

WEAVING THE FABRIC OF A SCIENTIFIC KNOWLEDGE

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The last two centuries have witnessed the gradual emergence of two terms of reference, two provisos of knowledge, two declarations of faith that have come of age during the 20th century as forces that virtually define the parameters of our knowledge concerning the true nature of reality and provide the frame of reference for our understanding of human origins and ultimate meaning. As such, they have displaced the traditional beliefs of the world religions with a dynamic, revolutionary, and alluring world-view that not only offers a more modern and progressive angle of vision than the old religious model, but has also altered, perhaps irrevocably, the way we understand ourselves and the world around us. We are referring, of course, to the universally accepted framework of modern science and the theory of evolution, both of which have revolutionized the way modern individuals perceive and understand themselves within the contemporary world.¹

Modern science has revolutionized the entire framework within which the mass global population approaches the enigmatic yet vital question concerning the true nature of reality. It provides the subconscious paradigm of mind that serves as an intellectual, emotive, and even physical sieve, producing concepts and consequences through which we understand and experience the modern world. Similarly, the theory of evolution has completely recast the mindset and mentality of people everywhere with its hypothetical explanation of man's origin and, by implication, his meaning and ultimate destiny. It releases mankind from the burden of a human responsibility that associates the human being with a sacred

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trust made between the primordial soul and its Divine Creator. It does this by providing modern man with a terrestrial lineage of development that commences with a single replicating cell and ends with the spectacular transition from animal primate to a conscious human.

We are living through a scientific revolution that is so effective and so complete that we are not even moved by some of its disturbing assertions. Whole, great, new blocks of information are being laid down as foundation stones for a new world order and we are already taking it for granted. DNA and sub-atomic particles have appeared over our horizon and the possibilities of altering the genetic code and cloning the human being are being actively debated at universities and research centers the world over. So far, we are not shocked by the speed and diversity of this new-found knowledge that has the power to alter and change irrevocably not only the way we understand the world but the very nature of the world. Yet we are hardly surprised, much less do we express feelings of dismay, that we are moving in a direction in which angels would fear to tread.

Nothing is without a price, however, and the cost of this extraordinary modern-day cosmology has been the loss of the traditional knowledge of the Transcendent Reality and the Supreme Intelligence as an efficacious knowledge in the minds of the people. Without the Supreme Being and the Universal Creator, there can be no symbolist perspective in which the entire created universe mirrors the Absolute Reality and every living thing serves as a symbol of that reality, nor is there the possibility of a human spirituality through which man can experience the knowledge of the Divinity and express the holy sentiments that will connect him with that Divinity. These are in effect the metaphysical realities that transcend the limitations of man and the world for the sake of a higher plane of knowledge and a deeper level of experience than we would otherwise know.

Without a window to the other side of reality, these two precepts of knowledge must bear their own logical consequences. Since modern science has completely altered, perhaps forever, the way we think about ourselves and the world, contemporary man has the right to ask questions and to expect reasonable, indeed believable, answers. Twentieth century man has been bombarded with a dizzying array of facts, figures, theories, and statistical projections concerning the age of the earth, distances within space, the constitution and behavior of sub-atomic particles, and the likes of quarks, dark matter, and black holes. Having effectively abandoned the traditional perspective, we have the right to ask of modern science to develop a

consensus in coming to terms with the precise implications of our current knowledge. We need a map of the terrain if you will, a picture of the world, and ultimately a world-view that can accommodate the vast array of scientific information that is being accumulated, unless it fall victim to becoming merely a philosophy of denial of the values and the traditional world-view without offering modern man a plausible, much less believable, alternative.

Increasingly, it seems that we find ourselves in the uncharted territory of an exploratory science. We roam through the *terra incognita* of a frontier wilderness as wild and uncomprehending as anything encountered beyond the spiritual horizon of our time. More so now than ever before, there is a profound need for a comprehensive world-view concerning the nature of reality, and there is a need for a perceptive approach to man's origins and ends. We have lost the traditional message that was implicit in the symbolic image of the horizon, for example, a message that spoke of the duality of man and the world, in which reality itself was shattered into two parts — the one above, the other below — with the horizon as the seam of the world that actually united the reality of this world into a seamless whole that mirrored the Transcendent Reality. We have lost the symbolic messages of Nature in which every Divinely-created thing within the natural order expressed the unity of the Transcendent Reality. We have lost the ability to express the sacred sentiments of an inner spirituality that was once the human expression of higher emotions, reflecting the knowledge and presence of the Divine Being. As a consequence, we have lost the *baraka* or channels of blessing and grace that flow through the arteries of the universe as a perennial dispensation from the Divinity to humanity.

Modern man no longer believes in the Supreme Creator, the Superior Intelligence, and the Lord of the Universe who always was, is, and always will be the One (*Al-Ahad*), the Eternal (*Al-Samad*) and the Real (*Al-Haq*). Why this is true perhaps no one can fully explain. Yet the evidence of this disbelief and denial lies visible for everyone to behold with a consequence that assaults the body, the mind, the psyche, and spirit of all who live in the modern world. No one can escape the effects of this denial and everyone must live within an ambiance of insecurity and doubt that pervades contemporary life. Modern science does little to alleviate the fundamental anxiety of people with regard to the underlying questions that occupy human sensibilities at deeper levels of existence. We are enamored with a science that is heralded as the pursuit of a knowledge that is provable and quantifiable, rather than the pursuit of a knowledge that will lead

to realization and transcendence. In other words, modern man seeks a knowledge for the sake of knowledge only, and does not address the inner needs of traditional man who was in search of a knowledge that would help him to understand himself, transcend his limitations, and fulfill the mandate of his being.

Now, without the perception of an Ultimate Intelligence dominating the horizon of our time, there is the perceived need for an alternative explanation to the old-fashioned and outdated outlook of the traditional world. We need a world-view, a new paradigm, a comprehensive manifesto, or a *Weltanschauung* to sign the bottom-line of our existence, and to provide the background and the vision of a world that simply does not explain itself. We need a credible explanation to resolve the enigmas of the world, to neutralize life's mystery, and to provide the world and everything in it with an identity that needs no explanation because it reaches deep within the soul and spirit of man and has about it the feel of truth. In other words, we need a knowledge like the knowledge of old and we need a world-view like the one provided by traditional metaphysics and cosmology. We need a knowledge that is more meaningful and applicable than the abstract reasoning and mathematical calculations that are the standard fare of the modern world of science. We need a qualitative approach in our search of knowledge and meaning that unites rather than shatters the worlds, and can substantiate and enliven the quantitative morass in which we find ourselves during these times.

The grand architectures of quantum physics, astrophysics, microbiology, and genetic engineering astound and thrill us with their miraculous window into a world of possibility. They take us down avenues of unreality, yet the findings they uncover leave modern man disturbingly cold on inner levels, because the theories, the abstractions, the mathematics, and the conclusions produce a kind of mathematical transubstantiation of matter that confuses and alienates people rather than offering them access to a revealed and essential knowledge. Unlike the Word and the Logos of sacred scripture, scientific knowledge does not bring with it an enlightened meaning and it does not have the potential of becoming a universal wisdom compressed within words. In addition to the findings that constitute the physical knowledge of the universe, we need a knowledge that is fused with mystery, a knowledge that is sacred, a knowledge that is intuitive within man, and a knowledge that provides the means of connecting him with the world of the spirit. In a word, we still need the revealed knowledge of the traditions.

Because its framework of knowledge is patchwork and developmental in nature, modern science is in search of such an identity and a world-view that is still not fully articulated and thus not fully credible. Like the traditional world-view of old, any knowledge that would lay claim to being a world-view would need to retain a kind of inner selfhood and a fundamental integrity that would not violate on the universal level what lies within us as basic and natural instincts. Modern science seems unable to synthesize and summarize its body of knowledge into a comprehensive whole, possibly because it lacks elements of the sacred and the mysterious that are as real and truly experienced within man as they are manifested within the external world of nature. Even when it does attempt to philosophize a perspective of meaning based on its discoveries, the result is far from satisfactory and inspires division rather than consensus.

There is no longer a world-view that people can comfortably relate to, because the knowledge of reality and the projection of meaning implicit in any belief system needs to connect the spirit of the world with the world of the spirit. A world-view that contains simply a body of doctrine that amounts to a knowledge for the sake of knowledge alone, a knowledge that does not come to man directly from above through intuition, will remain what it professes to be, namely a knowledge of the physical world only. The theories, the measurable data, and the analysis that come to light will possess no immediate synthesis because they deny the higher levels of reality that have the power to unify the disparate elements of the world. The passion engendered by scientific analysis produces no profound and organic meaning that could in any way point toward a totality of perspective. In other words, there is no center or focal-point around which the myriad details of such a knowledge can unify. In order to achieve purpose, meaning, and the kind of vision that satisfies the demands of both wisdom and virtue, the principles of modern science need to take cognizance of and access to the Principal Truth.

Because the mystique of modern science does not satisfy certain inner conditions of life, a contemporary mania has developed that compels modern man and in particular the scientific community to search for an identity, a framework, and a coherent paradigm that can answer the questions and solve the mysteries that strike a profound cord within our beings, not with facts, theories, hypotheses, or a mathematical formulae concerning the latest projection of science, but with an intuitive truth that cannot be explained and that actually needs no explanation. There is nothing constant about modern science except that it is in a constant state of flux. With the passage

of time, science puts forward a new theory or hypothesis, based inductively on a number of disclosed facts, only to discredit it with an unexpected discovery or an alien set of principles. "Gone are the days when the authority of physics could be involved in support of a single established world-view! What has happened is that the pre-quantum scientific world-view (now termed "classical") has come to be disavowed 'at the top' by physicists capable of grasping the implications of quantum theory."² The sub-atomic world of quantum physics has become a realm so alien it is amazing that our best scientific minds can enter it at all. It certainly remains for most people, and most probably will remain for an indefinite future, beyond the reach of ordinary mortals, much less offer a message that can enrich their lives or contribute a world-view that could be both credible and universal.

"Classical" physics, in comparison with the abstract and hypothetical quality of quantum and astral physics, now seems not only inaccurate, but primitive. It inspired dreams of omniscience among the emerging scientific elite of that time with its new, enlightening knowledge concerning the nature of reality. The new physics of modern times, however, counsels caution and sobriety; or perhaps more relevantly because we don't really know any longer what we are dealing with. Like the search for the origin of life, physicists probe deeper and deeper into the inner sanctum of the atom without being able to identify its fundamental building block. Indeed they may not even exist as such.³ Scientific brains and their mathematical calculations seem strained to the breaking point, as they deal with a complexity seemingly too deep for anyone to fathom. One theory leads to another until the entire edifice takes on the unreal quality of an assumed reality and a hoped for truth. No field of modern science would be more likely to grasp the banner of truth concerning the true nature of reality than the realm of particle physics. Quantum theory, and its attendant quantum enigma, has taken on the aura of the fantastic and the sublime. Physicists speak of quantum fluctuation, for example, and like all things in quantum theory, there is some confusion whether the behavior of sub-atomic particles should be described as either a particle or a wave. Just as scientists talk about the wave function of the electron, they now talk about the wave function of the universe, assuming that a set of mathematical tools used to explain the nucleus can be applied to the whole of creation. And yet, as sublime and ethereal as these regions may be, amounting to a virtual cosmology of quantum physics, in which the atom represents not *the* universe but *a* universe, there is actually nothing behind the reflections of our experimental mirrors

but the magnitude of our own observations and the virtuosity of our own abstractions. The abstractions of "real" truth may require a quantum leap of another kind. If quantum theory can tell us so much about the inner cosmos of atoms, what then can it tell us about the most fundamental particle of all, namely the infinitely dense pinpoint whose mysterious explosion is said to have given rise to all we see and imagine. How do you get something, indeed the entire universe and everything in it, from nothing? Once again the search for both knowledge and meaning take us back to primal origins and the fundamental mystery at the heart of the universe.

In view of our modern-day search to comprehend the whole through the study of an infinite number of particularities, we have turned to the heavens in our theoretical exploration of the universe. We have managed to draw an extremely vivid picture of the heavens, with its stunningly brilliant quasars, its infinitely deep and dense black holes, and the mysterious and ominous dark matter. Through creative documentaries, the mass media have dramatically portrayed these findings to a fascinated and expectant world, leading credulous layman to believe that these things actually exist. "Detecting black holes requires immersing oneself deeply into the wells of theory. And even then, the only black holes one can unambiguously see are those within the equations of Einstein's general theory of relativity, which imply that if a collapsing star is massive enough it will go on collapsing forever, tearing a dimensionless pinhole into the space-time fabric."⁴ Judging from these and other incredible astronomical findings, together with the facility and familiarity with which the astronomers speak of the time/space axis of light years and infinite distances, you would think that we earthlings had traveled great distances across the span of galaxies. In fact, we have sent space probes no farther than just beyond the solar system, and although we have stepped on the moon, we have not stepped beyond it. The rest of the picture is built from the photons that happen to come our way that are magnified by telescopes and that astronomers sift for patterns.

Through popularization of recent scientific findings and their glamorization through films and the media, the cosmological model that modern science has constructed has become so firmly lodged in the brain that mere humans can be heard to speculate confidently about the very origin of the universe. Serious books have been written on the first three and the last three minutes of creation,⁵ in the wake of the big bang theory of the origin of the universe. We refer to the Big Bang theory itself as a proven fact and do not recognize it as the creation myth that it really is, a myth that, incidentally, does not contradict in any substantial way the well known creation doctrine of

the various world scriptures, particularly with respect to its spontaneity and absoluteness.⁶

The truth is that in the meticulous weave of the fabric of physical knowledge, the Big Bang theory is very much a working hypothesis and not the *de facto* representation of the creation of the universe that we are systematically led to believe. Once again, we are not attempting to discredit the veracity of such a theory. On the contrary, since it is in keeping with the religious perspective of a spontaneous and absolute transition from nothing to something initiated by the Hand of the Divinity, we merely wish to point out that the claim of an approximation to comprehending the origin of the universe under the guise of scientific principles are admittedly beyond the ability and scope of the scientific enterprise. We search from the moon, to the sun, to the stars. The farther we move from earth, the deeper our measurements become embedded within our theories of stellar physics, which are based in turn on thermodynamics, quantum mechanics, and the nuclear physics we believe energizes stars. "Extrapolating a cosmos from pinpoints of light also takes great ingenuity and imagination. Over the years we have slowly developed a grand picture of the universal scheme — the Big Bang theory. But inevitably the universe refuses to be squeezed into our formulations. And so, as in particle physics, we end up honing and revising, stacking abstraction on top of abstraction, always striving for a better fit."⁷ Nevertheless we are not one step closer to understanding the nature of reality, our origins, our end and/or the essential knowledge that lies within and between these perennial mysteries.

Man has always been interested in the true nature of the reality and he has always used the available knowledge as a springboard toward an understanding of the reality that surrounded him. The pursuit of knowledge has been a perennial quest for mankind down through the ages, a knowledge whose ultimate objective was to understand the nature of both physical and spiritual reality. The search for a true knowledge of reality and its realization through experience and through life itself has always formed the basis of human motivation to know and understand. This desire to know and understand is fundamental to human survival on the earthly plane and is written within man's being as a fundamental desire for transcendence and salvation.

That having been said, we have the right to ask: Do we, as modern man, think that we are unique in wanting to know the true nature of the reality? Primitive, pre-historic, and traditional man

wanted, needed, and ultimately enjoyed the fruits of his knowledge as much as we do today, at least in principle according to his needs, and possibly more so. As modern and contemporary individuals, we differ markedly from all those who have gone before us, in the understanding of what knowledge is and where the essential knowledge is to be found. Modern man is the recipient of a legacy of development that began in the 17th century and that has now culminated in a body of knowledge and its attendant philosophy that is fully summarized by the term "modern science."⁸ Rama Coomaraswamy, a respected writer on traditional themes within the context of the perennial philosophy (*philosophia perennis*), has even called the modern scientific outlook "a philosophical position that clothes itself in scientific terminology."

Not surprisingly, in view of the increasing tendency of contemporary scientists to extemporize on the philosophical implications of their findings to the extent that they speculate even upon the nature and purpose of creation, modern science finds its grandparent and mentor in the person of the Renaissance philosopher Francis Bacon.⁹ Bacon is not particularly remembered as a philosopher, but he is of great significance for the understanding of the central aspect of modern science because he laid down the guidelines — moral, aesthetic, and psychic — for this "new philosophy." He sought to create a "new" science which would give man mastery over nature and domination over the environment. He was highly anti-metaphysical during an age that still could be considered traditional, coming on the heels of the Medieval era. He attempted to describe what came to be known as the "scientific method," emphasizing that data should be collected and experiments made in order to have the secrets of nature revealed through an organized observation. He advocated the new empirical method of science in passionate and often outright vicious terms. Nature has to be "hounded in her wanderings," wrote Bacon, "bound into service" and made a "slave." She is to be "put in constraint," and the aim of the scientist is to "torture nature's secrets from her." He is in fact credited by many as having established the "scientific method" which for him amounted, perhaps prophetically, to a "new philosophy." Bacon concluded that his *novum organum* (new logic) should apply "not only to natural but to all sciences," and that it is to "embrace everything." He thus opened the way for the systematic and comprehensive development of the scientific approach, providing the guidelines for modern science, philosophy, and aesthetics, in addition to establishing the basic parameters that still constitute the modern and contemporary world-view.

Science commenced as an alternative “medium” to traditional knowledge in order to answer the question “what is the nature of reality?” through a radically different approach to the pursuit and understanding of knowledge. In seeking out an alternative to the traditional world-view, the newly emerging scientific outlook was already establishing a precinct and a platform from which to launch itself into speculation concerning what the traditions refer to as “higher” knowledge, such as the origin and purpose of creation, both universal and human, which formerly had been the domain of religion. As such, there are no definitive “sources” of knowledge within the paradigm of modern science such as are found within the traditional perspective.¹⁰ Genuine scientific knowledge concerning the nature of reality needed to be first unearthed before formulating a reasonable, indeed a credible, world-view. Scientists began by trying to explain the nature of matter as the first step in coming to terms with the true nature of the reality. By an extension of logic, reality was placed within a context of that which was observable and measurable by the human mind.

However, that is not the full extent of the mentality that underlies much of the mystique of the modern scientific perspective. “Modern science is based upon certain assumptions concerning the nature of physical reality including the logical character of the laws dominating over the physical world, the independence of physical reality from other orders of reality, the possibility of experimental treatment of the physical world, the quantification of the results of experimentation and observation and the possibility of prediction based upon mathematical study of the physical world.”¹¹ Needless to say, the assumptions concerning the nature of the physical universe have provided, on the one hand, the foundation of modern science as we know it; on the other hand, these hidden assumptions have shaped our mentalities and conditioned our intellectual perceptions concerning everything we believe in, from the nature of reality to the origin of the universe and *Homo sapiens* as a conscious and thinking species. These suppositions provide the conceptual frame of mind within which the modern scientist works; it is a framework upon which modern science is based and which the scientist cannot do without. As such, out of the formal architectural structure of modern science emerges an identity that seeks knowledge, not by reaching upwards towards an other-worldly or “higher” source, but by focusing within, on making assumptions, formulating theories, conducting experiments, offering predictions, and drawing conclusions that once arrived at form the basis of a contemporary philosophy of life.

First and foremost, modern science religiously maintains the independence of the physical reality from all other orders of reality, and in particular the metaphysical levels of reality of which the religions speak. Indeed, it proclaims the physical reality as the only true reality. It seeks knowledge through the experimental treatment of the physical world which results in the quantification of that world. The parameters of the physical world, namely space, time, matter, motion, and energy are realities that are independent of that higher order of supra-physical reality that was traditionally associated with the levels of being and levels of reality found within traditional cosmology. "Not only are there many levels of reality or existence stretching from the material plane to the Absolute and Infinite Reality which is God, but there are also many levels of subjective reality or consciousness, many envelopes of the self, leading to the ultimate Self, which is Infinite and Eternal and which is none other than the Transcendent and Immanent Reality both beyond and within."¹²

The purely secularist assumptions, by virtue of their independent, exclusive, and absolute qualities, are needless to say cut off from the power and influence of the Divine Being. The physical universe, which is the only "real" reality according to the scientific perspective, is the subject of mathematization and quantification. The human mind, by virtue of the faculty of reason, becomes the sole arbiter of what is true and what is false. Man becomes the absolute architect of a virtual reality, in which his consciousness is exclusively identified with the power of human reason to navigate a way through the vast and mysterious reality of the creation. The physical universe becomes in this view the sole source of knowledge, the human faculty of reason the sole vehicle with which to approach that knowledge.

We are a product of these times. Our mentalities are dominated by the intrusion of the scientific perspective that thinks rationally and logically, but also mechanically and deterministically. We approach the meaning of existence as if it were purely or even primarily physical and mathematical. In our denial of the truth of anything that lies beyond these planes, we falsify the very existence we are trying to verify. We need a change of consciousness and a re-ordering of our mentalities, that to date have been overwhelmed by the physical and philosophical priorities of modern science.

We live in an era that is witnessing incredible discoveries in quantum physics, in astrophysics, in molecular biology, not to mention the other fields of science and technology. These findings state their own factual truths, but that is regrettably not enough in

coming to terms with the true nature of the universe and the reality that encompasses it. The entire body of knowledge and the irrefutable facts that emerge from the contemporary scientific enterprise need to be integrated into a scheme of things, a world-view and a philosophy, that can accommodate a truer understanding of ourselves and our surrounding world.

The overwhelming impression given off by modern science is that its fundamental purpose is to categorically resolve, once and for all, the mystery of life, the mystery of the creation of the universe, the mystery of the origin of man and the universe, in short, all of the major enigmas of our time. The search for origins and ends seems to be the primary goal of all branches of modern science. Whether it be biology, paleontology, botany, zoology, astronomy and/or cosmology,¹³ every field of science ultimately interprets its findings with a view to settling the "problem" of God with a solution that could be considered as objective and absolute as God himself. Scientists themselves, knowingly or unknowingly, have accepted and continue to work within a framework of metaphysical or philosophical principles that constitute a reality in their own right and that are quite apart from the phenomena which are supposed to be the object of scrutiny. In other words, modern science, through its ongoing experimentation, its continuous flow of interpretation of the facts and findings, through its tendency to universalize its theories and findings, through its habit of making assumptions that quickly assume the mantle of truths, has contradicted its working *credo* as a pragmatic, materialist, and empirical discipline independent of supra-rational and spiritual speculation. Paradoxically, the high priests of the scientific community systematically project, interpret, and attempt to finalize a philosophical view of things that is anything but objective, empirical, or even neutral.

Modern science risks developing a crisis of identity that is as objective and real as the findings that scientists have genuinely uncovered and have value in their own right. Modern science and her faithful scientists proclaim as a matter of pride to be objective, rationalistic, secularist, and empirical to a measure; yet in order to fill the incredible chasm that exists between traditional and perennial wisdom on the one hand and the speculative theory and hypothesis on the other, scientists are trying to assess the metaphysical and/or human significance of their findings without the blessing (*barakah*) and benefit of true metaphysics and spirituality.

We have the legitimate right to ask, therefore, what we are dealing with: science, philosophy, or a philosophy of science? Can

science live with the prospect of routinely denying the existence of a "sacred science" while attempting to draw conclusions that are solely within the domain of the sacred? Can science pursue the discovery of facts and figures without permitting itself the luxury of interpreting this knowledge within a cosmic framework of philosophy and metaphysics, the very realm of which modern science denies? What does modern science want to achieve? What is its purpose and goal within its self-proclaimed random, purposeless, and chance environment, a point of principle that scientists so meticulously adhere to and explore? Indeed what does modern science stand for and how does it identify itself? These are questions that need to be addressed because their answers will determine the whole character of the modern scientific enterprise, as well as the character of the society that is fashioned in its image and affected by its influence.

ENDNOTES

1. We need to clarify our terms of reference. Strictly speaking, *modern science* is not a science as physics, chemistry, or biology are considered sciences, but rather a secular paradigm and philosophy that sets the parameters and virtually dominates the pursuit of a modern-day intellectual framework of knowledge. Similarly, evolution is not a science as such. As a working hypothesis of the origins and development of organic life on earth, it draws upon a multiple framework of particular sciences in support of its fundamental premise. Modern science is human science as opposed to the sacred science of the traditional world; while materialistic evolution forms the cornerstone of the modern scientific outlook.
2. Wolfgang Smith, *The Quantum Enigma* (Peru, Ill.: Sherwood Sugden & Co., 1995), p. i. "Quantum mechanics, if you will, is a scientific theory in search of a *Weltanschauung*. The search has been on since 1927."
3. Quantum theory thus reveals an essential interconnectedness of the universe. It shows that we cannot decompose the world into independently existing smallest units. As we penetrate into matter, we find that it is made of particles, but these are not the "basic building blocks" in the sense of Democritus and Newton. They are merely idealizations which are useful from a practical point of view but have no fundamental significance. In the words of Niels Bohr, "Isolated material particles are abstractions, their properties being definable and observable only through their interaction with other systems." Quoted in Capra, Fritjof., *The Tao of Physics* (Boston: Shambhala, 1991), p. 137. The Niels Bohr's comment finds its source in his *Atomic Physics and the Description of Nature*, (Cambridge, England: Cambridge University press, 1934), p. 57.
4. Johnson, George., *Fire in the Mind* (New York: Vintage Books, 1995), pp. 76-77.
5. Paul Davies, *The Last Three Minutes: Conjecture About the Ultimate Fate of the Universe* (New York: Basic Books, 1994)
6. This is not to minimize in any way the incredible achievements of science, and in particular the Big Bang theory which found its inception in the scientific discovery that the universe did not "always" exist. According to the Biblical account, *Qui vivit in aeternum creavit omnia simul* ("He that lives in eternity created all things at once"), while according to the Qur'an "(God is) the Originator of the heavens and the earth; when He decrees a matter, He says: "Be!" and it is (Al-Baqarah 2: 117).

7. Johnson, George., op. cit., p. 61-62.
8. The modern term "science" has a very specific and particularized qualification, of which we shall presently write, that dominates the intellectual horizon of these times. Yet, we should note here that the word "science" itself etymologically refers to a knowledge of a much broader base. We find that throughout the linguistic historical record the word "knowledge" was referred to as "science," most notably the knowledge contained within the religious framework, which is referred to as "sacred science." The base of modern science, its conception, and the way it is understood by the mass population generally, is needless to say much narrower than that. "Science, thus understood, has by definition nothing to do with the sacred, a term which is meaningless in its world-view, while what is called sacred, to the extent that this category still possesses meaning in the contemporary world, seems to have little to do with science." Nasr, S. H., *The Need for a Sacred Science* (Albany, NY: SUNY Press, 1993) p. 1.
9. English philosopher, essayist, and statesman. Bacon's best-known writings are his aphoristic *Essays* (1597-1625). He projected to write a major philosophical work, the *Instauratio Magna*, but completed only two parts: the *Advancement of Learning* (1605), later expanded in Latin as *De Augmentis Scientiarum* (1623); and the *Novum Organum* (1620). His major contribution to philosophy was his application of induction, which is the fundamental approach still used by modern science, rather than the *a priori* method of medieval scholasticism that understood reason and faith to have a harmonious relationship.
10. In Islam, for example, the sources of knowledge are very clearly articulated and well defined. The Qur'an, as well as other traditional and revelatory texts, are very specific in this matter. The Qur'an itself is, of course, the primary source of knowledge *par excellence*, it being the direct descent of knowledge both from and of the Divinity through the Divine Speech. However, two other sources of knowledge for mankind are specifically mentioned in the Qur'an; they are the manifested creation in the form of nature, and man himself who is considered a source of knowledge as well as a font of experience. "One who discovers his own self, discovers God" is a commonly quoted Sufi aphorism. What may prove enigmatic to the modern mentality, steeped as it is in the secular and scientist ambiance of the modern world, is the meaning of the word "knowledge" itself, since distinctions need to be made between scientific and sacred (essential) knowledge, but that is for another chapter on another day.
11. Nasr, S. H., *A Young Muslim's Guide to the Modern World* (Chicago: Kazi Publications, Inc. 1993), p. 183.
12. Nasr, S. H., op. cit., p. 15.

13. "Strictly speaking, a modern cosmology does not exist. The modern science of nature expressly limits itself to the corporeal domain alone, which it isolates from the total cosmos while considering things in their purely spatial and temporal phenomenality, as if supra-sensible reality with its differing levels were nothing at all and as if that reality were not knowable by means of the intellect, in which it is analogically inherent by virtue of the correspondence between the macrocosm and the microcosm." Titus Burckhardt, *Mirror of the Intellect* (Albany, NY: State University of New York Press, 1987), pp. 21-22.