The Intersection of Faith and Science: A Unified Theory of Consciousness and Inner Religious Experience

Dr. M. H. Qazi

ABSTRACT

This article explores the intersection of scientific inquiry and religious experience, seeking a unified theory of consciousness that transcends reductionist materialism. Drawing on Iqbal's metaphysical perspectives, particularly his concept of Directive Energy, it integrates insights from quantum physics, biology, psychology, and religious thought. The discussion emphasizes the non-material nature of the ego (self, consciousness) and its immortality, presenting consciousness as both a product of evolution and a transcendental force influencing the brain and bodily functions. Through a series of premises, the article critiques purely physical explanations of consciousness, suggesting that neural networks and recent scientific discoveries can complement metaphysical views. The role of consciousness is explored in both normal experience and higher states of mysticism, suggesting that religious experiences, like normal ones, can be understood within a holistic framework that includes both physical and non-physical realities. The work culminates in a proposed theory of "monistic spiritualism, " which aims to reconcile scientific advancements with spiritual truths, ultimately seeking a more complete understanding of the self and its place in both serial time and divine dimensions.

In our search for a physical, psychological and religious basis for inner religious experience, we have already dealt with a diverse matrix of evidences, each with its own strengths and weaknesses. The reader will appreciate that none of these creeds taken separately can lead us to a fuller understanding of consciousness (ego, self). The case of religion is, however, different. It has its own arena of knowledge, which, in essence, has to be accepted as a matter of faith. Yet, for satisfying the concrete mind, as Iqbal desired, it seems legitimate, that we sift out the fragmented truth unveiled by recent scientific discoveries in support of the revealed knowledge. This is precisely the direction which Iqbal chose in the *Reconstruction* and handled it with admirable ease. For him normal experience and religious experience are subsets of experiential holism, though for the later we are still hunting for sensitive and reliable methods of verification. There are indications, however, that such methods do exist and presently are under intense investigation. Accordingly, this encourages us to find out if it can help us reach a meaningful conclusion with regard to a unified theory of consciousness (self, ego). This we will do now, first by stating a few premises followed by a synthesis that could give us a direction we are seeking with regard to inner religious experience. Accordingly, we begin with the first premise.

First Premise

For soul Iqbal uses the word ego. For him ego (Soul) is not a substance, as understood by theologians. Not being a physical object, it does not occupy space. Yet, it has a personality having peculiar relationship with body; on the one hand, it has the characteristics of dealing with it in serial time appreciative of its sensibilities, and on the other hand, it enjoys the luxury of elevating the body and landing it in Divine time and Divine space mediating its contact with the infinite. The freedom of the ego is its generic property emanating from the Directive Energy (*Amr-e-Rabbi*), and inherent *ab-initio* in all types of matter, living or non-living. Being a product of Directive Energy it is immortal. In this sense one may wonder, whether this concept has similarities with the homogeneous substance of Spinoza? Perhaps Yes, since the word substance used by spinoza implies something beyond the physical being (Durrant, 1933),[1] We may be skeptical about Iqbal's views but the significance of his views about ego can be best appreciated

if his metaphysical dimensions are fortified, to the possible extent, with the available scientific evidences. This takes us to the second premise.

Second Premise

We have already argued that ego, self and consciousness are nearly synonymous. We continue to maintain the same view. Presently, we find a fresh wave of literature on consciousness, which mostly converges on the structure and function of the brain. No wonder, then, that we are now passing through a period of consciousness paradigm. On this subject, the role of prefrontal integration modules (PIMs) located in the frontal lobe of the brain is also significant. The PIMs are the neuronal aggregations which receive all kinds of sensory stimuli, integrate them, and then send appropriate efferent messages for appropriate response (s) warranted by the situation. It has been suggested that in the brain with consciousness (as in humans) the thought products are generated only from the PIMs. How sensory information is represented within the PIMs, within the memory system, and between the two is diagrammatically shown in figure 1.

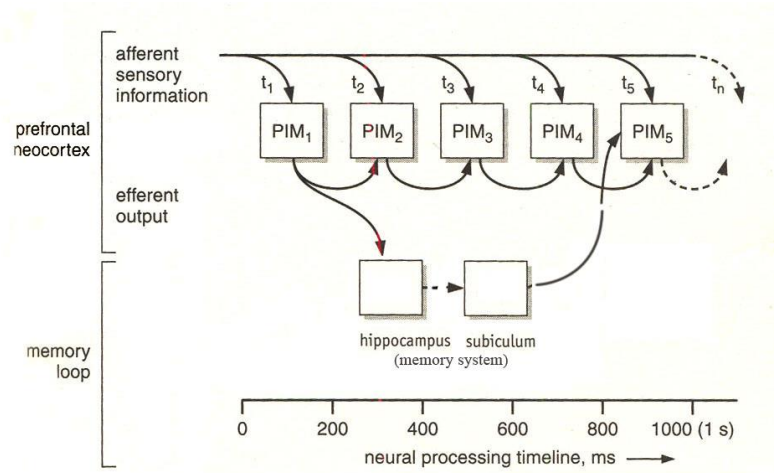


Figure 1: Sensory information through the prefrontal integration modules into the memory system and back again to the prefrontal region. The whole sensory process and its motor response take 200 mili seconds. (Adapted from Pico, M: Consciousness in Four Dimensions, 2001).

It may be noted that one cycle of sensory representation within a PIM takes about 200 mili seconds. This results in efferent output to the adjacent PIMs, the memory systems, and other target regions, affecting their activities at the same rate. On the basis of this and much more information about the input/output integration by PIMs; it has been assumed that this region is the site

of thought generation and thus of consciousness. This assumption gives a purely physical basis to consciousness (ego, self) to which it is difficult to agree in view of several other contradictory evidences. However, one can concede that this part of the brain, that is, PIMs can constitute an important link between mind (consciousness, ego, self) and activities of the brain in serial time in periods of sensibility. This takes us to the third Premise.

Third Premise

We derive our third premise form Eccles, work on the electrochemistry of nerve impulse and the transfer of message from the nerve endings to other cells along a gap that is mediated by chemical messengers. For this pioneer work, he was awarded Nobel Prize in 1963. However, being a believer in the revealed knowledge, and ardent supporter of Karl Popper's 'Three Worlds', he could not accept the pure physicalist view of monistic materialism. On the contrary, like Iqbal, he identified self (Consciousness, ego) as an independent entity exercising control over the brain. For this he emphatically argued in his book: 'How Self Controls the brain', published in 1992. [2] To be able to support his views, which converge upon a kind of "dualism", he proposed the theory of imaginary particles, the Psychons, which he thought were the product of the electrochemical processes, and have a strong nexus with non-material self (consciousness, ego). Indeed, using the medium of Psychons he came out with the concept of 'fields' (field theory) to satisfy the quantum probabilistic interpretation of the phenomenon involved in the control of the brain (material) by the self (non-material). If we compare Eccle's interpretations with that of Iqbal, his field theory continues to be a subject of extensive discussion (see for example, Watson and Williams, 2003). [3] On the whole, however, we find considerable merit in Eccles theory, since it makes an attempt to combine known physics with hitherto unfathomed physical processes supposedly operating below the observable quantum physical levels. This aspect has been neatly emphasized by Penrose (1990)[4] who suggested that new laws of physics and mathematics have yet to be discovered to answer the difficult questions raised by the biophysics of consciousness. We can comfortably go along with several aspects of Eccles' theory provided that the modifications suggested in some recent studies are kept in view (Watson and Williams)[5].

Fourth Premise

Our fourth premise is based on the incisive and brilliant critique of Eccles' theory of psychons and electro-chemical fields. (Watson and Williams, *op. cit*). His views stand in juxtaposition to

the Putative Law of entropy. It is known that the entropy of the world is increasing. Also, it is agreed that better the organization of a system, the lower the entropy and vice versa. However, Watson and Williams (1993, 1997)[6, 7] presented their own theory which they called the "the Theory of Enformed Systems" (TES). This interesting piece of work postulated that 'there exists fundamental conserved capacity to organize, denoted by the term 'Enformy'. In this way disorganization is opposed where enformy organizes and sustains the four dimensional fields of a system (enforamation). In our opinion, this interesting postulate enriches our understanding of consciousness by further strengthening the psychon field theory of Eccles and of Iqbal's underpinning of ego (self, consciousness). This theory is likely to provide some justification even for the physicists (reductionists). There is little difference between the SELF of Watson and self of Eccles (Watson 1993).

The SELF of Watson is acronym for Singular, Enformed, Living Fields (SELF). Accordingly, the SELF means the linking of memory of conscious states which are experienced at various times during the life time (linkage with awareness). For our purpose there are three features of this theory, which have attracted our attention. First, the SELFs correspond to the organization inherent in our coherent systems, ranging from photons to humans and beyond, because they are continuous in space-time, but discontinuous in space. Second, the SELF organizes its own state at a given time integrating past and present in space-time. Third, the last named attribute accounts for telepathy, remote viewing, pre-cognition, psychokinesis, and to which may be added even revelation in the mystic state. In many ways this theory solves some of the caveats of Eccles' theory of psychons, especially the binding problem. Suffice to point out here that according to this theory, unlike that of Eccle's theory, brain is not necessary for memory content in organized states of higher consciousness. Furthermore, if anything, it enhances the acceptability of Eccles' field theory when the same is replaced with TES of Watson. This takes us to the fifth premise.

Fifth Premise

This assumption relies on the work presented by Pratt (1977)[8] in his book *Consciousness, Causality and Quantum Physics*. His most challenging concept lies in the statement that:

> it is quite possible that while the quantum theory, and with it the indeterminacy principle are valid to a very high degree of approximation in certain domains, they both cease to have relevance in new domains

below that in which current theory is applicable (Bohm and Hiley, 1993).[9]

In our opinion, expressed elsewhere as well, this statement provides a meeting ground for physics and metaphysics and lends support to the existence of a 'Directive Force' as yet un-explored by the currently known principles of quantum physics, extending at best to Plank's constant. Additionally, the Physicists are aware of the collapse of waves function in a mysterious way –violating the Schrodinger equation. For this reason Bohm's tautological interpretation that wave function gives only ill-defined and unsatisfactory notion of wave function collapse seems valid. It appears that the alternate arguments about particles having a complete inner structure accompanied by a quantum wave field merits serious consideration; the particles are acted upon not only by electromagnetic field, but also by a subtle force-the quantum potential determined by quantum field. Thus, particles guided by quantum potential (perhaps equivalent of 'Directive Force') provide connection between quantum states. It has been claimed, that quantum potential recognized by standard quantum vacuum, underlying the material world has an astronomical energy (of the order of 10^{108} $J/^{cm3}$). What else this energy could be if not a manifestation of the 'Directive force'? The elegance of quantum physics apart, we cannot escape the conclusion that observation is not necessary for proving the existence of quantum world when it lies beyond its measurable domain, that is below the recognized quantum world. Is it not true of the transcendental as well? Kant's critique of pure reason may be re-examined in this perspective. This now takes us to the sixth premise.

Sixth Premise

Keeping in view the structure and function of the brain we may, without reservation agree to the presence of neural networks, in the form of assemblies and sub-assemblies. It has been estimated that there are about 10^9 neurons in the brain. However, each assembly is comprised of 10, 000 neurons (Dennet, 1967, 1975).[10, 11] We may accept the electrochemical nature of the stimulus passing through the nerve fiber and reaching the nerve endings evoking response in other cells. The code translating the message at the nerve ending is not known. Certainly, it is not similar to the binary code used in computations performed by a computer. Accordingly, any attempt to formalize artificial intelligence will remain a wild goose chase till such time that the neural code is broken. We have seen that sensory messages are analyzed and integrated in the

prefrontal integration modules (PIMs) and their coordinated action responses are realized through efferent pathways as directed by PIMs. We may agree that this apparatus is necessary for thought production. It has already been argued that thought is a necessary companion of consciousness (ego, self). It perpetuates beyond serial time during higher order consciousness in mystic states. It is our considered view that in spite of mystic stillness neural assemblies are at work in a monolithic thought process, which incessantly feeds the peculiar conscious state divorced from serial time and normal neural sensibilities which are, so obvious in normal experience. We attribute this property to inherent 'Directive Force' which begins to operate from the time of fertilization of the ovum and continues its activity through the law of recapitulation: ontogeny repeats phylogeny. All this happens under the spell of 'Directive Force' unleashed by the genetic code. We are inclined to agree that neural networks and religious experience are catalyzed by self (consciousness, ego) as envisaged in Eccles field theory and Watson's theory of TES. We are also inclined to propose that self (consciousness, ego) is something above and beyond the ordinary physical process. It operates from a higher order of non-physical substratum occupying phenomenal space. Furthermore we do believe that consciousness is a product of evolution reaching its climax in humans, and bestowing high survival value to this species. It has the peculiar characteristics of operating in serial time and beyond, which Iqbal calls Divine time. Not surprisingly, Penrose (1990)[12] has made a strong case for the existence of consciousness, though in a rudimentary form at the lowest level of organic life. His identification of microtubules in paramecium (used for sense perception) with identical microtubules in the neural fibers is a bold attempt to bring quantum mechanical continuity between the lower and higher forms of life. This takes us to the seventh premise.

Seventh Premise

A brief description of phenomenology has already been presented. Here we will take note of two aspects of this philosophy, namely, phenomenological space and phenomenological time. Both are relevant to the theory of ego (self, consciousness). If we accept, as we have done so far, that soul (ego, consciousness) is a non-material entity and does not occupy space, and yet it controls the brain (Iqbal, 1930; Eccles, 1992), [13,14] then what line of argument can we adopt to show that even non-material consciousness has a spatial character? To some extent this dilemma has been resolved by suggesting the existence of phenomenal space for consciousness

as envisaged in TES. It is to be realized that "space which traditionally has been denied to consciousness is physical space since we have no idea of precise relationship between matter and experience" (Dainton, 2000). [15] It follows from this that we also have no idea of the precise relationship between experience and physical space which the matter occupies. If this be so, as is obvious, then it is logical to conclude that experience does not occupy physical space at all. Yet, there is a strong case for stating that all our experiences, without exception, seem to be located somewhere in the physical space as, for example, occupied by any physical objects. Accepting this later premise we have already insisted that this is applicable to perceptual experience only (the normal experience as stated by Iqbal). Now, a person may be handling a series of physical events, in which case a number of spatially connected co-consciousness experiences are involved in the operational activity within a single unified three-dimensional phenomenal space (Kant, 1980).[16] This level of consciousness, by and large, necessarily has to be unitary because of binding of conscious experiences in the same compact. We have no hesitation in accepting this concept in as much as perceptual conscious experience is concerned.

This, however, does not solve our problem with regard to the implications inherent in inner religious experience. The reason being that in mystic states, all sensations, afferent or efferent, are in a state of suspension (Forman, 1992).[17] Perhaps the memory of such sensations is obliterated. Thus, agreeing with Dainton, (2000), [18] we are inclined to propose that in such states higher levels of consciousness come into operation with a single perpetuating thought, for instance, of the transcendental which is characteristic of the mystic state. This, in our opinion, is what has been called intellectual consciousness. It is this level of consciousness which is the essence of the ego (Iqbal), of the self (Eccles) and of SELF (Watson) which influence the brain whereby, the neural assemblies of Dainton[19] and prefrontal integration modules are made subservient to the influence of self (mind, ego) unleashing electrochemical activity of repetitive nature under a unitary stimulus. It appears that it is on this basis that Eccles has proposed the theory of psychons and Watson has strengthened it with his theory of enformation. This level of consciousness we speculate operates in the space-time paradigm, in which time is non-serial and the spatial dimensions do not conform to Newtonian space or Einstein's space-time relativity. Clearly, then, there are two levels of consciousness, the normal operating in serial time under the

integrative control of PIMs and the other the higher level of consciousness operating in non-serial time giving possible credence to Iqbal's notion of Divine time and Divine space in the realm of inner religious experience. This takes us to the eighth and last premise.

Eighth Premise

Iqbal (1930),[20] and Forman (1999),[21] both agree that mystic experience, at best, is subjective. Iqbal in fact goes a step further and draws distinction between mystic and a prophetic experiences when he quotes Maulana Abdul Quddus of Gangoh[22]. Whereas both experiences are subjective, the mystic keeps it to himself, but the prophet shares it with others as ordained through revealed knowledge. Unlike the normal experience, the religious experience is ordinarily non-verifiable. Towing the line of reductionists, any experience, which is non-verifiable, should be rejected out of hand. With a large amount of scientific evidence, which we have been able to put together, the reductionist view point falls apart. Even the physicists now agree that what is not visible or verifiable within the domain of quantum mechanics, cannot necessarily be denied. Accordingly, there is considerable merit in Iqbal's contention that mystic experience is a valid source of knowledge.

The Hypothesis

The eight premises stated in the previous sections essentially summarize our views. We can now use these premises for articulating a unified theory in support of inner religious experience. The hypothesis we are going to construct is essentially based on (a). Iqbal's metaphysical approach in the *Reconstruction* of Religious Thought in Islam (1930),[23] especially the Directive Energy (b). Forman's thesis about what mysticism has to teach us about consciousness (1999),[24] (c). Eccles theory of how the self controls the brain (1992),[25] (d). Watson and Williams theory of enformy (2003),[26] (e). Bohm and Hiley's theory of sub-physical quantum activity,[27] (f). Karl Poppers theory of 'Three Worlds' as described in his book: 'The Self and its Brain' (1977),[28] (g). Alwyn Scott's Stairway of the Mind (1995),[29] (h). Hebbs theory of neural networks (1949, 1980),[30,31] (i). Schrodinger's lectures delivered in Trinity College Cambridge on 'Mind and Matter' (1956),[32] (j). Roger Penrose's Book 'Emperor's Mind' (1989),[33] (k). Crick and Kock's Neurobiological theory of consciousness,[34] and (m). Dennet's 'Consciousness Explained' (1991),[35]

Iqbal relies on the distinction between the words: *Khalq* (creation) and *Amr* (Directive Energy) as they appear in the text of the Qur'an in its various sections. However, since 'Directive Energy' will figure prominently in our own thesis on consciousness (Ego, Self), it will be worthwhile to explore the full significance of the term as it appears in an authentic lexicon of Arabic language. For this, we will turn to Leghat-al-Qur'an complied by Ghulam Ahmed Pervaiz (1960).[36] Like Iqbal, Pervaiz refers to Pringle Pettison when he quotes him that – 'it is inadequacy of English language which has only one word for the process of creation (*Khalq*), though it was necessary that two separate words were available for perceptive (physical world) and the non-perceptive (spiritual world). It is in this context that the Qur'an uses two separate words, that is, *Khalq* and *Amr*. It is a matter of common understanding that creation is an act in which a final product, assembled from various elements, appears in complete appreciated form. Yet, the process involved in the act of creation must receive a putsch from some source of energy. This is what Iqbal recognizes as 'Directive Energy'.

It may be noted that various meanings have been assigned to the word '*Amr*' according to the context in which it appears in various sections of the Qur'an. For example: (a) Consultation (Al-Qur'an: 26:35; 7:110; 65:6; 28:30), (b) Abundance of something (Al-Qur'an: 17:16), (c) Command (Al-Qur'an: 2:67; 16:23) and (d) Desire or Accord (Al-Qur'an 18:82), among others. Yet, of particular interest to us is the Ayah 7:54 in which *Khalq* (creation) appears in juxtaposition to '*Amr*' (command). Here, as we have already stated, '*Khalq*' means to create new things by various procedures from an array of elements. '*Khalq*' thus is a stage when things appear before us as perceptive entities. All stages prior to this that is in the planning process inherently belong to the 'Directive Energy' emanating from the transcendental. The '*Amr*' (direction) we are referring to permeates every segment of the universe from the tiniest quarks to the humans. The laws that regulate the universe are the consequence of the same '*Amr*', which preceded the 'big bang'. '*Amr*' is the organizer of these laws, which are being discovered and extended piece-meal by man (see also Al-Qur'an: 45:17 and 65:5). All this means that 'Directive Energy' is a continuous process, and at least in the case of humans, the command is not time related; it, indeed, remains in intimate relation with the soul, though the latter has the freedom to act. The following quote from the Qur'an is illustrative:

> Do the (ungodly) wait until the angels come to them or there comes the command of thy Lord (for their doom?) so did those who went but Allah wronged them not: may, they wronged their own souls. (Al-Qur'an 16:33)

We are conscious that the concepts developed in the preceding section will be unacceptable to a physicalist, turned reductionist, who is only accustomed to verifiable prepositions through experimental data. It would therefore be difficult for him to digest what he calls the dogmas of religion. A concrete Muslim mind may also fall victim to the same trap. Despite this, we maintain that Iqbal's concept of *Amr-e-Rabbi* has a lot to offer in this regard as we will show by extracting evidences from recent advances in Physics and Psychology. We are also maintaining that ego (soul, consciousness and self) is non-material and immortal. Further, we will argue that it controls the brain in serial time and space, notwithstanding the fact that it can also enjoy the luxury of Divine time and Divine space. For this we will have to shift our focus from metaphysical epistemic state to the world of science.

First, we will look into the origin, nature and application of 'Directive Energy'. **Second**, if soul is a non-material, then, how does it organize the functions of the body in serial time and how do we conceive its existence without occupying space? **Third**, how does higher consciousness (ego, self) come into operation and elevate itself in Divine time and Divine space for contact with the Infinite? **Fourth**, is the universe expanding? **Fifth**, what is the physicalists' view of the nature of matter and, whether the currently discussed unified theory of matter can provide a clue to the nature of the universe? **Sixth**, what significance the process of organic evolution has in relation to the 'Directive Energy'? **Seventh**, do new researches in psychology offer any hope for the authenticity of inner religious experience? **Eighth**, can we accept the reductionists point of view about the relationship of consciousness (ego, self) based on the structure and function of the brain? **Ninth**, what significance Hiesenberg's principle of uncertainty has for consciousness (ego, self) and the collapse of wave function? **Lastly**, how subjective state of inner religious experience can be raised to an acceptable level of objectivity. Presently, we will only synthesize the already expressed views for constructing a unified theory of consciousness (ego, self).

Let us take up the 'Directive Energy'. Obviously a physicalist, as we have already stated may consider it a mere dogma. We do not accept this, since the very statement in itself is a dogma of science.

Penrose (1993), [37] the great mathematician from Cambridge is of the view that different laws of mathematics and physics have to be worked out for the conditions prevailing prior to the big bang. The big bang model of the universe is the one, which is generally accepted by physicists, though alternate schemes have also been proposed (for example, the strong anthropomorphic principle). It has been suggested that the early universe must have gone through a period of very rapid expansion (Allan Gruth of MIT). According to one estimate the radius of the universe increased by a million, million, million, million, million, million times (10^{30}), in only a tiny fraction of a second. With this information one may ponder over the allegorical meaning of the Qur'anic verse reproduced below:

> We have created heaven and earth in six days. (32:4)

The reason cited for rapid inflationary expansion of universe resides in the fact that at the time of big bang the universe had a very high temperature. At such temperatures the strong force, the weak nuclear forces, and electromagnetic forces were unified into a single force. However, as the universe cooled down past its expansion phase, the particulate energies went down and the symmetry between forces was disengaged, though, it has been claimed that temperature may drop below the critical level without the symmetry of the forces being broken. Such a symmetry of forces was essential, since the aggregation of these forces can act as anti-gravitation force in sympathy with the proposed cosmological constant of Einstein during the rapid inflationary expansion – resulting ultimately in a stabilized model of the universe. The discussion of various inflationary models is beyond the scope of this article. The subject receives excellent treatment in the book: *A Brief History of Time* (Hawking, 1998). [38] However, for our purpose, we would like to correlate the implications of this speculative approach with our theme of 'Directive Energy'.

We do understand that the size of the universe was zero at the time of big bang, and as already stated, it was infinitely hot. The only matter that existed at the time comprised the photons, electrons and neutrinos and their anti particles together with some protons and neutrons[39]. Given this circumstance, we can very well imagine that it was energy all around at that time. This raises some obvious questions: (a) where did the Energy come from? (b) did it have any direction or purpose? (c) was big bang a natural consequence of this energy? (d) unlike the present day universe what type of laws of physics and mathematics were applicable at that time to the matter at large, especially, at a very high

temperature? This was a period when all forces were unified and were inherently capable of working against the gravitational pull. At best a physicist would like to answer these questions within the limitations of his known knowledge of the universe. Beyond this, even his speculative mind fails to keep company with his scientific thoughts, let alone reductionism. In spite of this he would insist that big bang was an accident, and any other source of knowledge presented to man through revelation is no better than a dogma. We are obliged to differ from this simplistic approach. Thus, in agreement with Iqbal, we do accept that religion is certainly a legitimate source of knowledge.

Even if by present standards one is able to sum up the total energy in the pre big bang matter, it would run into trillions of trillions … of trillions of energy units. Was this to be wasted? Was it purposeless? Was it void of any direction? The answer is no. How do we interpret this? This is possible only if we concede that (a) there is only one direction, which the high-energy particulate matter could take, that is, the creation of the universe, and (b) that what existed in the pre-big bang period was simply a preparatory stage for the creation of the universe. This is what Iqbal identifies as *Amr-e-Rabbi* (Directive Energy). Accordingly, under the spell of Directive Energy what happened was destined to happen. *Amr-e-Rabbi* is a continuum that existed *ab initio* and continues unabated. Soul (ego, self) is a manifestation of the same Directive Energy, indeed, with a modicum of freedom consistent with his characteristics (*Reconstruction*: The Freedom of the Ego and its Immortality). It may be noted as to how the continuity of Directive Energy, even after coming into existence of the universe is supported by the revealed knowledge. The Qur'anic verse: "We add to Our creation what We will" points to the expansion of universe in all directions as maintained by scientists. Interestingly enough, the phenomenon of the expansion of universe was discovered by Hubble only in 1926 using the red shift in the spectrum. Similarly, the discovery of black holes is a recent phenomenon[40]. This may be judged in the light of allegorical meaning of the verse: By the star when it goes down (Al-Qur'an 103:1).

There are other lines of evidence which are consistent with the concept of Directive Energy. For this, we will first cite a few examples from biology and then extend our arguments to the world of physics. We have already referred to the principle of 'ontogeny repeats phylogeny'. This principle is guided by a built in mechanism in the genetic code of a fertilized ovum for developing into a full

organism. Organic evolution as proposed by Darwin (1959)[41] is nothing but a four dimensional evolution of the genetic material (DNA). The rise of consciousness in man, though co-existed with evolution of the neo-cortex in the brain, yet it surpasses the physical structures and takes on a non-physical position designated as ego or self by Eccles (1992)[42] and Iqbal (1930), [43] which regulates and controls the brain activities. Is it not amazing that the single celled fertilized ovum passing through the stages of morula, and blastula reaches a new dynamic state of gastrula? It is at this stage that streams of cells passing over the dorsal lip of the blastopore in the gastrula, take their destined positions in the three germ layers, that is, the ectoderm, the endoderm and the mesoderm. It is from the ectoderm that the neural tube takes its shape in the presence of underlying mesoderm. What forces regulate this organized differentiation of cells is not known. The dorsal lip though is known to be the organizer of the whole process. We attribute these properties of embryonic development to the Directive Energy. Another example comes from the well-known antigen-antibody interaction in living systems. The defense mechanism of the body is so designed that any foreign body (antigen) entering the living system is identified by specialized cells present in circulating blood. These cells secrete antibodies against the foreign antigens, which are captured by antibodies and are inactivated. It is highly revealing to note that these specialized cells have ancient memory extending over a period of millions of years in sympathy with the evolution of human gene pool. This is another illustrative example of the continuity of Directive Energy. Myriads of such examples are extant in biological systems, which have been discovered (not invented). Thus, in agreement with Iqbal, we have no hesitation in stating that all these processes, as we see in biological systems, are happening under the umbrella of Directive Energy, which has been operating even prior to the big bang.

We now take another look on the world of physics. Some of the most intriguing statements made by Bohm (1993)[44] and Bohm and Peat (1989)[45] have been discussed here. Here, for the convenience of the reader, we would like to reiterate that according to these workers: it is quite possible that while quantum theory and with it the indeterminacy principle are valid to a very high degree of approximation in a certain domain, they both cease to have relevance in the new domains below that in which current theory is not applicable. This may create a stir amongst quantum physicists; yet, there is little doubt that this line of thought exposes the limitations of quantum theory. Obviously, if this is true then one

has to reject two major assumptions of the theory, namely, absolute indeterminism and objective existence of quantum systems only when they are measurable and observable. Quark, for example, has not been observed as yet. Nor would it be possible unless an accelerator with energy as large as that of the sun is available (Gel Mann 1994). [46] It is only on mathematical basis that the existence of this fundamental particle has been postulated. This is also true of gluons. It simply means that something which cannot be observed (for instance, anything below the recognized quantum world) or known precisely cannot be said to exist. Is it not a rebuttal of Kant's line of reasoning and the rejection of positivist's view of normal verifiable experience? On the contrary it gives credence to Iqbal's contention that inner religious experience (normally not observable or verifiable) is as much a reality as the normal experience (verifiable). It is by the same token that a metaphysical approach which emphasizes the contact of finite with the infinite through inner religious experience could be accepted with the same conviction as we apply to the normal experience.

We have repeatedly brought under discussion the theory of quantum physics for the reason that it remains a major source of excitement amongst the physicists. Further, it remains a matter of common conviction with the physicists who generally follow reductionism as a creed. They argue that through reductionism it is possible to solve all problems related to natural phenomena including consciousness (mind, ego, self). The difficulty with reductionists is that they have not only reduced nature into smaller and smaller parts, they have reduced science itself to narrower and narrower academic specialties. The world view of these disjointed disciplines is limited to highly constricted horizons that prevent even seeing into other disciplines, much less the whole nature (Watson, 2005: the enformy page-http:/www. enformy. com/$enformy. html). [47] The reductionist approach, in our opinion, is weird, if not absurd. It reduces science to myth. Iqbal pointed this out several decades ago when he called this the dogmas of science (*Reconstruction*)[48]. What appears close to reality is the approach relying on holistic attitude corresponding to the unitary experience advocated by Iqbal.

Recently, Pratt (1997), [49] following Bohm and his colleagues (op. cit.), has examined the relationship between consciousness, causality, and quantum physics. In essence, he has accepted Bohm's interpretation of quantum theory. Like Bohm, Pratt argues for ontological interpretation of quantum theory, rejecting the

assumption that wave function gives the most complete description of reality possible, avoiding thereby the need to introduce the ill defined and unsatisfactory functions of wave collapse (and all the paradoxes that go with it). Instead he assumes the real existence of particles and fields: particles have a complete inner structure and are always accompanied by wave field; they are acted upon not only by classical electromagnetic forces but also by a subtle force, the quantum potential, determined by the quantum field. The quantum potential carries information from the whole environment and provides direct, non-local connections between quantum systems. This line of thought from the world of physics gives immense support to the concept of Directive Energy and solves the binding problem faced by Eccles theory of psychons when examined in the context of subtler forces in the form of quantum potential. Indeed, it has been suggested that quantum potential is extremely sensitive and complex and is a kind of vast ocean of energy on which physical or explicate world is just a ripple. Unfortunately, such an energy pool, though recognized, has been given little consideration by standard quantum theory. The same theory, however, postulates a universal quantum field – the quantum vacuum or zero potential field which underlies the material world.

From the forgoing analysis it should be clear that (a) one cannot deny the existence of something which is not being observed, measured or precisely known, (b) on this basis the positivist view requires to be revisited so that disengagement between epistemology and ontology is eliminated (Bohm, 1994), [50] (c) there is an implicate order emanating from the quantum potential (Directive Energy) which carries information from the whole environment and pervades directly the non-local quantum systems, and (e) consciousness is rooted deep in the implicate order and is therefore present to some degree in all material forms. However, one cannot ignore the fact that there might be an infinite series of implicate orders each having a matter aspect and consciousness aspect. The possibility that there are subtler levels of matter cannot be ruled out (Weber, 1990). In the perspective of this vision of neo-physicists, it should now be convenient to understand the views expressed by Iqbal and Eccles on non-materiality of soul (ego, self, consciousness), and the physical and psychological basis of inner religious experience.

We have already provided enough material on the validity of Directive Energy. Suffice to state that there are vast oceans of energy below the presently known physical structures which

represent only a ripple in this vast ocean. At this level even quantum theory fails to operate. This eminently supports the reality of the continuum of Directive Energy from the pre-big bang period. This also lends credence to the non-local origin of activity, for example, from the soul (ego, self, consciousness, mind), thereby regulating the brain under certain physiological states such as mysticism. This, in a way, solves the binding problem between self (ego, consciousness) and the brain, which was difficult to explain by Iqbal in 1930[51] and even by Eccles in1992. [52]

The ego and the freedom of the will make an interesting study in the context of present day knowledge of physics and psychology. Quantum theory is said to be indeterministic. However, as we have already argued, it is clearly open to interpretation: it either means hidden causes, or complete absence of causes. In this regard we have to take into consideration a few issues. First, if we are unable to identify a cause, it does not mean that there is no cause. Second, it is generally assumed that quantum events happen spontaneously, having no relationship with everything else in the universe. The latter issue has to be taken with caution, since the opposite view is also available; all systems are continuously participating in an intricate network of causal interactions at many different levels (Pratt, 1997). [53] Apparently, though, individual quantum systems can behave unpredictably (if we ignore the non-local influence of the implicate order, meaning the quantum vacuum underlying the material world). It is now being argued that even if everything has a cause, or may be many causes, it does not mean that all our acts and choices are predetermined by purely physical processes. This has been called hard determinism (Thronton, 1989). [54] The indeterminism seen at the quantum level, in a way, opens a possibility for creativity and free will. This would, however, mean pure chance, and as Pratt (1997)[55] has remarked that "our choices and actions 'pop-up' in a totally random manner, in which case they could hardly be said as our choices" (emphasis – randomness). This line of thought gives us room to return to Iqbal's notion of free will (*Reconstruction*)[56]. We believe, as Iqbal argued, that there are subtler non-physical forces (ego, self, soul, consciousness) that guide our acts of free will. And what are those subtler forces? Certainly, the Directive Energy, which has provided freedom to the soul (ego, self, consciousness) as advocated by Iqbal. In fact, it is legitimate to state that no pre-determinism in any form is involved (see the Qur'anic verse 16: 33). In all this discussion, we have to assume on physiological and psychological grounds that soul (ego, self, consciousness) is a kind of non-material energy and is a part of

universally penetrating Directive Energy. This has a nexus with oceans of quantum potential permeating the whole universe. Clearly then, like Iqbal (1930), [57] Eccles (1992)[58] and Watson (2005), [59] one cannot escape the conclusion that the soul is immortal and remains intact even after its separation from the body at the time of death.

Now, if we recognize the existence of a sub-physical quantum potential, which can influence every quantum event in this universe, then, it is not difficult to make a distinction between serial time and Divine time. Serial time is a product of human mind appreciable by those inhabiting the planet earth. Einstein's relativity theory makes time the fourth dimension of space. This is a universally accepted preposition. But the time which is integrated with space is the serial time. What about the fact that quantum theory as well as relativity theory break down in areas underlying the known physical space? It has been argued, for instance, that "if two quantum systems interact and move apart, their behavior is correlated in a way that cannot be explained in terms of signals traveling between them at or slower than the speed of light. We are inclined to interpret this in terms of the universal networking of quantum potential (defined above) with the physical world, which may involve signals traveling faster than light (this has implications for Eccle's theory of psychons). It is here, in our opinion, that serial time ceases and Divine time starts. However, appreciation of Divine time can be realized only in a mystic state. By the same token Divine space can be visualized when we consider it in relation to non-local effects of soul (ego consciousness). We do agree that non-local effects occur instantaneously and it is difficult to verify them experimentally, though it can be experimentally falsified (Bohm and Hiley, 1993). [60] This has not been not done so far. The following statement from the same workers is of significance:

> For if non-local connections are propagated not at infinite speeds but at speed greater than that of light through a quantum ether … a sub quantum domain where current quantum theory and relativity theory break down … then correlations predicted by quantum theory would vanish if measurements were made in periods shorter than those required for the transmission of quantum connections … If super luminal interactions exist they would be non-local only in the sense of non-physical.

This takes us to the case of telepathy and clairvoyance (prophetic phenomena). They imply the applicability of non-

locality. A number of investigations in this area suggest that non-locality is the only acceptable mechanism of instantaneous connectedness of the subject and the object in a mind-to-mind transfer. This means that the information would be received exactly at the same time as it is generated, without undergoing any form of transmission. (It may be noted that neuron to neuron passage of stimulus has a delay time of 200 m seconds.) There is, however, one caveat in this scheme from the point of view of physicists. They can argue that information is basically a pattern of energy, which always takes time to travel from the source to the recipient location. This argument can be negated if one takes the case of extra sensory perception (ESP). It involves the use of subtler forms of energy (discussed above) which travel at super luminal speeds through supra physical realms (Pratt, 1987). [61] The time period in such cases is of no consequence; nor can there be any attenuation as in the case of electromagnetic fields, which follow the inverse square law. We believe that during inner religious experience or even during prophetic revelation such subtler forces come into play, provided the mystic makes the necessary physiological preparation of disengaging himself from all sensory stimuli and focuses his full attention on to the infinite for seeking contact with Him. In such cases the period of contact will determine his ecstasy. Prolonged contacts may lead to such utterances as: "I am the creative truth (Mansur Hallaj)".

The phenomenon of micro-psychokinesis (m-pk) has recently been the subject of several studies. It is of interest to note that in m-pk consciousness is stated to influence directly the atomic particles (Boughton, 1996). [62] This has been demonstrated experimentally when the shift of quantum events was observed (Boughton, 1991; Jahn and Dunne 1987)[63]. This has been attributed to the collapse of wave function by consciousness. The problem of macro-psychokinesis (teleportation, levitation, poltergeist activity and materialization) has been studied extensively over the last 150 years (Inglis, 1984; Milton, 1994)[64, 65]. Yet, it remains a taboo area and therefore does not call for any further discussion.

We are aware that in developing our arguments in support of physical and psychological basis of religious experience, we have leaned heavily on the possible existence of subtler planes for integrating the non-local transmission of information as proposed by Tilner (1993). [66] This, however, remains open to further investigation. Yet those who are involved in the study of matter are also on equally weak footing when they try to explain the nature of

matter based on super string theory (hypothetical extra dimensions which are said to be curled up in an area of billion – trillion – trillionth of centimeter across and to which no access could be made). For this we may have yet to wait for another few decades. The controversies will however continue. There are some researchers who do not favor a-physical realms such as consciousness (ego, self, mind). In this regard we have refered to the works of several reductionists (Crick, 1994; Hamerof, 1994; Sperry, 1994; Dennet, 1991;). [67, 68, 69, 70] In spite of this, Mitchell (1995)[71] believes that all psychic phenomena involve non-local resonance between the brain and quantum vacuum for transfer of information. Such considerations bridge the gap between physics and metaphysics, as was the hope of Iqbal. We have, to the extent of our reach, tried to put together current evidences from physics, biology and psychology in support of Iqbal's theme of inner religious experience. There are, however, two more theories, namely, of Eccles (1994)[72] and of Watson (2005), [73] which are related to biophysics of consciousness. We shall again take up these theories in tandem in order to seek further support for Iqbal's thesis on inner religious experience.

Eccles was in complete disagreement with the 'identity theory' which postulates that mental states are identical with physico-chemical states of the brain. While rejecting these theories he has argued that (a) it offers vague generalizations, (b) it promises that problem will be resolved when we have more complete scientific understanding of the brain in a period of another hundred years. This he calls 'promisery materialism', (c) it fails to account for the wonder and mystery of the human self with its spiritual value, with his creativity and with his uniqueness for each of us (How the Self Controls the brain; pp: 33, 176)[74] and (d) it allows no real scope for freedom. In brief Eccles in his theory of the self argued for non-material mind, which acts upon and is influenced by our material brains; there is a mental world in addition to physical world, and the two interact. However, Eccles rejects Cartesian dualism. A deep study of Iqbal demonstrates that he preempted the views expressed by Eccles in 1992 in his book: "How Self Controls the Brain". Eccles was a physicist of high repute. He received Nobel Prize for his work on 'Chemical Transmission of Message at the Nerve Synapse'. Like Iqbal, being a strong believer in spiritual self and material brain, he formulated the theory of 'psychons'. His hypothetical psychons were supposed to be associated with the nerve endings and mediated the reciprocal interaction of the material brain and the spiritual self. However, in order to place his

psychons within the ambit of the worldview of physics, he assigned quantum probabilistic role to psychons. He conceived that the psychons have complete inner structure and are always accompanied by quantum wave fields, which, as we understand today, are not only acted upon by electromagnetic forces but also by subtler forces (discussed earlier). The influence of psychons on nerve endings as proposed by Eccles (acting as quantum fields) also provided support to the notion that the strength of the message varied with the strength of the quantum potential and thus opened the way for interpreting the neural code, though this remains elusive so far. Whatever the merit of this theory, there is one difficulty, which has been repeatedly pointed out by his critics. For example, Pratt (1995), [75] generally agreeing with the basic arguments of this theory expressed skepticism about Eccles acceptance of the standard interpretation of the conservation of energy. Further, if interaction between brain and mind is conceived as flow of information, then, how can it be explained without involving energy? In his opinion these two aspects actually limit his theory. This criticism can be overcome by resorting to subtler, etheric type of force or energy acting at the quantum and sub-quantum levels. Perhaps Eccles argument that "more direct action of the will precludes conservation law" may help meet this criticism. Even then, what about Para psychological phenomena? In conclusion, one can state that the scheme of events proposed by Eccles and Popper (1972)[76] and Eccles (1992)[77] about the characteristics of the soul (ego, self) formulated by them fits neatly into the meta-physical scheme proposed by Iqbal seventy years ago in the *Reconstruction*. It is worth noting, however, that both the schemes are upgraded when examined in the light of quantum potential operating at levels below the known physical structures (Bohm, 1994). [78] In view of these studies, we continue to maintain that soul (ego, self, consciousness) is non-material and immortal by design (as we have argued elsewhere as well) and is an extension of the transcendental energy permeating all kinds of matter, living or non-living. The linkage of soul with Directive Energy should leave no doubt about its immortal nature. In as much as its freedom is concerned, this is implied, in a way, in Hisenberg's Principle.

Any discussion about consciousness (ego, self, mind) would be incomplete if a reference is not made to the theory of Enformed Systems (TES) proposed by Watson (1997, 1998);[79, 80, 81, 82] Watson *et. al. (1998, 1999);* and Watson and Williams (2003)[83]. Here, we will focus only on those ramifications of this theory, which are of significance for our theme of inner religious experience. This

innovative theory stands in contrast to both, monistic materialism and reductionism. Indeed, there are several features of the theory, which can be accepted, of course, with a few reservations.

First, Enformism is a set of concepts that are based on the premise that organization is fundamental to everything including matter and spirit. Accordingly, Enformism means the inherent capacity of the whole system to organize. This is claimed to be a non-material, pre-physical property ingrained in all physical systems, living as well as non-living, when considered in wholes and not in parts of the whole. The sentient organization stands in contrast to the well-known physical principle of entropy (Watson 1997, 1998). [84, 85] Interestingly enough, hypothetical Maxwell's Demon is said to operate in case of a mixture of gas particles at various levels of energy, enclosed in the system, which rather than mixing up, as expected, randomly forms a gradient of energy. This phenomenon, unexplainable through the laws of physics lends support to the principle of inherent self-organization postulated under TES. Nowhere else is this principle more relevant than in living systems. An organism coming into existence following the development of a fertilized ovum through successive stages of transformation under the spell of pre-physical phenomenon (what Iqbal calls coming together of sub-egos), is not subject to laws of entropy. Why? Because as the physicists say the entropy of the world is increasing. Here in mother's womb or a bird's egg, within a restricted cosmos, with every growth cycle, if anything, the entropy is decreasing. Obviously, then, one can infer that the implicate force, which drives the process is universal in nature and can be well designated as a process of Enformy. This eliminates both monistic materialism and reductionism, though the same may play a role in living organisms in periods of sensibility.

Second, commenting on Eccles theory of psychons, Watson uses the acronym- SELF- meaning Singular Enformed Living Fields as a replacement of psychons to solve the binding problem between, 'self' (of Eccles and Iqbal) and the brain. From spiritualistic point of view we find great merit in this approach, since it eliminates the presence of entities in the form of psychons. Now does it require a quantum physical support to explain the behavior of psychons? The most interesting part of the SELF lies in the fact that it itself behaves like a field, without having physical existence as ordinarily conceived.

Third, the Enformed systems according to TES have a collective memory gained from experiences ordinarily in serial time.

This collection of experiences prepares the consciousness (ego, self, soul) to exercise its influence on the body in periods of sensation, thus regulating efferent activity of the brain when it is receiving sensory stimulations. On the contrary the same system behaves differently in the event of a mystic state, when the subject is cut off from all sensory stimulations (a period of stillness identified by Iqbal, 1930[86]; Forman, 2000[87]). Accordingly, the SELF of Watson, it can be easily argued, leads the mystic to a spell of unitary experience, fully concentrating on the Infinite, and thus navigating him to the Divine environment of space and time. The time being non-serial, and space not representing the Newtonian space. This, we believe, is a period of illumination, which we are inclined to attribute to hypothetical particles, the luminons to replace the psychons. Indeed, there are indications of the transfer of non-local information having nexus with quantum potentials at the sub-physical level. In our opinion this is the only way to accept the validity of TES in spiritual terms.

Fourth, it is unfortunate that intellectual of Watson's caliber takes us to the non-spiritual arena when he uses TES to disapprove the existence of a Creator. We may call this non-material agnosticism or more appropriately spiritual agnosticism. The line of argument he uses is more semantic than realistic. For instance, he makes a rather erroneous distinction between the words, 'creating' and 'Creator', the former he interprets as a process, and the later as an entity. According to him the word process is sufficient to describe all natural phenomena including organic evolution, thus, precluding the need for a Creator. The difficulty with Watson is that unlike Pratt (2003)[88] he has not given thought to implicate order in the vast oceans of energy below the sub-physical world, which we have related to the Directive Energy as proposed by Iqbal (1930)[89]. Nor has he been able to speculate on the physiological state of mind of a mystic in periods of absolute calm and stillness. Disagreeing with Watson's negation of the Creator, we would like to emphasize the distinction which Iqbal has drawn between *Khalq* (Creation) and *Amr* (Direction).

In essence, then, without prejudice to the authenticity of science and religion, we have made an attempt to reinforce Iqbal's metaphysical approaches with fresh evidences drawn from the worldviews of science and religion.

Yet this is not all. The more we study Iqbal the more we realize that Iqbal neither subscribes to monistic materialism nor to classical dualism. He was a proponent of the unity of life. As such,

we intend to explore further those aspects of our unified theory which can be assigned to Iqbal's vision of holistic experience and which could find universal acceptance by students of meta-physics (within the ambit of the expanded world view of Islam) and those relying on the infallibility of quantum physics. This is discussed in the following paragraphs.

For physicists, whether reductionists or dualists, quantum physics is so sacrosanct that it enjoys a focal position for all sources of knowledge related in one form or the other with the material world. There is nothing wrong about it. Yet, in recent times, students, in particular of particle physics have pointed out a number of caveats in the theory. Foremost amongst them are Bhom (1935), Neumann (1955), and Stapp (1973, 1993, 1999, 2001). Stapp, a particle physicist, at Lawrence Berkley National Laboratory, University of California, has developed interesting ideas about the "Quantum Theory and the Role of Mind in Nature". In his article-"The Hard Problem: A Quantum Approach" he concedes that "all our behavior and all of internal processing that occurs in the bodies could be deduced, at least in principle, from classical mechanics and appropriate boundary conditions". Yet, he is not convinced that classical mechanics can find a suitable solution for experience, that is, streams of consciousness that constitute the selves. The same ambiguity confronted Iqbal when he turned to Newtonian physics or relativity (classical physics) and even Heisenberg's wave function. Nor was Iqbal able to extract beingness and consciousness from classical physics. This meant that there remained incompleteness in dealing with the full description of nature. To understand where does the incompleteness of quantum theory lie, we examine how Stapp approaches the problem vis-à-vis that proposed by the Copenhagen group (Bohr, Dirac and Heisenberg).

According to Newton's theory every part of the universe is instantly linked, causally, to every other part of the universe (for example, if a person were to kick a stone, and send it flying off in some direction, every particle in the entire universe would immediately begin to feel the effect of the kick). This idea is mind-boggling. However, relativity theory of Einstein, banished it from classical physics. It resurfaced with quantum theory. Whereas Einstein objected to this, Bohr, the proponent of quantum theory, defended the same. This resulted in renunciation of classical idea of causality, and revision of our attitude towards the problem of physical reality. This is what Iqbal calls the revolt of physics against

its own foundations. This was however, not to be the case. The rise of new physics (quantum theory) was a natural imperative of intellectual manifestations, since the classical theories of Newton and Einstein did not take into account the role of experience and consciousness in understanding the reality of nature around us.

To overcome this difficulty Bohr introduced the idea of observer in the quantum theory. He claimed, "quantum theory, regarded as a theory about human knowledge, is a complete description of physical reality". Yet, Einstein was not convinced and remarked, "What I dislike about this kind of argument is the basic positivistic attitude, which from my view is untenable and seems to me to come to the same thing as Berkley's principle, *esse est principi* (to be is to be perceived)". In recent years Gell-Mann (op. cit.) has expressed similar views. He believes that "in order to understand the evolutionary process of living organisms one needs to have a coherent theory of the quantum mechanical reality in which these organisms are imbedded". It is precisely because of these difficulties that Stapp (1991, 2001) started a search for a complete quantum theory keeping in view the concept of non-locality (quantum theory is non-local; Tittle, *et al,* 1988). Of course, Stapp's major concern has been to bring human experience and consciousness into our understanding of reality. While articulating his views in quest for a complete theory, he critically examines the inadequacies in the Copenhagen model of quantum theory. In his view, the theory is "only a halfway house: it brings in human experience, but at the stiff price of excluding the rest of reality". His major objection lies in the fact that if the theory was to present the whole science, how should it be possible to "leave out the physical world". It is agreed that we can never know for sure that any proposed theory of the world around us is true. Yet, there is no reason that "one should not attempt formulating a coherent idea of what the world could be and the rules by which it could work". His main argument rejecting the Copenhagen model revolves around the concept of non-locality for which he cites the photon experiments. A pair of photons was sent in two different directions ten miles apart along optical fibers. The two particles reached their destinations at the same time. Experiments were performed on each of them separately. The observed connections between the outcomes of these experiments clearly defied the nature of the physical world based on directly observable objects ;(physical letters 1).

Given this introduction, we now pass on to the specific analysis of quantum theory undertaken by Stapp (1991, 1996, 2001). His arguments run like this: **First**, quantum theory according to the (Orthodox, Copenhagen) interpretation, involves a huge conceptual shift from the classical ideal; it brings experiences of observers into the physical theory. In as much as the observer is concerned, his experience of observing the data emerging from the system, at best, remains subjective. Bohr, himself stated that "In our description of nature the purpose is not to disclose the real essences of phenomena but only to track down as far as possible relation between the multifold aspects of experience" (Bohr, 1934). **Second**, in accepting this interpretation we only offer rules of calculation for the deduction pertaining to observations obtained under well defined conditions specified by classical mechanical concepts (Bohr, 1958; Stapp, 1993). **Third**, in contrast to classical mechanics human experiences occupy a basic primitive place in quantum mechanics, not withstanding the fact that rules of calculations pertaining to these experiences enable us only to look for matter like properties that occur in classical mechanics. The mathematical rules are therefore only generalizations of those used in classical mechanics. **Fourth**, Einstein thought that physics is an attempt to conceptually grasp reality as it is thought independently being observed. This may be true; however, the introduction of experiences into atomic physics is not only accepted by the scientific community but is considered as the correct way of comprehending atomic phenomena. **Fifth**, the crux of the problem is that "the quantum state and the form of our experience (limited to observer in the Copenhagen model) represent not the full reality itself but rather the probabilities for our perceptions to be various possible specified perceptions". **Sixth**, using this line of argument Stapp concludes that "*in the context of mind / brain problem the most orthodox interpretation of quantum theory brings the experiences of the human observers into the basic physical theory on at least a co equal basis with the physical or matter like aspects of description: and it thus gives only half of the dynamical and ontological story*". From this critique of orthodox quantum theory, Stapp, proceeds to analyse the ontological basis of the theory as proposed by Bohm (1984), Heisenberg (1976), Neumann (1952).

As early as 1952, Bohm postulated that real ontological basis for quantum theory can be realized only by segregating the 'particle' and wave function as proposed by Heisenberg. He suggested that particle rides like a surfer on the wave. In this theory one finds a huge gap between the information contained in the wave and

information contained in our experience. In physical jargon both waves and particles may be considered as material. Yet, wave describes all the possibilities for what our actual experience might be. This means that the waves represent potential beingness. On the other hand, the path of surfer specifies the actual choice from amongst the various possibilities. This represents the actuality of beingness of the particle. Accordingly, as Stapp writes "the wave generates all the possible experiences; whereas, trajectory defined by the surfer specifies which of the possible experiences actually occurs". Furthermore, Bohm's model does not account for the empty branches which form the part of the Heisenberg model, though Heisenberg proposes a sudden change which causes collapse of the wave function to differentiate between actual events and objective tendencies. At best, Bohm's surfer represents only the actual event. The major problem with the Heisenberg theory however, is to find a reasonable criterion for the occurrence of these actual events.

After having examined the difficulties in the interpretation of Bohr (op. cit.) and that of Heisenberg (op. cit.), Stapp proceeds to re-examine the quantum theory in the light of a dramatically different perspective presented by Neumann (1952). He finds merit in Neumann's suggestion that "*there is nothing in the purely material aspects of nature that singles out where the actual events occur…these events occur where* ***consciousness*** *enters, that is, in conjunction with conscious event*". This approach which includes consciousness gives complete 'ontologicalization' to the Copenhagen interpretation. In this way, the subjective Copenhagen interpretation is transformed into objective reality. Stapp reinforces this argument by citing the example of 'survival of the species' in which actual events occur in the human brain under the spell of consciousness. It is important to note that in the Von-Neumann scheme there is no sudden collapse of wave function (as proposed by Heisenberg). All the wave branches continue to exist thereby allowing the streams of consciousness to perpetuate. In fact, each different branch does not affect the other accompanying branches, therefore, each wave can be considered as a different 'self' or 'psyche'.

In essence, all that we have stated so far means: (a) that classical mechanics is unable to give a rationally coherent description of the world itself. The classical principles are simply too impoverished to serve as a basis for description of all of nature including the felt experiences (for example pain etc). Nor do the principles of classical mechanics explain the property of the

materials from which the living brains are made. (b) The introduction of quantum mechanics gave a new impetus to our understanding of reality by introducing the concept of observer. Even this has been identified as controversial because of the subjectivity involved. (c) All alternate explanations which do not include experiences and consciousness have the same shortcomings. (d) The mathematical rules introduced for calculating the probabilities of actuality of events to occur are mere expectations pertaining to these experiences. (e) The wave function as proposed is the quantum analog of the corresponding classical equation of motion. The part dealing with mind enters into the scheme only to the extent that it may pick out 'reality' from an enormous mass of potentialities. (f) Consciousness of self involves streams of thought. Each part of which can remember those events that went before (note that memory of past events resides in consciousness). When an event is to take place, all past experiences are recalled. And only that event which is actualized to occur is realized by collapse of other wave functions; the collapse of waves is, as suggested, caused by consciousness. One can say that "each conscious event is a new entity that arises from the ashes of the old".

This brings the updated interpretation of quantum theory closest to Iqbal's vision of consciousness (ego). The above discussion leads us to suggest that quantum theory itself is converted from a 'half house' (as proposed by the Copenhagen group) to 'full-house' (completeness) when consciousness is injected into the particle-wave as has been repeatedly proposed. For us in terms of unified theory it would mean that neither dualism nor monistic materialism provides a full explanation for the role of consciousness (self) neither in verifiable experience nor in inner religious experience. Iqbal's thesis on the subject in the *Reconstruction* points in same direction.

In support of the updated version of quantum theory, Pauli's remarks are worth consideration – "element of pure chance to embark on ontological discussion of the cause of the actualization entails assuming that the element of pure chance that occurs in contemporary quantum theory is merely a mass of ignorance of the true cause, which must necessarily be highly non local (Mermin, 1994)". The only way to locate the cause lies in the fact that actualizations must come from the experiential aspect of things. In the same vein Arthur Eddington observed: "the quantum world is more like a 'giant mind' than like the 'giant machine' described by

classical mechanics. For, the evolving state represents vector not 'substance', but rather a 'probability' for something to happen, and probability is normally considered to be a subjective or mental sort of thing, not a material reality. The second part of quantum reality is the 'actual' event, which Heisenberg contrasts with the 'potentia' from which the event arises. The 'actual' specifies what is able to be experienced: only the actualized branches can be experienced. This connection of the actual to experience is strengthened by the Wigner-von-Neumann proposal, which is essentially to *identify* the actual with experience. "

All that we have stated about the relationship of consciousness and quantum theory (Stapp's version) has important bearing on Iqbal's vision of 'inner religious experience'. For the first time in the history of physics Von-Neumann – Stapp inclusion of consciousness in the quantum theory opens the way for interpreting Iqbal's consciousness– ego scheme accommodating to the possible extent the view point of quantum physicists. It is becoming increasingly obvious from the recent works of particle physicists like Bohm, Von-Neumann and Stapp (op. cit) that (a) consciousness (ego, mind) is a non material entity, (b) like the self it controls the brain (see also Eccles, (1994), (c) whereas, Stapp's work is an attempt to develop a complete quantum theory, yet, it remains confined to the understanding of the physical reality of the world but does not include the genesis of mystic experience. Agreeing with Iqbal we postulate that experiences whether verifiable (normal) or non-verifiable (inner religious experience) are holistic and subject to same parameters as identified for a complete quantum theory. This, in our opinion, as Iqbal has stated, brings science and philosophy closer together. In terms of unified theory which we are proposing, it can be gain said that neither dualism nor monistic materialism provides complete answer for interpreting inner religious experience. What then should be the answer?, For this we are proposing that explaining all types of experiences, the only holistic approach lies in introducing the concept of **monistic spiritualism**. This fits into the scheme of Iqbal when all his views as expressed in the *Reconstruction* are related to major advances made in the field of particle physics and thus in the updated quantum theory. The accompanying diagram summarizes our concept of unified theory (monistic spiritualism) in the light of Iqbal's views supported by recent researches.

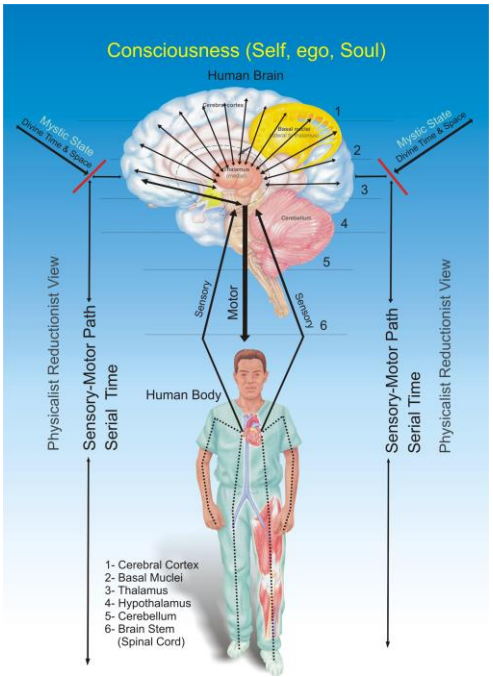
To conclude this article it would be appropriate to present a summary of the views expressed here. **First**, we maintain with Iqbal

the non-materiality and immortality of ego (Soul, Consciousness, Self); meaning thereby that there is no spiritual death. **Second**, ample evidence has been provided for the freedom of ego as a modicum of transcendental emanation of Directive energy which permeates all living and non-living matter and was in place even prior to the big bang. For this we have relied heavily on new physical approaches, for instance the existence of sub-physical oceans of energy (10^{108} J/ cm^3), which is not subject to Heisenberg's principle of uncertainty, nor to Einstein's relativity paradigm. The nexus between sub-physical energy and Directive energy has been postulated, yet much more is required to be discovered about its influence on non-local phenomenon witnessed in psycho-kinesis, that is, passage of thought from one human to another or even to other living organisms. Such evidences from the sub-physical world do have implications for the separation of serial time and space from Divine time and space, as well as for the non-physical ego (Soul, Consciousness, Self), endowed with property of non-local influence on the brain. **Third**, on the Biological side we have further strengthened Iqbal's concept of creative evolution under the spell of Directive energy, inherent in the principle of "ontogeny repeats phylogeny" or in the structure and function of DNA, and ancient memory of antibodies. **Fourth**, Inner religious experience whether taken subjectively or objectively clearly stands on the same legitimate grounds as the normal experience (verifiable). Thus, unlike Kant, it can now be argued that what cannot be observed or measured does not mean that it does not exist. This aspect receives support from such examples as the theoretical existence of quarks and even gluons. **Fifth**, the viewpoint of reductionists that every act, including consciousness (Ego, Self, Soul), can be explained through a process of reduction of physical structures of the brain, has been shown to have little relevance. Balance of evidence indicates that monistic materialism is not a theory of choice in as much as mind-body relationship is concerned. Same is true of dualism in the form put up by Descartes. Certainly, the concepts of Popper, Eccles and Iqbal are more germane to the validity of mind-body problem. Similarly, Watson's theory of Enformy provides high support for the existence of consciousness (Ego, Self); as a non-physical entity, (provided that its agnostic spiritualism is held back). **Sixth**, There is abundant direct evidence that brain in company with consciousness plays a dominant role in the activity of the body through the thalamus, cortex and more importantly the PIMs, when sensory-motor pathways are in operation. **Seventh**, it is hypothesized that

in mystic states when the subject is in a period of stillness (a period in which sensory-motor activity is suppressed), consciousness plays its unique role, elevating the mystic into Divine time and space under unitary experience for contact with the Infinite. **Finally**, our analysis undertaken so far assigns a dual role to consciousness (Ego, Self) integrating sensory-motor stimuli on the one hand and performing a unique role in the mystic state under the spell of Directive energy on the other hand as is hypothetically imaged in 2.

Legend to figure 2. The picture is imaginary and depicts the relationship of human consciousness in two modes. In mode A consciousness regulates the activity of the brain in sensory-motor responses. In mode B, for example, during inner religious experience (mystic state) when all motor sensory stimuli are eliminated, higher consciousness comes into play and the state of the mind is elevated to Divine ime Divine Space. This is a possible period of contact between the finite and the infinite. Note the flow of sensory and motor messages during the activity of the brain in periods when normal verifiable experience is operative. Note also that in mode B the level of experience is different. Yet the picture reflects the holistic experience repeatedly emphasized by Iqbal in the *Reconstruction*.

Figure 2



Notes and Reference

1 Durrant, W., *The Story of Philosophy*, Washington, Square Press, New York. 1933.
2 Eccles. J. C., *How Self Controls Its Brain* Springer-Verlag, Berlin. 1994.
3 Watson, D. E. and Williams, O., *Eccle's Model of Self Controlling the Brain*, Neuroquantology, 1:19, 2003.
4 Penrose, R., *Shadows of Mind*, Oxford University Press, Oxford, 1989.
5 Watson, D. E. and Williams, O., *op. cit.,* 2003.
6 Ibid.
7 Ibid.
8 Pratt, D., Consciousness, Casualty and Quantum Physics, *Journal of Scientific Exploration*, 11:1, 1997.
9 Bohm, D. Hiley, B. J., *The Undivided Universe: An Ontological Interpretation of Quantum Theory*, Routledge, New York. 1997.
10 Dennet, D. C., *Consciousness Explained*, Little Brown, Boston, 1991.
11 Dennet, D. C., *Ibid.,* 1991.
12 Penrose, R., *op. cit.,* 1989.
13 Iqbal, M., *The Reconstruction of Religious Thought in Islam: Edited by M*, Saeed Shaikh. Institute of Islamic Culture, Lahore: 2003.
14 Eccles, J. C., *op. cit.,* 1994.
15 Dainton, B., *Stream of Consciousness*, Routledg, New York, 2000.
16 Kant, I., *Critique of Pure Reason*, Trans. Kemp Smith. Macmillan, London, 1982.
17 Forman, R. K. C What does Mysticism Have to Teach us About Consciousness. *Journal of Consciousness Sciences*, 5:2, 1998.
18 Dainton, B., *op. cit.,* 2000.
19 Ibid.
20 Iqbal, M., *op. cit.,* 2003.
21 Forman, R. K. C., *op. cit.,* 1998.
22 Iqbal, M., *op. cit.,* 99.
23 Iqbal, M., *op. cit.,* 2003.
24 Forman, R. K. C., *op. cit.,* 1998.
25 Eccles, J. C., *op. cit.,* 1994.
26 Wason, D. and Williams, O., *op. cit.,* 2003.
27 Bohm, D. and Hiley, B. J., *op. cit.,* 1993.
28 Popper, K. R. and Eccles, J. C., *The Self and Its Brain*, Sringer-Verlag, Berlin, 1977.
29 Scott, A., *Stairway to the Mind.* Springer-Verlag, New York, 1995.
30 Hebb, D. O., *The Organization of Behavior*, Wiley, New York, 1949.
31 Hebb, D. O., *Essay on Mind*, Lawrance Erlbaum Associates, New York, 1980.
32 Schrodinger's, Lectures delivered in Trinity College Cambridge on Mind and Matter, 1956.

[33] Penrose, R., *The Emperor's New Mind*, Oxford University, Oxford, 1989.
[34] Krick, F. and Koch, C., Towards Neurtobiological Theory of Consciousness. *Scmin, Neurosc,* 2:263, 1990.
[35] Dennet, C., *op. cit.,* 1991.
[36] Pervaiz, G. A., *Lughat Al-Arabi.*
[37] Penrose, R., *op. cit.* (1989).
[38] Hawkins, S., *Brief History of Time*, Barton Books, 1988.
[39] Hawkins, S., *Ibid.,* 1988.
[40] Ibid.
[41] Darwin, C., *The Origin of Species*, 1859.
[42] Eccles, J. C., *op. cit.,* 1994.
[43] Iqbal, M., *op. cit.,* 2003.
[44] Bohm, D. and Hiley, B. J., *op. cit.,* 1993.
[45] Bohm, D and Peat, F. D., *Sciences Oder and Creativity*, Routledge, London, 1989.
[46] Gell-Mann, M., *Quark and the Jaguar*, W. H. Freeman and Company, New York, 1994.
[47] Watson, D., The Enformy Page (See web page: http:// wwww. enformy. com/$enformy. html).
[48] Iqbal, M., *op. cit.,* 2003.
[49] Pratt, D., Consciousness, Casualty and Quantum Physics*, Journal of Scientific Exploration*, 11:1, 1997.
[50] Bohm, D., Causality and Chance in *Modern Physics, Routledge and Kegan Paul*, 1984.
[51] Weber, R., Dialogues with Scientist and Sages: Research for Unity. Arkana, London, 1990.
[52] Eccles, J. C., *op. cit.,* 1994.
[53] Pratt, D., *op. cit.,* 1997.
[54] Thronton, M., *Do We Have Free Will*? Classical Press, Bristol, 1989.
[55] Pratt, D., *op. cit.,* 1997.
[56] Iqbal, M., *op. cit.,* 2003.
[57] Ibid.
[58] Eccles, J. C., *op. cit.,* 1994.
[59] Watson, D. E., *op. cit.,* 1993.
[60] Bohm, D. and Hiley, B. J., *op. cit.,* 1993.
[61] Pratt, D., *op. cit.,* 1997.
[62] Boughton, R. S., *Parapsychology: The Controversial Science*, Vallantine Books, New York, 1991.
[63] John, R. G. and Dunne, B. J. Margins of Reality: The Role of Consciousness in *Physical World*, Harcourt Brace, New York, 1987.
[64] Inglis, B., Science of Parascience, *A History of Para-normal*, Hoddr and Stoughton, London, 1984.
[65] Milton, R., *Forbidden Science: Suppressed Research that could Change our Life*, Forth Estate, London, 1994.
[66] Tilner, W. A., What are Subtle Energies? *Journals of Scientific Exploration*, 7:3,

293, 1993.

67 Crick, F., *The Astonishing Hypothesis: Scientific Search for Soul*, Scribner's Sons, New York, 1994.

68 Hamer of, S. R., Quantum Coherence in Microtubules: Neural Basis of Emergent Consciousness, *Journal of Consciousness Studies*, 1:1, 91, 1994.

69 Sperry, R. W., Holding Course among shifting paradigms, in *New Metaphysics Foundation of Science* Ed. W. Harman with J. Clark. Institute of Neotic Science, 1994.

70 Dennet, D. C., *op. cit.,* 1991.

71 Mitchell, E. and Williams, O., *The Way of the Explorer: An Apollo Astronaut's Journey through the Material and Metaphysical Worlds*, Putman, New York, 1996.

72 Eccles, J. C., *op. cit.,* 1994.

73 Watson, D., *op. cit.,* 1993.

74 Eccles, J. C., *op. cit.,* 1994.

75 Pratt, D., *op. cit.,* 1997.

76 Popper, K. R and Eccles, J. C., *op. cit.,* 1977.

77 Eccles, J. C., *op. cit.,* 1994.

78 Bohm, D., *op. cit.,* 1984.

79 Watson, D., *op. cit.,* 1993.

80 Ibid.

81 Ibid.

82 Ibid.

83 Watson, D. and Williams, O., *op. cit.,* 2003.

84 Watson, D., *op. cit.,* 1993.

85 Ibid.

86 Iqbal, M., *op. cit.,* 2003.

87 Forman, R. K. C., *op. cit.,* 1998.

88 Pratt, D., *op. cit.,* 1997.

89 Iqbal, M., *op. cit.,* 2003.