

UNFOLDING UNIVERSE
science + mysticism = Science

Abraham Amaha*

'The most beautiful and most profound emotion we can experience is the sensation of the mystical. It is the sower of all true science. He to whom this emotion is a stranger, who can no longer wonder and stand rapt in awe, is as good as dead. To know that what is impenetrable to us really exists, manifesting itself as the highest wisdom and the most radiant beauty which our dull faculties can comprehend only in their primitive forms - this knowledge, this feeling is at the center of true religiousness.' Albert Einstein

This is a naive presentation of a certain principle and its implications derived from certain frameworks of modern science. This article tries to link scientific discoveries with the realization of the origin and content of the individual self and, thereby, attempts to show how to raise this self through the application of this derived principle. It deduces that man is partly physical and partly spiritual, the combination of which makes him whole. This wholeness is the qualitative dialectic between the two (matter and spirit/space-time/wave) seemingly opposing entities that have deep-rooted meaning in their union as complementary to each other. On the basis of the undeveloped self, some aspects of modern civilization are criticized. In the end, it invites individuals to open a forum of public discussion on this curious matter.

The essence of this discussion may necessarily be controversial to some degree. For the most part, it may be due to its lack of sophistication and its too-simplistic approach to the problem. For the lesser part, it may be because of the non-rigorous expression,

* Assistant Professor, Department of Physics; Addis Ababa University.

UNFOLDING UNIVERSE
science + mysticism = Science

Abraham Amaha*

'The most beautiful and most profound emotion we can experience is the sensation of the mystical. It is the sower of all true science. He to whom this emotion is a stranger, who can no longer wonder and stand rapt in awe, is as good as dead. To know that what is impenetrable to us really exists, manifesting itself as the highest wisdom and the most radiant beauty which our dull faculties can comprehend only in their primitive forms - this knowledge, this feeling is at the center of true religiousness.' Albert Einstein

This is a naive presentation of a certain principle and its implications derived from certain frameworks of modern science. This article tries to link scientific discoveries with the realization of the origin and content of the individual self and, thereby, attempts to show how to raise this self through the application of this derived principle. It deduces that man is partly physical and partly spiritual, the combination of which makes him whole. This wholeness is the qualitative dialectic between the two (matter and spirit/space-time/wave) seemingly opposing entities that have deep-rooted meaning in their union as complementary to each other. On the basis of the undeveloped self, some aspects of modern civilization are criticized. In the end, it invites individuals to open a forum of public discussion on this curious matter.

The essence of this discussion may necessarily be controversial to some degree. For the most part, it may be due to its lack of sophistication and its too-simplistic approach to the problem. For the lesser part, it may be because of the non-rigorous expression,

* Assistant Professor, Department of Physics, Addis Ababa University.

intended to invoke curiosity and participation from professional/private experiences of individuals. It may also be possible that the diverse and intertwined ideas and materials presented here may cause some misunderstanding (or even irritation) at the beginning; but, unlike the traditional reductionist approach, this is synthetic by nature - one way of going through science. The important thing is, this particular text is addressed to the least of the people who are only thirsty about those things and who can not afford any challenge or dollar to obtain it - it is only a note, and it is for free. In going through this material, a well-versed intellectual may find it futile or even some thing like a sophism, unworthy of contemplating upon. I would like to assure the reader, however, that this little monograph is not wishful thinking, nor is it some kind of a new finding; instead, it is like a grain of sand thrown from a seashore of understanding only to point to the way of the very beginning of a long journey towards the oceans of self-awareness. It intends to wake the self from the long-long dream of evolutionary reality. Hence, I wish that it be read with total open mindedness as long as it holds one's own interest.

According to Darwin's theory, evolution is the development of increased order and complex forms of life (plants, animals) from earlier and simpler forms where the successful ones can keep on living against environmental hostilities. In this process, progressive evolutionary change manifests by the 'natural selection' that preserves adaptability and advantageous mutation. This means successful animals leave messages for better and more refined DNA structures than their own for their offspring. DNA, the short form of Deoxyribonucleic acid, is the acid that carries genetic information in a cell. This acid takes the form of a long chain of molecules wound in a double helix in which the information needed to replicate and operate the organism is encoded. Needless to say, traces of life (first orders of such acids to life) on earth have been found in rocks 3.8 billion years old. Moreover, slight changes in the ordering pattern of DNA components can make a genetic difference between an elephant and

a mouse. Nowadays, genetic engineering is one of the exploding fields of pursuit in improving genes for useful purposes. Considering the human being as the highest-evolved animal, a person at the present age must be made of all the encoded messages and adaptation mechanisms throughout the ages. Thus the kind of DNA we are made of bears all the history of creation, at least beginning from the first primitive single-celled life, as a root of an evolutionary tree animated by the dynamic process of birth and death. That is why the scientific speculation that our technology will soon develop that we can 'beam' our DNA to the unknown.

From the psychological (particularly, psychoanalytical) point of view, this DNA is also the bearer of all patterns of behavioral actions - the instinct for survival. Please note that such instincts reside in the brain as static references, the dynamic aspect being the process of associating them with the present external reality (through some mediating agent) for action or learning. The history of instinct, however, can be shadowed and repressed by influences, in form of hypnosis. For example, the animal instinct to fight or to run under pressure is modified by modern man as to rebel or to conform to the pressure, as the well-known saying; 'if you can't beat them, join them' indicates. In any case, the present-day human instinct is based on the sum total of all evolutionary processes (mainly of self-preservation) of the past. This potential reference is contained in the sub-conscious (which can be likened to a deep ocean) and is termed as a human psyche. Some components in this ocean are shallow for immediate expressions or daydreams; and others are deep to be considered as cultural or the collective unconscious.

In order to define the individual self and to understand the underlying dynamic interplay between the DNA and the sub-conscious, let us take a glimpse of how the brain functions generally. It is understood that the smallest entities of the brain, the neurons or nerve cells (each with over a thousand electro-chemical conductors, like the tiny

processor in a digital watch), are tiny decision-making units responsive to appropriate electrical signals over suitable thresholds. Then the brain, with billions of such processors operating at the same time, 'parallel computation' (or job-sharing activities of elementary tasks), becomes a gigantic parallel computer which in the end may send an electrical or chemical signal to the outside. This signal, in turn, may cause the movement of an arm, a smile, or increased readiness to respond to new external stimuli. Setting up of future plans and goals, as visionary inputs to the brain computer, are evident. Technically speaking, the most superior cluster of such cells in the brain is the NRT (Nucleus Reticularis Thalami), a gray flat tissue in the cerebral cortex. It seems to control or 'eye' the rest of the brain as a link to the outside world, and therefore, can be defined as the rational-minded self, I.

This self that controls and directs the interaction of some ideal picture stored in the brain memory, and external reality (through NRT) is limited to the five senses of perception. The audio and video signals we respond to (on which we heavily depend), occupy only infinitesimal segments in the spectrum of radiation - medium of communication and information. Thus one can conclude that the thinking process of modern man is to a large extent motivated by the visible (external) matter and the stored (internal) memories of the past; that is, by the less-evolved limited animal self. Urged by the dynamics of evolution, the first preoccupation of this self is then to expand this limitation by way of reasoning (logical synthesis in the memory of related types) and learning. The collective form of such pursuits to expand and to improve becomes a 'rational society' or civilized community'.

Unfortunately, this kind of civilization we live in is beset with adversities. Naturally, we are surrounded by wars, hunger and our fashionable disease, AIDS, among other spells. Should we really expect any better out of an evolution set out to work on adversities

and distractions? No; it demands these restrictions (as media) to expand and express itself by enlarging the horizon of this barrier by limitations. The point is, the self seems to enjoy the adversities as challenge for fulfillment and reward - self-esteem. This is the best example of life in a chaotic abysmal universe. But, 'within chaos, there is cosmos' (order); 'within diversity, there is unity!' When one begins to see that one is made up of all those lower strata, then one discerns at least how beastly the self can be, and then, by objectively looking at it, one begins to proceed forward. The classical Greeks saw emotion as primitive, unclean and involving man's baser nature; but sad to say, the motive was mainly to suppress it as a sign of wisdom'. Consequently, upon pondering over this fact, one finds one more dimension (degree of freedom) to widen one's own choice. This new dimension is the principle of *observation* (with the Universe as a standard) towards a higher understanding of the Self. That is, by arming oneself with the realization of past trauma and present problems, one progresses to be a creative human being.

In order to further gain insight of the general content of the Self, let us observe the following natural phenomena from physics. In defining the formation of the Universe, there is what they call the Big Bang theory that says something like this: Before anything ever existed, there was energy - spark. This energy was dimensionless, timeless, and of course, matter less. (This approach is supposed to express the 'standard model of the Universe' we live in.) This Primal Energy, as I would like to call it, has then unfolded (like the bud of a flower) forming space; and the other dimension, time, came in to make actual what was potential - creation. According to the well-known mathematical physicist, John Taylor, 'Thus one region which started out much smaller [as small as existing-non-existing ('string') particle?] than a proton ended up an instant later the size of a grapefruit and later became our own Universe For a better picture of this Energy', one can think of a spinning wheel the center of which (with radius zero and local time not quite defined) is stationary, with no

motion. But this fixed point contains all the ingredients (momentum, energy, ...) of the peripheral speed and turmoil for the solid wheel. In the same way, this Primal Energy contains the 'destiny' of the Universe through the formation and destruction of matter.

Curiously speaking, where do we stand? In the language of physics again, there are four fundamental forces of interaction responsible for the manifestation of the Universe: The two weakest types are gravitational and electromagnetic; and the rest are rather remote, in the nucleus of an atom. We can then safely say that our present-day technology is to a large extent based on the two simplest forces - gravitational and electromagnetic. At this stage, beginning from the Primal Energy of infinite curvature (just a mathematical point, corresponding to the strongest force), the Universe must have gradually unfolded till present to be more-or-less like a stretched hand (linear), 'flat', where parallel lines never meet. In any case, the gradual procession of changes from the Primal Energy (through radiation) to matter of chemical substance of atoms and molecules (inorganic matter), to the organic, and then to the living material of increased organization and complexity leads directly to the following conclusion The well-accepted fact that life arose from non-living material (as from the famous 'Miller-Urey Experiment' and subsequent cellular developments) is a strong indication that we have evolved from the Primal Energy with perfect continuity; and that this Energy is inside of us chemically (in terms of atomic constituents and their ways of arrangements in our DNA cells) and psychologically (in terms of our 'souls?'). Thus, in principle, the Self is the conscious awareness of this present state of evolution, to be clear later. In a sense, we do not have to look for Dinknesh (Lucy) to tell us where we originated from - who we are. Whatever we are made of at present is enough to tell us who we *really* are in a complete form. If only a fraction of money and manpower invested in warfare, or even in geology and anthropology, were applied to the kind of research into

using this Energy for constructive purposes, the whole outlook of the world would have been totally different.

In the 'quantum mechanics' of physics, the 'uncertainty principle' or 'indeterminacy' of Werner Heisenberg says that everything we measure is subject to truly random fluctuations, at least in the atomic world. This means there is an intrinsic uncertainty in the simultaneous measurements of pairs of 'complementary' variables. What it says roughly is that all the things we perceive exist halfway as particles and halfway as an invisible wave. The certainty in-between of locating the entity as a particle, and missing it as a wave yields some inherent fuzziness in its description. However, in the midst of these fluctuations, it is now well understood that such disorderly processes display deep statistical regularities in themselves, considered as an integral whole - made up of both the visible and the invisible aspects of reality. This can be understood from the fact that an electronic equipment functions nicely, a spider weaves its web with fascinating grace and a new-born child begins life, in spite of the frenzied atoms (which display erratic behaviors) with which these entities are built. Thus, by virtue of this [purposeful] fact alone, we see order in the midst of disorder. [Even the natural selection of evolution, with all the infinite possibilities and randomness, must have some element of order that we (may be, the successful ones) happen to communicate through this particular text at this very moment.] Then by observing our true nature in this Light of Order, we slowly and quietly disentangle ourselves from these crippling forces of chaos and disintegration, at least as a liberation from the myth of birth and death of material evolution. Probably this *observation* is what is called *salvation* in religious terms.

The dynamic outcome of this observation, on the other hand, is that the very existence and procreative trend of the material reality is threatened. To begin with, it will have to produce the kind of rational wisdom ('Serpent?') to tackle limitations through 'science' as

discussed above. It becomes one of the basic requirements of evolution for development and 'perfection' from the havoc it is made of. It creates problems and caresses us to 'solve' them, just to keep us busy enough to convince ourselves that we are actually dealing with whole reality - 'repeated lies become true'. Clearly, these are no true solutions; but in the guise of being solutions, they are causes to other more subtle problems so that this earthly material system is tactfully preserved. Think of aerosols, insecticides and genetic engineering for a moment! (A physicist once remarked that, in answering a question, five more get raised by the knowledge of that answer.) What happens is, the more problems we face (in psychology, shocks and traumas) the more we depend on this dark sub-conscious for solutions mainly to preserve the self from perishing by the very problem itself. When we succeed, we feel triumphant that we have fulfilled ourselves. We advocate 'positive thinking' simply to reinstate our missing ones and to be prepared for more challenges, but as a means of getting ahead of shame and inferiority which again linger in different forms. There is no positive thinking in hypocrisy; it comes rather as a result of objective observation and mastery of the problem with all its backgrounds. Strictly speaking, the static I (the stored opinion of the self in the brain, the ego image) can be anything to fulfill the 'survival of the fittest' in the tree of evolution. Even the morsel of food (a tiny piece of food, served in a golden dish or in a dirty plastic bag) is the renewal of the ancient contract to be earth-bound so that the body may live. In this way 'modernization', as the means of development strictly under the clutches of evolution, has brought us all these mess we cannot deal with rightly, lifted by our own bootstraps. Second, this materialistic evolution has fooled us with substitutes mimicking reality in a broad daylight: If you do not call me flagrant, telephone is a substitute for telepathy; and chemicals to be swallowed are substitutes for the life-giving Light, In other words, for healthy progress, we would have evolved to open up more subtle sensory organs than we presently have, instead of 'creating' electronic gadgets to numb our natural senses. Apparently, this trend

of rising above limitations is blocked by pride, 'so that it should express itself as a solution. Our position, with the knowledge we presently have, together with the tremendous developments of electronics, genetic engineering and 'globalization' is gloomy. There must be some force at work here. In this deadly pursuit by man to be everything, Mother Nature turns Demonic and our Earth becomes Hell. It is frustrating to see life becoming a nightmare, particularly in my jungle land - Africa! On this false side of the coin 'modernization will soon beam human DNA to the rest of the Universe; and space ships will travel endlessly by fusing available hydrogen atoms in thin space as fuel, at speeds close to that of light Could it be then the DNA of a miserable woman surrounded by hungry infants begging in rain in the slummy streets of Merkato*? Alas, I even thought we had more meaningful cultural exchanges with the extraterrestrial! Never mind, the Primal Energy is our home now, and we can soar in space and time far beyond the comprehension of the savage self.

I witness, therefore, the process of the so-called modernization (the process of attaining highly developed social organization through Darwin's evolution) is logically the process of our extinction - 'the best kinds of people must live on this earth' Ironically, the 'uncivilized' people like us, living in hell, are threatening the world with overpopulation. Yes, we have been pushed to dwell in the morbid dark sub-conscious, too deep that we turned to be totally sensual degraded beings. We sank below the consciousness level and became entities subject to the powers, projections and 'vibes' of environment through emotions. We could not even think of having 'higher' ego ideals for ourselves. We got caught up with the electricity of our arousal ('sex machine!') and now we breed to death. Here, science has to keep everything in check. Again it has to devise philanthropic supply of bandages, weapons developed by Nobel-Prize winners and associates, and egotistical uplifts by self-denying politicians. Practically we are given medicine to get sick for more medicines, to keep us chained downward with ever increasing

tightness of the grip. No one seems to know who is doing what, for we do not seem to know what we want. It seems like the fearful dictator with no notion of visions and possibilities, but imprisoned in the confinements of his morbid thinking process suffocates his own people, unknowingly. We do not need wars, Machiavellian influences or any kind of imposition from the inferior self. Knowing that we live in darkness, are we *enlightened*! We come from the entirety of all universes, if there are more than one. If it is not for lack of attention in our part, we have been constantly told that "the truth will set you free" and hence "the meek shall inherit the earth". The ancient Orient had even more accurate expression of reality than the present one, some four thousand years ago. As 'history repeats itself', this time is the turn of those simple people (of any kind) with goodness at heart, to keep the Universe living graciously. This is where we are logically heading for.

Coming back to science, who says science should not exist? On the contrary; if it did not exist, then there would not be any sense of objectivity and everyone would be led as sheep to the slaughterhouse. It could not have been a point of our discussion here to begin with, if science was not there. Without the phenomena of interaction of particles and the resulting scientific knowledge (matter + matter = science), there would not be any kind of technological progress at all. However, the kind of science we know of must accept its limitations to allow other phenomenological components be included, for it is evident that one aspect of the complementary must finally implode to give way to the other, and vice versa. As matter is complementary to space-time, or wave, so is their union leading to the ultimate knowledge we should all strive for. This way, science + mysticism = Science. With this Science of higher origin, the secrets of Nature would be unraveled, with great simplicity and elegance, to the most satisfaction and fulfillment of humanity from which the world would attain its perfection.

Religion and science are not mutually exclusive, but they are complementary to each other, the same way as the matter-wave duality of entities in quantum mechanics (the cornerstone of modern science) is. In fact, this duality phenomenon has been extended to the 'principle of complementarity', which recognizes that seemingly opposing entities are complementary to each other, rather than contradictory, that both aspects are equally needed for a complete description. At this point, visible and non-visible entities become complementary to each other; and so, the invisible entity is as important as the visible one in terms of which we identify ourselves and subsequent realities. Perhaps this can be understood better with the following analogy, which also hints that unbalanced view of the contents in the duality can lead to wrong developments. In other words, it is impossible to attain an exhaustive theory, like the so-called TOE (Theory Of Everything) that can lead to the ultimate knowledge of the wholeness unilaterally; i.e., science and mysticism cannot be unified independently.

According to the dynamic and fashionable chaos theory, concerning non-linear systems in mathematics, one notes that real systems (we take for granted) are always non-linear. In this context, the linear combination (sum) of the constituents of an object is always smaller than the object itself. This is because there are mysterious extra values, 'irrational numbers' (acting as dark gap in-between nearby 'rational points', the usual fractions), playing a dominant role in defining continuity. Now suppose there is a sphere of given radius (r) through which a horizontal plane passes. The plane cuts circles of radii ranging from zero at the poles to that of the great circle, of radius r , at the equator. Then when it comes to 'open your heart', one perceives the three-dimensional sphere in full, with great simplicity and conformity with the maker; and when it is to turn your brain 'on', one adds the two-dimensional slices of circles, no matter how infinitely many, to stack up and make the sphere. But according to this theory, one obtains only an approximate value of the sphere. This

is because irrational numbers require 'uncountably infinite' information (as much as that of the sphere itself) for themselves, let alone express objects with complete precision. Now, with the irrational numbers as unknowable ones, perception with the limited five senses (or even with the aid of the most sophisticated equipment), or generally in terms of what we *know*, is not enough to give a full description of the sphere; i.e., if we try to define it by our limited rational standards. Alternatively, let the sphere signify the whole Universe. Then the first fellow recognizes the Universe as it is, he tells what he sees, living without much care as part of it like the tree, nourished by Mother Nature and inspired by the invisible vibration of the Cosmos. He becomes like the little child (in the legend) who revealed that the fashionable king, who persisted in wearing new styles of clothes to the frustration of his tailors, was actually walking unclothed; while everyone else in town 'believed' that the king was wearing the most advanced [invisible] clothes. To the second, it becomes an object where his truth rests, believe-make-believe, an object towards achieving his goals, derived from the external. He seeks himself in it and finds out that by manipulating matter, he can have the Universe under control. 'Temptation'? It is an inert and passive substance that made the Universe anyway, subject to experiments, through which he seeks exuberance and fulfillment by playing with this material object and reconstructing it, to claim creation.

As a matter of argument, or according to the present scenario; if all the brains on earth (including computers and animal brain, with the human contribution of absolute selfless devotion to one's own task) are harmoniously synchronized (in the computer sense, to function as parallel computers), then the resulting super-brain is still incapable to express the essence of the Universe. Moreover, if a super-super-brain as big as the earth (or even the whole of matter in space) is created, it always falls short of the consciousness of the complementary part, or generally what is called the missing-part, for it does not exist in it, as a seed, for future unfolding. Now, when it

comes to man, the *awareness* of the whole lifts him to a higher understanding: Along this trend, the Oriental principle of 'TAO', the symbol of which is shown on the flag of South Korea (or in the WingDings symbols [in the computers]) is a handy example. It defines the circle that contains the light/dark symmetric pattern, as a sign of wholeness and calls it the Circle-of-Life for it harmoniously accommodates the 'opposing' patterns. It is also a perfect circle (on which any point can be the beginning as well as the end) that any swerve on the circle causing a disproportionate change in one, is controlled by a natural feedback mechanism generated by the other (as a seed, shown as dots in the symbol above) which is contained in the former. This principle, to which modern psychology owes great respect, suggests that opposites like summer/winter, order/disorder, male/female, spiritual/physical, light/dark, life/death, etc. are responsible for the unfolding of the Universe. It then deduces, just to mention one, that the observer is a link (as a 'flame') between heaven (the supra-sensitive world of ideas) and earth (the material world of visible things) to form with these, a trinity of the primal powers. Such splendid philosophies excelled the Oriental society in morality, art, medicine, ... from which it experienced highly flourished culture (with vivid traces) for some time. However, in course of time, the profound meaning attached to space, time, matter and others was somehow misused, and presently has become more of magic and fortune-telling; and like the others, South Korea is busy with its economy and arming itself against 'enemies'. In this regard, Africa has an overwhelming progress in the spiritual domain, which is ideal for research work. However, for the reason that the spiritual dominates the material, such spiritual gifts are again abused to end up like witchcraft and possession, no less dangerous than our chemical/nuclear weapons we presently have in this world. (I wonder, who is making all the tornadoes, deserts, diseases and even the bombs, with more subtlety than the 'butterfly effect' in chaos theory, or *within* the so-called Planck Scale where science is literally dead?)

On the other hand, there are also many deeply religious people who could manage to have control over matter (for constructive purposes) and finally to disappear, like the great composer St. Yared of Ethiopia and many more. But unfortunately, what still governs around here is the curse of poverty, as is rampant in the streets; while on the other hand, in the other side of the world, modern technology provides pleasure and comfort, plus those deadly weapons. We also observe the great works of William Shakespeare in England (particularly through his composition, '*Julius Caesar*' of Rome) and of Karl Marx (in the origin of class struggle) indicating their transcendence in space and time, respectively; not to mention the kind of life the piano had on the world-renowned (but deaf) composer, Ludwig Van Beethoven. Moreover, 'Fear God and honour the Queen' may also be one sign of recognition of the primal duos: God (King)/Queen, even though it carries the chilling implication that God created the King in his own image. Coming back to our sphere of our previous discussion, whatever knowledge/power the sphere bestows, the power that is shared is always greater than the power that is gained through manipulation. Thus the simplest thing is to attain it effortlessly, or *meekly*. The sliced ego-self can never approximate Reality. QED

To recapitulate, the Primal Light Energy that is constantly making this beautiful Universe at this very moment (even while you are reading this text) is within us; and hence, we can be co-creators for the future unfolding. "The Kingdom of Heaven is within you!" (You will know, as long as it is honest and sincere and without will or energy, everything you want will be what will happen for the future, perhaps with necessary delays.) Yet this 'Energy' we called, is actually some kind of label, only used for identification. As we discussed earlier, this 'Energy' was suddenly created from the invisible, may be in form of 'space-time singularity', as there is proof that the Universe did not always exist. Hence we conclude that Man is partly visible (with the DNA's and what not) and partly invisible (conceptual/spiritual being) from the pre-existence of this Primal Energy, or from the concept of

the formation of the Universe through the 'proton' mentioned earlier. The realization of these fundamental forces makes Man whole and complete. I would say, however, we should not put too much emphasis on the invisibility. As stated earlier, the audio and video signals we are receptive with are very-very narrow bands of frequency in what is available. It can very well be possible to contrive mechanisms (possibly, not completely material, kinds of 'solitons') to convert the invisible frequency to a visible one, the same way a television converts the invisible VHF/UHF to the visible pictures; or even evolve forward to open up new sensory eyes to see the whole thing directly. Nowadays scientific advances suggest that there are certain molecules called neurotransmitters which oscillate in some way to act as antennas to connect the body with the rest of the Universe. Intensified form of these oscillations is the 'aura' (as a threshold to the invisible) in the endocrine system, the seats of which are called chakras according to the Orient; and 'acupuncture' has something to do with 'smoothing out distortions' (using needles) in the transmission and reception of signals. All these require serious and intensive research work; they are indeed invisible, but in some way they manifest. With this task, I think we will be more busy than we are now with the world accommodating all of us perfectly adequately!

Talking about research, there is also something in physics I cannot possibly proceed without mentioning; perhaps this paragraph can be skipped without loss of generality. Let us begin with dimensionality and the corresponding impact it has on one's own thinking process. It is apparent that, in order to locate or 'see' an object, a three-dimensional space is needed to specify its height, width and depth. Since reality involves motion, time is also included. However the association of space and time is rather loose, and it is only good for crude classical schemes. Thanks to the premier scientist Albert Einstein who formally joined them (in his 'Theory of Relativity') towards the space-time continuum with some kind of warped geometry to indicate the existence and motion of matter. However,

this theory triggered subtle inquisition and mental search beyond common sense, especially through puzzles and paradoxes so generated. It was even unbearable, at the beginning, to ardent socialist countries and was rejected on grounds that it had some idealism in it than whole of materialism. As a generalization to this theory and others, the so-called Superstring Theory seems to advance and give a green light towards dealing with even higher-dimensional abstractions. This theory takes what is called *string* (halfway between a particle and the formless mathematical point) as a standard, and hence it seems to serve as a bridge between the visible and the invisible aspects of reality. In its application, it takes up abstract high-dimensional space, and when a certain reality needs to be 'seen', this whole of reality is suddenly projected ('compactified') onto the familiar four-dimensional space (3 space + 1 time) leaving behind the more informative super-strata of higher orders. At one time Theodor Kaluza introduced a fifth-dimensional space on top of the space-time manifold, it turned out to represent the phenomena of the electromagnetic force which is the next higher-type of the underlying gravitational force. In this dimension we have only a surprisingly minute share of the experience - our sight - plus some indirect perception through technology via TVs, radios, This additional axis (dimension) happens to be so warped that the matter aspect of this light is the quantified bundles of energy - photons. A little extrapolation suggests that, apart from the zero-rest-mass photons, there can even be particles with imaginary masses (like 'tachyons') or even others like the (ghost) 'shadow particles' whose higher-dimensional representations are more meaningful in the abstract world than in this. Under such conditions, the phenomena associated with the Pyramids, Bermuda-Triangle or things that have to do with paranormal phenomena like psychokinesis, ESP, or talking in different unlearned languages, etc. are quite acceptable. To make things clear, the temporal reduction of this reality onto a suitable dimension (the sensual dimension) is analogous to the shadow (or the cross-sectional circle) of a long three-dimensional water-pipe cast

by a two-dimensional plane; this yields less realistic picture than the tube itself - ignorant of length. The one dimensional view would be the straight-line diameter, again ignorant of the shape of the pipe. Going the reverse direction is to search for more meaning, and hence, for higher dimensions: A two dimensional reality, for example when viewing a photograph, is not that comfortable as it is, until one stretches oneself into roughly introducing depth (a third-dimension), time ('when?') and a negligible span of the electromagnetic radiation to see it with, for a meaningful event which now bears five dimensions. Going further into higher dimensions means dissolving oneself and possibly observing the meaning of all that exists. Thus when I see someone on the street, whatever he might have been in the infinite-dimensional space is suddenly conjured to be seen by me. Then I see the person to the depth I can go: his three-dimensional physical feature to begin with, then (towards subtler qualities) his mood, attitude, vibes, spirit, But, in order to do this, we must have communicated in the higher plane to meet each other at that instant. Similarly, one can also communicate or 'interfere' with the forces before or at the instant one projects this abstract reality to the perception of his senses. [This is supported by the so called 'many-universes theory' which is powerful enough to handle paradoxes like 'Schrödinger's cat' in quantum mechanics.] Several questions arise here: Does one really conspire with oneself in the higher plane to find oneself in the physical reality he is in? If so, why does he choose ugly manifestations for himself? Could it be the influence of the incapable beast-self that equates transcendence with death, and hence confines itself with morbid limitations so that by resenting seeing itself in reality, it is driven to overcome them emotionally - 'sins'? Or, are we generally reflections of our environment, in need of advancing it forward through observing it objectively? In the laboratory, however, the more a reality is invisibly 'huge' (as strong influence, impression or other subtle manifestations associated with it) the smaller its particle-aspect is to be projected on the screen of the four-dimensional world. In other words, the more one insists to 'see' the

particle aspects of such entities, the more energy is required for particle accelerators and so on, and hence more money. Along this line, to probe the string itself within its physical dimensions requires a terribly large amount of money; this means many of the realities cannot readily display their matter aspect, but can have tremendous effect on the material world. At this level it seems to honestly tell us that it is more of invisible than we attempt to force it to be; it also seems to suggest that we conserve the money for the hungry and raise the consciousness of people to higher state of healthy awareness. Finally; if we cannot see the invisible this way, then we should begin to sense reality with more and more subtle connection (in which the telepathy technique may work) with the external - experience/life. This way, we perform the right Evolution. It is only when this theory begins to perceive in both aspects, can it possibly be a TOE. In other words, even though one does not see the invisible, this theory must recognize its existence and know that a tiny volume of space is packed with all sorts of dynamic vibrations and interaction forces, by the manifestation of which, it should learn. If I may add, such manifestations are abundant particularly in those countries with least exposure to modern technology. For further clarification: Einstein's preoccupation, during the last years of his life was (for example) about this possibility of invisibility.

Genius as he was, Einstein was a little obsessed by his own principle that says the speed of light (in vacuum) is the highest speed and is always the same regardless of the state of motion of the emitting object - in rounded form this speed $c = 300,000$ kilometers per second. But in measuring the speed of light, a light pulse was beamed by a material object, and another one like it registers the arrival of the pulse that has traveled some material distance and divided by the elapsed material time; for unfolding is the formation of space, time and matter ..., and they exist only when we intend to measure. Thus the constant speed of light, c , is the highest speed of the *material* aspect of light, of the quantized photon; and so, it is not

the whole truth because of its limited constant value. The constant value of c , however, led Einstein to somewhat erratic conclusion that the Universe is deterministic, that the Universe is like a big clock-machine, and human beings are nothing but organs patched in the system as tiny entities. With this in mind, he dismissed the concepts of indeterminacy's and chaotic behaviors by saying; 'God does not play dice with the Universe'. At about the same time, however, the renowned physicist Paul Dirac has already displayed a line of continuity between matter and space through his 'virtual particles', which later became what is known as quantum-fluctuations of sudden appearances of particles from nothing ('vacuum') and their disappearances to nothing. Even his own work, in addition to the matter-energy/wave (visible-non-visible) convertibility he proved himself, General Relativity told him that there is a close relation between matter and space: that the outcome of the geometrical warping of space-time (like squeezing a sponge for a drop of water) is gravity - matter. 'Gravity is the curvature of space-time [which can be accessed, or lived through].' With all these in front of him, he could not quite discover the 'hidden variable' in the other side, the invisible side, even though he knew well about it. (He even once remarked; 'time and space are modes by which we think, not conditions in which we live.')

It was nearly fifteen years after his death that the chaos theory widely unraveled the existence of order within disorder, and hence, the Universe can be determined (or affected) in a sense. I am afraid, modern science, with all its technological magnificence, is also obsessed by experiments: Anything that cannot be experimented upon and in conformity with experiment is rejected on the outset. We tend to forget that experimental results are only the matter aspect - half-truths - measured by *material* equipment. Even the non-existence of aether, the intangible substance claimed to be pervading the Universe, is still a mystery. Apart from the stringent limitation on the essence of free-will, creativity, influence, ... (all arising from higher dimensions or from higher orders of non-linearity), Einstein was

actually right that we are tiny droplets (as we physically are!) in the ocean of the living Universe - our Mind.

Suppose I am granted to install an ego ideal (in terms of which I evaluate and act upon external reality) of my choice in the brain memory, via the NRT mentioned earlier. Then I would be better off if I chose the 'Universe' or 'Energy' pictures rather than the evolution/environment-driven limited images as a 'scientist', 'rich person', etc. By having the Universe as a standard, I am extended to everything; and so, I embrace the whole thing. In this Universal awareness, I see ugly things, as I was ugly; and generally, I create the kind of reality I should go through only to know more about my creations and myself. That is, in drifting through the flux of events, my attitude towards this expanding wave-like unfolding is my own verdict. By boldly chasing my limitations and weakness, I outgrow them. Little by little, I affect reality to a positive form of unfolding. This is positive thinking. The problem is, however, that we are so doubtful and separated that we are not capable to dare see ourselves in Reality. In my part, I do not have any shadow of doubt about this self-evident truth, for it is a logical down-to-earth principle, which has been constantly advocated for throughout the ages. This is then the One; nothing can stand against and contest its might. Melting my evolutionary selfish ego in the fire of the Universe, I do not see big difference between my friend and I, among other things. This little affinity with my friend is the Love that I claim is the solution. With Love, the agony of the poor woman with her children in Merkato is my problem as well as the problem of an exploding billionaire; similarly, the joy of my fellowman is my joy. When we model ourselves with the Cosmos, we are being heavenly, in direct contact with the notion of the 'Heavenly Father' - the Father of all those martyrs for Love. Unlike the 'blind' love we know of, the Love I am proclaiming is a conscious, wake and cognitive force that we all must resort to. Consider this, if we Love someone, all the compartments of virtue in the memory system are opened and intensified. The longer it dwells in us, the

more residual for permanence in the ocean of the sub-conscious; in this light, the animal instincts of vice through resentment and anger are controlled and eradicated little by little. In this process we begin to find purpose in life on earth. Through Love, we learn to cooperate in order to sustain this beautiful Universe in all scales graciously; which otherwise would be destroyed through hate, as this poor woman would hate and curse a doom, and definitely it happens. At least we owe our existence to it. Hence, we do not need all these theories, nor dogmas and gurus to lead us here. One does not get it through analysis - through theories begetting other theories of higher range of validity, *ad infinitum* - there is no TOE! We do not even have to talk about the DNA, NRT, 'string' or 'Energy', for such mind-stretching professional things only show how sluggish we are to change. When we do change our standards and views, however, we carry out natural performance with instinctive sureness ('eigenfunction') and without any pressure or effort on our part; otherwise this evolution of ambitious competitive struggle for existence (in which the brain finds the highest role) is self-destructive or endless like mirage in a desert. Moreover, we need not even worry about the validity of any of the theories [or religions, for that matter] we used, even though many of them are cornered by paradoxes; for a compilation of theories and data is needed only to advance within a given realm of the duet for horizontal development or one-sided evolution. We used these theories and findings (as every era has its own logic) only as a basis of our discussion, like music, for a higher understanding; because, what we are talking about is the self-evident truth, inside everyone of us, which does not require the support of any proof. This principle of Love is rather the simplest and the easiest gift available to every individual. My friend, it is a free gift, it is not like how we judge and punish others; choose the best! The kind of Ethiopia we want is then - -----, not a country of beggars and AIDS. Globalization is then a brain-wave of exchange of hearts and not merely commodities. In Love, one will sing 'We are the People' with joy and deep emotional satisfaction, endlessly.

This is all I have to say for now. If you understand me at any point of the discussion, this little friendly tug is like the immortal DNA cell in a dish, carrying the whole design, growing to whatever it is meant to be. As a lemon seed grows to a tree, so may the word escalate in you (originating from unbiased innate curiosity) with a clear dramatic manifestation of unfolding Universe. In short, it will trigger the deep-seated Order inside you, such that bits of disordered past experiences somehow rearrange themselves (automata) to yield ordered and meaningful future life, for the simple reason that you look at reality from a higher altitude, like in an aircraft.

I would like to say, moreover, that as the tiniest organisms on earth, or the grand planets, stars, galaxies, etc., count their ages, so does Humanity as a Living History of Evolution whose present-day looks are wars, diseases, ... If we choose to be active members of this Organ, then we experience Living through serenity: The well-known concept of 'here & now' or the observation of space-time 'non-locality' is understood to be sitting in a quiet place and observing the self, I. When we *observe* thought stuff in our heads, drifting like clouds, we are calming those external influences from getting into us and reigning over our lives, in form of reactions and emotions. Because again, external stimuli activate the brain to go to the dark corners of the past for solutions; and what one sees in principle is death. Therefore, one gets pressured to do anything (mainly to run/suppress) about what one is experiencing; we do not pause for a moment to observe, 'what you see is what you get'. When we begin to be calm and objective, however, reality seems a little 'reversed' with the self detached and feeling empty; but what a wonderful experience to be *meek*! At the beginning, this new *observation* can also be painful, but never (without proof) more pain (with corresponding inner peace through simplicity) than in the poorest of the poor. The difference is we have the pain, but not simplicity. When we hold on in objectivity, we recognize how terribly indiscreet and emotional we can be, and by being totally helpless in front of this

bestly energy, we realize that "strength is made perfect in weakness". Thus, if one is on top of these thought clouds - closer to the 'Sun' or 'Heavenly' - one sees the nature these mundane impulses and their afflictions through the consciousness of the Universe which is the Living comprehensive whole containing everything. That is, in *observing*, one is close to the center of the wheel and sees Reality in revelations just as if plugging into an electrical socket and having instantaneous connection with the powerhouse. It is beyond words! (This Universal Self is such that, when one freely asks crazy questions the whole Universe echoes dreadful answers manifesting with one event leading to the other.) Hence one progresses with logical and pragmatic synchronization with the Unfolding Universe - just like a farmer follows the cycles of the seasons to do his job; but this time, with total obedience and grace. In contrast, if a poor man like me is gravitated by the hustle and bustle of the world, then he is operating under the tormenting clouds, shadowed and moved by the evolving beastly emotions with (nervous) excessive use of the brain. And since this grotesque monster thing is embedded in him, he will have to be subject to moral codes, laws and even chains, if need be, so that his beastly nature is governed by a law-obeying, peaceful 'civilized' society. I deeply feel it is appropriate to find oneself in churches, mosques or wherever one can humble oneself and face the truth. In simple terms, it is natural to see our thoughts, intentions and generally our present situations in peace: If they are bad we repent (feel sorry) to help us rid our weakness, guilt and morbidity; and if they are good, then we are cheered, at peace with ourselves. In this manner problems (curses, even from graves) lose their effect upon us and hence we do not make mistakes to cause us to worry again and make more mistakes again

In conclusion, it is presumably clear that 1) the Universe we live in contains all the visible and the invisible aspects of all things as Whole; or again in mathematical terms, 'Real = rational + irrational'; 2)

the Whole (of higher qualities) is always greater than the sum of its complementary components, and 3) life seems to be 'ghost in the machine'. When one gives room to the unknown, then one allows 'miracles' to happen; yet, most of reality is full of surprises with great subtleties of causal explanation beyond rational reasoning - surprises which do not always come as we want. To make things short, unlike the blindfolded truths with parents, it is then like the quality Father, the visible Mother and the dialectically-Scientific minded bright Child who is always misunderstood by this world. We do not need the imperfection of the world so that we are needed to perfect it, we can already be perfect, and make our environment perfect. Peace, or Love, is attained only when both ghost and machine are recognized and harmoniously integrated. Consequently, you will rule inside whatever kind of body you are given.

Remember, Love is everything!

Most of the discussion in this text is based on the four books 'The TAO of physics' by Fritjof Capra 'The Mystery of the Quantum World' by Euan Squires, 'The Matter Myth' by Paul Davies and John Gribbin, 'When the Clock Struck Zero' by John Taylor, and the teachings of Roy Masters - *Foundation of Human Understanding*, P.O.Box 34036, 8780 Venice Blvd., Los Angeles, CA 90034, USA.