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# Integration of Technology and Life in the Dimension of Being

Woo-Won CHOI\*

Through interweaving and fusion, each civilization is entering into a new stage of evolution. In this rapidly changing age, philosophy should be competent to illuminate the direction and driving principles. Today's world community is searching for the spirit of integration in a new dimension of Being. Between different civilizations, between different religions, between science and religion, between man and nature, between technology and humanity, etc., our age calls for a true philosophy of Being capable of leading them into an essential integration, ceasing the conflict.

To avoid past fallacies of superficial modern reason, committed by the West and later by Asian countries also through imitation, each country should establish the strategy of social development in this dimension. The inertia of modernity is menacing the high-technological society. In the way, we will meet post-modernism first. It is certain that post-modernism approaches this dimension with its merits resting largely in its auto-critique of western civilization. But there is a far distance between auto-critique and synthetic ability of essential integration. We find this ability at the bottom of the Asian culture, in the Awakenings of Buddhism, Islam, Hinduism, and Taoism. To harmonize future high-technology society and human values, we need a new philosophical dimension of the Being. Contemporary metaphysics influenced by those Awakenings shows us the opening of this new dimension.

## **Metaphysical Transformation to Essential Integration**

Under the pressure of modernization, traditions had to be broken, shrunk, or fade away. It meant the progress of history that modernity broke

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down the fossilized crust of the traditional feudal societies. But the problem is that, among the traditions expelled by modernity, there were essential elements connecting us to Life and Being. The immature modern reason dichotomized the world affairs too simply and superficially. As it could not read the invisible interconnections, it could not dig deeper the true reality. As a result, it confined us in another artificial dogmatism of dichotomy, let alone attaining the dimension of the Being. In social life, such blindness brought about the *Seinsvergessenheit* and inversion of values.

The Identity Principle and logic of exclusion underlying the western philosophy up to modernity were well criticized by Post-modernism. Its emphasis on the variety, multilateralism, decentralism, protection of minority, and complex structure of dispersion and specialization as the direction of future societies makes possible the coexistence and tolerance between others. But, still there remains far distance from Post-modernism to the essential integration needed for the harmony and mutual encouragement of World Community. The essential integration between different civilizations, between different religions, between science and religion, between man and nature, between technology and humanity can be achieved only in the ultimate dimension where the Being recover its original unity of verity, beauty, and divinity as the universal love itself.

The history of philosophy shows that the evolution of civilizations has attained in this dimension. In this context, the fundamental transformation of Western metaphysics in H. Bergson is very significant. He rightly pointed out the fact that the history of Western philosophy, from its origin, was dominated by the hidden illusions concerning the Being. This fundamental problem has made the history of Western philosophy a series of endless debates and refutations rotating in a confined circle of hidden faults.

This fact has great significance for this paper, because we can see that those metaphysical illusions are underlying the modern confusion between instrumentality and essence which disturbs the desirable relation of technology and human values. Born from this confusion, the paradigms of modern philosophy closed the way to the essence of the Life and Being, driving themselves to self-oblivion and finally to inversion of values. Because, as the instrument, technologies can serve good or for bad, if they

are accompanied by such blind philosophies, the future of the world will be suspicious and dangerous. But, thanks to the transformation of Western metaphysics, we can see what the cause of those illusions and confusions is, to what new dimension our high-technology civilization should change its direction. The Bergsonian genetics of intelligence gives an excellent explanation of the interconnection between these problems. Those illusions and confusions were born when the intelligence molded on the inert matter extended its strong tendency of unlimited reduction to the realm of life. The inhumanity and inversion of values in the high-technological society come from the absurdity of deriving the notion of life from that of death.

The obstinate thick wall of confusions separating the Western philosophy from the true Being broke down by the metaphysics of *durée pure*. H. Bergson indicated that the reality of the Being should be deciphered not in space, but in time.<sup>1</sup> The metaphysical illusions began with the spatialization of time, confusing time with space. We should grasp the reality as the process, mobility itself, and the process is to be perceived in its active interpenetration of the past and the present. This philosophy of Being advances to coincide with the essence of life, and his final message was spiritual *élan d'amour* of open religion. Bergson prescribes to the Western philosophy to return to the origin of misconceptions and faults in the ancient Greek age of 2600 years ago, especially to the school of Elea, and to recommence after correcting them.<sup>2</sup> In the philosophy of Martin Heidegger deeply influenced by Bergson, the same ideas are expressed in different German vocabularies like *Sein und Zeit*, *Holzwege*, *Seinsvergessenheit*, *Heimatlosigkeit*, *Fundamental Ontologie*, etc.

The fact that we can see the deep influence of Buddhism on this metaphysical transformation of H. Bergson has many important implications for this paper.<sup>3</sup> This transformation means the birth of a new civili-

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1 Henri Bergson. *Matière et Mémoire: Essai sur la relation du corps à l'esprit* (Paris: Les Presses universitaires de France, 1965), 248. English translation by N. M. Paul and W. S. Palmer, *Matter and Memory* (New York: Zone Books, 1994).

2 Henry Bergson. *L'évolution Créatrice* (Paris: Les Presses universitaires de France, 1959), ch. IV.

3 About this important influence of Buddhism on H. Bergson, see my paper "Epistemology for a Harmonized World Order", *Ideals of the Asian Community: Aspirations for a Harmonized World Order* (Proceedings of the 3<sup>rd</sup> International Conference of the Asian Philosophical Association, Istanbul, 2005), 7-13, available at the website of AsianPA: <http://www.asianpa.net/assets/upload/proceedings/yHTwVAdBVcLteNBb.pdf>.

zation by the fusion of Eastern and Western civilizations. It is possible to save the stray techno-scientific civilization menaced by inhumanity and total collapse. In the globalization age, each civilization will contribute to the humanity with its own merits developed during long history. The Western civilization has brightened the world with science, technology, and democracy, and the great Awakening of the Being which has permeated in Asian cultures from ancient times will open a road to the true World Community. The light emanating from the high dimension of the Being will illuminate our problematic field of knowledge and education. It is in this dimension that the philosophy of the high-technology society should be based, not in the prevalent customary positivism.

We see in history that, even if a new dimension is opened by some pioneers, the inertia of the previous one is so strong that the society still continues to be dominated unconsciously by the old fossilized paradigms or customs for a long time. To overcome this mental limit or obstacle, we should know how it blocks our way to the verity of reality and finally deforms our life. When a state artificially cut from a becoming is fossilized to be an eternal form or principle, its self-oblivion will confine it in a closed circle of literal analysis or simple mechanical efficiency. Positivism is such a case. It drives technological society into a more desolate land.

### **Inertia of Modern Reason**

In the present techno-scientific society, the most widely spread paradigm of conceptions dominating the ordinary way of thinking is to be summed up as positivism. It is natural that the ordinary education is under the influence of this positivism. The crucial problem is that, as the final product of *raison moderne*, positivism inherits its very superficiality and uniformity that are blocking the way to the Being. In this unhappy one-dimensional state of mind, the original unity of verity, beauty, and divinity is broken, and they will be represented in mutual isolation. Just as science and religion confront each other, art and religion have lost their same original ground. In modern times, with the division of art and religion, the essential unity of beauty and divinity has been forgotten, and we worry that, even if art is becoming more and more refined in its techniques, its spiritual

origin is eliminated from us almost completely. We do not know the true messages that art is delivering to us. We have lost sight of the fact that the ultimate meaning of beauty is divinity.

Under the influence of this false philosophy, education is to be misled and reproduce the false relations and false attitudes in life. Forgetting their original interconnections, philosophy, art, and religion are deformed as we see today. In this deformed system of values, what matters is only the maximization of technological efficiency and money. We have seen that, even in the field of philosophy, the Logical Positivism reduced philosophy to a simple analysis of scientific languages, forgetting the fundamental inseparability of synthesis and analysis.

If there are hidden illusions in the basis of the metaphysics of the Being, naturally, through wrong education, they will cause the oblivion of the true reality, or the inversion of value, which will finally deform and oppress life. In the history of the world, we can find many such cases where the hidden unconscious illusions and dogmas have dominated the world in the name of religion or rationality. In effect, a well-organized interest group which could legislate the dogmas has dominated and controlled the society by its uniform principles, sacrificing the majority of the people.

At this point, we cannot help raising questions about the fundamental character of the Western civilization and its historical development. Seen from the aspect of the metaphysics and the ontology, it has repeated the history of illusions, oblivions, and inversions, in spite of the bright success in techno-scientific field. The ironical crisis of today's techno-scientific civilization in which even the survival of mankind is menaced by its own scientific achievements is caused by this dual aspect of the Western civilization. At first sight, this phenomenon may seem self-contradictory. But this self-contradiction is only apparent. We should be able to see how the scientific civilization is estranged from the realization of the true Being through the philosophical misunderstandings derived from those illusions. The rationalism, the intellectualism, and the logos-centrism, misled by those illusions, could not escape from the closed circuit of uniformity and superficiality, incapable of penetrating into the essence of the Being. Those forms of the Philosophy of Identity, captured by its strong tendency of absolute deduction or unlimited reduction, could not accept the heteroge-

neous othernesses of the world. Their metaphysical fault made it impossible for them to enter into the true meaning of life, at the same time closing the way to the community of mankind. In this respect, the western rationalism was transformed surreptitiously into an instrument of exclusion and domination of the otherness. The so called Western modern reason declared itself as the ideal model of the evolution of all civilizations, underestimating other civilizations as the savage, barbarous, or undeveloped. Such an error of extremely linear interpretation of history was a natural result of the superficial *raison moderne*.

The unconscious tendency of the absolute deduction, the monistic reduction, or the uniform totalization makes the Philosophy of Identity fall into the dichotomical way of thinking. The world affairs are divided by two sides, one within the boundary of the definition, and the other outside the boundary of the definition. According to the Identity Principle, the latter should be excluded, expelled, dominated, or annihilated as heretics, or irrationals. The principle or ideology of the Western medieval society is a good example of the mistake of the Philosophy of Identity. Its ideal was to integrate religion, politics, law, economy, arts, culture, and morality into one closed coherent circuit, while excommunicating and extinguishing the others which exist outside that circuit as heretics. The medieval society was a perfect model of a totalitarian society. Such a historical fault did not stop with the end of the medieval age. In modern philosophy, the totalization of knowledge reappeared in the form of Cartesian rationalism, mechanism, dialectical materialism, communism, positivism, etc. And our contemporary techno-scientific society is seriously exposed to the danger of one-dimensional uniformity. Describing history as a battle between totalitarianism and liberal democracy, Karl Popper indicated that identity philosophy encourages a totalitarian mode of thought.<sup>4</sup> And Jean-François Lyotard called the danger of totalization as “terror against life.”<sup>5</sup> Fundamentally, it is the false conception of the Being hidden in the root of the Philosophy of Identity that deforms life in the world in various ways.

The history of philosophy shows that the Western traditional rationalism did not recognize the reality of the world. Today, we see that the

4 Karl Raimund Popper. *The Open Society and Its Enemies: Hegel and Marx* (London: Routledge & Kegan Paul, 1973), 2: 395.

5 Jean-François Lyotard. *La condition postmoderne* (Paris: Les Edition de Minuit, 1979), 8.

philosophies which were severely criticized as irrational until the beginning of 20th century give us a deeper understanding of the world. As Bergson rightly indicated, the paradigm of the rationalism, being molded on the inert matter, cannot be the guiding concept in our study of the Being and Life. The sympathy, co-existence, and harmony with the other civilizations and religions, in short, with the otherness, are possible when we open our eyes into the true meaning of the Being and Life. But the traditional Western philosophy, lacking in the vision of the essence and wholeness of the real world, has been confined to the obstinate habit of uniform thinking, which made it closed in the established superficial preconceptions.

Today, positivism, most influential in ordinary life among the various forms of modern philosophies, regards the type of scientific knowledge as the ideal model of knowledge. It is not difficult to see that positivism is the inert prolongation of the modern reason. In his biological epistemology on intelligence, H. Bergson rightly pointed out the fact that the metaphysical illusions on the Being made the confusion between instrumentality and essence in *raison moderne*. Such a uniform thinking, best shown in the Logical Positivism of Vienna Circle, is a case of the happy illusion and self-oblivion, which menace the techno-scientific civilization. The superficiality of positivism makes people blind to the inner reality of the world. It is the vulnerable soil on which the various dangers, psychological, social, or political, can grow.

Generally, deceived by the concept of pure objectivity, the modern reason insisted on the dichotomy of intellect and emotion, objectivity and subjectivity, concept and intuition, giving the full value of reality only to the former and at the same time underestimating and neglecting the latter. Intellect, objectivity, and concept thus defined could not approach the reality of the Being, nor could be conscious of their own origination from the activity of the life. This means that modern reason cannot read at all the processes of experience. The discussion of modern philosophy on experience could not arrive even at the elementary explanation of the representation and perception. The rationalism, empiricism, Kantian constructionism, dialectic, positivism, etc., could not escape from this fault. In these philosophies, the basic concepts like the Being, meaning, experience, knowledge, science, etc., are misunderstood. We cannot help but

being astonished to see that such false conceptions and paradigms have led education and social development planning as the basis of knowledge. It is natural that such conceptions have reproduced false attitudes and deformed relations in social life.

### Technology and Religion

Because the dangers menacing the techno-scientific civilization come from the deformed value system like oblivion of the Being or inversion grown from the confusion of instrumentality and essence, the problems cannot be solved solely by the advance of high technologies. That is why the future education should recommence with the new philosophy of the Being. We should completely read again the contents and meaning of experience as the origin of science and religion. On this point, Bergson wrote:

*Yet we may admit that mystical experience, left to itself, cannot provide the philosopher with complete certainty. It could be absolutely convincing only if he had come by another way, such as a sensuous experience coupled with rational inference, to the conclusion of the probable existence of a privileged experience through which man could get into touch with a transcendent principle. The occurrence in mystics of just such an experience would then make it possible to add something to the results already established, whilst these established results would reflect back on to the mystical experience something of their own objectivity. Experience is the only source of knowledge.<sup>6</sup>*

One of the most important missions of contemporary metaphysics is to decipher the contents and meaning of this privileged experience. Even if it is a very rare special experience, attained through a long and hard spiritual mortification, nobody can deny that it is a given fact. It is the experience of the highest dimension of the Being. The word 宗教 which means religion in Korea, Japan, and China has this implication. Translating the Sanskrit word Siddhanta, 宗 (summit) means the highest dimension

6 Henri Bergson. *The Two Sources of Morality and Religion*, trans. by Audra and Brereton (New York: Doubleday Anchor Books, 1954), 247-248.

of verity<sup>7</sup>. And 教 means teaching in human language. The etymology of the word 宗教 shows that, in Asian tradition, there is no confrontation between philosophy and religion, no conflict between science and religion. Starting from different places, they advance towards the same summit like in mountain climbing.

Though its essential state is attained only by the religious masters, we cannot say that ordinary man is completely cut off from it. Moved deeply by the works of music, literature, or art delivering the messages of the great souls, anyone can have an experience of meeting an infinite divine world. Is this experience different fundamentally from that of mysticism? Never different, because these experiences are the lights emitted from the same deepest world of our Being, teaching us together by strong emotion about what we are, what the meaning of life is, and what to do. Do these experiences tell us the existence of the transcendental God of Trinity? Or rather do they not tell us that the essence of life we feel in our deepest self is the élan d'amour<sup>8</sup> itself, and that the profundity of the Being, ordinarily concealed by the manifold thick strata of interests and desires, sends us the flashing light of verity through a crack made for a few seconds by the great spiritual vibration?

The original spirit of open religion is closely related to these experiences. Here, what is the most important is the vivid religious experience and inspiration. The absolute systematization of theology has nothing to do with this original spirit of religion, as it supports the political powers which exclude others for their own interests.

Experience is an indivisible and integrated field of interaction between the subject and the object. In this indivisible whole field, the subject and the object interpenetrate. Preoccupied with the superficial dualism of objectivity and subjectivity, the immature raison moderne has led to confrontation and conflict between science and religion. At this level of mind,

7 Interpreting the *saddharma-pundarika-sūtra* (法華經), the Chinese Buddhist monk 天台智者 of the early 7<sup>th</sup> century used this word 宗教 in his book 法華玄儀. Concluding that the *saddharma-pundarika-sūtra* (法華經) is the ultimate teaching of Buddha, he called it 宗教.

8 Henri Bergson. *Les deux sources de la morale et de la religion* (Paris: Les Presses universitaires de France, 1932), 98. For more detailed discussion, see chap. III, "La religion dynamique".

science is not a true science, religion not a true religion. Here, the old Asian cultural tradition that gives warning to the technique used solely for technique should be reevaluated. In this respect, the Islam tradition in which there is no trouble between science and religion is a good example of the great spirit of integration into the whole.

This spirit of integration coming from the great awakenings of Buddhism, Taoism, Hinduism, Christianity, and Islam will be the new philosophical basis of the future education. Inheriting this great open mind, the future generations will be able to share together all the merits developed in the different civilizations, encouraging each other. This education will open a road to the true world community. The world will advance toward a new ideal of the unity of philosophy, art, and religion. We call it new only in the sense that we find our original self after a long history of oblivion and wandering.

### **Awakening of The Being**

Jorge Luis Borges, Sarvepalli Radhakrishnan, Ken Wilber, Aldous Huxley, Huston Smith, Thomas Merton etc., affirm that in spite of outer differences of surface religions there is an astonishing sameness in the mystical experiences of in-depth religions. In this ultimate dimension of Being, the verity, beauty, and divinity coincide. The essential integration is attained. The awakening of verity will come with great emotion from the deepest part of our self. This emotion of highest beauty and divinity will reveal us that the essence, meaning, and purpose of life are love.<sup>9</sup> The true Being underlying all our concepts and values is love itself. Freed from the illusions, confusions, oblivion, and inversions concerning the Being, if high technology civilization is guided by this awakening, we can expect the promised future.

It has been noted by great religious teachers that the experiences and awakenings which have generated the open religions are same. In the state of ecstasy or enstasis,<sup>10</sup> there emerged the following awakenings that

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<sup>9</sup> Bergson wrote: "Une émotion de ce genre ressemble sans doute, quoique de très loin, au sublime amour qui est pour le mystique l'essence même de Dieu", *Les deux sources de la morale et de la religion*, op. cit., 268.

<sup>10</sup> Ecstasy and enstasis are the two different interpretations of the same reality *Samadhi* (三昧).

between the universe and me there is an inseparable connection, that my existence is possible only with the participation of the universe, that all things of the universe interpenetrate each other, that all living beings, in spite of their different forms, have the same value, and finally that the ultimate nature of the Being and Life is charity and love. If it is true that all things arise by universal interaction, the essence of our life is derived from that of the universe, and the religious ecstasy or enstasis will mean the ultimate dimension of the becoming oneness with the universe. The phrases like the union of Heaven, Earth, and Man, union of Atman and Brahman, or the union with God have been used to express this dimension.

We have briefly surveyed the stages in the evolution of civilizations with philosophy. From this fundamental perspective, we could see more clearly the nature and limit of the customary principles guiding social development and education in many Asian countries. The present high-technological phase mixed with tradition and modernity demands to our societies a persuasive ability of new integration. Our work is to overcome the immature level of the modernity, and to open the dimension of the essential integration with the philosophical transformation. Very astonishingly, the essentials necessary for this integration were found in the basis of the old Asian cultures. Until now, we could not see that there are highest spiritual treasures under the thick fossilized crust of tradition. These treasures will emit more bright lights in the high-technological civilization menaced by inversion and inhumanity. Our spiritual heritages will lead us to the Asian Community, and also to the World Community.

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## The Role of Faith and Science in the Development of Civilisations

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The philosopher Herbert Spencer argued that science is organised knowledge.<sup>1</sup> Science is a system where beliefs are based on objective methodology and logical reasons designed to analyse the experience of reality. Faith means complete trust or confidence in someone or something based on spiritual apprehension rather than proof. Science with faith creates a vision and both these aspects of human thinking and experience can be necessary for human life while neither is adequate on its own. Einstein said that "Religion without science is blind; while science without religion is lame." Here, we are saying that science with faith is a vision. Language incorporates concepts which interpret human experiences; however some languages maps better onto the experience of reality than others. Human observation entails interpretation and a choice of perspective while there can be different perspectives on a single reality. As an example, three famous scientists observed a falling stone in different historical periods: the ancient Greek philosopher Aristotle believed that no force was needed for moving a stone as it was moving naturally. Newton saw motion caused by the force of gravity by the earth and Albert Einstein saw a warp in space-time introduced by the presence of a large mass- the earth. The concepts of physics and the word for inertia had not been invented at the time of the Ancient Greek philosopher but appeared in Newton's physics. Although reason makes sense of our experiences and relates them to our world-view, assumptions underlay that world-view and have an influence beyond pure experience and reason, requiring faith to accept something that is not strictly provable. Nevertheless, reason using wrong assumptions will result in wrong answers.

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1 UNESCO, 2002, *International Bureau of Education*, 24: 3/4, (1994), 533-54.

The first chapter, or the first verse revealed to Prophet Muhammad in the Qur'an interestingly says: "Read in the Name of the Lord and Cherisher {قُلْ اِنَّمَا يَدَّبَّرْتُ الْقَوَامَ بِرَبِّهِمْ سَابِرًا} and then it goes on to say; "He who had taught the use of the pen, taught men that which was unknown to him."<sup>2</sup> In this part of Quran, both scientific methodology and a religious belief were integrated together by using "taught by the pen" and "the Lord created the man" respectively to lead to the result that it "taught a man that which he knew not". There is also another verse of the Qur'an, the most conscious of Allah are the knowledgeable, the scientists (نُمِرَ بِاللَّيْلِ وَالنَّهَارِ وَرَبِّهِمْ يَوْمِئِذٍ).<sup>3</sup> That is a fundamental starting point about knowledge. Do we create knowledge or do we discover knowledge? How does all this relate to religion? The human being has a mind to imagine, enquire, study and understand the Creator or the Initiator of the universe with a mind and heart that is rational, where human reasons can be used to understand it. It is reasonable to look for a link between the faith and science and convert this link to something useful. This is because knowledge is only discovered and faith helps finding new knowledge. Is there a link between faith and science in general?

In this paper the relation between science and faith is introduced in the next section. Then the role of an integrated faith and science on the development of civilisation is presented in section 3 and finally examples of faith inspired inventions and discoveries in human life are given in section 4.

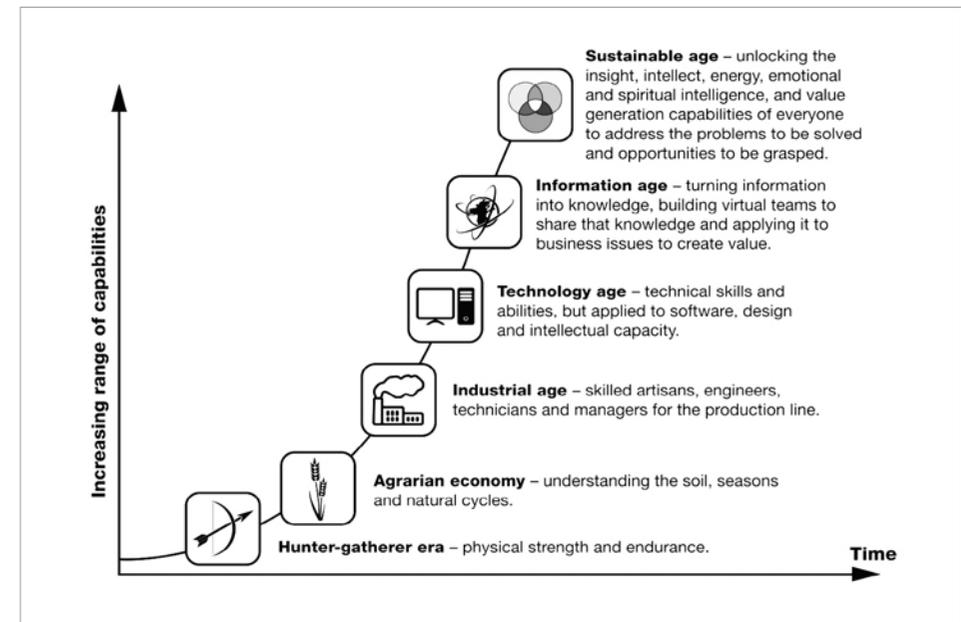
### I. The Relation Between Science and Belief

Human development has been marked by many ages. It has progressed from the hunter-gather age to the information age in maybe less than ten thousand years. However the time scale with the period of each age is getting shorter (Fig. 1).

<sup>2</sup> The Qur'an, 96/al-'Alaq, 1-4.

<sup>3</sup> Surat al-Fātir, 35: 28.

Figure 1: Human Mission Diagram



The right hand side of the y-axis in figure 1 shows that increasing our capabilities, tools and critical mass help to make those sorts of leaps and progress. Today, we may not be more brilliant or clever than previous generations but we certainly have more tools than them. The information age gives us access to all knowledge, previous and current, which has made the world almost like a village. Furthermore, as there are many people now looking at the same problem, a solution will be found sooner. But in this information age which is where we are now, where will it take us? We all have the inspiration and the hope that make all theories and most ideologies looked towards what we call a Sustainable Age. Whether it is from the non-believer's point of view or the believer's point of view, they name this age for example "Sustainable Age", "The Kingdom of God on Earth" or "the State of God on Earth" respectively. The Sustainable Age means that humanity reaches the stage where it achieves social justice, fairness, prosperity, an environmentally friendly society and a sustainable society. We are all inspired by the desire to contribute to that stage, and the time when this can be achieved also depends on us.

How does this process and organised knowledge come about - do we discover new knowledge or do we acquire it? Scientific laws have been

made by human beings involving concepts, models, rules, exemplars, and language to perceive phenomena and explain the experience. However these paradigms can ever be absolute and sometimes change in a major way such as the change from Newtonian to the modern physics of relativity and uncertainty and some changes in paradigms may occur in the future. Although events at a certain level are unchanged by the way they are perceived for instant the cavemen knew that if they released a rock it fell. This fact remained known and unchanged throughout Galileo and Newton formulated a mathematical law for gravitational phenomena to explain that particular behavior under law and prediction. However they established the existence of gravity long before anyone was able to give a descriptive account of gravitation.<sup>4</sup> Intellectual curiosity is discovering the unknown and acquiring new knowledge. Invention is looking to what everyone is looking at but seeing what no one else is seeing. A new device, method, or process developed from study and experimentation is an incremental development of known knowledge.

Furthermore, all this tells us that this knowledge must come from one source that is intelligent, comprehensive, limitless, powerful and not confined by time and space. Because knowledge is consistent, elegant, profound and factual; otherwise if knowledge comes from different sources then we have contradictions and inconsistency. For example, the fluid flow laws that are applied in the lab, the same laws can be applied in the ocean, and that true for all laws. So this consistency of knowledge shows that it must come from one source, and this source is called God or the Creator by the believers; while non-believers may use different ways to describe it.

### A. Knowledge And Religions

What is the meaning of knowledge from the religious point of view? In Christianity, Catholicism or Evangelism knowledge is one of seven gifts of the Holy Spirit. But there is no elaboration to specify the gift and its importance. Hindu Scriptures present two kinds of knowledge, secondhand knowledge obtained from books, hearsay, etc. and knowledge borne from direct experience, i.e., knowledge that one discovers for oneself. In Islam, knowledge (Arabic: علم, 'ilm) is given a great significance. "The

<sup>4</sup> J. P. Moreland. *Christianity and the Nature of Science: A Philosophical Investigation* (Grand Rapids, MI: Baker Books, 1989).

All-Knowing" (al-'Alim) is one of the Beautiful Names of God in Islam. The Qur'an declares that knowledge comes from God.<sup>5</sup> Islamic scholars, theologians and jurists as well as scientists are often given the title 'alim, meaning "knowledgeable". So science refers to that sort of broader context of organised knowledge, structure and discipline.

We know that belief is a subjective personal basis for an individual behaviour, while the truth is an objective state independent of an individual. Interestingly philosophy traditionally defined knowledge as justified true belief<sup>6</sup> because the whole concept of philosophy is based on the truth and searching the truth. So the relationship between belief and knowledge is that a belief is knowledge, if it is true and factual or if the belief is consistent with the truth it is also knowledge. Therefore, a false belief is not considered to be knowledge even if it is sincere. Since we said earlier that science is organised knowledge, then a true belief is knowledge and therefore it is science. Science is the system where beliefs are derived from objective methodologies, observations, experimentations, and proof. But also we have to accept that all methods of proof whether it is experimentation, observation, hearing, seeing can be quantified; however feeling cannot be quantified scientifically. There has not been a scientific methodology to quantify feeling yet. This also put us into the context of a definite foundations of the personality, physical, intellectual, moral and spiritual which the scientific methodologies alone cannot capture all those elements of the personality.<sup>7</sup> Religion is the system of beliefs based on faith and if the belief is true it is therefore knowledge. Hence science and true beliefs are consistent. Because true belief is knowledge, it excludes the interpretations, as sometimes people are interpreting Holy Scriptures such as the Qur'an, by telling their own interpretation and it is not necessarily reflecting the true meaning of the text. The ultimate truth is remained to be discovered, so that the truth is not missing.

Both scientific research and religious beliefs and, indeed, the combination of the two schema involve a mixture of subjective and creative thinking and objective realities. Both work from the seen to the unseen in

<sup>5</sup> Surat al-Baqarah 2: 239.

<sup>6</sup> Alvin Plantinga & Nicholas Wolterstorff. *Faith and Rationality: Reason and Belief in God* (Notre Dame, IN: University of Notre Dame Press, 1983).

<sup>7</sup> Karl Popper. *The Logic of Scientific Discovery* (New York: Basic Books, Inc., 1956).

human experience and involve the confession that our knowledge is partial.

There are three levels of new knowledge that could be defined. This is depending on how a new knowledge is discovered or observed. The highest level of knowledge is ‘miracles’ which is defined according to the Oxford Dictionary as an event manifesting divine intervention in human affairs and extremely outstanding or unusual event thing or accomplishment. A miracle could also be defined as an external event that follows natural laws and principles which have not been discovered yet. In the Qur’an, Allah says that “Everything happens with a reason” and a scientist believes that everything must have a reason. There are some critical questions being in search of that reasons which we have not found answers to those yet, such as why we are here; what is the purpose of creation? But it does not mean that those questions will never have an answer. Again Allah said in the Qur’an “we will (continue to) show them our evidence in the world and within themselves”).<sup>8</sup> It means it is a continuous learning process because there is a limit to how much we know and can comprehend. However those principles once they will be known.

For example, speaking of a mobile phone a hundred year ago would be a miracle, but the iPhone is not due to the fact that the principles of mobile communications are now known to us. There are so many examples of miracles which we have not yet found an explanation for; whether it is the virgin birth of Mary, or the crossing of the sea by Moses, or some of the extraordinary events which we heard about or sometimes even experiencing in our own life. Science looks for explanations in terms of natural processes and a miracle is a gap in scientific explanation.<sup>9</sup>

There is another level of knowledge which is a new knowledge that can be explained or observed such as the discovery of gravity, electricity and penicillin among other discoveries. Finding new knowledge is driven by intellectual curiosity to discover the unknown. However, there is a perception that discoveries happen by pure chance and chance favours the prepared minds. Although, if chance favours the prepared minds that it must have a choice and that is inconsistent with chance! If chance makes a choice then it must be intelligent and that again is inconsistent with defi-

<sup>8</sup> (سُرِّيهِمْ آيَاتِنَا فِي الْأَفَاقِ وَ فِي أَنْفُسِهِمْ) Surat Fussilat 41: 53.

<sup>9</sup> Surat Maryam 19: 20-21. See C. S. Lewis, *The Problem of Pain* (New York: Macmillan, 1976), Ch. 7.

nition of chance! What is missing that new knowledge comes from God by inspiration and God favours the prepared minds for obvious reasons! (وَمَنْ يَتَّقِ اللَّهَ يَجْعَلْ لَهُ مَخْرَجًا وَيَرْزُقْهُ مِنْ حَيْثُ لَا يَحْتَسِبُ)<sup>10</sup> “The one who is the believer and most aware of Allah (God), Allah will make a way for him out and will provide for him from where he does not expect”. One of the most important characteristic of the believer is believing in the unseen. In the Qur’an this point was described several times such as “This is the Book (The Qur’an); in it is a guidance and gifts, and ensure, without doubt, to those are most conscious of Allah; who believe in the Unseen” (بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ (الم (١) ذَلِكَ الْكِتَابُ لَا رَيْبَ فِيهِ هُدًى لِّلْمُتَّقِينَ (٢) الَّذِينَ يُؤْمِنُونَ بِالْغَيْبِ)<sup>11</sup> As mentioned before the intellectual curiosity is to discover the unknown. For the believer who believes in the unseen, he/she believes that there is a solution out there for the problem that is not solved yet or the phenomena that has not been discovered yet. The new knowledge is out there created by God. However, this knowledge is also time dependent. This means that we have to reach a stage in our understanding to be ready ‘prepared’ to get a new knowledge. Faith provides the base and the trust in accessing this knowledge and this goes back what was mentioned earlier that science with faith is a vision. For solving a given problem, a believer believes that there is a solution out there, and would be more confident to find it; with God’s help. This might prompts the question about the fairness of God for giving one but does not give someone else. The idea of the faith is believing in the unknown to acquire a new knowledge. It is to do with our own understanding of things around us and the choices we make. Helping a hard working student advances his or her knowledge does not constitute unfairness for other students, who might not put the same time and effort. This would be more consistent with the concept of favouring the prepared minds, which was described in the Qur’an as “my Lord grant me more knowledge (وَقُلْ رَبِّ زِدْنِي عِلْمًا)<sup>12</sup> A new knowledge is a kind of inspiration and no one can be in control of inspiration, because no one could tell us how to be inspired. It is our own way of interacting with the world around us and using our knowledge and our faith.

<sup>10</sup> Surat al-Talaq 65: 6.

<sup>11</sup> Surat al-Baqarah 2: 1-2.

<sup>12</sup> Surat Taha 20: 114.

The third lower level of a new knowledge is invention. An invention could be a new device, method, or process developed from study and experimentation. It is an incremental development of known knowledge such as car, telephone, computer, chair, scientific community and publication and so on. These all are inventions not discoveries. Invention is the making of known knowledge and principles.

Today, there is a conflict view taken by many scientists that there is non-compatibility and the relationship has not been very sweet between science and faith or science and religion for obvious reasons. There is also the view of independence that treating each as quite separate realms of enquiry. Moreover there are people who leading that campaign and dialogue to make integration between faith and science, aiming to unify both fields into a single discourse.

### **B. Technology, Science and Faith**

Technology is the application of scientific knowledge for practical purposes, especially in industry. It is a set of tools and technical means and their interrelation with life, society, and environment. Technology has largely affected society in many positive ways, enhancing health, quality of life, advancing economies, etc. However many technological processes have also produced many unwanted by-products known as pollution that to do with the unsustainable use of technology.

Science and technology are consistent with faith, as they are both true beliefs.<sup>13</sup> The consistency of science and faith can be seen in Prophet Muhammad (PUH) sayings. He said “الدين طاعة الخالق وخدمة المخلوق”. Faith is a submission to God and it is a service to his creations.<sup>14</sup> Science provides the knowledge to reflect on and understands the existence of God, while technology provides the tools to serve the society. Science provides the means to understand the physical reality and questioning its origin, its initiation and the link to faith.

Science inspires intellectual curiosity and keeping the ongoing big question about the purpose of our existence. Science makes us closer to understand the existence of the Creator because the concept of Creator is consistent with the scientific methodologies and the natural laws and

<sup>13</sup> Bas. C. van Fraassen. *The Scientific Image* (Oxford: Clarendon Press, 1980).

<sup>14</sup> Alvin Plantinga. *Warrant and Proper Function* (Oxford: University Press, 1993).

principles of the universe, such as mass and energy conservation among others. It is also consistent with the scientific principle of cause and effect; and action and reaction. Because the subject of ‘matter’ in science brings the question of time and space which both have a marked beginning, i.e. matter has an age, which means there was initiator. The initiator is the Creator but what is the nature of the Creator is not the subject of this paper, though the Creator is not a matter, i.e. is not confined by time and space.

## **II. Islamic Civilisation: Bayt Al-Hikmah Centre For Study and Research**

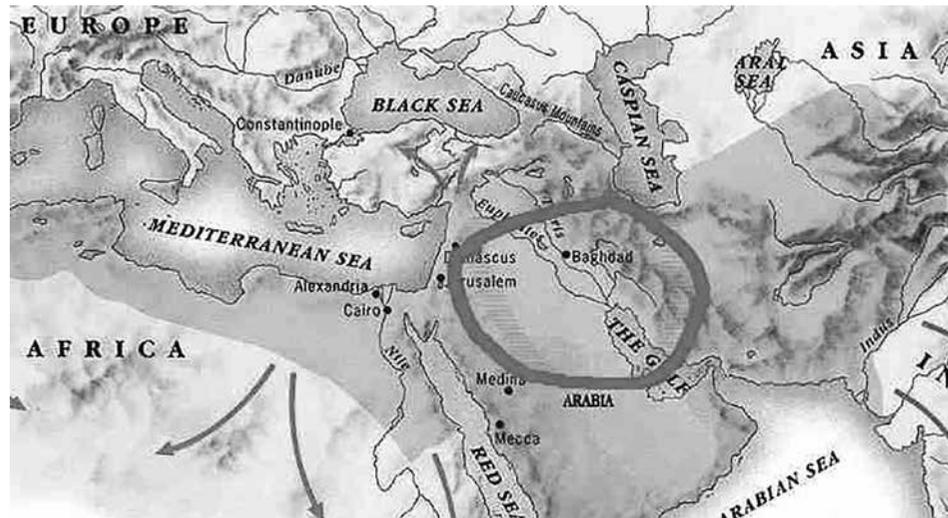
The contribution of Islamic Civilisation to science is an instant for a linkage between faith and civilisation. Islamic Civilisation is not a specific race such as an Arab or a Persian or a Turkish, but it is the contribution of all Muslims or non-Muslims who even lived in the Ur of the Chaldees (South of modern Iraq where Abraham lived) because the centre of activity throughout history moved from one place to the other. According to the Qur’an, it was Abraham who first called the believers in one Creator ‘Muslims’, though Muslims have been associated with the followers of Prophet Mohammad.<sup>15</sup>

During the Islamic Golden Age (7th century to the mid-13th century), Muslim rulers established the “House of Wisdom (Bayt al-Hikmah)” in Baghdad (Figure 2) and the Muslim world became a major intellectual centre for science, philosophy, medicine and education. There were Christians, Jews, Muslims, Arabs and non-Arabs who contributed to that civilisation. Artists, engineers, scholars, poets, philosophers, geographers and traders contributed to agriculture, the arts, economics, industry, law, literature, navigation, philosophy, sciences, sociology, and technology by using their own inventions and innovations at that time. Not all scientists during this period were Muslim or Arab, as there were a number of notable non-Arab scientists as well as some non-Muslim scientists, who contributed to scientific studies in the Muslim world. The majority of texts during this period were written in Arabic, and many classic works of antiquity that might otherwise have been lost were translated into Arabic and

<sup>15</sup> Surat al-Baqarah 2: 132-133.

Persian and later in turn translated into Turkish, Hebrew, and Latin. The Islamic empire was the first “truly universal civilization,” which brought together for the first time people as diverse as the Chinese, the Indians, the people of the Middle East and North Africa, black Africans, and white Europeans<sup>16</sup>

**Figure 2:** Baghdad (Gift of God) was at cultural crossroads in the early ninth century.



Christianity is a monotheistic Abrahamic religion based on the life and teachings of Jesus of Nazareth as presented in the New Testament. In the west and on 27 February 380, Emperor Theodosius-I enacted a law establishing Christianity as the official religion of the Roman Empire. From at least the 4th century, Christianity has played a prominent role in the shaping of western civilization and inspired, philosophy, art and science in the West.

With the decline of Islamic Civilizations in the late Middle Ages and the rise of Europe, the Islamic scientific tradition shifted into a new period. Institutions that had existed for centuries in the Muslim world looked to the new scientific institutions of European powers. This changed the practice of science in the Muslim world, as Islamic scientists had to confront the Western approach to scientific learning, which was based on a different philosophy of nature. However, most have maintained the view that the acquisition of knowledge and scientific pursuit in general is not in

<sup>16</sup> George Saliba. *A History of Arabic Astronomy: Planetary Theories during the Golden Age of Islam* (New York and London: New York University Press, 1994), 245, 250, 256–7.

discord with Islamic thought and religious belief. There are many religious scholars were curious to put knowledge into practice by their effective discoveries and inventions. A summary of their biography and works are summarised in the next part.<sup>17</sup>

### A. Faith Inspired Discoveries and Inventions

According to most historians, the modern scientific method was first developed by Islamic scientists, pioneered by Ibn Al-Haytham, known to the west as “Alhazen”. Ibn al Haytham (965- 1040) was the First Scientist to test hypotheses with verifiable experiments, developing the scientific method. In his massive study of light and vision, *Kitâb al-Manâzir* (Book of Optics), he devised the world’s first camera obscura (المراه), which means like a mirror in Arabic, to discover the truth about nature. Ibn al-Haytham reasoned, one had to eliminate human opinion and allow the universe to speak for itself through physical experiments.<sup>18</sup>

Al-Khwarizmi (780-850) the Islamic mathematician adopted Arab-Hindu numerals and zero and the word Algorithm derives from his name. Islamic heritage being described generally in the Quran was a complex process for people at that time. Al-Khwarizmi who was a religious scholar as well as a mathematician found a solution to calculate the amount of heritage for each person and make heritage rule easy for people by his famous and important inventions of Algebra and Algebraic equations. He also described the constant need to find the direction of Ka’ba in Mecca, like geometry a tool worth developing.<sup>19</sup>

Jabir ibn Hayyan, (721-815) was a chemist, astronomer, engineer, geologist, philosopher, physicist, pharmacist and physician. He is considered by many to be the “Father of Chemistry” (science of quantities), Distillation, and nitric acids, and crystallisation – that have become the foundation of today’s Chemistry and Chemical Engineering. In response to Imam Jafar al-Sadiq’s (grandson of Prophet Mohammad) wishes, Jabir

<sup>17</sup> Jim Al-Khalili. *The House of Wisdom: How Arabic Science Saved Ancient Knowledge and Gave Us the Renaissance* (New York: Penguin Books, 2011).

<sup>18</sup> Charles M. Falco. “Ibn al-Haytham and the Origins of Computerized Image Analysis”, International Conference on Computer Engineering & Systems (ICCES), 2007.

<sup>19</sup> Jim Al-Khalili. *Pathfinders: The Golden Age of Islamic Science* (New York: Penguin Books, 2012).

invented a kind of paper that resisted fire, and an ink that could be read at night. He invented an additive which, when applied to an iron surface, inhibited rust and when applied to a textile, would make it water repellent.

Ibn Sina (980 – 1037) is the father of modern medicine. The Canon (Law) of medicine, which was a standard medical text at many medieval universities, was used as a text-book in the universities of Montpellier and Leuven as late as 1650. Canon of medicine provides a complete system of medicine according to the principles of Galen and Hippocrates. He is regarded as the most famous and influential polymath of the Islamic Golden Age.

Muhammad ibn Zakariyā al-Rāzī (865– 925): He is known to have perfected methods of distillation and extraction, which have led to his discovery of sulfuric acid, by dry distillation of vitriol (al-zajāt), and alcohol (ethanol). As a pioneer of alchemy, al-Razi was the first to distill/refine petroleum and produce kerosene (later used as lamp oil and jet fuel).

There are sometimes difficulties in identifying religious convictions of scientists; however it is obvious that the general public greatly underestimates the religion of scientists. Justin Marston, founder-chair of Christian Students in Science did a 1997 survey of 850 British students at ten universities to find out their views of whether some great scientists were religious or nonreligious. The students were asked to identify their opinion on religious views of the scientists in three categories including more religious, about the same or less religious than their contemporaries. The answers were illustrated in percentage of the total participants. Table 1 shows the results of students' views on the religion of some major scientists. Moreover, table 1 introduces the scientists across their main area of science.

**Table 1:** Student's views on religion of scientists<sup>20</sup>

Name	Main Area(s)	More religious	About the same	Less religious
Planck	Quantum Physics	5.0	64.1	30.9
Einstein	Relativity	15.5	48.2	36.3
Galileo	Dynamics	16.2	54.1	29.7
Newton	Physics	20.1	60.8	19.1
Kepler	Solar System	10.9	63.1	26.0
Faraday	Electricity/Physics	10.4	74.5	15.1

<sup>20</sup> Roger Forster. Paul Marston. *Reason, Science and Faith* (Oxford: Monarch Books, 1999).

The results showed that two third of the participants suggested that Kepler, Newton and Faraday were not more religious than their contemporaries; while they were all markedly devout to their faith. Newton (1643-1727) wrote more on religion than he did on natural science. He demonstrated that “Gravity explains the motions of the planets, but it cannot explain who set the planets in motion. God governs all things and knows all that exists and can be done”.<sup>21</sup> He saw evidence of design in the system of the world: “Such a wonderful uniformity in the planetary system must be allowed the effect of choice.”<sup>22</sup>

The one third of students suggested that Galileo was less religious than his generation whereas he was a Catholic among his contemporaries in which they were protestant and there was a major conflict between two religious ideas at that time. The half of students attended on this survey suggested that Einstein was religious about the same of his contemporaries though he was not a Christian. He is associated with major revolutions in our thinking about time, gravity, and the conversion of matter to energy. The way he expressed his belief in God reveals that he perceived the universe to be harmonious. He said that “I want to know how God created this world. I am not interested in this or that phenomenon, in the spectrum of this or that elements. I want to know His thoughts, the rest are details.”<sup>23</sup>

In general, the great scientists have had religious convictions however their biographies may fail to mention their deep beliefs expecting a rational universe from a rational creator-God. The next section shows how a scientific approach has been achieved with the faith.

## B. Sustainable Age and Modern Civilization

Energy, water and food play a key role in the sustainable environment, extreme poverty reduction and child morality which those have been considered in international development goals “Millennium Goals” to achieve by 2015. Interestingly these three fundamental elements, food-

<sup>21</sup> John Hudson Tiner. *Issac Newton: Inventor, Scientist and Teacher* (Milford, Mich.: Mott Media, 1975).

<sup>22</sup> Franklin L.V. Baumer. *Main Currents of Western Thought* (New York: Alfred A. Knopf, Inc., 1970), 324.

<sup>23</sup> Iain Paul. *Science and Theology in Einstein's Perspective* (Edinburgh, Scottish Academic Press, 1986).

water-energy, are highly interdependent together; for instant food production needs clean water, and energy is consumed for producing clean water whereas energy generation requires water. Therefore a sustainable solution for water shortage would set a sustainable development for both food and energy accordingly. In other word, a Sustainable Age would not be reached without having access to clean water, sufficient energy and food; regardless of how many people lives on earth and where.

The Quran mentioned an exciting energy source which could be exploited technologically to produce clean power. This is described in the Qur'an as follows: *مَرَجَ الْبَحْرَيْنِ يَلْتَقِيَانِ بَيْنَهُمَا بَرْزَخٌ لَا يَبْغِيَانِ* "When two seas meet there is a barrier between them."<sup>24</sup> If we look to the meaning of the Arabic text, it is much deeper and wider than just the conventional sea water and the fresh water. When it says *مَرَجَ* (maraj) means 'a dense' solution or generally every two solutions of different densities, there is a barrier exists between them. In scientific term when there is a barrier between a dense solution and a less dense solution, it means there is a potential energy in the barrier, whether it is a physical or a chemical barrier. In case of miscible waters with different densities, the barrier is chemical due to the different chemical potentials between the two solutions. This chemical potential energy difference could be converted into a mechanical form of energy which could be used to produce power in a process termed Osmotic Power, which is based on the natural osmosis process.<sup>25</sup> This phenomenon is coming almost like a battery which is the platform for many inventions and processes in the area of desalination and power generation.<sup>26</sup> Power can be produced from any two immiscible solutions of different densities. The power could be used for producing electricity and water, which are the

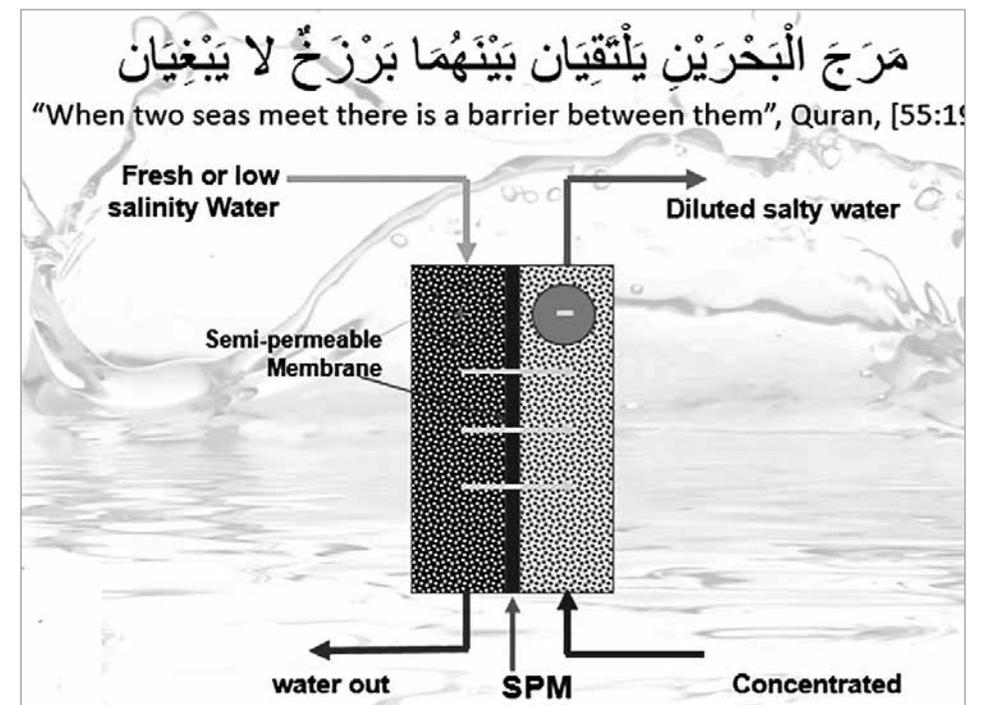
<sup>24</sup> Surat al-Rahman 55: 19-20.

<sup>25</sup> Adel O. Sharif and Maryam Aryafar. "A Thermal Regeneration Forward Osmosis Process", UK patent application number GB1321711.2. See also A. K. Al-Mayahi and A. O. Sharif, "Salinity Gradient Method for Power Generation", Japan Patent No. JP 4,546,473, (2010).

<sup>26</sup> Adel O. Sharif, "Separation Method, European", Patent No. EP2089142. Also see Adel O. Sharif, "Separation Method", European Patent No. EP2089142; A.O. Sharif, "Solvent Separation", UK, Patent application, December 2008; A.O. Sharif, "Zero Liquid Discharge Desalination", UK Patent GB0822359.6, (2008); A.O. Sharif and A.M. Al-Tae, "Membrane Pre-treatment", UK Patent GB0817248.8, (2008); A. O. Sharif, "Secondary Oil Recovery", U.S. Patent No. US 7,942,205 B2, Date of Patent: May, 17, 2011; European Patent No. EP1,877,163.

biases for food production. Figure 3 illustrates the osmotic cell concept, where water moves naturally, through a membrane which retains the solutes, from the fresh water or low concentration solution side to the more concentrated side. The low solute concentration side of the chamber acts as the 'positive electrode' in the cell, while the high solute concentration side acts as the 'negative electrode' in the osmotic cell. The flux of water induces pressure on the concentrated side which can be converted into power using a turbine and a generator.

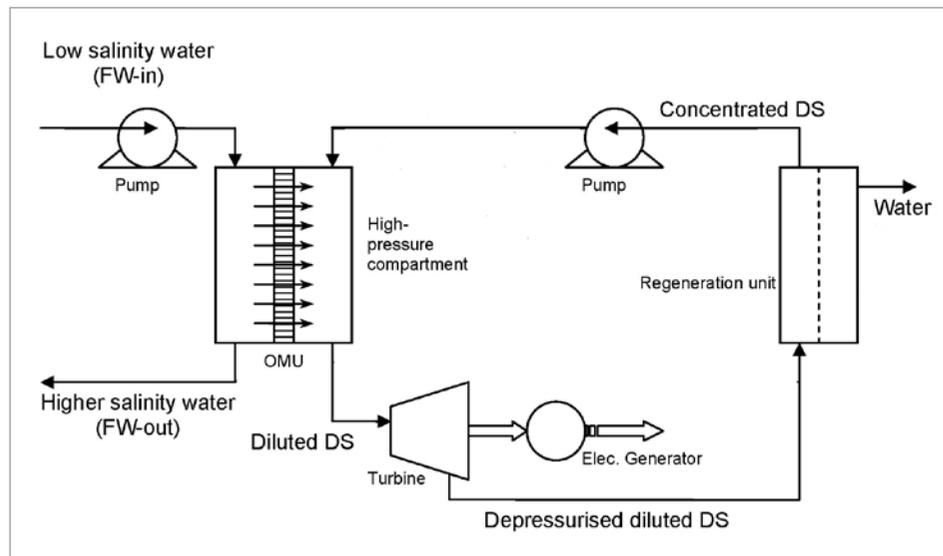
Figure 3: Power generation by using direct osmosis process



Osmotic Power has been introduced as a source of renewable and sustainable energy, and it shows a great potential for clean power production. Osmotic power is produced in a process, as illustrated in Figure 4, of mixing a low solute concentration solution (FW), which has a relatively low osmotic pressure (FW-in), and a high concentration solution (DS), which normally has a higher osmotic pressure, through a semi-permeable membrane in an Osmotic Membrane Unit (OMU). The membrane retains the solute movement between the two solutions and only allows pure wa-

ter to pass through it. This can be achieved by using fresh water, brackish water or waste water effluent as the lower osmotic potential side (FW) and a saltier water such as seawater or brine as the high osmotic potential side (DS) to create the required osmotic pressure difference to run the process (Figure 4). In this process, the clean water passes across the membrane from FW side to DS side and the volume of water on the DS side is increased accordingly. The resultant high-pressure DS is then used to drive a turbine, and generate power. It means that the osmotic energy due to the chemical potential difference can be converted into mechanical energy and to hydropower. The diluted saltier water (DS) is then goes to a Regeneration Unit (RU) such as evaporation, crystallization, membrane separation, or other solutes concentration techniques in order to separate and recycle DS for reusing in the process and the clean water is extracted as the product.<sup>27</sup>

**Figure 4:** Schematic diagram of the Osmotic power generation and clean water production process



27 Adel O. Sharif and Maryam Aryafar. "A Thermal Regeneration Forward Osmosis Process", UK patent application number GB1321711.2. Again A.K. Al-Mayahi and A. O. Sharif, "Salinity Gradient Method for Power Generation", Japan Patent No. JP 4,546,473, (2010).

The reference to the difference between salty and fresh water in the Qur'an is in chapter Furqân verse 53: "And God it is Who has made two seas to flow freely, the one sweet that subdues thirst by its sweetness, and the other salt that burns by its saltiness; and between the two, God made a barrier and inviolable obstruction."<sup>28</sup> This is another example of faith inspired scientific activities where we can put scientific knowledge into useful applications. In this case, the source of knowledge is the holy Qur'an, but scientific tools allowed the understanding and the conversion of knowledge.

The aforementioned examples of faith inspired science enforce the point that there is no conflict between faith and science. The integration of both science and faith could facilitate the advancement of science and enhancing the understanding of faith. Such integration could benefit humanity in reaching a Sustainable Age.

#### Conclusion

If knowledge is the fundamental basis for both science and faith, and knowledge cannot be created but discovered, the source for this knowledge must therefore be intelligent. This source for the believers is God or the Creator, while it remains undetermined for the non-believers. Our current understanding of both science and religion is incomplete, as the ultimate truth of both has not been discovered. For example, human emotions and feelings cannot be modeled by mathematical equations. This learning curve should go on and the interaction between science and faith can facilitate this process. History has shown us time and time again, that faith has inspired inventions and discoveries. When faith is subjected to logic and rational; and where imagination and inspiration are considered as scientific tools there should be no conflict between faith and science.

Science when inspired by faith allows us to enhance our understanding of both faith and science. Thus, our advances towards achieving the Sustainable Age is greater. Human knowledge and skills alone cannot lead humanity to a happy and dignified life. Humanity has every reason to place the proclaimers of high moral standards and values above the discoverers of objective truth.<sup>29</sup>

28 Surat al-Furqân 25: 53.

29 See above Tiner, Issac Newton: Inventor, Scientist and Teacher.

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## Thinking of the Philosophy of Environment and Technology

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Taşköprülüzade (d. 1561), one of the most prominent scholars and thinkers of the Period of Sulayman the Magnificent, says: "Learning is the worship of the mind." Four centuries after him, Martin Heidegger (1889-1976), the leading German philosopher who questioned technology in terms of moral values said "searching is the religion of thinking." Even though what he meant by religion was the kind of belief Ancient Greeks had, I understand from the way Taşköprülüzade used the word that this meeting is worth to be considered as "the worship of the mind."

Technology is an important element when the relationship between humans and environment is considered. The people with environmental-oriented consciousness hold technology responsible for the most significant problems of 21<sup>st</sup> century. That is why, when the reasons of environmental issues are discussed, we need to question modern science and the result of it which is the technology itself. Talking about the philosophy of environment and technology, the first thinker that comes to mind is Heidegger. For, he considered this issue before the negative results of human-environment relationship (*fasâd fi'l-âra*), which is also defined as environmental problems, became widespread and he became one of the first thinkers, who "questioned" environment and technology thoroughly. Heidegger pointed out eagerly: "Everywhere we remain unfree and chained to technology, whether we passionately affirm or deny it. But we are delivered over to it in the worst possible way when we regard it as something neutral; for this conception of it, to which today we particularly like to do homage, makes us utterly blind to the essence of technology."<sup>1</sup>

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1 Heidegger's "Questioning Technology" article was written after his sequential conferences that took place in Bremen in 1949. Heidegger studied on rough copies and published a book called *Die Technik und die Kehre* in 1961. The book was translated into Turkish as *Tekniğe İlişkin Soruşturma* by Doğan Özlem (Istanbul: Paradigma Yayınları, 1998). English translation by William Lovitt as *The Question Concerning Technology and Other Essays* (New York: Harper Troch Book, 1977), 4. The references are to the English translation.

Jean-Jacques Rousseau (1712-1778), who was a nature-lover and stood up for natural and plain life, argued that people, who are alienated from nature and tried to dominate it, started contaminating the earth, destroying it and became miserable as a result. Like ancient Greeks, he thought that “the source of happiness is to understand nature and live in compliance with it in the simplest way possible.” According to Rousseau, natural living equals for happiness. Contamination begins with deviation from the natural. With civilization and creation of the concept of personal property, science and arts developed, thus the foundation of misery and contamination was laid sooner than expected.<sup>2</sup>

The number of people who argue that environmental issues were born and became widespread due to the dominant sense of science and world view (which Heidegger defines as metaphysics) is more than we mentioned in this article. Therefore, we need to take the concept of technology into consideration and question this concept. If we consider the famous quote of Socrates “an unquestioned life is not worth living,” which was said in another context, and create our own motto: “Unquestioned technology is not worth using” we will have much better conception of technology and origin of our perception, and we will free ourselves from the negative and passive effect of technology, which we can consider as slavery. However, Heidegger was not that hopeful about this as much as we are now.

## I. Criticism of Technology

I have already mentioned that Heidegger was one of the most prominent thinkers, who tried to understand and explain the origin of technology and criticized its effect on human and nature. For he developed his opinions of modern technology with reckoning and internal feud. In other words, Heidegger analyzed modern technology “by settling scores with Western philosophy, especially Western metaphysic.”<sup>3</sup> For this reason, his criticism of technology can also be considered as the criticism of Western philosophy and metaphysics. The majority of environmentalist thinkers looked for the cause of environmental problems by being inspired/affected

2 Afşar Timuçin. “Kirlenmiş Bir Dünyada”, *Felsefelogos Dergisi*, 6: 1 (1999).

3 Doğan Özlem. *Tekniğe İlişkin Soruşturma* (Istanbul: Paradigma Yayınları, 1998), Introduction to the translation, 16.

by Heidegger and they felt the need to argue with Cartesian view of philosophy and modern science.

Moreover, they were inspired by the criticism of Western philosophy in general and specifically of technology, put forward by Heidegger and they considered him as the master. According to these thinkers, Heidegger’s most important contributions to environmentalist thinking can be classified into three broad areas: First, he made the most comprehensive criticism to Western philosophy since the time of Plato. According to his point of view, the human-oriented perception of dominating over nature resulted from that philosophical tradition. His second most important idea was that Taoist understanding, separated from analytical customs of the West, encouraged us to consider things with the viewpoint of “letting things go.” The third was his invitation urging us to settle down on earth and live in it with an ease of mind (naturally/ as a part of nature). One of the lessons learnt from these perceptions was that we are not the lords of nature, but only a humble member and due to this fact, we need to watch out the process of nature with a careful eye.<sup>4</sup>

Going back to where we started, the first steps of the technology era were taken when the science understanding of ancient Greeks started to change. With Descartes, who is considered to be father of modern/new philosophy, the understanding of science changed as well as the subject-object relation, in favor of the “subject”. Science (*Wissenschaft*) means discipline or a branch of information in modern sense, yet for Greeks, it meant “Considering matters thoroughly” due to one of the meanings of logos, thus science meant the act of thinking about Being. However, according to Heidegger, “science does not think” when its appearance in the new age is considered. For science has become the discipline of the subject, which defined nature and historical events as causative sequence, separating itself from nature with self-consciousness and alienated it.<sup>5</sup>

In that case, technology is not just a tool. Technology is the style of revealing mysteries. When we pay attention to this fact, we come across with a completely different perspective of the origin of technology. This is the field of revealing mysteries and reality (*Wahrheit*).<sup>6</sup>

4 Bill Devall and George Sessions. *Deep Ecology: Living as if Nature Mattered* (Layton, Utah: Peregrine Smith Press, 1985), 98.

5 Özlem, op. cit.

6 Heidegger, *Question Concerning Technology*, 12.

We also need to be careful about two things when the meaning of this word is considered. First of all, this word is not only used for activities related to handcraft and manual skills, but also for mental and fine arts. (...) The other important fact we need to consider about the word *tekhne* is much more important. *Tekhne* had been connected with the word *episteme* since early ages, until the time of Plato. Both words mean “knowing” in the most comprehensive sense. They mean being completely in the perfect sense, comprehending something and being competent at something. Such kind of knowing provides an unfolding.<sup>7</sup>

At this point, Heidegger asks: “What is modern technology?” It is the unfolding of mysteries. When we pay attention to this basic characteristic feature, something new is revealed from modern technology. Revealing mysteries, which is the dominant element of modern technology, does not mean a prominent unfolding or *revealing* like *poiesis*. Revelation of mysteries in modern technology creates a challenge to nature by forcing an unreasonable request to provide an energy that can be reaped and stored.<sup>8</sup>

“The urge of modern human to dominate over everything that comes across to his way” rises with the perception.<sup>9</sup> The thing we call “technology” tries to handle and understand everything with “objectivity” and then tries to control it.<sup>10</sup> Modern technicians are expected to create order with all data provided, to help improve the operation of all kinds of humane/inhumane beings and offer solutions to problems. Even he also expects this from himself and tries to keep everything under control. As Çüçen puts forward: “Heidegger’s opinion of technology is based on the criticism of the technology notion of modern science and *tekhne* concept of ancient Greeks. The purpose of modern subject-oriented philosophy introduced by Descartes is to comprehend the dominant laws of nature. Dominating over nature and the desire to comprehend its laws were formed on the basis of exposing oneself wide open and self-consciousness... Cogito exposes everything with its own design. Modern philosophy and science was based on the image of how the subject sees itself.”<sup>11</sup>

7 Ibid, 53.

8 Ibid, 55.

9 Özlem, op. cit., 20.

10 Ibid, 20.

11 A. Kadir Çüçen. *Heidegger’de Varlık ve Zaman* (Bursa: Asa Kitabevi, 2003), 175.

According to Capra, the most significant feature of Cartesian differentiation is the domination of “soul” over “body”, which also shaped the following developments.<sup>12</sup> From this point of view, new opinions such as all beings are completely different from humans, that they do not have any more value than how much the subject appreciates them and that the subject has no moral responsibility against nature started to prevail. And because of this, some thinkers defined it as “self-divinization of the subject.” According to this point of view, the modern human does not need anything other than himself to ground reality. The subject alone is the sole criterion of reality and information. Nothing should be relied upon other than this fact. Taking only experiment and observation into account, Positivist philosophy and science, which rejects all kinds of metaphysical values that are not subjected to human experience, is the result of human-oriented understanding.<sup>13</sup>

One of the most important results of this understanding is that the human is the source of all information and values. Other than humans, the nature and its constituents (intrinsically) are not valuable. The utility and happiness offered to humans by nature is only valuable to its size and measure. In other words, the value of nature is instrumental, not intrinsic or actual. The value of nature is measured with the amount of utility and happiness offered to the human, thus he can do anything he desires to increase happiness and it is rightful to abuse nature for this purpose.

With this perception, “the mystic conception of nature” by the ancient cultures, “the nurturing nature” (*natura naturans*) concept of the Renaissance and “the nature as God’s creation” understanding of monotheistic religions give its place to a different perception of nature. This perception is the result of modern philosophy and it is brand new. The most fundamental feature of it is its human-oriented approach. This approach, which alienates intrinsic and metaphysical dimension of nature and offers that it is only valuable as an instrument, has now been assessed as “the loss of earth.”<sup>14</sup>

Heidegger argues that this approach of modern science is in conflict with the origin of science. Science protests against reality being

12 Fritjof Capra. *The Turning Point* (London: Bantam Books, 1982), 59.

13 Michael Zimmerman. “Heidegger and Marcuse: Technology as Ideology”, in *Research in Philosophy and Technology*, 2 (1979), 248.

14 Ibid.

manipulated. Science defends the comprehension of reality in the purist sense. Science should not approach reality with the purpose of changing it. However, according to Heidegger, modern science assaults reality. By rearranging reality, science shapes it to be examined and followed. Modern scientists do not let things exist as they are. He invades things, objectifies and comes face to face with them and shapes them. The existing things are taking a form in front of our noses.<sup>15</sup> Most of the environmental issues are nothing more than misuse of the power the subject yields as a result of his “oblivion” and crosses the boundaries of nature.<sup>16</sup>

As a result, the human (industrialized and developed, so to speak) has reached a power that could change the balance in ecosystem with the help of technology and information. In this context, we need to define the boundaries and responsibilities of his actions and also identify the good and bad. The modern human has not started to damage others with his actions and the style of life he chose to live, at least not in this period of time, yet it will not be the same for future generations. As a result of our life style, natural balance started to deteriorate and many live specimen became extinct and all these show how serious the consequences will be.

## II. Environmental Morals

The decisive factor in the discipline we have today, which, now as a new subdivision of morality, we define as “environmental ethics” is the construction of a previous moral understanding on a different basis from the human-centered understanding and the attempt to re-establish human-human, human-nature and human-God relationship. However, in modern sense of morals, we do not witness to any kind of moral responsibility of the human to future generations, let alone his responsibility to nature.

Taken from a different point of view, it could be possible to understand this perception to some extent. When we consider the informational aspect, where moral theories are formulated and developed, the modern human itself, defined briefly above, has information related to himself and the outside world. When considered from this aspect, the human did not

15 Tuğba Genç. “Heidegger, Modern Bilim ve Sanat”, *Ethos: Felsefe ve Toplumsal Bilimlerde Diyaloglar*, 2: 4 (2008).

16 İbrahim Özdemir. *Yalnız Gezegen* (Istanbul: Kaynak Yayınları, 2001).

know that the future generations would be affected negatively from what he did at that moment. For example; it can be observed that as a result of the philosophical ideas of 17<sup>th</sup> century, deontological, opportunistic, hedonistic and similar moral theories do not hold future situations under morally responsible. Morally, “good” is limited to the meaning of “satisfying desires and capturing happiness.” And responsibility was asserted to be limited only to humans when morality is considered.<sup>17</sup> In other words, the basics of human actions and the standard of good or bad, decided by the seen and the observable. That is why, when an action is determined to be good or bad, only the things at that exact moment and in that exact place were taken into consideration. Discussing the basic features of classical moral system, Hans Jones argues that the actions taken “now and here” are only evaluated in terms of good and bad, yet the future good/bad results of the actions in question are not considered. From his point of view, we are in dire need of a new moral understanding.<sup>18</sup>

As environmental problems point out and environmental science has proven, the fundamentals of our actions have changed dramatically. Our current actions and life style affect both future generations and the whole ecosystem we live in. For this reason, environmentalist moralists try to re-define “moral responsibility.” By doing this, they are also re-defining the boundaries of moral responsibility in a way that could cover its future effects and possible results. These actions do not only cause legal problems for the ones, who are here right now, but also for future generations and people, who live in other continents.

## Conclusion

As mentioned above, Heidegger defines Cartesian “subject” as the “subject” of technology, which threaten and damage our environment, world and finally each other. When we examine/question the features of this subject, I believe we can reach clues that can help us overcome this problem. Qur’an-oriented human and universe perception created by

17 Errol Harris. “Ethical Implications of Newtonian Science” in *Philosophical Perspective of Newtonian Science*, ed. by Philip Bricker (Cambridge: MIT Press, 1990), 211-225.

18 Hans Jones. *The Imperative of Responsibility: In Search of Ethics for the Technological Age* (Chicago: University of Chicago Press, 1984), 6; also see Zimmerman, op. cit., 43-53.

Muslim thinkers can alter our perception of environment and technology. As Nasr rightfully points out, the intake of science and technology without questioning will only make us dependent on the West and take our traditions for granted. As a result, we will face the same results as the West does: Destruction of the earth and humans.

In this context, it is required to question and define Islamic world view and the concept of universe. Moreover, the concepts of Allah-universe-human, caliphate, trust and connection should be questioned and examined. What is the meaning of “vicegerent”, as this is a status given to human beings in the Qur’an, and what is its boundary? How should we relate to the nature that was entrusted to us? How can we relate to nature, defined as “ready as it is” by Heidegger, yet written in Quran to be created by Allah for us and bestowed upon us and for all creatures living in it? According to Heidegger, our knowledge of ourselves and being (*Dasein*) is defined by science and technology. However, when look from the perspective of Islamic world view, what kind of science concept and technology can we see? I believe that another way to do this is to question Islamic philosophical traditions and try to comprehend it, just as Heidegger did with Western philosophical traditions.

There are certain important subjects in the famous interview (1966) of Heidegger in *Der Spiegel*, which was agreed to be published after his death. The interviewers asked the pessimistic philosopher whether philosophy could save us or not and the answer given by Heidegger has still been a topic of controversy ever since. According to him; “Philosophy cannot create an effect that could change the current situation of the world. This is applicable for not only philosophy, but also for everything that is related to human worries and wishes. Only God can save us.”<sup>19</sup>

From this point of view, the dynamic Allah-universe-human conception of Islamic knowledge and tradition, represented perfectly by Ghazali, Ibn Arabi, Mevlana, Mulla Sadra, Muhammed Iqbal, Said Nursi etc. indicates that we can create a new standpoint and perception of universe and environment by taking energy from our own traditions. That is why, unlike Heidegger, I am quite hopeful about future.

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19 *Der Spiegel* interview was translated into English by Maria Alter and John D. Caputo and published in *Philosophy Today* 20 (1976), 267-284.

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