collapse of the quantum wave-function. The ratio of the interference pattern’s double slit spectral power to its single slit spectral power was predicted to decrease when attention was focused toward the double slit as compared to away from it. The study found that factors associated with consciousness “significantly” correlated in predicted ways with perturbations in the double slit interference pattern. “Observation not only disturbs what has to be measured, they produce it. We compel the electron to assume a definite position. We ourselves produce the results of the measurement.” Although this is one of the most popular experiments used to posit the connection between consciousness and physical reality, there are several other studies that clearly show that consciousness, or factors that are associated with consciousness are directly correlated with our reality in some way. A number of experiments in the field of parapsychology have also demonstrated this. Sure, we might not understand the extent of this connection, and in most cases scientists can’t even explain it. However they are, and have been observed time and time again.

Non material universe

What we perceive as our physical material world, is really not physical or material at all, in fact, it is far from it. “If quantum mechanics hasn’t profoundly shocked you, you haven’t understood it yet. Everything we call real is made of things that cannot be regarded as real.” – Niels Bohr At the turn of the nineteenth century, physicists started to explore the relationship between energy and the structure of matter. In doing so, the belief that a physical, Newtonian material universe that was at the very heart of scientific knowing was dropped, and the realization that matter is nothing but an illusion replaced it. Scientists began to recognize that everything in the Universe is made out of energy. “Despite the unrivaled empirical success of quantum theory, the very suggestion that it may be literally true as a description of nature is still greeted with cynicism, incomprehension and even anger.” (T. Folger, “Quantum Shmantum”). Quantum physicists discovered that physical atoms are made up of vortices of energy that are constantly spinning and vibrating, each one radiating its own unique energy signature. Therefore, if we really want to observe ourselves and find out what we are, we are really beings of energy and vibration, radiating our own unique energy signature -this is fact and is what quantum physics has shown us time and time again. We are much more than what we perceive ourselves to be, and it’s time we begin to see ourselves in that light. If you observed the composition of an atom with a microscope you would see a small, invisible tornado-like vortex, with a number of infinitely small energy vortices called quarks and photons. These are what

make up the structure of the atom. As you focused in closer and closer on the structure of the atom, you would see nothing, you would observe a physical void. The atom has no physical structure, we have no physical structure, physical things really don't have any physical structure! Atoms are made out of invisible energy, not tangible matter. "Get over it, and accept the inarguable conclusion. The universe is immaterial-mental and spiritual" – Richard Conn Henry, (quote taken from "the mental universe) It's quite the conundrum, isn't it? Our experience tells us that our reality is made up of physical material things, and that our world is an independently existing objective one. The revelation that the universe is not an assembly of physical parts, suggested by Newtonian physics, and instead comes from a holistic entanglement of immaterial energy waves stems from the work of Albert Einstein, Max Planck and Werner Heisenberg, among others.

The Role of Consciousness in Quantum

Mechanics

What does it mean that our physical material reality isn't really physical at all? It could mean a number of things, and concepts such as this cannot be explored if scientists remain within the boundaries of the only perceived world existing, the world we see. As Nikola Tesla supposedly said: "The day science begins to study non-physical phenomena, it will make more progress in one decade than in all the previous centuries of its existence." Fortunately,

many scientists have already taken the leap, and have already questioned the meaning and implications of what we've discovered with quantum physics. One of these potential revelations is that "the observer creates the reality." A fundamental conclusion of the new physics also acknowledges that the observer creates the reality. As observers, we are personally involved with the creation of our own reality. Physicists are being forced to admit that the universe is a "mental" construction. Pioneering physicist Sir James Jeans wrote: "The stream of knowledge is heading toward a non-mechanical reality; the universe begins to look more like a great thought than like a great machine. Mind no longer appears to be an accidental intruder into the realm of matter, we ought rather hail it as the creator and governor of the realm of matter. (R. C. Henry, "The Mental Universe").

One great example that illustrates the role of consciousness within the physical material world (which we know not to be so physical) is the double slit experiment. This experiment has been used multiple times to explore the role of consciousness in shaping the nature of physical reality. A double-slit optical system was used to test the possible role of consciousness in the collapse of the quantum wave-function. The ratio of the interference pattern's double-slit spectral power to its single-slit spectral power was predicted to decrease when attention was focused toward the double-slit as compared to away from it. The study found that factors associated with consciousness, such as meditation, experience, electrocortical markers of focused attention and psychological factors such as openness and absorption,

significantly correlated in predicted ways with perturbations in the double-slit interference pattern. This is just the beginning. I wrote another article earlier this year that has much more, sourced information with regards to the role of consciousness and our physical material world:

What's The Significance?

The significance of this information is for us to wake up, and realize that we are all energy, radiating our own unique energy signature. Feelings, thoughts and emotions play a vital role, quantum physics helps us see the significance of how we all feel. “If you want to know the secrets of the universe, think in terms of energy, frequency and vibration.” – Nikola Tesla. Studies have shown that positive emotions and operating from a place of serenity within oneself can lead to a very different experience for the person emitting those emotions and for those around them. At our subatomic level, does the vibrational frequency change the manifestation of physical reality? If so, in what way? We know that when an atom changes its state, it absorbs or emits electromagnetic frequencies, which are responsible for changing its state. Do different states of emotion, perception and feelings result in different electromagnetic frequencies? Yes! This has been proven. “Space is just a construct that gives the illusion that there are separate objects”.

CHAPTER 3

Quantum Theory

Quantum theory arose from the scientific attempt to describe the behavior of atoms and their components. Therefore, it concerns primarily the microcosm. Physicists have long known that certain procedures, such as radioactivity, seemed random and unpredictable. While a large number of radioactive atoms obey the laws of statistics, it is impossible to predict the exact time at which a specific atomic nucleus will split. This fundamental uncertainty is extended to all individual and subatomic phenomena. The word "quantum" by itself means a small energy package, i.e a very small package (from the Latin word *quandum*). Thus, quantum mechanics, as quantum theory is called, has to do with the basic keystones of matter. These are the basic elementary particles which build up everything in nature. These particles include atoms, molecules, neutrons, protons, electrons, quark, and also photons (the basic light units). All these objects - if we can really describe them as such - are much-much smaller than anything that can be seen and observed by the human eye. In the dreamy quantum world: the particles are waves and the waves are particles. That is, a beam light is both an electromagnetic wave propagating in the universe, and a flow of tiny particles directed with speed towards the observer. This arises from the fact that some quantum experiments or phenomena reveal the wave

nature of light, whereas others reveal the particulate nature the same light.

Note though that never both aspects of light are revealed simultaneously. Nevertheless, we suggest that before we observe a beam of light it is both a wave and a particle flow at the same time. In the realm of quantum physics everything is ambiguous: a feature of uncertainty dominates on all its entities, whether it is light, electrons, atoms or quarks. This uncertainty is known as the uncertainty principle and it states that we can only predict the most probable position of a particle and not the exact location. Moreover, we are never able to determine with exact precision nor the position or the momentum of a particle. Therefore, the scientific predictions on the results have a statistical and probabilistic nature. Moreover, there are no "hidden variables" (as Einstein would like), which, if were made known, would dispel the fog that surrounds the quantum world. Therefore, the magical, the obscure, and the hidden, are the integral features of the quantum structure of the universe. For the interpretation of quantum mechanics there is a need for an ontological investigation and reflection: Because what explanation can be given for the mysterious superposition of the states of the quantum systems? A photon (a quantum of light) or an electron (a negatively charged elementary particle) can be found in a superposition of two or more states. We can no longer talk about "here" OR "there". In the strange quantum world we can talk about "here" AND "there." A photon, a part of a flow of light, that falls on a film screen with two holes, instead of choosing one or the other hole as normally

expected, can pass through both of the two holes at the same time. An electron that follows a curved path around a nucleus can be possibly located in multiple positions simultaneously. The phenomenon that creates the greatest wonder in the dreamy world of quanta is the phenomenon called Quantum Entanglement.

Two particles that may be too far away from each other, even millions or billions of kilometers away, are strangely linked. The slightest variation that may occur in one of them immediately causes a change in the other. The quantum theory is primarily a practical field of physics. The quantum theory helped to achieve brilliant technological developments such as nuclear power, transistors, electron microscopy, lasers, and superconductors. Also, it explained the structure of atoms and nuclei, the chemical bonds, the mechanical and thermal properties of solids, the electrical conductivity, the iciness of collapsed stars, and many other important natural phenomena. The quantum theory has been proven by a vast majority of evidences that arise not only by the relevant devices found in trade, but also by carefully designed scientific experiment. Thus, most of the theoretical physicists simply perform their tasks without reflecting on the bizarre philosophical implications of quantum theory. This is proof that the ideology of common sense and positivism dominates on the western civilization's "cosmic theory of knowledge." On the other hand, the mathematical theory of Hilbert space, the abstract algebra, and the probability theory – which are the mathematical tools used for the explanation of quantum phenomena - allow the prediction of highly-precise results from the experiments, although

they do not make us understand the processes behind this phenomenon. It looks like that the mysterious box of a quantum system is beyond the human limits of genuine understanding. According to one of the interpretations of quantum mechanics, we can only use the box to predict results, which are simply statistical in nature. The understanding of modern physics and mathematics does not arise from their "language" or their equations but from the importance expressed through this language. This means a shift the effort to interpret the phenomena using the horizontal mathematical formalism of epistemology to the vertical mathematical structuralism of ontology. In other words, a shift from scientism to the philosophical science.

NEW CONCEPTS OF MATTER, LIFE AND MIND

The concept of matter

Advances in the new sciences suggest a further modification of this assumption about the nature of reality. In light of what scientists are beginning to glimpse regarding the nature of the quantum vacuum, the energy "sea" that underlies all of spacetime, it is no longer warranted to view matter as primary and space as secondary. It is to space or rather, to the cosmically extended 'Dirac-sea' of the vacuum that we should grant primary reality. The things we know as matter (and that scientists know as mass, with its associated properties of inertia and gravitation) appear as the consequence of interactions in the depth of this universal field. In the emerging concept there is no 'absolute matter,' only an absolute

matter generating energy field.

The concept of life

The subtle relationship between the material things we meet with in our experience and the energy field that underlies them in the depth of the universe also transforms our view of life. Interactions with the quantum vacuum may not be limited to micro-particles: they may also involve macroscale entities, such as living systems. Life appears to be a manifestation of the constant if subtle interaction of the wave-packets classically known as 'matter' with the underlying vacuum field. These assumptions change our most fundamental notions of life. The living world is not the harsh domain of classical Darwinism, where each struggles against all, with every species, every organism and every gene competing for advantage against every other. Organisms are not skin-enclosed selfish entities, and competition is never unfettered. Life evolves, as does the universe itself, in a 'sacred dance' with an underlying field. This makes living beings into elements in a vast network of intimate relations that embraces the entire biosphere itself an interconnected element within the wider connections that reach into the cosmos.

The concept of mind

In the on going co-evolution of matter with the vacuum's zero-point field, life, and mind and consciousness emerge out of the higher domains of life. This evolutionary concept does not 'reduce' reality either to non-living matter (as materialism), or assimilate it

to a nonmaterial mind (as idealism). Both are real but (unlike in dualism), neither is the original element in reality. Matter as well as mind evolved out of a common cosmic womb: the energy-field of the quantum vacuum. The interaction of our mind and consciousness with the quantum vacuum links us with other minds around us, as well as with the biosphere of the planet. It 'opens' our mind to society, nature, and the universe. This openness has been known to mystics and sensitives, prophets and meta-physicians through the ages. But it has been denied by modern scientists and by those who took modern science to be the only way of comprehending reality. Now, however, the recognition of openness is returning to the natural sciences. Traffic between our consciousness and the rest of the world may be constant and flowing in both directions. Everything that goes on in our mind could leave its wave traces in the quantum vacuum, and everything could be received by those who know how to 'tune in' to the subtle patterns that propagate there.

**SCIENCE NOT SCIENTISM – BEYOND MATERIALISM
AND IDEALISM CONSCIOUSNESS IS THE CONNECTION
OF BEINGS AND THE WORLD**

Our culture's materialistic worldview is rooted in *scientism* , which is not the same as science itself. Science in its purest sense is not a worldview but a *method* for systematically investigating and organizing aspects of reality that we access through our senses. Simply put, science is a way of knowing reality. Scientism takes this one step further and claims that science is *the only* way of

knowing reality. Whereas science is silent regarding the aspects of reality beyond its scope, scientism asserts that there is *no* reality beyond its scope. According to scientism, if something is not rational, or not verifiable through the physical senses, then it is not real. The first thing to notice about scientism is that it makes a fundamental assertion about reality. Scientism says, "science is the *only* way of obtaining true knowledge of reality." This statement, however, cannot itself be verified by the methods of science.

Our materialistic worldview thus rests upon two assumptions: (1) science reveals a material world, and (2) scientism is true. The first assumption has been seriously challenged by the discovery of quantum theory.² As for the second assumption, we have already seen that scientism is no more than an unjustified assumption about reality. And we must be careful to remember that scientism can just as easily fool us into taking a quantum worldview as reality. No matter what worldview science might offer, if we mistake it for all of reality, we have bought into scientism. We see, then, that scientism blinds us to everything in reality that is beyond the scope of the scientific method, no matter what that method may reveal to us. So, how much of reality is left out? Almost all of it! Einstein, for example, tells us. All our science, measured against reality, is primitive and childlike.³ And Heisenberg echoes his words: The existing scientific concepts cover always only a very limited part of reality, and the other part that has not yet been understood is infinite.⁴ In the process of deepening our inquiry into the nature of reality, we are limited only by assumptions we cling to, whether they be assumptions about the object of our seeking or about the

method we're using. We can only continue to deepen our knowledge by acknowledging that our worldviews, theories, and methods of investigation are, at best, only provisional, and eventually must be surrendered. As Heisenberg tells us, Whenever we proceed from the known into the unknown we may hope to understand, but we may have to learn at the same time a new meaning of the word "understanding." ⁶. So if we wish to become ever more intimate with reality, we must continually go beyond our current way of understanding, our current mode of inquiry, and our current notions of reality. In an unlimited inquiry, the very method of science itself must finally be surrendered, leaving us simply with science , which literally means knowledge . This suggests that science in its most radical sense is not limited to any particular method of science, any assumption about reality, or even any idea of what "knowledge" means. Only when we surrender everything and open ourselves to the unknown without any fixed method or framework or preconception, can Reality then perfectly reveal itself as the Knowingness that is inherent to Consciousness Itself.

Modern Physics Contradicts Materialism

The first reason is that the advent of quantum physics in the first quarter of the twentieth century has rendered the materialist worldview scientifically untenable. A fundamental assumption of the materialist worldview is that physical objects exist independently of consciousness, which is considered to be a mere epiphenomenon of physical processes taking place in the brain. According to quantum physics, however, this is not true. Material

objects do not exist in any definite way apart from the consciousness which observes them. These two aspects of reality—consciousness and its objects—are inseparable. Thus, the evidence of science itself contradicts a purely materialistic account of the universe. Consequently, science has had to abandon its materialist worldview and is currently in search of some other explanation for its findings. This does *not* mean that science presently provides evidence for a spiritual worldview, as some modern thinkers have prematurely concluded. What it does mean, however, is that materialism can never again provide a sound basis for science. Thus, a major obstacle to any rapprochement between science and religion has been effectively removed.

PARALLEL METHODOLOGIES AND DIFFERENCES BETWEEN MYSTICISM AND SCIENCE

There are, in fact, two connections between science and mysticism. The first has to do with similarities in their methodology. Just as scientists maintain that the truth of their theories can be verified by anyone who conducts the proper observations and experiments, mystics maintain that the Truth of their teachings can be verified by anyone who is willing to undertake the appropriate spiritual disciplines and practices. Thus, the difference between science and religion is not (as many people have supposed) that one relies on empirical investigation and the other on blind faith. Rather, the difference lies in the domains to be investigated and the kinds of truth to be verified. While scientists focus their investigations on the behavior of objects in

consciousness, mystics concentrate on the subject to consciousness—that 'self' or 'I' to whom the objects appear. And while scientists seek to develop ever more refined and comprehensive theories about how reality works, mystics seek to Realize a Truth about its fundamental nature that lies beyond the grasp of any theory whatsoever. It should be noted that, far from placing science and mysticism in conflict, these differences between their respective domains and functions are actually what make their compatibility possible. Not only do science and mysticism possess parallel methodologies, but mysticism can actually provide a coherent spiritual/philosophical understanding of how science works. One of the key teachings agreed upon by mystics of all traditions concerns the relationship between consciousness and its objects—the very relationship which (as we have already seen) lies at the heart of the philosophical crisis in modern physics. What the mystics claim is that the distinction between the subject *to* consciousness and objects arising *in* consciousness is imaginary.

In reality, Consciousness (God, Brahman, Buddha-Mind, or Tao) constitutes the Formless Ground out of which all forms arise as inseparably as waves arising from a single ocean. Thus, mystical teachings pick up precisely where modern scientific theories leave off. And so it is here, at this juncture between their two domains, that an actual continuity between science and mysticism begins to reveal itself. Once this is grasped, the problem of constructing a new worldview boils down essentially to a question of formulation: Can the continuity between mystical teachings and scientific

theories be expressed in a single, rigorous language comprehensible to both?

DIFFERENCES

The truths which science yields are conceptual truths, arrived at through a combination of thinking and experiencing. As such, they are also and inevitably relative truths, subject to revision and change as our thoughts and experiences change. But the Truth to which mystics bear witness is an Absolute Truth—one which, as the Hindu sage, Shankara, says, "is beyond the grasp of the senses,"¹⁴ and which, Ibn `Arabi writes, "cannot be arrived at by the intellect by means of any rational thought process." This Absolute Truth can only be known through a *third* mode of cognition—called variously *Enlightenment*, *Realization*, or *Gnosis*—which transcends both thinking and experiencing. In fact, it is precisely our ordinary ways of thinking and experiencing that veil this Truth from us, for as Buddhist master, Huang Po, writes: *Blinded by their own sight, hearing, feeling and knowing, they do not perceive the spiritual brilliance of the source substance. If they would only eliminate all conceptual thought in a flash, that source-substance would manifest itself like the sun ascending through the void and illuminating the whole universe without hindrance or bounds.*

Dionysius the Areopagite says of the Christian mystic's Enlightenment: Renouncing all that the mind may conceive, wrapped entirely in the intangible and the invisible, he belongs completely to him who is beyond everything. Here, being neither

oneself nor someone else, *one is supremely united by a completely unknowing inactivity of all knowledge, and knows beyond the mind by knowing nothing.* In other words, the Truth to which all Mystics testify is of an entirely different order than the truths formulated by science. When Jesus said, "Know the Truth and it shall make you free," ¹⁸ he wasn't talking about the theory of relativity. And when the Buddha said, "The gift of truth is the highest gift," he wasn't referring to quantum physics. There are quite a few seekers out there today who think that discovering mystical Truth is simply a matter of "shifting your paradigm," or learning a "new worldview." And while it is certainly valuable to examine your worldview and to investigate new paradigms, it is also crucial to remember that, no matter how revolutionary a worldview may seem, or how compatible with mysticism a paradigm may be, worldviews and paradigms always remain conceptual constructs. But the Absolute Truth revealed by Gnosis lies beyond *all* concepts, *all* paradigms, and *all* worldviews, whatsoever, into that Ocean of Silence at the Heart of the World.

DIALOGUE BETWEEN

THE EASTERN THOUGHT AND MODERN WESTERN SCIENCE

The spiritual experience of oneness conduces to the same insight as reasoning through science. Both convey the insight of fundamental interconnection between ourselves, other people, other forms of life, the biosphere and, ultimately, the universe. Science

and spirituality, far from being mutually exclusive and conflicting elements, are complementary partners in the search for the path that can enable humanity to recover its oneness with the world. Science demonstrates the urgent and objective need for it; and spirituality testifies to its inherent value and supreme desirability. The Progress to new physics - quantum mechanics, relativity, the universe of the microparticles, theories for complex and non-linear dynamic systems, invisible worlds, chaos leads to order, give a different dimension to the way of thinking of individuals, scientists, and philosophers. The basic elements of the Eastern world view are also those of the world view emerging from modern physics. The Eastern thought and, more generally, mystical thought provide a consistent and relevant philosophical background to the theories of contemporary science; a conception of the world in which man's scientific discoveries can be in harmony with his spiritual aims and religious beliefs. The two basic themes of this conception are the unity and interrelation of all phenomena and the intrinsically dynamic nature of the universe.

The further we penetrate into the submicroscopic world, the more we shall realize how the modern physicist, like the Eastern mystic, has come to see the world as a system of inseparable, interacting and ever-moving components with man being an integral part of this system. Quantum theory thus reveals an essential interconnectedness of the universe. It shows that we cannot decompose the world into independently existing smallest units. As we penetrate into matter, we find that it is made of particles, but these are not the 'basic building blocks' in the sense of

Democritus and Newton.

They are merely idealizations which are useful from practical point of view, but have no fundamental significance. In the words of Niels Bohr, 'Isolated material particles are abstractions, their properties being definable and observable only through their interaction. The structural similarities of Eastern thought and Western natural science pointed out the great scientists of our time. Bohr's quantum principle of complementarity supports that everything in the Universe consists of opposed sections. The Chinese Tao is the symbol that characterizes the dialectic unity of opposites. The Tao is the rhythm which connects the opposites. Other physicists who noted this similarity include Heisenberg, Niels Bohr and Julius Oppenheimer, as well as a host of contemporary scientists and biologists. Heisenberg: 'The two foundations of twentieth-century physics-quantum theory and relativity theory-both force us to see the world very much in the way a Hindu, Buddhist or Taoist sees it, and how this similarity strengthens when we look at the recent attempts to combine these two theories in order to describe the phenomena of the submicroscopic world: the properties and interactions of the subatomic particles of which all matter is made. Here the parallels between modern physics and Eastern mysticism are most striking and we shall often encounter statements where it is almost impossible to say whether they have been made by physicists or by Eastern mystics. *Niels Bohr* 'The great scientific contribution in theoretical physics that has come from Japan since the last war may be an indication of a certain relationship between philosophical

ideas in the tradition of the Far East and the philosophical substance of quantum theory. *Robert Oppenheimer*: “For a parallel to the lesson of atomic [we must turn] to those kinds of epistemological problems with which already thinkers like the Buddha and Lao Tzu have been confronted, when trying to harmonize our position as spectators and actors in the great drama of existence”.

Oppenheimer wrote in 1954: 'The general notions about human understanding...which are illustrated by the discoveries in atomic physics are not in the nature of things wholly unfamiliar, wholly unheard of, or even new. Even in our own culture they have a history, and in Buddhist and Hindu thought a more considerable and central place. What we shall find is an exemplification, an encouragement and a refinement of old wisdom'. Schrödinger, in speaking of a universe in which particles are represented by wave functions, said, “The unity and continuity of Vedanta are reflected in the unity and continuity of wave mechanics. This is entirely consistent with the Vedanta concept of All in One.” “The multiplicity is only apparent. This is the doctrine of the Upanishads. And not of the Upanishads only. The mystical experience of the union with God regularly leads to this view, unless strong prejudices stand in the West.” (Erwin Schrödinger, *What is Life?* , p. 129, Cambridge University Press) As Fritjof Capra suggests, ‘...Eastern thought, and more generally, mystical thought provide a consistent and relevant philosophical background to the theories of contemporary science,’ both conveying ‘the unity and interrelation of all phenomena and the intrinsically dynamic

nature of the universe.' Capra quotes the Tantric Buddhist Lama Anagarika Govinda: 'The Buddhist does not believe in an independent or separately existing external world...The external world and his inner world are for him only two sides of the same fabric, in which the threads of all forces and of all events, of all forms of consciousness and of their objects, are woven into an inseparable net of endless, mutually conditioned relations.' Likewise, said a Japanese Zen master upon attaining enlightenment: 'I came to realise clearly that Mind is not other than mountains and rivers and the great wide earth, the sun and the moon and the stars.'

CHAPTER 4

One Thought, Two Forms of Universal Spiritual (Unity- Diversity)

(MYSTICISM AND RATIONALISM)

Mysticism: All are one, the universe is a Unity

All things in the universe are one. They are all made of the same basic matter/energy, and they interact with one another, constantly. All things on earth are one: plants, animals, rocks, oceans and atmosphere. All living creatures had a common origin, all depend on each other, and shape and are shaped by non-living things. Life has radically altered the earth's atmosphere, and molded many aspects of its geology. The Gaia system is an organic evolving whole embracing the biosphere, hydrosphere, lithosphere and atmosphere. All humans on earth are one. We descend from the same family of common ancestors. We are, in a quite literal sense, siblings, and like siblings we depend on each other's love and care and responsibility. We are interdependent not just in our families and communities, but in nations, and increasingly on a global scale - just as we are also interdependent with nature and the earth.

Rationalism: The universe is many and different beings

Yet at the same time things are many. Matter-energy is embodied in many different particles and bodies. Life has evolved into many unique species - at least 1.5 million that we know of - and each individual of each species is unique. Diversity is essential to the beauty and interest of nature and the universe. Without it everything would be blank and monotonous. All these beings have their own separate existence. Existence as a separate individual is always more or less temporary, from the day's life of a mayfly to the billions of years of a star. Sooner or later, humans, cats, trees, planets, stars will end their temporary existence and be reabsorbed, recycled and recreated as part of new phenomena. Yet even if their existence is temporary, this does not mean that it is unreal or unimportant. Animals with nervous systems and senses have a greater degree of separation. Their consciousness make each one see themselves as separate. And in many respects they are separate: driven to seek survival, even at the expense of other individuals or other species.

Recognizing unity and diversity

We often think too rigidly in terms of either/or, black/white distinctions. Philosophical systems that talk about unity tend to deny or play down diversity, as if it were in some way not real, or not important. Yet this devalues individual things and creatures. It makes us look at them in a distant and abstract way, makes us ignore their particularity. Other systems focus too much on

diversity and ignore the ways in which things are united and interdependent. This too carries the risk that we see ourselves only as isolated individuals, in competition with each other. Yet we do not have to make an all-or-nothing choice between unity and multiplicity. Both exist and for wholeness we must embrace both. Imagine you are standing on a rocky shore by the ocean, on a breezy day. The reach ahead of you is ultimately linked with every stretch of sea on the planet. It is a unity, a vast watery whole. But in front of you, where water interfaces with air, what you see is waves, hundreds of thousands of waves: some enormous, others smaller, others again tiny waves on the backs of waves. Each of these waves is a distinct entity, with its own characteristics. They are a multiplicity. The Multiplicity and the Unity are one and the same thing, a thing that is both many and one at the same time. The waves, and the currents underwater, make up the ocean. The ocean is the underlying basis for every wave. Neither the ocean, nor the waves, can be understood in isolation from each other.

The One is the Many, the Many are the One.

We need a sense of the unity of life and of humans for the sake of human welfare and for the survival of the planet. We need a sense of unity with the cosmos so that we can connect with Reality. But we also need a sense of individuality, for the sake of our own dignity and independence and of the loving care for others. We need it to appreciate each natural form, each animal and plant, each human person in their uniqueness. We must preserve the sense of unity and the sense of diversity and multiplicity. We must

recognize that the One and the Many are the same thing viewed from different angles. The One is the Many. The One is manifested only in and through the Many. It has no separate existence apart from the Many. Equally the Many are the One. Even during their temporary separation, they are always part of the One, and always united with the One. Every one of us is always part of the One and can unite with the One at any time we choose.

DIFFERENCES IN WESTERN AND EASTERN THOUGHT

The eastern and Asian philosophies and religions were led through introspection, meditation, intuition, insight and mystical experience to the understanding of the deep structure of the natural world. We could say that they do not constitute philosophies, with the west notion of the term, since they are not expressed by the rational intellect, the logical argument and the declarative language of science, but by parables, allegories, images and poetic language. The eastern philosophy points a path to the revelation of truth, namely the living experience that humans, plants, animals, the planet, the stars, everybody and everything is One. Everything is made of the same “universal matter”. The separations are metaphysical abstractions and mental constructions. The difference between the western and the eastern and Asian thought is the way that we will reach the ultimate knowledge, the knowledge of wholeness. There is no methodology on the western sense, a system of predefined rules that aim on a purpose. There is the path of the personal search. That is why we support that the

“knowledge” is not mental, namely impersonal, but it is experiential, i.e., personal. The “knowledge” is ineffable and inexpressible, for it is not expressed in words, but shown with attitude, manner and style. The eastern and Asian thought is poetical thought and wisdom of life. The western philosophy is a rational thought seeking for the truth by the abstract mind and the natural or artificial symbolism of language and mathematics. The eastern philosophy denied the division into matter and spirit, on which the western philosophy and science was founded. It is talking about the unbreakable One. Namely, it is neither idealism, nor materialism. It does not accept this theoretical division on knowledge. The western thought founded its building on the division of matter and spirit and from this division emerged the two philosophical currents of materialism and idealism. The western science today ends up on the same conclusion with the eastern philosophy. We surpass this division between matter and spirit. The nature is united. We go over matter and spirit. Besides, at the contemporary physics, matter and energy is the same. The Universe is energy. The matter is nothing more than concentrated energy. What is more, the division into spirit that observes and matter that is being observed has been refuted by the double slit experiment of quantum physics. In this experiment the observer and the object being observed are one since they affect one another. The science of Chaos teaches us that everything is interconnected, but the contemporary developments in neuroscience, getting started with the brain neurons and their multiple connections, reveal the topology of the brain, a miniature of the universal geometry of

everything.

The wisdom of the Eastern ancient knowledge and the Western philosophy of the contemporary scientific knowledge converge and create open thought, the thought of open Wholeness. The core of the open thought is the cosmic consciousness. In every particle, atom, molecule, cell of matter the energy and the information of the cosmic spirit is concentrated. The history of the universal spirit and the spirit of the universal history of spirit unfold through time and in different places. They are history of transformation of our relationship with the world. The knowledge of the cosmic spirit is an unchanged structure, which is expressed in multiple forms in the evolutionary history of the universe. There is an harmony between the spirit of Eastern wisdom and Western science. It attempts to suggest that modern physics goes far beyond technology, that the of universal thought can be a path with a heart, a way to spiritual knowledge and self-realization.

COSMIC MIND AND CREATIVITY

Cosmic Conversations

We live in a universe that can be seen and experienced from many different perspectives. We therefore need to look at the universe from many different angles. Everything and everyone is a form of the universe being expressed in a particular way. In other words, each one of us can say with absolute certainty “We are the Universe!” Since we are the universe, each one of us provides a valuable perspective that complements the contributions of

everyone and everything else around us. Each of us is the universe being expressed in a particular location in a specific way. We're all part of the same moving and evolving cosmos, but the view of it is unique from each of our respective locations.

This suggests that the universe is not only omniscient, but that it is also multiperspectival – there are many different, and equally valid, viewpoints on this. Each one of us is a cosmic laboratory within which we can discover the secrets of the universe. We speak in various ways, we are each the universe having become aware of itself in our own unique way. The insights that the universe has many different perspectives and is both cosmic and personal has great transformative potential, and is worth reflecting on deeply.

Creativity and Modern Science

Creativity and Theory of relativity

In Einstein's theory of relativity, the notions of events (space and time simultaneity), mass and energy equivalence (special relativity), space expansion (big bang) as well as space and energy-mass equivalence, are introduced. General theory of relativity combined to quantum mechanics leads to the emergence of the whole universe from zero and absolute nothingness. Such "emergence – creation" of the universe from zero does not take place in space or time, since both are identical to the universe, space as energy expansion of the vacant space and time as a measurement unit of movement and change. Hence, the event, as "something" that takes place, and since it takes place, creates

space, time and matter – mass – energy, constitutes a novelty of the theory of relativity which suggests that the world is eternally being created and is not static and perpetual.

Creativity and Quantum mechanics

In quantum mechanics, the term “creativity” is amplified, since natural events form the constant transition from possibility to reality, according to the ontological probabilism of the Schrödinger equation. The completion of the quantum theory through the concept of the Grand Unified Theories, and especially through the yet incomplete superstring theory, reveals that at the micro level of creation of sub-atomic particles or space, motion literally comes prior to Being and objects are forms of a motion which suggests a constant transition from possibility to reality.

In non – linear physics of complex systems, the term “creativity” does not simply correspond to the initial emergence of the universe (big bang) or to the sub-atomic scale processes described by quantum mechanics, the Grand Unified Theories and the superstring theory, but is expanded to all aspects of nature: i.e. physical – chemical, ecological, psychological – mental aspect. So, through the non – linear physics theory, macroscopically viewed beings are constructed, holistic forms of motion, in order for the whole to gain a non reducible (therefore the whole is constantly being produced) ontological meaning which characterizes the operation of the part.

Combining the theories of quantum mechanics and relativity, it

could be stated that modern physics abolishes the customary perception concerning the natural phenomena, which were concerned as a constant transformation of a fundamental substance. On the contrary, the contemporary description of the natural world by physics and mathematics corresponds to Morphodynamics, i.e. the description of the world as creation of all cosmic shapes from a zero point, on all cosmic levels. From this point of view, zero is understood as the absence of shape, while the notion of an unshaped eternal substance is weakened and does not seem to be able to be justified by the evolution of scientific thought. The “beings” and their “substance” are assimilated to forms of movement that have already been created or that are being created, and constitute motion inside motion.

Creativity and Non-linear and Chaotic systems

Physics of chaotic systems attributes a mathematical description through bifurcation theory to the notion of creating cosmic shapes, according to which when a physical system tends to critical situations, it develops new structures of existence and function through atopic interrelation and information processes in an unpredictable manner. Generally speaking, it could be suggested that new structures of existence and operation, that resemble to a virtual form scaling on the physical system and tuning its parts in order for the whole to gain meaning and being as a whole and not as a simple result of microscopic processes, are formed and created inside nature. This means that the world is revealed as information apart from being matter and energy. This procedure of creating

cosmic figures seems, or is, indeed capable of being considered as a kind of expression of a “cosmic discourse”, of “cosmic words” and “cosmic sentences” in the sense of which, the fact that is indicated, is constantly supplemented by the fact that is about to be indicated.

It can be stated that the arrow of time, which is introduced by cosmic functions (thermodynamics, electromagnetic radiation, big bang, information procedures, Markov procedures, etc.), corresponds to an irreversible and irrevocable direction of a cosmic “sense” which is constantly being created and enriched. Hence, what came to birth from zero point, even if it is corroded in the future, has contributed in order its corrosion does not correspond to a cosmic situation similar to the one existing before its creation. In other words, birth and corrosion make the future always asymmetric towards the past. By this point of view, even if the whole universe reaches zero point at a time, this does not mean that zero point after the creation of the world is similar to zero point before it. Possibly, time equals to an unchangeable and irrevocable “cosmic memory” and to a development of cosmic correlations which can never be eradicated even if the world and the universe die completely off.

Creativity and living systems – Networks – Relationships

Over the past thirty years, a new systemic conception of life has emerged at the forefront of science. New emphasis has been given to complexity, networks, and patterns of organisation leading

to a novel kind of ‘systemic’ thinking. ‘The view of living systems as networks provides a novel perspective on the so-called “hierarchies” of nature. Since living systems at all levels are networks, we must visualize the web of life as living systems (networks) interacting in network fashion with other systems (networks). For example, we can picture an ecosystem schematically as a network with a few nodes. Each node represents an organism, which means that each node, when magnified, appears itself as a network. Each node in the new network may represent an organ, which in turn will appear as a network when magnified, and so on. In other words, the web of life consists of networks within networks. At each scale, under closer scrutiny, the nodes of the network reveal themselves as smaller networks. We tend to arrange these systems, all nesting within larger systems, in a hierarchical scheme by placing the larger systems above the smaller ones in pyramid fashion. But this is a human projection. In nature, there is no “above” or “below,” and there are no hierarchies. There are only networks nesting within other networks. ‘

‘The realization that systems are integrated wholes that cannot be understood by analysis was even more shocking in physics than in biology. Ever since Newton, physicists had believed that all physical phenomena could be reduced to the properties of hard and solid material particles. In the 1920s, however, quantum theory forced them to accept the fact that we cannot decompose the world into independently existing smallest units. As we shift our attention from macroscopic objects to atoms and subatomic particles , nature

does not show us any isolated building blocks, but rather appears as a complex web of relationships between the various parts of a unified whole.’

Cells are parts of tissues; tissues are parts of organs, organs parts of organisms; and living organisms are parts of ecosystems and social systems. At each level the living system is an integrated whole with smaller components, while at the same time being a part of a larger whole. Ultimately – as quantum physics showed so impressively – there are no parts at all. What we call a part is merely a pattern in an inseparable web of relationships. Therefore, the shift of perspective from the parts to the whole can also be seen as a shift from objects to relationships.’ All living systems are networks of smaller components, and the web of life as a whole is a multilayered structure of living systems nesting within other living systems – networks within networks. Organisms are aggregates of autonomous but closely coupled cells; populations are networks of autonomous organisms belonging to a single species; and ecosystems are webs of organisms, both single-celled and multicellular, belonging to many different species. What is common to all these living systems is that their smallest living components are always cells, and therefore we can confidently say that all living systems, ultimately, are autopoietic. However, it is also interesting to ask whether the larger systems formed by those autopoietic cells – the organisms, societies, and ecosystems – are in themselves autopoietic networks.’

From objects to relationships – Throughout the living world we

find systems nesting within larger systems. While mechanistic science concentrates on reducing things to basic material building blocks, the emerging holistic paradigm recognizes that systems are integrated wholes whose properties cannot be reduced to those of smaller units. The two fundamental themes of this systems view of life are the universal interconnectedness and interdependence of all phenomena, and the intrinsically dynamic nature of reality. Systems theory accepts neither the traditional scientific view of evolution as a game of dice, nor the western religious view of an ordered universe designed by a divine creator. Evolution is presented as basically open and indeterminate, without goal or purpose, yet with a recognizable pattern of development. Chance fluctuations supposedly take place, causing a system at a certain moment to become unstable. As it ‘approaches the critical point, it “decides” itself which way to go, and this decision will determine its evolution’.

The theory of general systems recognizes two principal phenomena of self-organization: self-renewal, ‘the ability of living systems continuously to renew and recycle their components while maintaining the integrity of their overall structures’; and self-transcendence, ‘the ability to reach out creatively beyond its physical and mental boundaries in the processes of learning, development, and evolution’ [4]. He argues that adaptation of species through genetic mutation (genotypic change) is only one side of evolution. The other is creativity: the development of new structures and functions of ever increasing complexity, independent of environmental pressure, as a manifestation of the potential for

self-transcendence inherent in all organisms.

Creativity and society

On anthropological level, the term “creativity” gains an extended level since it is revealed that the human is not a simple creation of a cosmic process, but has got a sense of belonging and co-creates in collaboration with Thought, its forms, its meanings and mental contents, the feelings and the emotions of theories, institutions, etc., which are not raised on the level of simple biological or physical – chemical processes, even though they are directly related to them and are produced by one another without being identified and without losing their self – efficiency. The world and the human are being co – created and co – produced in a two-way relationship, a feedback relationship that is unfolded as Time. It may be stated that cosmic creation from zero point or the absolutenothing of the cosmic forms of existence, is identified to a connected to time, ontologically unpredictable and innovative course of the world towards the asymmetric and the unique, through constant physical symmetry disruptions. Thus, the world is constantly enriched ontologically by a neo – innovation that renders the future asymmetric to the past. The arrow of time means that literally the world and the cosmic forms of being are constantly created from zero point and the absolute nothing and “return” to the latter, recreating it.

Creativity of Unity / Multiplicity

Our Universe exists as a unified field or whole. Creative energy swirling as atoms, giving rise to molecules, forming galaxies, stars, planets, mountains, rivers and the bodies of all living beings. If this is so, why do we not “see” the world this way, experience our lives for the miracle it is? Forests, lovers, galaxies, flowers, rivers, mountains, moons and countless living beings- our Universe moves and dances as each of us. Born of Earth, animated by solar winds , we are the children of evolution’s story, Nature’s emergence on the stage of cosmic history. Birds calling, hurricanes swirling, bees passing by, waves crashing on beaches, leaves waving hello from a neighbor’s tree. All flowering into this moment, creative expressions of our sacred totality. Waiting, just waiting, for our minds to quiet, our hearts to open and our eyes to see...

Our physical bodies function as a harmonious whole, all the cells and systems working together as one, in synch with the surrounding world. We breathe in oxygen given to us by the trees, drink water from lakes and springs, take in materials from trees and plants that grow in the earth, their leaves gathering energy from our local star, the sun. Every moment of our lives, whether we are aware of it or not, we live in unity and intimate connection with the creative wisdom of the natural world. Thinking and behavior that is in tune with Nature’s wisdom is more compassionate and holistic than the mechanistic ways of complex civilizations. All it requires is mindful observation, curiosity, a creative imagination and a peaceful heart.

Transformation of Thought And Evolution of Consciousness

The challenge for humanity now is to transform and transcend our fractured views of the world, to shift paradigms, to return to a more wise and holistic understanding of ourselves and our place in the Universe. A change in thinking and behavior will result naturally from a change of heart. As Einstein put it, “Our task must be to free ourselves from this prison by widening our circle of compassion to embrace all living creatures and the whole of nature in its beauty.” Once enough of us open our minds and collaborate together, there’s a good chance we’ll find many of our problems can be solved quite easily. By aligning our species with the wisdom of Nature (and our own hearts), the health of our planet and communities could be restored. We just need to recognize our interdependence with the rest of the Universe, be more generous and grateful, care about one another, re-evaluate our priorities and change the way we think.

The whole Universe pulses with complex interconnections and a mysterious beauty far beyond our imaginations. There’s a deeper truth that our limited conceptions ignores- that the Universe is not something that exists outside of us. You and I are creative living expressions of ALL that is. We are born of atoms forged in the heart of long gone stars, energized now by the photons of our local sun. Kept alive by the nutrients and air of our World. We are Life manifesting as people, mountains, rivers and trees. Seeing this deeper truth and experiencing our connection to the Universe is the beginning of wisdom. Sharing that wisdom with others- and using

it as the foundation for redesigning the human systems that we build together- is how our world can be re-created and transformed.

BIBLIOGRAPHY

Internet Resources

- www.centerforsacredsciences.org
- www.spaceandmotion.com
- www.ervinlaszlo.com
- www.ncbi.nlm.nih.gov/pmc
- open-thought-blog.tumblr.com
- www.deepakchopra.com
- *consciousness* arizona.edu

Other Resources Books

- Cosmology: philosophy and physics by Alexis Karpouzos
- Questioning the Scientific Worldview by Thomas J. McFarlane
- The Consciousness Revolution by Ervin Laszlo,
- The New Science and Spirituality Reader by Ervin Laszlo,
- The Tao of Physics by Fritjof Capra
- *Maps of Consciousness* by Ralph Metzner,
- The Structure of Scientific Revolutions by Thomas Kuhn
- A Study of History by Arnold Toynbee
- The Passion of the Western Mind by Richard Tarnas
- The Social Construction of Reality by Peter Berger
- Laws of Form by G. Spencer-Brown
- Monadology by Leibniz
- Albert Einstein - The Merging of Spirit and Science
- Aristotle , Metaphysics
- Immanuel Kant Quotes on Metaphysics
- Bertrand Russell's Theory of Knowledge
- Friedrich Nietzsche , The Greeks
- The Perennial Philosophy by Aldous Huxley
- The Need for a Sacred Science by Seyyed Hossein Nasr
- Collinson , Fifty Eastern Thinkers
- Schrödinger E, The Interpretation of Quantum Mechanics
- David Bohm , Wholeness and the Implicate Order