TECHNOLOGY AND VALUES

Edited with an Introduction by
Alparslan Açıkgenç

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CONTENTS

Preface ……..v-vi

Introduction
Alparslan Açıkgenç.....1-9

Technology in Islam and the West: Consume with Caution
Alan A. Godlas.....11-47

Integration of Technology and Life in the Dimension of Being
CHOI Woo-Won.....49-59

Empire of Desire: Technology, Capitalism, and the Perennial Moral Challenge
Edward R. Moad.....61-68

Does Technology Create Value?
Süleyman Hayri Bolay.....69-89

Technology and its Place in Islamic Civilization
Zekâi Şen.....91-108

The Role of Faith and Science in the Development of Civilisations
Adel O. Sharif- Mohamed S. Sharif - Maryam Aryafar.....109-125

Inculcation of Values into Technology: An Islamic Perspective
Hamid Fahmy Zarkasyi.....127-151

Main Indicator of Modern Global Civilization Fiscal Capitalism Ideology
Teoman Duralı.....153-159

Thinking of the Philosophy of Environment and Technology
İbrahim Özdemir.....161-169

PREFACE

We witness technological innovations in every field to make life easier. The race in technology takes precedence over all other races. Innovations in physics, chemistry, electronics, health and economics are coming one after another. Rapid circulation of information leads to rapid arithmetic expansion of technological developments. Human beings are now captured by the technology that they capture to meet their needs. Technology frenzy together with consumption frenzy is carrying humanity away. Nobody has the power or tolerance to stop, to think and to question. Very few people ask questions and try to answer. However, it is condemned to remain as low voices amid rightful cries.

Large production, which is carried out with the ambition to make money, cause ecocide, air and water pollution. The more complicated and powerful the technology is, the greater the disaster it will bring. The nuclear disaster in Japan has put the lives of hundreds of thousands of people and living beings in danger. Japan, boasting of its technology, was incapable of facing this catastrophe. This fact has taught us: There are measures we need to take into account beyond technical reasons in the process of production and consumption. There are values and rules. We cannot use the world entrusted to us according to our own wishes. It is important to use the blessings entrusted to us in the proper place. Japan is experiencing the same grief in Hiroshima now because of the technology they produce themselves, which they have been going through for years because of the technology others use. Was Japan obliged to do this?

It has become impossible to imagine a life without cars and mobile phones. All these fast developments follow each other rapidly without creating a tradition. We start each day as ignorant individuals vis-à-vis technology. Due to technology, our established orders are deteriorating and we suffer because we can`t adapt to the new order. Before the law, ethics and traditions of these innovations form, people have to reestablish everything from anew because of a new technical development. Technology shakes our family ties, our social and economic relationships fundamentally. Our values which have accumulated over centuries are being thrown in the trash overnight. With the slogan of `The one who stands still, falls` technology requires everyone to run towards the unknown. But as the poet said:

Oh rider on the swarthy horse, rush your horse, rush,
The curves of this road will lead to the grave in the end.

Do you need to run so hard for a life that will finally end up at the graveyard? Shouldn’t some folks say stop for a minute? Isn’t there a need for someone to say, Crowds stop! This street is a dead end.

On the other hand, I think it is also wrong to totally reject innovations brought by technology. Technology makes our lives easier. It gives us the opportunity to do things in minutes that would otherwise take months or even years. It makes the far close and the hard easy. We don't buy these devices just because we need them but rather because we are constantly reminded to buy new ones. We are told that if we do not want to fall behind we must always get the latest one and move with the times. So, how much a part of our lives should it be? Technology claims to overcome everything swiftly and easily but how happy does it really make us? Is there a limit? Does it have the authority to intervene in every area? Should it intervene? Shouldn't we have a moral limit? Is everything that is technologically produced really useful?

Many diseases can be cured easily thanks to ample innovations in health services. Nevertheless, it should be noted that many new illnesses appear due to new technologies. In the past, plague had been considered the disease of the time. As for today, cancer and heart attacks emerge as the disease of the current time.

A worker who works in a given department of a factory has no idea about the whole of the factory. Since he cannot perceive the whole, he feels himself like a part of a machine and is upset. Whereas in the traditional production method, a craftsman who produces a tool has a command of the whole and is aware of the final product he is to create. Thus he finds great pleasure when the final product comes out and he considers himself valuable.

However, I know that the traditional method of production is no longer possible in a globalizing world. Can we equip mass production and consumption with values?

Like in other aspects of our lives, a moral frame is necessary in the field of technology as well. Those who develop and produce technologies must consider the responsibilities that humanity brings along. We must remember that this earth was entrusted to us and we do not have the right to misuse it.

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INTRODUCTION

Since its inception, the International Foundation for Technological Economic Social Research (UTESAV) has been involved in a variety of activities related to civilizations. The most important of these activities are scientific meetings. The papers presented at the meetings so far have been made available for everyone to use. Held at an international level papers presented at these conferences have been both in Turkish and in English. We published the proceedings in both languages by translating the English papers into Turkish and vice versa.[1] These scientific meetings were organized primarily after a series of workshops for the development of ideas and searching for the names of research experts in these fields. We believe that such events are a great asset to civilization studies. Especially in today's world, the communication and transportation technologies are increasingly intensifying the relations between civilizations. Yet, there is no global consensus about the moral grounds and values system that will regulate the relations between civilizations. This situation, in the field of technology, which is experiencing a rapid development on a global scale, is unfortunately devoid of the technological values system that will stand up to this. Relevant scholars such as environmentalists, philosophers and sociologists who have been sensitive to the subject have studied science and gave valuable works. However, their effect remains more or less at an intellectual level, and technological developments have not been globally regulated in the direction of ideas produced in these scientific studies. In this respect, the International Symposium on Technology and Values, organized by the International Technological Economic Social Research Foundation on 1 June 2013, has opened a discussion on the subject from a bird's-eye viewpoint, but it has contributed to the depth of the scientific studies presented. The articles we would like to present here again for everyone are composed of the ideas discussed and developed in this symposium.

As it is known, technology is one of the important elements of the formation of civilization. Technology today is no longer a *craft*, as it used to be in ancient times, consisting of tools produced through trial and error to answer only technical needs. Maybe we can interpret craft as traditional technology. However, technology is

[1] See for example. *Civilization and Values: Open Civilization and Istanbul Approach*, ed. Recep Şentürk (İstanbul: İstanbul Ticaret Odası ve UTESAV, 2013). The Turkish version is *Medeniyet ve Değerler*, ed. Recep Şentürk (İstanbul: İstanbul Ticaret Odası ve UTESAV, 2013).

today primarily tools and equipment produced on the basis of scientific theories. It is also known that this word is derived from the words “techne” and “logos” in ancient Greek. “Techne” has meanings like “hand craft” and “skill” and “art”. On the other hand, the word “logos” is the word for “speech” or “discourse”. Just as the word “logic” is derived from the word “speech” in Islamic philosophy, the word “logic”, which is also used in English and other Western languages, is derived from the concept of “logos”. These derivational words give us enough information about the meaning of the word “logos”. Indeed, the names of many sciences such as psychology (*psykhe* + *logos*), biology and meteorology are derived from the combination of the word “logos” and the word expressing the subject matter of that science. When these meanings are considered we can say that if we stick to the root meaning of the word “technology” it can be expressed as the “science of crafts”. In that case, technology is used as the public name of the technical tools produced by moving from the ideals reached in science. From this point of view, how can technology be related to values? In other words, how the technology should be taken into account in relation to the values has a special importance in this context. In that case, technology is used as the common name for technical tools produced by applying theories reached in sciences. From this point of view, how can technology be related to values? In other words, how the technology should be taken into account in relation to the values has a special importance in this context.

Two things will keep us occupied here: First, how should the technology itself be in our day? Now, as it has been in the past, the technology that comes out of simple tool-making skills, for example, brings many problems when it wants to generate energy through the nuclear power plant. As a new medical technology, genetic engineering brings many problems again. Accordingly, what kind of technology do we need to develop so that we do not encounter these problems. The resulting environmental disasters and up to the pierced ozone layer with many other problems and food products that cause human health problems await solutions. However, secondly, the value problems are occupying us. Is there any relation between the ethical values and these problems brought by technology? If so, what is this relationship? Can we solve these problems that are brought by technology in terms of moral perspective? Humanity today is facing such a chain of multitudinous problems that are looking for remedies. We cannot remain silent

on these problems. What should be our perspective considering our own cultural values? How can we produce a solution?

These important points have been discussed in various ways in our scientific meeting. Alan A. Godlas presented the keynote address with his paper entitled "Technology in Islam and the West: Consuming Carefully, Gadamer's Hermeneutic Understanding and Emotional Intelligence." As our readers will appreciate, this paper is very important because it not only deals with the issue of technology and values but also tries to solve many problems coming from the Islamic point of view. By virtually scanning the whole history of Islamic thought, this paper addresses urbanization, globalization and environmental problems by relating developments in today's world and especially in Western civilization. It is understandable how great an effort has been made when we look at the sources mentioned by professor Alan Abd al-Haqq. It is worth mentioning here that at least one of his results which should impress us:

> In this, I follow Imām al-Ghazālī, who referred to striving against the ego-self (*nafs*) as the greater *jihād*; while striving in the world, he regarded as a necessary, but lesser *jihād*: "The greater *jihād* is the *jihād* against the ego-self (*nafs*), as one of the companions… stated: "We have returned from the lesser *jihād* to the greater *jihād*, meaning, the *jihād* against the self." Hence, I am suggesting first, that considering the two forms of effort—referred to as the greater and lesser *jihāds*—we should emphasize the greater *jihād* (which strives against the distortions of the *nafs*) without neglecting the lesser *jihād* (which consists of striving to find the wisest solutions in our worldly affairs). Second, we should understand the greater *jihād*, on the one hand, as being both a *jihād* of *ḥāl* (affect) and a *jihād* of *'ilm* (cognition); and, on the other hand, we can understand the lesser *jihād* as a jihād of *'amal* (action). Third, I suggest implementing what I call an ABC approach to education for enhancing understanding, applying it specifically to the problem of developing an Islamic ethic for technology, with the "A" standing for "affect" (*ḥāl*), the "B" standing for "behavior" ('amal), and the "C" standing for "cognition" (*'ilm*). The greater *jihād* , as a *jihād* of *ḥāl*, is an affective *jihād* (a *jihād* relating to emotions), one that can decrease the power of the *nafs* by directly increasing emotional intelligence, by enabling us to use emotions so that they will enhance wisdom and not become a means for increasing the distorting effects of the *nafs*. In addition, the greater *jihād* is also a *jihād* of *'ilm* (cognition), when it is conducted so as to reduce the dominance of the *nafs* by means of enhancing self-cognition, self-knowledge, self-understanding (all of which indirectly reduce fear deriving from the absence of these or from perceived threats to them), as well as by striving to understand the world and others. Fourth and finally, concerning the lesser *jihād*, a *jihād* of *'amal* (action), we must constantly strive to create an appropriate form of *'amal*, an *adab* for dealing with technology.

Woo-Won Choi, a professor of Pusan State University, from Busan, the city where the memorial cemetery for Turkish soldiers martyred in the Korean war is located, discusses the concept of "Integration of Technology and Life in the Dimension of Being" in the context of civilization. Accordingly, during the period of industrialization, all countries came to terms with the same benefits and losses that this period brought. In spite of economic development, prosperity and security sentiment, humanity came face to face with environmental pollution, fear and spiritual destruction as a result of the collapse of the whole system. These developments, which have emerged as a consequence of modernity, have brought against each other humanity, nature and technology that has not yet matured with respect to values. This negative situation has always been tried to be resolved with higher technology but it has failed. We need to see the danger in technology; this danger is imprisoning us in an artificial error that makes us forget our true Being. In this case, the values will be completely reversed and they will drag us towards a dangerous bog. The visible transformation of the contemporary Western metaphysics illuminates the source of these problems precisely and advises us to overcome the problems introduced by the positivist worldview. That is why; Techno-scientific civilization is vulnerable to dangerous confusion and chaos. We are moving away from the reality of existence; we cannot integrate technology and life unless we isolate ourselves from absolute integrity, truth, beauty and nobility. This is also the reason why religious awakening, artistic emotions and philosophical thinking have a more important place in today's techno-scientific civilization. Philosophy, art and religion; Old Asian traditions that believe in the absolute integration of life with respect to the spiritual values of these items will be the future guidance of a new global civilization. The inclusion of this absolute integration into the high technology of the future will ensure the right balance and harmony between technology, people and nature.

As we have seen Professor Choi is defending the idea that Asian civilizations hold an important place in integrating technology with values and he also argues that Western civilization should not remain indifferent to this. A study examining the notion of technology in Western civilization that lacks values with the same approach is also a study by Edward R. Moad of the department of philosophy in Qatar University with the title "Empire of Desire: Technology, Capitalism and The Perennial Moral Challenge". In his work, Moad states that the eternal moral

struggle is as old as human history, but today this struggle left its place to the fight between the moral nihilism represented by technology and the idea that moral values are absolute, valid everywhere. While advocating this, Moad says: "I can say that if I will answer this according to my own values and my own city, the values are universal. One possible answer is that my values, or those of my city, are universally valid, simply because they are ours, as represented by the moral chauvinism of Euthyphro. Another possible answer is that there are no universally valid values; only the good in a city, which differs from the good in another city, depending only on what that people deem good, or have been convinced to deem good by the strongest or most eloquent among them. This position is represented by the likes of the Sophists, Gorgias, and Thrasymachus."

We are facing an important problem here: Now that technology wears down values and paves the way to moral relativism, can we overturn technology and build a system of values over it? Professor Süleyman Hayri Bolay's paper brings up this issue with the question "does technology produce value?" This leads to a chain of many questions. Bolay, who expressed these questions, tried to answer them: Is technology indispensable, an essential necessity to take? What are the elements behind this technique and technology, which have the power to create value? What is the philosophical basis behind the idea of "Machine Man"? Or can we use the technology we receive with peace of mind by meeting our needs? Should we continue to develop it in this way because it meets our needs without being aware of the damages that technology may cause? Or should we produce it ourselves instead of importing technology in Turkey? Can we prevent harm by producing it ourselves? What values did technology make? If technology creates value, how and by what means does it create it? Does technology make man a machine? Is it a human machine? Can the robot replace the human? Will humans be robotic? Will people who are mechanized or robotized lose their freedom? Can they protect their human qualities in such a state?

Professor Bolay, who examines the debate in all its aspects, indicates that technology can ultimately create value. It creates indeed certain positive value. It can make people rich, for example, comfortable and provide a luxurious life. This approach, however, adopts a life that spends the wealth recklessly. Technology can, on the other hand, raise the reputation of businessmen and industrialists in the country and in the world. But these values are all material values. But the values we

want to emphasize are spiritual values. Can technology create a system of morality, a Christian, a Buddhist and more specifically an Islamic moral system? Nay, it can never create such a value system. That is why we cannot infer a value from technology which instructs us how to prevent damage caused to the environment by technology. What gives us such values are only spiritual systems and especially religion. Based on these values, we can receive support from technology and prevent the destruction that technology can cause to the environment. In this case, knowing how to use technology itself is another value.

Professor Adel Sharif also discusses the role of belief and science in the development of civilizations in his article "The Role of Faith and Science in the Development of Civilisations" and questions whether there is a connection between belief and science. This article also includes examples of the relationship between faith and science, and concludes that there is no conflict between them. According to this, Sharif argues that faith and science walk in harmony through the development of civilizations; however, this relationship between them is generally not fully defined and has been regarded as a conflict throughout history. In this context, the author defines technology as the application of scientific knowledge for practical purposes in the industry. It is well known that technology is beneficial to society in many positive ways, such that it increases its quality of health, and it also improves the quality of life and economy. Technological processes, on the other hand, produce many undesirable side effects, known as harmful, that makes technology unsustainable. In view of this, therefore, it is necessary to relate technology to values. As a result, it can be said that if science and technology are influenced by faith, it leads us to enrich our understanding of both faith and science. So the breakthrough we will make towards achieving sustainable technology becomes more meaningful. Only human knowledge and talents cannot bring humanity to a happier and more valuable life. Mankind has every reason to be the leaders of supreme moral standards and values beyond being an explorer of objective reality. In this case, technology developed carefully considering the values cannot be harmful.

Professor Zekai Şen's paper examining the place of technology in Islamic civilization has taken over the history of how civilizations used raw materials such as water, soil, air and fire throughout history and how this turned into technology over time. In order to ensure that people's daily, seasonal and yearly needs are

maintained in a sustainable way, the first technological productions has come into being with the development of tools, instruments and simple devices that have emerged during the process of producing every material and making it useful. Thus, civilizations were born with the development of different tools to help people to meet their needs such as dressing, dressing and security more effectively. At first, according to the materials used for the tools, the names are given to the historical periods such as Paleolithic, Neolithic, copper, bronze and finally Iron Age. Today we are able to classify later periods by understanding some of the remaining technological tools. The various instruments that symbolize the technologies of those times have allowed later times imagination of more advanced devices in the light of scientific theories.

With the addition of empirical methods to rational methods in Islamic civilization, the first designs and drawings of today's automation devices were made, and then it passed to Europe and caused the start of the industrial revolution there. Professor Şen gives examples of the origins of the technology developed in Islamic civilization. However, it should be noted that the old technology which we can be still considered traditional does not exclude the human and the belief elements in terms of values, so it did not lead to a situation that would create danger to the environment and society. Taking this issue from the perspective of the philosophy of environment and technology, Prof. Dr. İbrahim Özdemir evaluates the criticism of some Western philosophers such as Heidegger raised against present-day technology. According to him, the worldview on which Western technology is based has to a greater extent, if not completely, destroyed humanity and the universe with its idea of sovereignty. Without returning to the bosom of Being, from the Heideggerian point of view, Western civilization will not be able to get rid of this deadlock. In this case Özdemir, who advocates that the West should listen to the contribution of Muslim thinkers, such as Ghazali, Ibn Arabi, Mevlana, Molla Sadra, Muhammed Iqbal, Said Nursi and so on, attempted to show that the dynamic understanding of Islamic *irfan* (experiential knowledge based on heart) and the *burhan* (rational) tradition shows us that we can produce a new perspective and understanding of the universe and the universe we live in through our own tradition. Therefore, he says that he is not as pessimistic as Heidegger, but rather he has hope.

In his paper entitled "Main Indicator Of Modern Global Civilization Fiscal

Capitalism Ideology" Professor Şaban Teoman Duralı reveals indirectly that it is primarily the western capitalist mentality which leads to technological problems today. After analyzing the relevant concepts such as culture, civilization and value, Professor Duralı examines the Western civilization which according to him has now established global sovereignty and can be described as irreligious and indifferent to religion, reaching the following conclusion: "I want to draw attention to something: Global civilization is trying to cover up many things that are happening right in front of our eyes. We have been conditioned to look at a number of focal points. So we do not see a lot of things happening around us. However, realizing what is happening around us and assessing the new developments, it is now time and indeed soon may become even too late, to realize a worldview based on fundamentals of Islam that will become the basis of a preconceived new civilization."

Hamid Fahmy Zarkasyi who participated in the symposium from Indonesia with a paper entitled "Inculcation of Values into Technology: An Islamic Perspective" argues that modern science is the source of modern technology. Modern science, however, is based on the philosophy of modern science, which is a product of the values of the West, created from an out-of-religion viewpoint. Western science and technology will not be able to meet Islamic values with modern technology until they are rescued from a non-religious perspective. According to Zarkasyi, the vision of an Islamic worldview can suggest some values in technology because the Islamic worldview reconciled values and scientific assumptions. Zarkasyi also tried to explain the fact that it was based on a legal basis in the Islamic civilization with the concept of *maqasid al-shari'ah* (higher goals of the law). According to this, the public benefit is divided into three levels in Islamic law: the first is the necessary five human rights of Islamic law (*shari'ah*), namely religion, nafs (self), reason, generation and property. These are called "the necessities" which are expressed today as human dignity, freedom of belief, freedom of thought, freedom of life and property. The second is the need to be called "*hâjiyât* (regular needs)"; and the third is "*tahsiniyat* (embellishments)" which are those desirable things that can be described as luxury. All these levels of social welfare are among the targets to be achieved with the new technologies being designed. As a result, Dr. Zarkasyi considers university education and research (R&D) as the last alternative to bringing values together with technology. However, in the university, technology

can be designed and produced in accordance with Islamic values; Economic, political, socio-cultural and infrastructural areas.

As time passes on, problems that are shaped around increasing technology and value relationship have begun to occupy all societies. Climate change, increased natural disasters, environmental pollution and increasing problems of finding clean water, famine and other catastrophes have forced people to focus on these problems. We are pleased that these efforts made at this one day humble conference may shed light on these problems, which are examined in different parts of the world from different perspectives. We also hope that our work will lead at least to draw attention to these issues even if it is not a solution for them. We hope that it will succeed in not only harmonizing humanity, technology and values but also prevent a great cataclysm that can be counted even if it will come a hundred years later in terms of human history.

Alparslan Açıkgenç

TECHNOLOGY IN ISLAM AND THE WEST: CONSUME WITH CAUTION

INSIGHTS FROM GADAMERIAN HERMENEUTICS AND EMOTIONAL INTELLIGENCE

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In addition to beginning with *Bismillāh ir-raḥmān ir-raḥīm*, in the name of God, the Infinitely Merciful and Infinitely Compassionate,[1] traditional Muslim discourse should begin by a declaration of taking refuge in God from the deviousness of Satan, by saying *aʿūdhū billāhi min al-Shayṭāni'r-rajīm* (I seek refuge in God from Satan, the reviled one). This is not simply a cultural custom in Islam; rather, it has its source in the example (*sunnah)* of Muḥammad ﷺ, which we read about in the *Ṣaḥiḥayn,* the two sound ḥadīth collections of Bukhārī and Muslim: "Two men insulted one another in the presence of God's Messenger ﷺ and one of them became angry to the extent that his face became red and swollen. The Prophet ﷺ looked at him and said: "I know a sentence (*kalima*) that were he to say it, that state he is in would leave him; and that sentence is: I seek refuge in God from the accursed Satan."[2]

We say this, not just in the context in which the Prophet ﷺ used it, but as part of the *adab*, the customary manners of a Muslim, before beginning all endeavors. Unfortunately, this sentence often becomes a mere cultural habit that is said and heard unthinkingly. So I would like to ask all of us here to stop for a moment, and

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[1] Among the hadiths that illustrate the importance in the *sunnah* for beginning endeavors, including speech, with the mention of Allah, we find that the Prophet ﷺ stated the following: "Every discourse that is not started, in the beginning, with mention of Allah, is cut off [from blessings] كُلُّ كَلَامٍ لَا يُبْدَأُ فِيهِ بِذِكْرِ اللهِ، فَهُوَ أَبْتَرُ al-Nasāʾī, *al-Sunan al-kubrá*, #10331, http://islamport.com/w/mtn/Web/1231/2767.htm; and ed. Ḥasan ʿAbd al-Munʿim Shalabī (al-Maktabah al-shāmilah) #10258. Similarly, it was reported that the Prophet ﷺ stated the following: كُلُّ كَلَامٍ لَا يُبْدَأُ فِيهِ بِبِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ فهو أجذم every discourse that is not started by *Bismillāh al-Raḥmān al-Raḥīm* is cut off. See Qurṭubī, *al-Jāmiʿ li-aḥkām al-Qurʾān* (Beirut: Dār al-Kutub al-ʿIlmīya, 1988), 13:128/marg., 192).

[2] Bukhārī and Muslim, *Ṣaḥiḥayn* (al-Maktabah al-Shāmilah).

say and contemplate this phrase together, remembering and taking refuge in God and reflecting upon the implications of this statement and what it should imply to us, right now, here, today, in a conference on Islam and Technology.

One thing that this ḥadīth should imply to us is that we should turn off our mobile phones. So just as you might remember to straighten your lines before praying in a group, please now, even though we are not praying, please check to make sure your mobile phones are turned off; or at least, if you think you may get an emergency call, please put your phone on vibrate; and then if it vibrates and if you need to answer it, please leave the room.

From these preliminary remarks, you might get the impression that today I will express the opinion that technology is an instrument of Satan. But that is not the case. In fact, I will only go so far as to state that technology can be an instrument of Satan, but it need not be so. Rather, technology can be an instrument of tremendous good. The fact, however, is that because of the potentially destructive power of technology, we need to exercise caution and *taqwá* (consciousness of God) and be highly conscious when using technology, otherwise instead of our mastering it for the good of humanity, technology will become our master and we will become enslaved to it.

One of the ways that we can avoid becoming slaves of technology is for any responsible person— and especially Muslim scholars and leaders— to do just as I have done today, and begin thinking about and developing recommended *adab* (good manners) concerning technology. We can build the foundation of this on Mevlana's words in his *Mesnevi*, words that Bediuzzaman Said Nursi also reminds us of in his *Lema'lar*:

از خدا جوییم توفیق ادب بی ادب محروم شد از لطف رب[3]
Tanrı'dan edepli olmayı dileyelim[4]
Edepsiz kişi Allah'ın lütfundan mahrum kalır.[5]
We seek from God the grace of good manners!
Without good manners one becomes deprived of the benevolence of the Lord-Sustainer.

[3] Jalāl al-Dīn Rūmī, *The Mathnawi,* ed. Reynold A. Nicholson (London: Luzac, 1925), vol. 1 [containing the Persian text, book 1 and 2]:7, line # 78.

[4] Erkan Türkmen, trans., *Mevlana'nın Gül Bahçesinden Bir Demet Gül,* Konya, 2012, http://www.rumierkan.com/TR/icerik.asp?content=Content_TR_65.00.htm.

[5] *Bediüzzaman Said Nursî*, *Lem'alar,* On Birinci Lem'a: Yedinci nükte, 108, http://www.sorularlarisale.com/index.php?s=modules/kulliyat&id=1922.

I hope that my presenting to you the concrete example of shutting off mobile phones during presentations in a conference such as this will help you to start thinking about and developing recommended *adab* concerning technology (if you have not already done so). I will return to the topic of the *adab* of technology later in my presentation today. So after these preliminary remarks, I would like to begin the core of my presentation:

بسم الله الرحمن الرحيم

The title of my presentation is "Technology in Islam and the West: Consume with Caution— Insights from Gadamerian Hermeneutics and Emotional Intelligence."

While there is no question that technology has provided our world with many advantages, it is undeniable that technology also presents us with many challenging problems. As examples I will briefly note three of the many problems: the destructive potential of nuclear technology and other weapons systems, the unintended disruption of our ecosystems by things such as urbanization, pesticides, and genetically modified crops, and the colonization of our attention by television programming and advertising, the internet, tablet computers such as i-pads, and mobile telephones.

Taking into consideration such obvious problems with technology, a great deal of scholarly discussion concerning Islam and technology has revolved around the issue of whether or not technology is potentially advantageous, neutral, or inherently detrimental to religious values in general and to those of Islam in particular. Nevertheless, Muslim leaders and popular Muslim opinion, in general, agree that Muslims must advance quickly in science and technology. The importance of scientific and technological advancement was certainly at the core of the trajectory of modern Turkey. Atatürk himself stated,

> We shall take science and knowledge from wherever they may be, and put them in the mind of every member of the nation. For science and for knowledge, there are no restrictions and no conditions. For a nation that insists on preserving a host of traditions and beliefs that rest on no logical proof, progress is very difficult, perhaps even impossible.[6]

Such an enthusiastic embrace of science and technology, however, is not unique

[6] Kemal Atatürk, *Atatürk'ün Söylev ve Demeçleri* (Ankara, 1952) II, 44, 5. Baskı 2006, from a speech given in October 27, 1922; "Ilim ve fen nerede ise oradan alacağız ve her ferdi milletin kafasına koyacağız, ilim ve fen için kayıt ve şart yoktur. Hiçbir delili mantıkiye istinat etmiyen bir takım an'anelerin, akidelerin muhafazasında ısrar eden milletlerin terakkisi çok güç olur; belki de hiç olmaz" Öğretmenlere (27. X. 1922), http://atam.gov.tr/wp-content/uploads/S%C3%96YLEV-

to Turkey. Ibrahim Kalin[7] maintains that this strongly felt need to advance swiftly in modern science and technology characterizes the Muslim world in general:

> From Mustafa Kemal Ataturk, the founder of modern Turkey, to Mahathir Muhammad, the prime minister of Malaysia, the goal has remained the same: to fill the gap between Western and Islamic societies by empowering Muslim countries with the tools and blessings of modern science. Not only are the ruling elites but also the populace at large convinced of the intrinsic power and necessity of science and technology.[8]

In spite of the tremendous need for scientific and technological advancement, scholars such as Seyyed Hossein Nasr have urged us to exercise caution and not to run headlong into the arms of modern science and its technological progeny. Nasr, however, goes beyond pointing out the many obvious problems in our world for which technology is the guilty party. He strongly argues that technology is not value-free. Like its epistemological father—modern science—technology marches through our world both carrying and being swept up by the modernistic worldview, which wreaks havoc on traditional religious worldviews in general and Islamic worldviews in particular.[9] As Nasr expresses it:

> Technology itself brings with it a certain technological culture which is against the soul of the human being as an immortal being, and is against the fabric of all traditional societies which are based on the

ORJ%C4%B0NAL.pdf. Translated by Von Grunebaum in his *Modern Islam: The Search for Cultural Identity* (Westport, Conn.: Greenwood Press, 1983), reprinted (New York: Random House, 1963), 104. Also cited by Ibrahim Kalin, "Three Views of Science in the Islamic World" in *God, Life and the Cosmos: Christian and Islamic Perspectives*, eds. Ted Peters, Muzaffar Iqbal, Syed Nomanul Haq, (Ashgate, 2002), 43-75; and in Kalin, "Islam and Science," http://www.oxfordislamicstudies.com/Public/focus/essay1009_science.html.

[7] Ibrahim Kalin, as of October, 2015, held the position of Deputy Undersecretary and Senior Advisor to the Prime Ministry of Turkey, now Deputy Undersecretary to the Office of the President.

[8] Ibrahim Kalin, "Islam and Science: Notes on an Ongoing Debate" in Gary Laderman and Arri Eisen, eds., *Science, Religion and Society: An Encyclopedia of History, Culture and Controversy* (Armonk, N.Y.: M.E. Sharpe, 2007), 113.

[9] Kalin (and others such as Huston Smith and S. H. Nasr) refers to the culture of which modern science and technology are the standard bearers as *scientism*. Science per se contrasts with "modern science" and *scientism*. "Scientism seeks to supplant the religious view of the universe and reduce religion to ethics without a claim over the nature of reality" (Ibrahim Kalin, "Islam and Science", *Oxford Islamic Studies Online* http://www.oxfordislamicstudies.com/Public/focus/essay1009_science.html). Huston Smith defines scientism as "the drawing of conclusions from science that do not logically follow" (Huston Smith, *Beyond the Post-modern Mind* [Wheaton, IL: The Theosophical Publishing House, 1989], 146). Furthermore, Smith states that [scientism] "goes beyond the actual findings of science to deny that other approaches to knowledge are valid and other truths true," (Huston Smith, *Forgotten Truth* [New York: Harper & Row, 1976], 16).

> spiritual relationship between the human being and the objects he or she creates. These objects [in a traditional society] are based on an art that is creative and reflects God's creativity as the Supreme Artisan….He has given us the power of creativity, which we reflect in our beings because we are His *khulafà*, His vicegerents on earth….

In traditional civilizations there was a continuous spectrum of creation which was always related to God, from the making of a simple comb to the composition of poetry and everything in between; everything was related to God and reflected His quality as the Supreme Artisan on the human plane. Now modern technology destroys that relationship.[10]

So, on the one hand, from Nasr's perspective, modern technology inherently cuts modern man off from the remembrance and awareness of God, the creator. Yet, on the other hand, there are Muslim scientists, such as Dr. Abdus Salam, the Pakistani physicist and winner of the Nobel Prize (in addition to numerous Muslim political leaders and large numbers of Muslims), who see modern science (and we can infer, modern technology) as being in complete harmony with Islam: "There truly is no dissonance between Islam and modern science."[11] In other words there is no consensus among Muslims about the harmony or dissonance between Islam, on the one hand, and science and technology, on the other.

My perspective, which I will elaborate today, is that aside from whatever the inherent potential value of technology may be, we run the risk of allowing technology to become destructive as long as our educational institutions fail to train students how to become aware of and steer clear of their own "selfish interest," this being a key concept in Bediuzzaman Said Nursi's *Risale-i Nur*.[12] Not being dominated by one's own selfish interest is necessary if one wishes to become

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[10] Seyyed Hossein Nasr and Muzaffar Iqbal, *Islam, Science, Muslims, and Technology* (Sherwood Park, Alberta, Canada: Al-Qalam Publishing), 98.

[11] Abdus Salam. *Ideals and Realities: Selected Essays,* ed. C. H. Lai (Philadelphia: World Scientific, 1987), 212 cited in Ibrahim Kalin, ed. *The Oxford Encyclopedia of Philosophy, Science, and Technology in Islam*, s.v., "Technology and Applied Sciences" by Aaron Segal, updated by Hassan Radoine (New York: Oxford University Press, 2014), 320.

[12] On "selfish interest" in the *Risale-i Nur*, see *Wan Kamal Mujani*, *Ermy Azziati Rozali*, and *Mohamad Zaidin* Mat Mohamad, "The World Stability within Cosmology As Inspired by Risale-i Nur*," Advances in Natural and Applied Sciences,* 6 (6): 980-984, 2012, http://www.bediuzzamansaidnursi.org/en/icerik/world-stability-within-cosmology-inspired-risale-i-nur. Note that the English phrase "selfish interest" is a useful way of conveying what is implied in the traditional Islamic term "*al-nafs al-ammārah*." In describing Said Nursi's perspective, M. Hakan Yavuz states:
These are the internalization of Islamic precepts and norms with the goal of self-transformation by subduing the *nafs al-ammarah* (the carnal soul) " M. Hakan Yavuz, "The Sufi Conception of

among the people of truth, guided by *īmān* (namely guided by faith undistorted by the ego-self). I argue that to the degree that we are dominated by our own selfish interest, in spite of our best intentions, we will fall short of becoming people of truth, and our *īmān* will become unconsciously distorted. Hence (because of the extreme danger of becoming subverted by one's "own selfish interest") I suggest that to develop an Islamic ethic of technology we must renew and refresh the three traditional Islamic principles of the *salaf al-ṣāliḥ* (our righteous predecessors), which principles are *islām*, *īmān*, and *iḥsān*.[13] Furthermore, in the course of taking a fresh look at how we can adapt *islām*, *īmān*, and *iḥsān*, in order to develop an authentically Islamic ethic for the use of technology, we need to understand that these refer, respectively, to principles of *ʿamal* (behavior), *ʿilm* (cognition), and *ḥāl* (affect, emotion, and state).

Moreover, since scholars in the West have also been dealing with the need to develop an ethic for coping with the challenges of technology, I argue that in our quest to develop an Islamic ethic for the use of technology we can benefit from understanding three recent developments in the West, and consequently train students in three ways that have parallels in the Islam of the *salaf al-ṣāliḥ* (pious predecessors): first, in the training of *'amal*, we need to train students to act responsibly with technology by updating and developing Islamic *adab* for technology; second, in the training of *'ilm*, we need to train students to cultivate a hermeneutical understanding (such as Gadamerian hermeneutics suggests, which involves cultivating self-understanding together with understanding of the world and technology—rather than striving for objectivity in a purely modernistic sense);

Jihad: The Case of Said Nursi," http://www.bediuzzamansaidnursi.org/en/icerik/sufi-conception-jihad-case-said-nursi; and see also Muhammad Sirozi, "Nursi's Ideas On Science Development In Muslim Countries," www.bediuzzamansaidnursi.org/en/icerik/nursi's-ideas-science-development-muslim-countries.

[13] *Islām* (surrendering), *īmān* (faith), *iḥsān* (affirming virtuous beauty). These three words, to which translations do not do justice, have come to indicate the major emphases of Islam. Most significantly they were defined in what is known as the *ḥadīth* of Gabriel, in which the Prophet ﷺ defined *islām* as the principal pious actions of Islam (also known as the "five pillars of Islam"), stating that "Islām is to testify that there is no god but God and that Muhammad is God's Messenger, to perform the prayer, bestow alms, fast Ramadan and make if are able, to undertake the pilgrimage to the Holy House [the Kaʿba in Mecca]." *Īmān* (faith), he stated, is to embrace the following six beliefs: "To believe in God and His Angels and His books and His Messengers and the Last Day, and to believe that no good or evil cometh but by his Providence." *Iḥsān*, as the Prophet ﷺ defined it is: "To worship God as if you see him, for if you do not see Him, then [know that] He sees you." (Bukhārī and Muslim, *Ṣaḥiḥayn* [al-Maktabah al-Shāmilah]).

and third, in the way of *ḥāl*, we need to train students to enhance their emotional intelligence (*duygusal zeka*).

The primary reason why renewing Islamic ethical principles and developing an ethical methodology for technology aided by insights from these Western developments is necessary is because the the human ego-self (*nafs*) —in spite of our highest intentions, aspirations, and efforts of religious leaders—will to varying degrees always be in danger of attempting to use technology (either unconsciously or consciously) without sufficient wisdom, leading to destructive outcomes because of the power of the ego-self (al-*nafs al-ammāra bi-al-sū'*), as we read in the Qur'an: *inna an-nafsa la-ammāratun bi-s-sūʾ* (Indeed, the ego-self commands to evil [Qur'an, Sūrat Yūsuf, 12:53]). Because of the degree to which the Muslim world, like the West, has already succumbed to many of the dangers of technology, it is essential that we use whatever insights we can find, as long as such insights are filtered by the light of Islam, just as Muslim scholars throughout the centuries have taken wisdom wherever they have found it and then islamicized it.

Furthermore, a *ḥadīth* of Tirmidhī, which he considered to have a high degree of authenticity (*ḥasan ṣaḥīḥ*), underscores the danger of the ego-self by highlighting the significance of working to diminish its power: The *mujāhid* is one who strives against his own ego-self (*nafs)*: الْمُجَاهِدُ مَنْ جَاهَدَ نَفْسَهُ.[14] Hence, I argue that we should adopt as a basic framework, an Islamic ethical model for approaching technology in which we emphasize, first and foremost, the *jihād ʿan al-nafs*, namely striving against our *nafs*, against our ego-self, in order to reduce the distortions of our perception and self-deceptions arising from the *al-nafs al-ammāra bi-al-sū'*. Second, we must understand that success in the *jihād* against the *al-nafs al-ammāra bi-al-sū'* will increase the likelihood that our efforts to perceive and develop an Islamic ethic of technology will in fact be for the sake of God (*fi-sabīl Allāh*)—neither being for the sake of our ego-self (*fī sabīl al-nafs*) nor for the sake of Shayṭān (*fī sabīl al-shayṭān*). In this, I follow Imām al-Ghazālī, who referred to striving against the ego-self (*nafs*) as the greater *jihād*; while striving in the world, he regarded as a necessary, but lesser *jihād*: "The greater *jihād* is the *jihād* against

[14] Abū ʿĪsá al-Tirmidhī, *Sunan al-Tirmidhī*, ed. Ibrahīm ʿAṭwah ʿAwaḍ (Cairo: Muṣṭafā al-Bābī al-Ḥalabī, 1975), 4:165, #1621.

the ego-self *(nafs)*, as one of the companions… stated: "We have returned from the lesser *jihād* to the greater *jihād*, meaning, the *jihād* against the self."[14]

Hence, I am suggesting first, that considering the two forms of effort—referred to as the greater and lesser *jihāds*—we should emphasize the greater *jihād (*which strives against the distortions of the *nafs*) without neglecting the lesser *jihād* (which consists of striving to find the wisest solutions in our worldly affairs). Second, we should understand the greater *jihād,* on the one hand, as being both a *jihād* of *ḥāl* (affect) and a *jihād* of *'ilm* (cognition); and, on the other hand, we can understand the lesser *jihād* as a *jihād* of *'amal* (action). Third, I suggest implementing what I call an ABC approach to education for enhancing understanding, applying it specifically to the problem of developing an Islamic ethic for technology, with the "A" standing for "affect" (*ḥāl*), the "B" standing for "behavior" (*'amal*), and the "C" standing for "cognition" (*'ilm*). The greater *jihād*, as a *jihād* of *ḥāl*, is an affective *jihād* (a *jihād* relating to emotions), one that can decrease the power of the *nafs* by directly increasing emotional

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[15] والجهاد الأكبر جهاد النفس كما قال بعض الصحابة رضي الله عنه رجعنا من الجهاد الأصغر إلى الجهاد الأكبر يعنون جهاد النفس
Abū Ḥāmid al-Ghazālī. *Iḥyā ʿulūm al-dīn: kitāb al-ʿuzla* (Jeddah; Dār al-Minhāj, 2011), 4:325-26.
A *ḥadīth* of the Prophet ﷺ concerning the greater *jihād* was reported by both Bayhaqī and al-Khaṭīb al-Baghdādī. These two *ḥadīth* reports included their chains of transmission and with minor differences in the content of the *hadith.* Bayhaqī himself noted that his chain of transmission (*isnād*) was "weak." Other scholars have cast doubt on the validity of al-Khaṭīb's *isnād*: The Prophet ﷺ said to a group of warriors who had just returned from battle, "You have arrived at the best place from which to embark; you have arrived [at the embarkation point of travelling] from the lesser *jihād* to the greater *jihād*." So they asked, "What is the greater *jihād*?" He said, "The servant's striving against his desires."
قَدِمْتُمْ خَيْرَ مَقْدَمٍ، وَقَدِمْتُمْ مِنَ الْجِهَادِ الأَصْغَرِ إِلَى الْجِهَادِ الأَكْبَرِ. قَالُوا: وَمَا الْجِهَادُ الأَكْبَرِ يَا رَسُولَ اللَّهِ؟ قَالَ: مُجَاهَدَةُ الْعَبْدِ هَوَاهُ
This version of the ḥadīth is form the *Tārīkh Baghdād*: al-Khaṭīb al-Baghdādī, *Tārīkh Baghdād* (Beirut: Dār al-Kutub al-ʿIlmīya, n.d.), 13:523-24, #7345; Abū Bakr Aḥmad al-Bayhaqī, *Kitāb al-Zuhd al-kabīr*, ed.ʿĀmir Aḥmad Haydar (Beirut: Dār al-Jinān, 1987), 165, #373;. Some scholarly criticisms of it were recorded by Ismāʿīl b. Muḥammad al-ʿAjlūnī, *Kashf al-khafāʾ* (Beirut: Muʾassasat al-Risāla, 1979), 1:511-12. See also G. F. Haddad, "Documentation of 'Greater Jihad' hadith," http://www.livingislam.org/n/dgjh_e.html.
A related and authentic *hadith* that confirms the meaning, however, as narrated by Abū Dharr and authenticated by al-Albānī, is "I asked the Prophet ﷺ 'Which *jihād* is the best?' He replied, "[The best *jihād* is] striving against your self and your desires, for God (*fī dhāt Allāh*), may He be exalted and glorified"
عَنْ أَبِي ذَرٍّ، قَالَ: سَأَلْتُ رَسُولَ اللَّهِ صَلَّى اللَّهُ عَلَيْهِ وَسَلَّمَ: أَيُّ الْجِهَادِ أَفْضَلُ؟ قَالَ: «أَنْ تُجَاهِدَ نَفْسَكَ وَهَوَاكَ فِي ذَاتِ اللَّهِ عَزَّ وَجَلَّ
Abū Nuʿaym al-Aṣbahānī, *Hilyat al-awliyāʾ* (Beirut: Dār al-Kitāb al-ʿArabī, 1980), 2:249. Al-Aṣbahānī, *Kitāb al-Arbaʿīn ʿalá madh'hab al-mutaḥaqqiqīn min al-ṣūfīyah*, ed. Badr b. ʿAbdallāh al-Badr (Beirut: Dār Ibn Hazm, 1993), 42. Nāṣir al-Dīn al-Albānī, *Silsilat al-aḥādīth al-ṣaḥīḥa* (Riyadh: Maktabat al-maʿārif, 1995), 3:483-84, #1496.

intelligence, by enabling us to use emotions so that they will enhance wisdom and not become a means for increasing the distorting effects of the *nafs*. In addition, the greater *jihād* is also a *jihād* of *ʻilm* (cognition), when it is conducted so as to reduce the dominance of the *nafs* by means of enhancing self-cognition, self-knowledge, self-understanding (all of which indirectly reduce fear deriving from the absence of these or from perceived threats to them), as well as by striving to understand the world and others. Fourth and finally, concerning the lesser *jihād*, a *jihād* of *ʻamal* (action), we must constantly strive to create an appropriate form of *ʻamal*, an *adab* for dealing with technology. In undertaking this, however, we must recognize that any failures of ours at attempting to create a successful *adab* for technology will be influenced, if not directly caused, by our unconsciousness of the distorting effects of our own *nafs* (which often undermines our best intentions). Furthermore, such distorting effects will arise because of our failures at our greater *jihāds*. Consequently we must recognize that any of our successes in creating an *adab* for technology will, for the most part, be due to our successes in our greater *jihād*. Nevertheless, such successes will ultimately all be due to the mercy of God, hence we pray as did the Prophet ﷺ: *allāhuma maghfiratuka awsaʿu min dhunūbī wa-raḥmatuka arjá ʻindi min ʻamali*. "O God, Your forgiveness is more encompassing than my sins; and Your mercy is what is hoped for more than my actions."[16]

Before developing my Affective-Behavioral-Cognitive (ABC) approach toward enhancing understanding within the overall framework of the greater and lesser forms of *jihād* (effort or striving), it is necessary to note that a number of Muslim scholars have formulated an Islamic ethic of technology, in particular, Muslim reformers such as Bediuzzaman Said Nursi, the Ijmali school of Ziauddin Sardar, and the traditionalist-perennial approach, which today is best articulated by Seyyid Hussein Nasr. Fortunately, Ibrahim Kalin has provided us with excellent articles that summarize their efforts and the major issues concerning Islam, science, and technology.[17] These, together with Muzaffar Iqbal's book on the perspective of Seyyid Hossein Nasr, *Islam, Science, Muslims, and Technology*,

[16] قُلِ اللَّهُمَّ مَغْفِرَتِكَ أَوْسَعُ مِنْ ذُنُوبِي وَرَحْمَتَكَ أَرْجَى عِنْدِي مِنْ عَمَلِي Al-Ḥākim al-Naysābūri, *al-Mustadrak ʿalá ṣaḥīḥayn* wa-bi-dhaylihi *al-Talkhīṣ* lil-Ḥāfiẓ al-Dhahabī (Beirut: Dār al-Kitāb al-ʿArabī, n.d.), 1:543-44; and ed. Muṣṭafá ʿAbd al-Qādir ʿAṭā (Beirut: Dār al-Kutub al-ʿIlmīya, 1990), 1:728, #1994 at al-Maktabah al-Shāmila.

[17] Ibrahim Kalin, "Three Views of Science in the Islamic World," http://www.muslimphilosophy.com/

allow me to proceed with my contribution, which, as I have noted, highlights the importance of the distorting effects of the selfish interests of scientists, scholars, and anyone attempting to cope with the technological age.[18] I should also mention that in developing the cognitive aspect of my ABC approach using a Gadamerian hermeneutic, I am indebted to an analytical framework that I learned from one of my formative professors, the late Huston Smith, in his book. *Beyond the Postmodern Mind*. There he defines an ethic as "an assemblage of guidelines for effecting the self-transformation that enables the world to be experienced in a new way" [19]

Because the behavioral (B) (ʿamalī) and cognitive (C) (ʿilmī) aspects of this ABC approach to enhancing understanding are more centered on the world in which we are living and relatively more accessible to readers, at this point we will begin our application of the ABC approach (to constructing an Islamic ethics of technology) with behavior and cognition, saving the affective (A) or emotional (ḥālī) aspect of the ABC approach for last. Prior to discussing the behavioral implications of our methodology as we construct Islamic ethics for technology, it should go without saying that because the epistemologies of modern Western science and philosophy

kalin/Three%20Views%20of%20Science%20in%20the%20Islamic%20World.doc; and "Islam and Science: Notes on an Ongoing Debate," *Parabola* 33(3):66-73, September 2008, http://tinyurl.com/kudwsrp.

[18]Kalin summarizes Nasr's critique of scientism or "modern" science as being comprised of five main traits:
The first is the secular view of the universe that sees no traces of the Divine in the natural order. Nature is no longer the *vestigia Dei* of Christian cosmology but a self-subsistent entity that can be encapsulated exhaustively in the quantitative formulae of natural sciences. The second feature is the mechanization of the world-picture upon the model of machines and clocks. Once couched in terms of mechanistic relations, nature becomes something absolutely determinable and predictable -- a much needed safety zone for the rise of modern industrial society and capitalism. The third aspect of modern science is rationalism and empiricism as we have alluded to before. The fourth trait is the legacy of Cartesian dualism that presupposes a complete separation between *res cogitans* and *res extensa*, viz., between the knowing subject and the object to be known. With this cleavage, the epistemological alienation of man from nature comes to completion by leaving behind a torrent of pseudo-problems of modern philosophy, the notorious mind-body problem being a special case in point. The last important aspect of modern science is in a sense a culmination of the foregoing features, and it is the exploitation of nature as a source of power and domination -- a fact not unknown to modern capitalist society." Ibrahim Kalin, "The Sacred versus the Secular: Nasr on Science" in *Library of Living Philosophers: Seyyed Hossein Nasr*, L. E. Hahn, R. E. Auxier and L. W. Stone, eds. (Chicago: Open Court Press, 2001), 445-462.

[19]Huston Smith, *Beyond the Post-modern Mind* (Wheaton, IL: The Theosophical Publishing House, 1989), 73.

as well as traditional epistemological Islamic values are accepted in varying degrees in the diverse cultures of the Muslim world, we should base our construction of an Islamic ethics of technology on values and guidelines that are shared in each of these epistemological cultural streams. Although some Muslims have argued for a return to the traditional Islamic epistemologies of *fiqh* (jurisprudence)—consisting of relying upon Qur'an, *ḥadīth, qiyās* (analogical reasoning), and *ijma'* (consensus) and the traditional schools of jurisprudence— and also, to varying degrees, to the wisdom of the Sufi shaykhs, our contention is that while the construction of an Islamic ethics of technology must be in dialogue with fiqh and Sufism, it must not simply rely on following the traditional behavioral guidelines of *fiqh* and Sufism, which have not been sufficient in enabling our societies to cope with the technological age. One social scientist, Bart Barendregt of Leiden University, after studying South-East Asia's digital culture, noted somewhat alarmingly "Muslim youngsters are adopting technology to distance themselves from older, traditional practices while also challenging Western models."[20] Peter Hershock noted that "the average American watches twenty-two thousand [television] commercials per year, as the average American father spends just forty-five minutes alone with his children each week while devoting an average of four hours daily to television."[21] While some might hope that existing global educational systems offer an alternative to the materialistic brainwashing of television, Hershock informs us that "[money spent on] corporate advertising worldwide exceeds the total global expenditure on all levels of education."[22] When we add to this the problems of the proliferation of military technology and the use of technology that both directly and indirectly is destroying the biosphere, the need for an Islamic *adab or 'amal* (i.e., an Islamic ethic) for coping with technology becomes stunningly obvious.

Some examples of such an *'amal* for coping with technology that we can suggest are that Muslim religious leaders need to develop recommendations guiding the usage for each society's major technologies. Ideally these recommendations should

[20] Bart Barendregt. *Economist*, "The Online Ummah" Aug 18th, 2012.

[21] Peter Hershock. "Turning Away from Technotopia: Critical Precedents for Refusing the Colonization of Consciousness" in Peter D. Hershock, Marietta Stepaniants and Roger T. Ames, eds., *Technology and Cultural Values: on the Edge of the Third Millennium* (Honolulu: University of Hawai'i, 2003), 598.

[22] Hershock, "Turning Away from Technotopia," 598.

be based on scientific studies, which responsible Muslim businessmen may wish to communicate to prospective buyers on packaging. For example, televisions, tablet computers, and mobile phones marketed to children and adolescents can be packaged with a warning and recommendation to parents to limit usage to a certain number of hours today. Also recommendations from each Muslim country's ministries of religious affairs and ministries of health should note that everyone, but especially children, could benefit from periodic vacations from technology, even if it is only for certain periods, such as immediately before and after performing prayers (*ṣalāt, namaz*).

In spite of the virtues of such recommended *adab* for technology—because even Muslims' best efforts to follow such *adab* and take refuge in the Qur'an and *sunnah* will be sabotaged, distorted, and corrupted by the ego-self (*nafs*) —such an *adab* or *ʿamal* of technology (constructed both from traditional Islamic epistemologies and methodologies that have produced *sharīʿa* and the *sunnah* together with contemporary scholars best efforts to construct an *adab* for technology), must be part of three-pronged strategy. The second component of such an approach should involve a cognitive (*ʿilmī*), hermeneutic approach that integrates understanding one's self and its viewpoints in context, together with effort to understand the world and others. Third, any attempt to construct an Islamic ethic of technology should include an affective (*ḥālī*) approach consisting of enhancing emotional intelligence grounded in Islamic resources for doing so, accompanied by a strong dosage of humility, specifically the humble recognition that even our best efforts to create an *adab* for technology, such as I suggested at the outset, may ultimately be undermined by the ego-self.

Consequently, moving beyond the *'amal*, which is the behavioral aspect of my suggested methodology, we can now attend to insights from Hans-Georg Gadamer, which comprise the theoretical outline and overall bi-directional cognitive approach (hence the "C" of my ABC approach) or *'ilmī* aspect of my suggestions for building an Islamic ethic for technology that is informed by recent developments in the West.[23] Most important is the idea—rooted in Gadamer's works—that we can move toward a hermeneutically objective understanding of our problem (which in

[23] In this paper our subsequent discussion concerning the cognitive dimension of a hermeneutical approach to an Islamic ethic of technology principally focuses on theoretical and psychological

this case is technology and the need for an Islamic ethic in facing it). Simply put, a hermeneutically objective understanding is one in which we focus our analytical efforts in two directions: not merely outwardly at the customary problem at hand or some "other," but also inwardly at our selves, where we also attempt to shine the light of understanding on our own prejudices or preconceptions in relation to their various contexts. Hans-Georg Gadamer (d. 2002), one of the most important 20th century philosophers, critiqued philosophers of the enlightenment, who asserted that in the search for truth and objectivity the "prejudices" (i.e., the prior views) of the subject (i.e., the interpreter) should be put aside and dismissed, as he stated it: "The fundamental prejudice of the enlightenment is the prejudice against prejudice itself."[24] Furthermore, much of the thrust of Gadamer's work is a sustained argument against a naïve "objectivity" that mistakenly imagines that the self of the

reasons for such an approach and its bi-directional nature (i.e., on the one hand, it recenters efforts to understand one's self in one's contexts, together with, on the other hand, the commonplace modernistic and Enlightenment-era efforts to understand the "other" objectively). Beyond these very general concerns, however, what follows here is a more specific outline of two modes of contextual analysis (to be implemented hermeneutically, i.e., bi-directionally) and analytical lenses in the form of areas of inquiry, which comprise one of the two analytical modes. The two analytical modes are sociohistorical and what I have termed "religiological" analysis (but which would more precisely be termed pisteology, since it refers to inquiry into beliefs, which are not necessarily religious). Socio-historical analysis consists of analysis of events, viewpoints, and feelings in their socio-historical context, as is commonly taught by modernist historians; except since this is a hermeneutical method, each scholar or student analyzes sociohistorically both his/her own viewpoints and those of some "other." Religiological analysis uses a variety of analytical lenses in a coherent system, most of which (especially their coherence) I derived from Huston Smith's *Beyond the Postmodern Mind (see especially 126-27, 210-11)*. One scholar who has used a number such lenses is Yasien Mohamed; although many scholars have used one or more of them (Yasien Mohamed, *The Path to Virtue: The Ethical Philosophy of al-Rāghib al-Iṣfahānī* [Kuala Lumpur: International Islamic University of Malaysia, 2006]). These lenses consist of a variety of questions about worldviews and beliefs in the following categories: epistemology, ontology (with subcategories of theology, cosmology, and eschatology), philosophical anthropology, psychology, teleology (understood as inquiry into beliefs about ultimate purpose(s), and methodology. Their virtue is that a person's beliefs in these areas can be constructed so as to cohere. When one's own or another's worldview coheres, it makes sense. The double virtue in this is that when someone is able to make sense of his/her own viewpoint, his/her own self-esteem and feeling of well-being are enhanced (and one's natural feelings of discomfort when faced with viewpoints that conflict with one's own become diminished indirectly). This enhancement of self-esteem, as Terror Management theorists inform us, is in turn a key to the virtue of not disparaging and not dehumanizing the other, and hence is a key to understanding them (Thomas A. Pyszczynski, Sheldon Solomon, Jeff Greenberg, *In the Wake of 9/11: The Psychology of Terror* [Washington, D.C.: American Psychological Association, 2003]).

[24]Hans-Georg Gadamer, *Truth and Method,* eds. Garret Barden and John Cumming (New York: Crossroad, 1988), 239-40.

interpreter and observer can simply be excluded or put aside in scientific efforts to reach truth. Rather than being a scientific truth, this is mere dogma. According to Gadamer, "Objectivism is an illusion."[25] Instead, Gadamer strongly argued for the essential role of self-understanding in the interpretative process, a point that has been developed by others into a prescriptive interpretative method and pedagogy.[26]

This aspect of Gadamer's hermeneutics could be termed a kind of subjective objectivity. Such a term was used by Ziauddin Sardar in 1985, although I have no idea whether or not Sardar considers himself to have been influenced by Gadamer. In describing Islamic science, Sardar was emphasizing the importance of individual selves of Muslims together with objectivity. He stated, "As such, Islamic science is *subjectively objective*; that is, it seeks subjective goals within an objective framework." Some examples of such subjective but nevertheless normative goals are "seeking the pleasure of Allah, the interests of the community."[27] Although what

[25]Hans-Georg Gadamer, "The Problem of Historical Consciousness," trans. Jeff L. Close, in *Interpretive Social Science: A Second Look,* eds. Paul Rabinow and William M. Sullivan (Berkeley: University of California Press, 1987), 126.

[26]For examples of how Gadamer's work has been applied in the field of education, see David Blacker, "Education as the Normative Dimension of Philosophical Hermeneutics," *Philosophy of Education*, 1993; https://www.academia.edu/1257855/Education_as_the_normative_dimension_of_philosophical_hermeneutics andhttps://web.archive.org/web/20100706040009/http://www.ed.uiuc.edu/EPS/PES-Yearbook/93_docs/Blacker.HTM; and Shaun Gallagher, Hermeneutics *and Education,* Albany, N.Y.: State University of New York Press, 1992. It also should be noted that Gadamer has had critics. Emilio Betti, E. D. Hirsch, and Habermas were the three most well-known strident critics of Gadamer. These were followed by Muslim scholars such as Fazlur Rahman and Aref Ali Nayed, who called attention to various problems in Gadamer's philosophical hermeneutics, problems that seem to argue for the rejection of objectivity and the embrace of relativism. Fazlur Rahman—who in 1982 may have been the first Muslim scholar to discuss Gadamer—followed the criticism of Gadamer raised by Emilio Betti and regarded Gadamer as being "hopelessly subjective." In discussing the processing of interpretation, like, E. D. Hirsch, they both rejected Gadamer's emphasis on the need to take into account the totality of linguistic, socio-cultural and historical factors affecting the interpreter. In addition they took aim at what they considered to be Gadamer's lack of emphasis on the need to understanding the intent of the author of a text. A more recent Muslim critic of Gadamer, who like Rahman supported Betti's hermeneutics, is Aref Nayed. Nayed has noted that Gadamer never intended to advocate a method of interpretation. Although many scholars have advanced opinions to the contrary, to Nayed's credit Gadamer's emphasis is clearly on *describing* the human process of interpretation not on *prescribing*, Jeffrey Anthony Mitscherling, Tanya DiTommaso and Aref Nayed, *The Author's Intention* (Lanham, MD: Lexington Books, 2004). The point is moot, however, because, in the very least, Gadamer has inspired numerous philosophers, social scientists and educators to argue for an integration of self-understanding into the interpretative process.

[27]Ziauddin Sardar. *Islamic Futures: the Shape of Ideas to Come* (Chicago: Islamic Futures and Policy Studies, 1985), 175.

I am arguing in this paper could be similarly expressed as subjective objectivity (albeit in a somewhat different sense than that meant by Sardar), the main problem with such an expression, as I see it, is that it is a red-flag to many who regard the term as being associated with relativism, and hence the abandonment of truth or objectivity.

Consequently, rather than subjective objectivity, I prefer the term used by Jean Grondin, "hermeneutical objectivity." Grondin, a biographer of Gadamer, stated, "One can dissociate illegitimate prejudices from those that are fruitful and can pave the way to a *hermeneutical objectivity* only by critically taking into account [what Heidegger called] one's anticipations of the work."[28] In both Heidegger's and Gadamer's hermeneutics, such prejudgments determine one's understanding.[29] Grondin adds that Gadamer regarded distinguishing illegitimate from legitimate prejudices as being essential to the work of hermeneutics and to moving towards objectivity.[30] Just as self-understanding for Gadamer is, as he himself put it, "Always on the way,"[31] so too is an objectivity that integrates self-awareness, especially of one's own prejudgments. "Making evident the prejudices that orient understanding is not destined to destroy objectivity, but to make it possible."[32] So the task of the interpreter, in Grondin's view of Gadamer's thought, must be—together with a focus on the matter to be interpreted—"to formulate his or her own hermeneutical situation, taking into account prejudices, expectations, and questions that govern his or her research, [which is] the minimal condition of objectivity."[33] It is especially dangerous in the process of interpretation to imagine that oneself is free of prejudices. This, in Grondin's words, makes one "more blindly exposed to their [i.e., prejudices'] power. Prejudices will exercise their underground domination all the more strongly, and potentially distortingly, when denied or repressed."[34]

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[28] Jean Grondin, "Hermeneutics and Relativism" in *Festivals of interpretation: essays on Hans-Georg Gadamer's work*, ed. Kathleen Wright (Albany, NY: State University of New York Press, 1991), 53-54.

[29] Ibid., 61-62.

[30] Ibid., 53-54.

[31] Hans-Georg Gadamer. "Hermeneutics as practical philosophy" in *Reason in the Age of Science* (Cambridge: MIT Press, 1982), 103.

[32] Grondin, "Hermeneutics and Relativism," 54.

[33] Ibid.

[34] Ibid.

In contrast to the flawed modernist view that science can proceed while simply trying to put one's prejudices aside or by ignoring them (a view that has unfortunately come to dominate the modern educational system), scholarly investigation and teaching should not only investigate the objects of our research, but at the same time should focus on the prejudices of the investigating subject and the understandings that he/she brings into the encounter with the object of his/her research, which in our present case is the task of constructing an Islamic ethic of technology. In an introduction to a compilation of key articles on Gadamer's work, the editor, echoing Grondin's view of Gadamer, writes "Because prejudices function as a necessary condition of historical understanding, Gadamer argues, they should be made the object of hermeneutic reflection."[35] Hence it makes perfect sense that in his "philosophical hermeneutics" Gadamer attached great importance to the perspective of not only the object, but also the subject, in creating understanding.

Building especially on Heidegger's work, Gadamer further developed the concept of the hermeneutical circle.[36] He characterized understanding as a "hermeneutical circle [which] is in fact a contentually fulfilled [*inhaltlich erfüllter*] circle, which joins the interpreter and his text into a unity within a processual whole."[37] Furthermore, he viewed the manner in which understanding occurs as follows: "Understanding always implies a preunderstanding which is in turn prefigured by the determinate tradition in which the interpreter lives and that shapes his prejudices."[38] Consequently, in developing a method of bridging science and technology with religion, it stands to reason that effort must be made, while studying "religion as object," to investigate what Gadamer termed the "preunderstanding" that the interpreter as subject is bringing to his/her encounter with it, which "preunderstanding" is itself formed by the "determinate tradition" that is the interpreter's context and that (from a psychological perspective) conditions and unconsciously shapes the thought of the interpreter. As Gadamer himself stated, "Every textual interpretation must begin then with the interpreter's reflection on the preconceptions which result from the hermeneutical situation in

[35]Kurt Muller-Vollmer, ed. *The Hermeneutics Reader* (New York: Continuum, 1988), 39.

[36]Gadamer, "The Problem of Historical Consciousness," 129.

[37]Gadamer, "The Problem of Historical Consciousness," 87.

[38]Gadamer, ibid.

which he finds himself. He must legitimate them, that is, look for their origin and adequacy."[39]

In discussing the interpreter's encounter with the object of his/her study, Gadamer expresses this whole/part dialectical relationship as a "fusion of horizons." One of the two fusing horizons is the interpreter's "horizon of understanding," which consists of his/her prejudices, history, and context, all of which inform his perspective and interpretive angle; and the other horizon is that of the object of his or her study, together with its historical context.[40] To facilitate this understanding or "fusion of horizons," scholars should both be open to the object of study and its horizon of understanding as well as shine the light of awareness on his/her own prejudices or horizon of understanding. David J. Blacker (a Professor of Philosophy of Education and Legal Studies at the University of Delaware) asserts that "Gadamer argues that…. one must maintain — at least initially — an attitude of 'openness' to the other. But this does not mean that one can, or even ought to, strive to eliminate one's own prejudices; on the contrary, Gadamer argues against the possibility or desirability of a neutral, nonprejudicial standpoint from which to 'evaluate' the other….The interpretive challenge is to maintain simultaneously the attitude of openness toward the text or person while also permitting, as best one can, one's own prejudices to rise to the surface so as to 'put them at play.' "[41]

In contrast to Gadamer's critics (noted previously), numerous scholars, among

[39]Gadamer, ibid., 130.

[40]*The Encyclopaedia of Educational Philosophy and Theory*, s.v. "Gadamer and the Philosophy of Education" (Pádraig Hogan), 2000, in http://www.ffst.hr/ENCYCLOPAEDIA/doku.php?id=gadamer_and_philosophy_of_education (28 October 2008, not working 22 March 2017) but accessed via archive.org at https://web.archive.org/web/20120119004025/http://www.ffst.hr/ENCYCLOPAEDIA/doku.php?id=gadamer_and_philosophy_of_education. See also Encyclopedia of Educational Philosophy and Theory, s.v. "Gadamer and the Philosophy of Education" (Pádraig Hogan) (Singapore: Springer, 2015), https://link.springer.com/referenceworkentry/10.1007/978-981-287-532-7_171-1. Note that although the author and title of both these articles are the same, they are in fact different articles, with the more recent of the two being more substantial and including more recent references.

[41]David Blacker, "Education as the normative dimension of philosophical hermeneutics" (paper presented at the Annual Meeting of the Philosophy of Education Society, New Orleans, LA., 1993). Blacker is a professor of Philosophy of Education and Legal Studies at the University of Delaware. http://www.academia.edu/1257855/Education_as_the_normative_dimension_of_philosophical_hermeneutics.

whom are Muslims such as Osman Bilen,[42] T. J. Winter,[43] and Reza Shah-Kazemi,[44] do not see a necessary conflict between Gadamer and objectivity. Similarly, I argue that Gadamer can assist us in refining our understanding of religious and scientific objective methodology by insights such as "The *wirkungsgeschichtliches Bewusstsein* (consciousness of effective history) seeks to be aware of its prejudgments and to control its own preunderstanding; and thus it does away with that naïve objectivism that falsifies ... the positivistic theory of science."[45]

Hence, an alternative to naïve objectivism, as we construct an Islamic ethics of technology, is the methodological pursuit of a hermeneutically informed objectivity which, like self-understanding, according to Gadamer, is "always on-the-way." Furthermore, as I will subsequently argue in my discussion of the affective "A" component of my ABC approach (in contrast to a Stoic and Enlightenment influenced paradigm of intellectual cultivation, which maintains that emotions should be ignored and suppressed in the classroom and scholarly endeavors), the methodological pursuit of a hermeneutically informed objectivity must include awareness of emotions and their cognitive dimension.[46] Naïve objectivism is naïve because it fails to recognize the unconscious and distorting influence of prejudgments, preunderstandings, and emotions (in spite of our best attempts to remain unbiased and unemotional). Consequently, to the degree that

[42]Osman Bilen, *The Historicity of Understanding and the Problem of Relativism in Gadamer's Philosophical Hermeneutics* (Washington, D.C.: Council for Research in Values and Philosophy, 2001). Bilen refutes the charge of relativism leveled against Gadamer by some critics.

[43]Tim Winter, "Qur'anic Reasoning as an academic practice," *Modern Theology, July 2006)*. Winter mines Gadamer for various insights in this paper, among which is Gadamer's understanding of interpretation as a "three-way activity" between the interpreter's understanding (*verstehen*) of a text and the understanding (*verständigung*) of one interpreter with another interpreter. http://www.interfaith.cam.ac.uk/resources/lecturespapersandspeeches/quranicreasoningasacademicpractice.

[44]Reza Shah-Kazemi, *The Other in the Light of the One* (Cambridge, UK: Islamic Texts Society, 2006), 48-50. Shah-Kazemi compares and contrasts Gadamer's approach to interpretation with a Sufi approach.

[45]Hans-Georg Gadamer, *Philosophical Hermeneutics* (Berkeley and Los Angeles: University of California Press, 1976), 27.

[46]Ingrid Schleibler, *Gadamer: between Heidegger and Habermas* (Oxford: Rowman and Littlefield, 2000), 162-63. Schleiber argues that Gadamer's conception of humans as belonging to a part of nature and not being separate from it provides a basis for seeing in Gadamer the potential for overcoming the dominant understanding of the separation of reason and emotions. See also Susan James, *Passion and Action: The Emotions in Seventeenth Century Philosophy* (Oxford: Clarendon, 1997).

we can become aware of our prejudgments, preunderstandings, and emotions about the normative role of technology in Muslim cultures, we will be decreasing our distorted understanding and increasing our objectivity. Although absolute objectivity is unreachable, we can and should strive for the relative objectivity that hermeneutical objectivity can produce.

Supporting this is a consensus in contemporary Western psychology that most, if not all, human behavior and thought is guided, influenced, or distorted by unconscious emotions and motives. This insight was crucial for the Pulitzer Prize winning work of Ernst Becker, [47] which was subsequently developed by social psychologists into what is now called "Terror Management Theory (TMT).[48] As Greenberg, Solomon, and Arndt note, psychological research specifically in the areas of "cognitive dissonance, motivated reasoning, terror management, and goal priming …demonstrates that human behavior is indeed often if not always guided by motives operating outside conscious awareness."[49] Hatred, for example —as Willard Gaylin, a noted psychiatrist, states— is generally an unconscious misdirection and outward projection of inner turmoil, which then takes the form of antagonism directed against someone or some entity in the world. "Hatred is rarely a rational response to a real threat or affront. Acts of hatred represent displacements of an internal conflict onto external sources....Displacement is an essential feature in the process of scapegoating….It [i.e. displacement] is a central mechanism of bigotry and hatred." [50]

Moreover, such unconscious motives, especially when we are ignorant of them, often lead us to act in ways that are destructive. Hence the methodological pursuit of hermeneutically informed objectivity needs to be supplemented by emotional

[47] Ernst Becker, *The Denial of Death* (New York: Free Press, 1973).

[48] Thomas A. Pyszczynski, Sheldon Solomon, Jeff Greenberg, *In the Wake of 9/11: The Psychology of Terror* (Washington, D.C.: American Psychological Association, 2003).

[49] Jeff Greenberg, Sheldon Solomon, and Jamie Arndt, "A Basic but Uniquely Human Motivation: terror management," in James Y. Shah and Wendy L. Gardner, eds., *Handbook of Motivation Science* (New York: Guilford Press, 2007), 114, http://tinyurl.com/5hqdam (Google Books, 23 March 2017) which includes citations to a number of studies that point to the unconscious motives that influence us.

[50] Willard Gaylin, *Hatred: the Psychological Descent into Violence* (New York: Public Affairs, 2003), 90, 100-101], http://tinyurl.com/62mqbg (accessed 23 March 2017). Gaylin uses the Freudian term "displacement" rather than a similar term "projection."

awareness, which can facilitate control of emotions without going as far as the Stoic rejection of emotions. We can certainly recognize the inherent danger especially in powerful unconscious emotions such as anger; a danger that has been pointed out by western psychologists and which is underscored in both the Qur'an and *ḥadīth*. "The self strongly commands one to evil" (*Inna n-nafsa la-ammāratun bi al-sū'*) (Qur'an, Sūrat Yūsuf 12:53). Also, as the Prophet ﷺ is reported to have said, "Your worst enemy is your self which is between your two sides."[51] Especially when people are under stress, unconscious egotistical motives —impelled by "the commanding self" (*al-nafs al-ammāra*)— will dictate and govern one's actions. In such situations, people's unwise reactions are varied: for example, concerning the emotion of anger, at one end of the spectrum people sometimes unleash anger in ways that are harmful to both others and themselves. In this regard, the Prophet ﷺ, underscoring his point by repeating himself a number of times, said, "Do not get angry" (*la taghḍab*)![52] At the other end of the spectrum, people sometimes go way beyond this behavioral *(ʿamalī)* guideline of refraining from reactively unloading their anger on someone into the other extreme of numbing their angry feelings and blinding their minds to the situations that produced their angry feelings. Without a doubt, numerous Muslim parents every day must vacillate between anger and numbed frustration when they see that their children have spent days lost in the stupor of some computer game. Ecologists and Muslims sickened by the often toxic urban air, as societies rush headlong into the pursuit of the latest industrial technology, certainly face frequent eruptions of anger and waves of

[51] A'dá 'adūwika nafsuka allatī bayna janbayka.
عن ابْنِ عَبَّاسٍ رَضِيَ اللَّهُ عَنْهُمَا قَالَ: قَالَ رَسُولُ اللَّهِ صَلَّى اللهُ عَلَيْهِ وَسَلَّمَ: «أَعْدَى عَدُوِّكَ نَفْسُكَ الَّتِي بَيْنَ جَنْبَيْكَ»
The chain of transmission (*isnād*) for this *hadith* was included in Bayhaqī (d.458/1065-66), *Kitāb al-Zuhd al-kabīr* (Beirut: Dār al-Jinān, 1987), #343, 156-67. Al-Ajlūnī noted that its *isnād* in Bayhaqī was "weak." See Ismāʿīl b. Muḥammad al-Ajlūnī, *Kashf al-khafāʾwa-muzīl al-ilbās* (Beirut: Muʾassasat al-Risāla, 1979), 1: 160, #412. Although Imām al-Ghazālī included it in the *Iḥyā ʿulūm al-dīn*, al-ʿIrāqī noted that one of Bayhaqī's transmitters of it was among the fabricators of ḥadīth (waḍḍāʿīn). See Zayn al-Dīn al-ʿIraqī, *al-Mughnī ʿan ḥaml al-asfār*, in *Iḥyā ʿulūm al-dīn* (Beirut: Dār al-Maʿrifa, 1982, 3: 4 marg.).

[52] It was narrated from Abū Hurayra that a man said to the Prophet, "Give me advice!" The Prophet answered, "Do not get angry!" Then he [i.e., the man] repeated his request a few times. And [each time] he [i.e., the Prophet] replied, "Do not get angry!" *Anna rajulan qāla lil-nabī: "Awṣinī," qāla "lā taghḍab" fa-raddada mirāran, qāla: "lā taghḍab."*
عَنْ أَبِي هُرَيْرَةَ رَضِيَ اللَّهُ عَنْهُ، أَنَّ رَجُلًا قَالَ لِلنَّبِيِّ صَلَّى اللهُ عَلَيْهِ وَسَلَّمَ: أَوْصِنِي، قَالَ: «لاَ تَغْضَبْ» فَرَدَّدَ مِرَارًا، قَالَ: «لاَ تَغْضَبْ
Al-Bukhārī, *Ṣaḥīḥ al-Bukhārī* (Liechtenstein: Thesaurus Islamicus Foundation, 2000), 3:1247, kitāb al-ādāb, bāb 77, ḥadīth #6185.

hopelessness. Fortunately, informed by hermeneutical understanding, we and our leaders are freed from the need to Stoically extirpate such feelings, on the one hand, as well as the need to adopt ill-conceived solutions frantically, on the other. With such freedom granted by our hermeneutical understanding, now before proceeding into the fray of constructing and implementing an Islamic ethic for technology, we can shine the light of understanding to the contexts in which our feelings, our prejudgments, and our existing attitudes make sense. Of course, simply making sense of our feelings and attitudes does not necessarily mean that we assume that they are even relatively objectively true. Understanding ourselves or others also does not necessarily mean that we should condone what we and others feel and do. Rather, the two-fold consequence of hermeneutical understanding is that by bringing our emotions and attitudes into the daylight of understanding, the many feelings and prejudices that were churning in the darkness of our unconscious, first of all, will have less power to distort unconsciously our thoughts and actions; and second, now *informed by*, rather than simply *driven by* such unconscious feelings and prejudicial attitudes, we will be better able to sift through them, leaving behind maladaptive feelings and prejudices, while utilizing our beneficial feelings and attitudes as we pursue a hermeneutically informed Islamic ethic of technology in the service of understanding and nurturing healthier societies.

In sum, arguments of Gadamer and his supporters, scientific research of Western psychologists, and Islamic primary sources point to the conclusion that the cognitive aspect of an Islamic ethic of technology can move toward hermeneutical objectivity by incorporating a Gadamerian hermeneutical approach to integrating awareness (in our contexts) of our selves' ideas, beliefs, and prejudices as well as by cultivating awareness of the largely unconscious impact of emotions. In this manner such an approach will assist in building a bridge between science and technology, on the one hand, and religion, on the other.

Returning now to the affective "A" component of developing an Islamic ethics of technology, scientific evidence comes principally from neuroscience and the psychology of intelligence. Arguably the leading neuroscientists writing about emotions and cognition has been that of Antonio Damasio, especially in his 1994 book *Descartes' Error: Emotion, Reason, and the Human Brain.* There he brought together many years of research by neuroscientists that clearly demonstrates

that feeling and thinking go hand in hand.[53] Such research has gone a long way towards dispelling the Stoic paradigmatic myth that emotions should have no place in education and have helped to buttress the scientific claims of psychologists of intelligence. Consequently, such research can prove to be useful in justifying the need for integrating emotions into the development of an Islamic ethics of technological education.

In the field of the psychology of intelligence, researchers of emotional intelligence, led by Salovey and Mayer, have mapped out ways in which awareness of emotions can enhance intelligence. This emotional dimension of intelligence is now called emotional intelligence (EI), which in Turkish has commonly been translated as *duygusal zeka*.[54] More specifically, the leading researchers of EI define it as the capacity "to carry out sophisticated information processing about emotions and emotion-relevant stimuli and to use this information as a guide to thinking and behavior."[55]

Concerning emotional intelligence, known as EI (or sometimes EQ), this research, especially in the "abilities" model of EI, has been led by Peter Salovey of Yale University and John Mayer of the University of New Hampshire, since 1990. Although "emotional intelligence" did not become the focus of scientific research until the work of Salovey and Mayer, in 1983 the renown Harvard psychologist, Howard Gardner, had clearly demonstrated the need for abandoning the concept of one intelligence and replacing it with the concept of multiple intelligences.[56]

From the time of the original work of Salovey and Mayer, EI has gone from being simply an important area of research in intelligence and emotions to a widely

[53] Antonio Damasio, *Descartes' Error: Emotion, Reason, and the Human Brain*, Putnam, 1994; revised Penguin edition, 2005. He followed this book by a number of others related to emotions and consciousness: *The Feeling of What Happens: Body and Emotion in the Making of Consciousness*, (Orlando: Harcourt, 1999); *Looking for Spinoza: Joy, Sorrow, and the Feeling* Brain (Orlando: Harcourt, 2003); *Self Comes to Mind: Constructing the Conscious Brain* (New York: Pantheon, 2010).

[54] Daniel Goleman, *Duygusal zeka neden IQ'dan daha önemlidir*, translated by Banu Seçkin Yüksel (İstanbul: Varlık Yayınları, 2002). In Arabic "emotional intelligence" is translated as *al-dhakā' al-'āṭifī;* instead, I would suggest *al-'aql al-ḥālī*.

[55] John D. Mayer, Peter Salovey, and David R. Caruso, "Emotional Intelligence: New Ability or Eclectic Traits," *American Psychologist* 63, no. 6 September (2008): 503.

[56] Howard Gardner, *Frames of Mind: The Theory of Multiple Intelligences* (New York: Basic Books, [1983] 2011).

popular topic, which popularity was due to the publication of Daniel Goleman's best-selling book.[57] In response to various criticisms and advances in research, the definition has undergone a number of changes and has been developed in variety of ways by different researchers. The primary criticism of EI has been that it is not really a form of intelligence; but it is rather a personality trait. One critic, Edwin A. Locke (a leading industrial-organizational psychologist and devotee of Ayn Rand), argued that "the concept of EI has now become so broad and the components so variegated that no one concept could possible encompass or integrate all of them."[58] Similarly, as Mayer, Salovey, and Caruso noted in a response, Locke asserted that "EI is an invalid concept in part because it is defined in too many ways."[59]

In order to refute the criticism, Salovey, Mayer, and Caruso have found it necessary to differentiate clearly their "ability model" from the "mixed models" of Goleman and Bar-on (among others). Salovey and Mayer maintain that three problems with the mixed models is as follows: first, they include "an eclectic mix of traits, many dispositional, such as happiness, self-esteem, [and] optimism" in addition to abilities (Mayer, Salovey, and Caruso, ibid, p.. 503); second, many qualities of mixed models, such as self-esteem, "do not directly concern emotion, intelligence, or their intersection;" and third, this has led to confusion, which has weakened the case for the legitimacy of EI as an empirical construct (ibid). Consequently, since Mayer, Salovey, and Caruso's ability model of EI is distinct from the mixed models; the criticism of the mixed-models of EI is not applicable to their ability model. Furthermore, the mixed models of EI, because they include personality traits and not just abilities, go beyond what appears to be legitimately termed an "intelligence." Nevertheless, the mixed models have found acceptance in the business community, among educators, and to some degree among psychologists —because research does confirm them both as assessment tools and

[57]Daniel Goleman, Emotional Intelligence: why it can matter more than IQ (New York: Bantam Books, 1995).

[58]Edwin A. Locke, "Why Emotional Intelligence Is an Invalid Concept," *Journal of Organizational Behavior* 26.4 (2005): 425-31.

[59]John D. Mayer, Peter Salovey, and David Caruso, "Emotional Intelligence: New Ability or Eclectic Traits," *American Psychologist* 63, no. 6 September (2008): 503. Other criticisms can be found in Kevin R. Murphy, ed. *A critique of emotional intelligence: What are the Problems and How Can They Be Fixed?* Mahwah, N.J.: Lawrence Erlbaum Associates, 2006; see also the critiques in Gerald Matthews, Moshe Zeidner, Richard D. Roberts, *Emotional Intelligence: Science and Myth* (Cambridge, Mass: MIT Press, 2002).

guides to enhancing performance.[60] Because Salovey and Meyer have successfully differentiated their ability model from the mixed models and have demonstrated its soundness through numerous empirical studies, the ability model of EI is gaining scientific and mainstream institutional acceptance. Among the evidence for this is that in the Fall of 2008, Salovey was appointed as the Provost of Yale University and in 2013 became Yale's president.

One final problem in integrating emotional intelligence enhancement into an Islamic ethics of technology is that in addition to there being various definitions of emotional intelligence, there are different understandings of the term "emotion" and its relationship to related terms such as affective experience, mood, affective trait, and feeling. Robert Emmons, one of the leading researchers in "positive psychology," states that the field of affective science (i.e., the study of emotions and emotion related phenomena) is in the process of standardizing its terminology. He follows E. L. Rosenberg, who regards common "affective experience" as a hierarchy consisting of three main levels (beginning with the top of the hierarchy): "affective traits, moods, and emotions." Specifically, Rosenberg defines emotions as "acute, intense, and typically brief psychophysiological changes that result from a response to a meaningful situation in one's environment."[61] Antonio Damasio, arguably one of the leading neuroscientists researching emotions, differentiates feelings from emotions by defining emotions, on the one hand, as the body's physical signals as it responds to stimuli outside of it; feelings, on the other hand, are the product of our brain's interpretations of emotions. "During the past 30 years, Antonio R. Damasio has strived to show that feelings are what arise as the brain interprets emotions, which are themselves purely physical signals of the body reacting to external stimuli."[62] He defines a feeling as "That process of continuous monitoring, that experience of what your body is doing while thoughts about specific contents roll by, is the essence what I call a feeling."[63] In contrast,

[60] Cary Cherniss, Melissa Extein, Daniel Goleman, Roger P. Weissberg, "Emotional Intelligence: What Does the Research Really Indicate? *Educational Psychologist* 41(4), 2006, 239-245].

[61] Robert Emmons, "Sacred Emotions," in *Soul, Psyche, Brain: New Directions in the Study of Religion and Brain-Mind Science*, ed. Kelly Bulkeley (New York: Palgrave Macmillan, 2005), 94.

[62] Manuela Lenzen, "*Feeling our emotions"* [An interview with Antonio *Damasio*]. *Scientific American Mind* 16(1) (2005), 14–15, https://www.scientificamerican.com/article/feeling-our-emotions.

[63] Antonio Damasio, *Descartes' Error: Emotion, Reason, and the Human Brain* (G. P. Putnam's Sons:

he defines an emotion as "a collection of changes in body state connected to particular mental images that have activated a specific brain system." Furthermore, he states that "the essence of feeling an emotion is the experience of such changes in juxtaposition to the mental images that initiated the cycle."[64]

So now that we have discussed a number of problems as well as foundational definitions for anyone interested in integrating emotional intelligence enhancement into an Islamic ethics of technology, we can proceed to explore in greater depth the four abilities of Salovey, Mayer, and Caruso's ability model of EI. As noted at the outset of this paper, Mayer and Salovey define EI as the "set of abilities" (that people have developed to varying degrees) that enable them "to carry out sophisticated information processing about emotions and emotion-relevant stimuli and to use this information as a guide to thinking and behavior."[65] Their original instrument for testing their four-branched ability model of EI was called the Multifactor Emotional Intelligence Scale (MEIS). In 1999, they revised it substantially, calling it the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT).[66] Currently they define four main branches of this model, from lowest to highest complexity[67] and with each of the names of these branches denoting a number of qualities.[68] The four branches are as follows: (1) Perceiving emotions accurately in oneself and

1994; New York: Penguin, 2005), 145.

[64]Ibid.

[65]John D. Mayer, Peter Salovey, and David R. Caruso, "Emotional Intelligence: New Ability or Eclectic Traits," *American Psychologist* 63, no. 6 September (2008): 503.

[66]Ibid., 507-512.

[67]Ibid., 507.

[68]John D. Mayer and Peter Salovey, "What is Emotional Intelligence?" in Peter Salovey, ed. Emotional Development and Emotional Intelligence: Educational Implications, Perseus Books, 1997, reprinted in Emotional Intelligence: Key Readings on the Mayer and Salovey Model (Port Chester, NY: Dude Publishing, 2004) 35-40. For the clearest exposition of the four principal abilities of EI of which I am aware, see Peter Salovey, Brian T. Detweiler-Bedell, Jerusha B. Detweiler-Bedell, and John D. Mayer, "Emotional Intelligence," in Handbook of Emotions, eds. Michael Lewis, Jeannette M. Haviland-Jones, and Lisa Feldman Barrett (New York: The Guilford Press, 2008), 535-38.

other;[69] (2) Using emotions to facilitate thinking;[70] (3) Understanding emotions, emotional language, and the signals conveyed by emotions; and (4) Managing emotions to attain specific goals.

Because the fourth of these branches can easily be misunderstood and because, if properly understood, it has the potential to give rise to significant insights, it needs clarification. "Managing emotions" is the "ability to stay open to feelings, both those that are pleasant and those that are unpleasant."[71] In contrast to someone with relatively low EI on the scale of "managing emotions" (who will consciously or unconsciously seek to avoid unpleasant emotions and be unaware that s/he can relate to such emotions with openness), someone with relatively high EI on this scale realizes that s/he can choose to respond with openness even to one's own unpleasant emotions or s/he can choose not to experience them. This highest or most complex branch of EI necessitates that (in the words of Mayer and Salovey) "[one's own] emotional reactions must be tolerated—even welcomed—when they occur, somewhat independently of how pleasant or unpleasant they are. Only if a person attends to feelings can something be learned about them."[72] In contrast to the rationalist's fear (that by staying open to emotions reason will become overwhelmed), staying open to a feeling in fact produces freedom from being dominated by emotions and from the ego's distortions deriving from its habitual attempts to avoid uncomfortable emotions, such as the uncomfortable emotions that arise when encountering viewpoints that conflict with one's own (viewpoints that evoke the primitive "fear of the other" studied by psychologists working with Terror Management Theory, which viewpoints and feelings commonly occur in the course of sustained inter-civilizational or intercultural encounters).

[69]It is important to remember that emotions contain and can convey useful information; and that "Emotional Intelligence theory explicates the cognitive and emotional mechanisms that process emotional information." Emotional awareness enables us to begin to process, sift through, and at some point, ideally, to utilize the information about engagement with the world (Marc A. Brackett and Susan E. Rivers, Sara Shiffman, Nicole Lerner and Peter Salovey, "Relating Emotional Abilities to Social Functioning: a comparison of self-report and performance measures of emotional intelligence," *Journal of Personality and Social Psychology* 91, no. 4 (2006): 780).

[70]Previously, in 1997, Mayer and Salovey termed this second ability "emotional facilitation of thinking" (Mayer and Salovey, "What is Emotional Intelligence?", 12).

[71]Ibid., 11.

[72]Ibid., 13-14.

While Salovey and Meyer have spent the bulk of their research on identifying and measuring emotional intelligence and its component abilities, Leslie Greenberg, a prominent Canadian psychologist, has for years pursued empirically validated methods of enhancing what amounts to EI. Although originally he developed what he termed "Emotion Focused Therapy" (EFT) and "Emotion Coaching" independently of Salovey and Meyer, his work of late has been converging with theirs.[73] The focus of EFT involves a process consisting of five principles to be cultivated in the following order: (1) increasing awareness of emotion, (2) expressing emotion, (3) enhancing emotion regulation,[74] (4) reflecting on emotion, and (5) transforming emotion."[75]

Three possible objections to applying EFT (and any other methods of enhancing emotional intelligence) in higher educational classrooms are first, in the original design of EFT the psychotherapist is the key to its implementation; second, few professors are trained psychotherapists; and third, some students may feel that even filling in an emotion inventory and handing it in to the professor may constitute an invasion of their privacy. Nevertheless, Greenberg's understanding of the therapist as an emotional coach, who even gives what he calls homework, can be developed into the role of the teacher and professor as an emotional educator. Early studies by colleagues of Salovey indicate that EI can be enhanced through appropriate emotional education; and they are currently in the midst of large-scale research testing the efficacy of EI education in schools.[76] Consequently, the future

[73] Evidence for the convergence of Greenberg's EFT with the work of Salovey and Meyer is that Salovey is among the most frequently cited authors in *Emotion Focused Therapy*, being cited seven times (without criticism). Of the numerous authorities whom Greenberg cites, only two were cited more than Salovey (Leslie Greenberg*, Emotion Focused Therapy: Coaching Clients to Work Through Their Feelings* [2002]: 317-8).

[74] According to Greenberg, not all emotions need regulation. Undercontrolled secondary emotions and maladaptive emotions are what need to be regulated. A key to emotional regulation, for Greenberg, is developing the ability "to tolerate emotion and to self-soothe *automatically*" (emphasis from the author).

[75] Leslie S. Greenberg, "The Clinical Application of Emotion in Psychotherapy," in *Handbook of Emotions*, ed. Michael Lewis, Jeannette M. Haviland-Jones, and Lisa Feldman Barrett (New York: The Guilford Press, 2008), 90-97. After briefly noting each of the five steps of emotion coaching, Greenberg discussed them in detail. A few year earlier he had identified eight steps (Leslie S. Greenberg, *Emotion-Focused Therapy: Coaching Clients to Work Through Their Feelings* [Washington, DC: American Psychological Association, 2002], 85-99).

[76] L. Nathanson, S. E. Rivers, L.M. Flynn, and M.A. Brackett, "Creating Emotionally Intelligent Schools With RULER," *Emotion Review* 8, no. 4 (October 2016): 1-6. RULER is an acronym

looks promising, not simply for enhancing emotional education in the US, but for developing an affectively informed Islamic ethics of technology, and also for the possibility of integrating emotional education into classes on Islam in secular universities and even in Islamic education curriculum in Islamic schools and seminaries.[77]

Fortunately, Islamic cultures have their own rich resources for enhancing emotional intelligence. Nevertheless, such resources have not been adequately mined, especially in the 20th century, in spite of the strong presence of emotionally intelligent concepts and practices in the teachings of figures such as Mevlana Celaluddin Rumi. Hence, we can propose possible Sufi-Islamic methods of cultivating EI (methods that can be tested), suggesting a pedagogy along the lines of Greenberg's model of EFT but using Islamic concepts (drawn from the Qur'an, the *Sunnah*, and Sufism) for enhancing EI and thereby integrating emotional intelligence enhancement into an Islamic ethics of technology.

In looking at how we can correlate Islamic concepts with the paradigm of the process of EFT developed by Greenberg, we see that the first step of the process "increasing awareness of emotion" involves gaining self-awareness in general and awareness of one's emotions in particular. Greenberg elaborates, stating that "increasing awareness of emotion," enhances people's abilities to "approach, tolerate, and accept their emotions" rather than avoiding them.[78] The problem is that people habitually try to avoid unpleasant feelings. As Greenberg states, people "often try to regulate their [disturbing] emotions by trying not to feel whatever it is they feel. This is not helpful in the long run." Hence, one of the first functions of what Greenberg calls an "emotional coach" is to coach people to identify, be aware of, and experience an emotion.

This corresponds to a central principle in Islam, but especially in Sufism, which is "cultivating awareness of self" *(maʿrifat al-nafs)*. We see this in particular in

that stands for "(R)ecognizing emotion in the self and others, (U)nderstanding the causes and consequences of emotions, (L)abeling emotions with a diverse and accurate vocabulary, (E) xpressing emotions constructively across contexts, and (R)egulating emotions effectively," ibid., 4.

[77]One Islamic seminary to institute classes in emotional intelligence as well as a certificate program in it has been the Madina Institute (Duluth, GA, USA), headed by Shaykh Muhammad bin Yahya al-Ninowy, http://www.madinainstituteusa.org/nonviolence/eq/.

[78]Greenberg, "The Clinical Application of Emotion in Psychotherapy," in *Handbook of Emotions*, 90.

the well-known saying repeated throughout Sufi texts: "Whoever knows one's self, knows one's Lord-Sustainer."[79] This was further elaborated by Sufis such as Aḥmad al-Rifāʿī, who took it to mean "One who realizes his self is passing away (*bil-fanāʾ*), realizes that His Lord-Sustainer remains (*bil-baqāʾ*)."[80]

Awareness of self and emotions occurs particularly in the process of what is called in Islam "remembrance of Allāh" (*dhikrullāh* or *zikir*). Especially in the beginning as a result of practicing "remembrance" as directed by an experienced shaykh, paradoxically one will become aware of one's self, one's thoughts, and one's emotions. When dhikr is done with the awareness that the Divine name "Allāh" is the all-inclusive name of God (*al-ism al-jāmiʿ*), then awareness deepens and each emotion one feels is not simply an emotion; rather it is regarded as a "state" (*ḥāl*) from God, who is regarded as the "transformer of states" (*muḥawwil al-aḥwāl*). Similarly, one's emotional awareness will increase when *dhikr* is done with the awareness that God, as the "Lord-Sustainer of all the worlds," (*rabb il-ʿalamīn*) is the sustainer (*murabbī*) of every state. In particular, for Muslims grappling with the issues of technology—issues that may appear at times to be in conflict with Islamic values—it is essential that both scholars and their students face their uncomfortable emotions with as much emotional awareness and intelligence that Islamic cultural resources, such as *dhikr*, will enable them to bring to bear.

Since the second and third steps in EFT are closely interrelated, we will discuss them together. The second step in EFT is emotional arousal and expression; while the third is emotional regulation, especially the regulation of negative or maladaptive emotions. In EFT, the major key to both of these is the nurturing relationship with one's emotion coach or trainer. Having been apprised of this, today's scholars must realize that they are not merely transmitters of information and technology to their students. In particular scholars of the Muslim world are also responsible to face to their own emotions (and those of their students') in an emotionally intelligent

[79] *Man ʿarafa nafsahu fa-qad ʿarafa rabbahu.* al-ʿAjlūnī noted, "Ibn Taymīya said that was fabricated; that al-Nawawī regarded it as being without a firm foundation (*laysa bi-thābit*); and that it was reported as having been said by Yaḥyá b. Muʿādh al-Rāzī. In spite of such criticisms, al-ʿAjlūnī noted one report in which Ibn ʿArabī stated, "This *ḥadīth*, if it is not authentic by way of its chain of narrators, it is [nevertheless] authentic by way of unveiling (*kashf*) (Al-ʿAjlūnī, *Kashf al-khafāʾ*, 343-44).

[80] Aḥmad b. ʿAlī al-Rifāʿī, *Ḥālat ahl al-ḥaqīqa maʿa Allāh taʿālá,* ed. Aḥmad Farīd al-Mazīdī (Beirut: Dār al-Kutub al-ʿIlmīya, 2004), 60.

fashion (by means of Islamic and Western scientific resources) as they grapple with constructing an ethics of technology. In this way they will model for their students how their students, too, can face the various issues and emotions evoked by technology. In particular, as Greenberg states, "The emotional validation and empathy of the therapist" is what helps people "to learn to self-soothe and restore emotional equilibrium."[81] In Islam, emotional arousal and expression, which is the second step, is facilitated in a number of ways, such as the following: First of all, through sincerity (*al-ṣidq*) in canonical and supplicatory prayers and in *dhikr*. This is when one stands before God and prays with *iḥsān*, as the Prophet ﷺ said in an authentic *ḥadīth* when defining *iḥsān* (which can literally be translated as the "affirmation of beautiful virtue"), "*Iḥsān* is worshipping God as if you are seeing Him; and if you are not seeing Him, then [at least realize that] He is seeing you."[82] Similarly, this arousal of emotion can come about by praying as the companion of the Prophet ﷺ, ʿAbdallāh b. ʿAmr b. al-ʿĀs (65 AH / 684 CE), recommended, "Plant for your world as if you are going to live forever, but act with regard to the Hereafter as if you are going to die tomorrow."[83] In other words, one's eternal spiritual well-being depends upon one's spiritual practice right now in any given moment. Second, emotions are aroused and expressed by reading and listening to Qur'an and stories about the Prophet, practice of Sufi *awrād* (litanies), in addition by participating in *samāʿ* (sema)(Sufi sessions of meditation to poems of praise of the Prophet or Sufi poems, which often deal with emotionally painful themes such as the separation from a lover from his/her beloved). Such sessions are well-known for arousing many emotions often to the point of tears and involuntary screams.

The third step in EFT, "regulating emotions," in Islam is commonly accomplished by following the *sharīʿa* (Islamic law, including regulations governing conduct),

[81] Greenberg, "The Clinical Application of Emotion in Psychotherapy," in *Handbook of Emotions,* 91.

[82] Al-Bukhārī, *Ṣaḥīḥ al-Bukhārī,* Kitāb al-tafsīr.
الإِحْسَانُ أَنْ تَعْبُدَ اللَّهَ كَأَنَّكَ تَرَاهُ، فَإِنْ لَمْ تَكُنْ تَرَاهُ فَإِنَّهُ يَرَاكَ

[83] Ibn Qutayba al-Dīnawarī (d. 276/889), *Gharīb al-ḥadīth,* ed. ʿAbdallāh al-Jabūrī (Baghdad: Maṭbaʿat al-ʿĀnī, 1397/1976-77 and al-Maktabah al-shāmilah) 1: 81 and islamport.com, https://tinyurl.com/jwb9n89, both of which contain the chain of transmission of this report; and Ibn Athīr, *al-Nihāya fī gharīb al-ḥadīth wa al-athar,* ed. Ṭāhir Aḥmad al-Zāwi and Maḥmūd Muḥammad al-Ṭanāḥī (Beirut: al-Maktaba al-ʿIlmīya, n.d.), 1: 359; Ibn Athīr's version lacks an *isnād*.
احْرُثْ لدنياك كأنك تعيش أبداً، واعْمَلْ لآخرتك كأنك تموت غداً

sunnah (the example of how the Prophet acted), and *adab* (manners) of Sufism. These all encourage Muslims and Sufis to restrict expression of hurtful and maladaptive emotions in particular. Fasting is especially useful in this regard. While today's relationship with technology may at times seem depersonalizing or at odds with religious values, scholars need to resist the temptation to express their frustration in maladaptive ways. The key to this is just as in EFT, where the 2nd and 3rd steps emphasize the importance of the relationship between the emotion coach or therapist and the client, the example of the teacher in a person-to-person transmission has always been an important key to transformation in general and in evoking and controlling emotions in particular. Traditionally one learned to approach emotions by being in the presence of elders (literally "shaykhs") in the community. The prime example of this was the Prophet Muhammad ﷺ, —since he lived, married, and worked in the world like ordinary people—whose life is, among other things, a record of the richness of human emotions. Sufis of course have regarded their shaykhs as living examples of the Prophet's character. Today, Greenberg directs emotion coaches, in particular circumstances, to evoke, express, and control emotions. Similarly, educators in general—by learning how to both express and control their own feelings and thereby to enhance their EI in general—can build on Greenberg's examples; and in the case of Muslim educators or with Muslim students, one can build on the example of the Prophet in order to facilitate the enhancement of their own EI and the EI of others. In an Islamic pedagogy for enhancing EI while facing the problems of a technologically dominated society and the emotions such problems evoke, as I have indicated, the trained Muslim emotional educator's ideally greater degree of empathy, emotional awareness, and ability to self-nurture will naturally create a fertile and safe space for the arousal and emergence of students' habitually suppressed emotions and will give rise to empathy, which will help to teach self-nurturing in his/her students. This self-soothing or self-nurturing, by diminishing the intensity of maladaptive emotions, will help them to regulate themselves. Even though it may be obvious to Muslim scholars, it bears remembering that God instructs Muslims "Do not despair of the mercy of God!" (*lā taqnaṭū min raḥmatillāh*) (Qur'an, Sūrat al-Zumar 39:53)[84] and "My mercy encompasses everything!" (*wa-raḥmatī wasiʿat kulla shayʾin*)

[84] قال الله تعالى: لا تَقْنَطُوا مِنْ رَحْمَةِ اللَّهِ

(Qur'an, Sūrat al-Aʿrāf 7:156).[85] Reminding oneself and one's students of such *āyas* can certainly take the edge off of difficult states and regulate maladaptive emotions that the encounter with technology can evoke.

The fourth step in EFT, reflecting on emotions, consists of understanding emotional experience and developing "new narratives to explain [one's] experience."[86] Three interrelated narratives can be discussed in order to give some examples of possible narratives that can facilitate understanding the emotions that arise in the encounter with technology and in the process of developing an ethic of technology: the first narrative is to awareness of the theophanic signs that are everywhere in existence; the second is related to recognizing that the gratitude of humankind is being tested by God; and the third is a narrative related to being attracted by love to know God by means of actualizing the Divine qualities of our primordial nature. Concerning the first of these narratives, recognizing and reflecting on God's theophanic signs can assist Muslims in understanding, in an emotionally healthy manner, the feelings that they experience as they attempt to cope with a world dominated by technology. Specifically, God, in the Qur'an, repeatedly not only tells Muslims to use their intellects but advises them to recognize and reflect about the signs of God in the creation, which God states God has not created in vain (Qur'an, Sūrat al-ʿImrān 4:191).[87] Moreover, we read in the Qur'an, where God states that the signs of God are both in the created world and one's self: "We will show them Our signs on the horizons [of the world of existence] and within their selves" (*sa-nurīhim āyātinā fil-āfāqi wa-fī anfusihim*) (Qur'an Sūrat al-Fuṣṣilat 41:53).[88] So the Muslim scholar who is endeavoring to construct an emotionally intelligent ethics for facing technology should remind Muslim students to reflect upon their emotions by using an Islamic narrative framework such as I have sketched out, a narrative in which emotions are among the signs (*āyāt*) or theophanies of God's attributes (*tajalliyāt ṣifātihi*).

Further developing this narrative is that traditionally Sufis termed the signs and theophanies that were difficult to face as the theophanies of God's attributes of

[85] قال الله تعالى: وَرَحْمَتِي وَسِعَتْ كُلَّ شَيْءٍ

[86] Greenberg, "The Clinical Application of Emotion in Psychotherapy," in *Handbook of Emotions,* 93.

[87] قال الله تعالى: الَّذِينَ يَذْكُرُونَ اللَّهَ قِيَامًا وَقُعُودًا وَعَلَى جُنُوبِهِمْ وَيَتَفَكَّرُونَ فِي خَلْقِ السَّمَاوَاتِ وَالْأَرْضِ رَبَّنَا مَا خَلَقْتَ هَذَا بَاطِلًا

[88] قال الله تعالى:سَنُرِيهِمْ آيَاتِنَا فِي الْآفَاقِ وَفِي أَنْفُسِهِمْ

qahr (severity) or *jalāl* (celal/grandeur), while the signs or theophanies that were relatively easy to cope with were signs or theophanies of God's *lutf* (benevolence) and *jamāl* (*cemal*/beauty). This understanding of the positively and negatively shaded polarities of the theophanic signs, goes hand in hand with the understanding that God is the ultimate agent of everything, and that everywhere is God's marvelous face, since "Wherever you turn, there is the face of God" (Qur'an, Sūrat al-Baqara 2:115). We add to this mix the awareness that although the Prophet ﷺ is the *ḥabiballāh* actualized, we are also *ḥabibullāh*, God's lovers, on the way to becoming actualized as we follow in the Prophet's ﷺ footsteps. Consequently, in this narrative, all of the difficult feelings that arise— as we face the modern world in general, and as we feel ourselves at times to be overwhelmed by its technological omnipresence, in particular—all these *qahrī* difficult feelings (as well as any *lutfu* pleasant ones that might arise) are new theophanic signs and faces of our Beloved that we are invited to love and reunite with. Here İbrahim Tennuri (d. 1482 CE), in a well-known poem, underscores the importance of responding with equal appreciation to the bi-polarity of the theophanic signs:

Cana cefa kıl ya vefa
Kahrın da hoş, lutfun da hoş,
Ya derd gönder ya da deva,
Kahrında hoş, lutfun da hoş.

O Beloved, whether you treat me badly or well
I'm happy with your severity or benevolence
Whether you send pain or the cure
I'm happy with your severity or benevolence

Hoştur bana senden gelen:
Ya hil'at-ü yahut kefen,
Ya taze gül, yahut diken..
Kahrında hoş lutfun da hoş.

I'm happy with whatever comes from you to me
Whether it's a robe of honor or a burial shroud
Whether it's roses or thorns
I'm happy with your severity or benevolence

Gelse celalinden cefa
Yahut cemalinden vefa,
İkiside cana safa:
Kahrın da hoş, lutfun da hoş.

Whether difficulty comes from your Grandeur
or ease from your Beauty
both of them are pure goodness for my soul
I'm happy with your severity or benevolence

Ger bağ-u ger bostan ola.
Ger bendü ger zindan ola,
Ger vasl-ü ger hicran ola,
Kahrın da hoş, lutfun da hoş.

Whether I'm in a garden or an orchard
in chains or in prison
in union or separated
I'm happy with your severity or benevolence[89]

A second interrelated narrative for approaching the many different emotions that arise while encountering technology and developing an ethics for engaging with it is that potential disturbing emotions can be understood as a means by which God is testing whether individuals will turn away and attempt to avoid these emotional theophanies or whether they will approach them with awareness and even appreciation. God states, "As for man, when his Lord-Sustainer tests him, honoring him, bestowing bounty upon him, he says, 'My Lord-Sustainer has honored me.' But when his Lord-Sustainer tests him, restricting his sustenance, he says 'My Lord-Sustainer has humiliated me'" (Qur'an Sūrat 89: 15-16).[90] To the degree that scholars themselves can respond, as a test of their gratitude to God, to the emotional difficulties they encounter when attempting to face technology and develop an ethic for it, they will be better able to assist their students in facing the emotions that technology has evoked in them; and they will also be better able to help students to utilize various Islamic narratives and to develop their own personal Islamic narratives as a foundation for understanding, utilizing, and transforming their emotions as they make their way through the technological age.

A third interrelated narrative that can facilitate emotional understanding in the context of our encounter with this technological age and help to make sense of one's emotional experience is the theological belief that God created creation because God loves and wants to be known directly, through experience, as indicated by the well-known *ḥadīth qudsī* transmitted by Sufis: I was a hidden treasure and I

[89]Numerous online sources ascribe this poem to *Ibrahim Tennuri*'s *Gulzar-i Manevi*, although some attribute it to Yunus Emre.

[90]قال الله تعالى: فَأَمَّا الْإِنْسَانُ إِذَا مَا ابْتَلَاهُ رَبُّهُ فَأَكْرَمَهُ وَنَعَّمَهُ فَيَقُولُ رَبِّي أَكْرَمَنِ وَأَمَّا إِذَا مَا ابْتَلَاهُ فَقَدَرَ عَلَيْهِ رِزْقَهُ فَيَقُولُ رَبِّي أَهَانَنِ

loved that I be known, so I created creation in order to be known (*kuntu kanzan makhfīyan fa-aḥbabtu an ʿurafa fa-khalaqtu l-khalqa likay uʿrafa*).[91] God made manifest all of the names and qualities in creation, such that creation consists of nothing but traces of these Divine names and qualities, which are called *āyāt* (God's signs). Moreover, God "taught" Adam all of the Divine Names; and since we are the inheritors of Adam's being, we too have been taught all the Divine Names. This teaching of the names comes about since a God actually created Adam's nature and hence our nature in order to mirror the Divine Nature. As the Prophet ﷺ in an authentic ḥadīth stated, God created Adam in His image (*Inna Allāha khalaqa Ādama ʿala ṣūratihi*).[92] So, this primordial Adamic human nature of ours is a theophany (*tajallī*) of all of God's names and attributes, as the Prophet ﷺ, in authentic ḥadīth, said, "Everyone who is born is born according to the primordial nature (*kullu mawlūdin yūladu ʿalá al-fiṭra*)."[93] But like after the fall of Adam and Eve, we too are forgetful of our theophanic nature, unaware that God is our Rabb, the Lord-Sustainer of all of our qualities, including all of our thoughts and emotions. In our forgetfulness, when our emotions are disturbing we do not respond to our emotions with sufficient intelligence and gratitude to God. If, however, we were to respond even to our disturbing emotions and thoughts with sufficient intelligence and gratitude, we might be graced to remember that all of our emotions and thoughts, including our sense of self, are a continuous shower of God's unconditional mercy (*raḥma*). Such forgetfulness is one aspect of what being dominated by our *nafs* (ego-self) consists of. It results in a distortion of our awareness, such that we are not aware that all of our thoughts, perceptions, and feelings are theophanies being sustained by God (even our forgetfulness!). Because of this domination by our nafs, we do not see each moment's theophany (*tajallī*) with *ihsan*, as if we are seeing God or God's manifestation. Consequently, by depriving ourselves of the awareness of God, we respond to each *tajalli* not as a theophanic mercy from God, but as a feeling that we must either crave or from which we must

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[91] ʿAjlūnī noted that Ibn Taymiya and others asserted that because it lacks any chain of transmission, that it was not a *ḥadīth* of the Prophet. Nevertheless, ʿAjlūni did quote the *ḥadīth* scholar, Mullā ʿAlī Qārī (d. 1014 CE/1605 AD), who stated, "But its meaning is authentic," being in harmony with the Qur'anic *āya*, "I only created jinn and humans in order to worship Me" (Qur'an Sūrat al-Dhāriyāt 51:56), ʿAjlūnī, *Kashf al-khafā'*, 173.
قال الله تعالى: وَمَا خَلَقْتُ الْجِنَّ وَالْإِنْسَ إِلَّا لِيَعْبُدُونِ

[92] Muslim, *Saḥīḥ al-Muslim* فَإِنَّ اَللهَ خَلَقَ آدَمَ عَلَى صُورَتِهِ

[93] Bukhārī and Muslīm, *Saḥīḥayn*: كُلُّ مَوْلُودٍ يُولَدُ عَلَى الفِطْرَة

distance ourselves. In worst case scenarios this drives us in an evil direction, make it more likely that we will commit some form of evil, as God states, "The ego-self commands to evil" (Qur'an, Sūrat Yūsuf 12:53). Fortunately, since we have free will, we have the potential, at any moment, to rediscover our true theophanic nature and to recognize that God is our Lord-Sustainer now, along the lines of primordial man who, when asked by God "Am I not your Lord-Sustainer?" replied "Yes, we have witnessed [that]" (*Alastu bi-rabbikum, Qālū balá shahidnā*) (Qur'an Sūrat al-Aʿrāf 7: 172). By repeatedly responding to each new divine manifestation in one's heart with unconditional openness and gratitude and even with love for God (even if such manifestations happen to be the sometimes troublesome feelings that humans experience when faced with the behemoth of technology), over time the ego-self along with its emotions can be refined and transformed to the point where it has the quality of peacefulness: "O ego-self at peace, return to your Lord-Sustainer, content [with Him] and pleasing [to Him]" (Qur'an, Sūrat al-Fajr 89:27-30)."[94] To the degree that the ego is at peace, its previous distortions and addictions will neither cause it to act when it would be beneficial and intelligent not to act, nor cause it to refrain from acting when it would be intelligent and beneficial to act. Such a peace increases the likelihood that we will be able to receive greater wisdom (less distorted by the conditioned and unconscious fears and desires of our ego-self), greater wisdom about our optimal conduct in our relationship with God and in our relationship with this world of ours. This is the wisdom that Muslims believe was most perfectly manifest in the example of the Prophet ﷺ but which we can aspire to now as we endeavor to construct an ethics of technology .

Moving to the fifth and final step in our effort to apply Greenberg's process of cultivating emotional intelligence to an ethics of technology, we come to emotional transformation. The key to this transformation in EFT, as is often seen in what is now called "positive psychology" in general, is to substitute a positive emotion for a maladaptive emotion (after having become aware of it sufficiently to learn whatever useful information it is conveying). For the Muslim scholar who is striving to provide optimal guidance to her/his students in this technological age—in particular to assist them in facing the emotional fallout that is one of its products — the way to take this last step of emotional transformation (in harmony with EFT's sense of substituting positive emotions for maladaptive emotions) is

[94] قال الله تعالى: يَا أَيَّتُهَا النَّفْسُ الْمُطْمَئِنَّةُ ارْجِعِي إِلَى رَبِّكِ رَاضِيَةً مَرْضِيَّةً فَادْخُلِي فِي عِبَادِي وَادْخُلِي جَنَّتِي

to educate students to attempt to (or to intend to) respond to every thought, feeling, and perception with even just a drop of the positive emotion of unconditional gratitude to God, namely, with gratitude to the Lord who is the Sustainer of all the worlds —with *al-ḥamdu lillāh wa-ashukru lillāh* (all praise and gratitude is due to God). Concerning the importance of gratitude, God states in the Qur'an, "If you are grateful, I will give you more" (Qur'an Sūrat Ibrāhīm 14:7).[95] And as the Prophet, in an authentic *ḥadīth,* said, "Should I not be a thankful servant?"[96]

In conclusion, it is my hope that by using the overall framework of the greater *jihād* to reduce the unconscious dominance of the ego-self (which is strengthened by the largely unconscious influence of emotions), scholars will begin to diminish the degree to which the ego-self obscures and distorts our efforts to construct an optimally humane Islamic ethics of technology. Practically speaking, I am suggesting that we, as educators, should adopt a methodology for developing an Islamic ethics of technology that is, on the one hand, harmonious with Qur'an, *sunnah*, and the wisdom of our pious predecessors, and, on the other hand, an approach that utilizes insights from Gadamerian hermeneutics and an evidence-based model from the psychology of emotional intelligence. This is what I have attempted to do with my (A)ffective (*ḥālī*), (B)ehavioral (*ʿamalī*), and (C)ognitive (*ʿilmī*) approach that I have outlined. Through the affective aspect, I suggest approaching the emotions (*ḥālī*) we encounter in the technological age based on empirically verified and testable concepts and methods, specifically Salovey and Mayer's "ability model" of emotional intelligence and Leslie Greenberg's Emotion Focused Therapy. Through the behavioral aspect, I suggest a method involving efforts by scholars, scientists, and leaders to develop engaged best practices (*ʿamal*) or *adab* for technology. Lastly, by means of the cognitive or *ʿilmī* aspect, I suggest utilizing a Gadamerian hermeneutical cultivation of self-understanding together with attempts to understand our technological world, while we move toward constructing an ethics of technology. Of course, all of this must be tempered by the humble recognition that if it is God's will, even our best efforts may fail; but, also, if it is God's will, we will succeed.

Wa-billāhi t-tawfīq.

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[95] قال الله تعالى: لَئِنْ شَكَرْتُمْ لَأَزِيدَنَّكُمْ

[96] Bukhārī and Muslim, *Ṣaḥīḥayn* أَفَلَا أَكُونُ عَبْدًا شَكُورًا

INTEGRATION OF TECHNOLOGY AND LIFE IN THE DIMENSION OF BEING

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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.

I. 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 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 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 a 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.[1] 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 for 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.[2] 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.[3] This transformation means the birth of a new civilization 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

[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 3rd 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.

civilization will contribute to humanity with its own merits developed during long history. 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.

II. 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 ordinary education is under the influence of this positivism. The crucial problem is that, as the final product of *raîson 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, 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 people.

At this point, we cannot help raising questions about the fundamental character of 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 the 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 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 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 heterogeneous 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, 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 savage,

barbarous, or undeveloped. Such an error of an extremely linear interpretation of history was a natural result of the superficial *raîson 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 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.[4] And Jean-François Lyotard called the danger of totalization as "terror against life."[5] 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 Western traditional rationalism did not recognize the reality of the world. Today, we see that the 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 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

[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.

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 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 *raîson moderne***.** Such uniform thinking, best shown in the Logical Positivism of the 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, 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 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.

III. 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 future education should recommence with a 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.[6]

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 of verity[7]. 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.

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

[7] Interpreting the *sadd harma-pundarīka-sūtra* (法華經), the Chinese Buddhist monk 天台山智者 *of the early 7th century used this word* 宗教 *in his book* 法華玄儀. *Concluding that* the *sadd harma-pundarīka-sūtra* (法華經) is the ultimate teaching of Buddha, he called it 宗教. [출처] |작성자

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*[8] 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 *raîson moderne* has led to confrontation and conflict between science and religion. At this level of mind, 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 future education. Inheriting this great open mind, the future generations will be able to share together all the merits developed in 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.

IV. 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

[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".

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 to us that the essence, meaning, and purpose of life are love.[9] 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 the same. In the state of ecstasy or *enstasis*,[10] there emerged the following awakenings that 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 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

[9] 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.

[10] Ecstasy and enstasis are the two different interpretations of the same reality *Samadhi* (三昧).

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.

EMPIRE OF DESIRE: TECHNOLOGY, CAPITALISM AND THE PERENNIAL MORAL CHALLENGE

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My topic is what I take to be one sort of perennial moral challenge historically posed by technological advancement. In the history of philosophy, this challenge informs the context of the Platonic dialogues. He wrote at a time when increased commercial and political activity between various Greek city-states forced them to confront the fact of their diverse and often incompatible moral, religious, and social values; raising the question, whether any set of values is universally valid, and if so, on what basis?

One possible answer is that my values, or those of my city, are universally valid, simply because they are ours, as represented by the moral chauvinism of Euthyphro. Another possible answer is that there are no universally valid values; only the good in a city, which differs from the good in another city, depending only on what that people deem good, or have been convinced to deem good by the strongest or most eloquent among them. This position is represented by the likes of the Sophists, Gorgias and Thrasymachus.

Whenever diverse people mix, it presents this dilemma between moral chauvinism and moral relativism. But both alternatives, as Socrates leads us to discover, are ultimately incoherent conceptions of value that, since the incoherent cannot be real, amount to moral nihilism. The Socratic challenge, explicitly in the Republic, is to resist moral nihilism by showing that the problematic dilemma is a false one. This is the perennial challenge that I have in mind.

We find it in al-Ghazali's *al-Munqidh min al-Dalal*. His childhood break from taqlid, in search of the universal *fitra* (primordial nature), eventually led him to the brink of skepticism. He also had to chart a path of intellectual and spiritual resistance to both the 'blind sectarianism' that is simply an assertion of an arbitrary

identity grounded in the lower *nafs* (soul), and extreme rationalism, the pretense of epistemological self-sufficiency that leads ultimately to skepticism. The former, even if accidently 'true', is a myopic truth. The latter, though it promises a universal truth, does so falsely.

In *al-Mustasfa min 'Ilm al-Usul*, for example, Ghazali considers the argument that, since all rational beings assent to certain ethical propositions, it follows that those propositions are universal, necessary truths. On the contrary, he responds, mankind might fall into agreement on a falsehood. He was right. An effective advertising campaign may convince everyone that Big Macs are good for your health, but that would not make it necessarily true. The elite among a group of former colonies may all agree to sign a document agreeing that a list of human rights drawn by their colonizers, are exclusively 'universal'. But it would not follow that no further discussion is due on that question.

The challenge, which I am calling 'perennial', is perhaps really a constant fixture of human experience. But it is one that confronts us more forcefully whenever technological expansion brings people with various civilizational and moral viewpoints into closer interaction. And this is happening unprecedentedly with the current phenomena we are calling globalization.

It manifests itself today in the form of a topic that is very popular for use in introductory philosophy and ethics courses and textbooks, sometimes called the 'diversity argument' for cultural relativism. It goes:

1. There is a diverse range of incompatible moral claims, rooted in incompatible moral paradigms.
2. There is no rational, non-circular way to adjudicate between these moral claims (i.e. no way to defend one moral claim over others that does not arbitrarily privilege one moral paradigm over others).

Therefore, there are no objective moral facts (that is, all values are relative and ultimately arbitrary).

This argument is easily understood by the layman, which explains its popularity in introductory courses and among so-called 'barstool philosophers.' For the individual whose ethical thought has not risen above the level of *taqlid*, it often represents the first step into critical moral reasoning. Today's communications technology appears to strengthen the force of this argument's premises. It reaches

into every province and confronts everyone with the specificity and peculiarity of their own values, the radical diversity of values in the world, the apparent intractability of conflict between them, and the ultimate, arbitrary, irrationality of it all.

But global communications technology does not facilitate any deeper philosophical reflection on this problem. Youtube is not serving as a forum for Socratic dialogue. What we are seeing expressed on the internet with respect to moral conflict can largely be classified into one of three categories. First, there are slogans, jingoism, and arbitrary assertions, accompanied by slander and vicious attacks against opponents. Secondly, there are 'new atheist' style attacks against religion generally. The nature of their complaints show that by 'religion' here, they really mean any ultimately arbitrary moral paradigm, which they take religion to be, by definition. Their habit is to bemoan what they see as a human historical pattern of conflict over arbitrary, irrational moral claims that will only end with the cessation of all such claims in favor of a universal secular worldview. Thirdly, we find a flippant, careless response to moral conflict that seems to reflect a deeper moral nihilism. And this is really the logical conclusion of the conviction that all moral claims are ultimately arbitrary (including the 'new atheist' moral claims against ultimately arbitrary moral claims).

It has been interesting to witness the recent tension unfolding between the ideological atheists, and a general outlook that might once have been understood as their own secular alternative to what they see as the welter of arbitrary moral claims. I refer to it here as liberal utilitarianism. This is the moral paradigm of the political and economic system that now enjoys global dominance, and it informs the discourse of the new global media. On the surface, it promises to save us from intractable conflict by providing a non-arbitrary, 'universal' standard by which to adjudicate between competing moral claims.

Liberalism and utilitarianism are both broad categories that cover a wide range of theoretical variations on a theme in the academic literature. But the broad cultural phenomena I am concerned with reflects mainly those versions advanced by John Stuart Mill. Their influence on American society is deep enough to be described as cultural instinct.

Liberalism is the principle that coercion and, by extension, violence is justified only to prevent harm to others. But what is 'harm'? This depends on what is 'good'. And incompatible moral paradigms have incompatible conceptions of the good. Therefore, the liberal principle cannot resolve conflict non-arbitrarily without a non-arbitrary conception of the good. This is where the element of utilitarianism steps in.

Utilitarianism is, first, the principle that the right act (or policy) is that which delivers the greatest good for the greatest number, coupled with a second principle, that the only intrinsic good is pleasure. This second principle, known as hedonism, is the element that promises to deliver a non-arbitrary conception of the good, which would, in turn render the principle of liberalism definite and non-arbitrary. But what is the argument for hedonism? The one that seems to have had the deepest influence on Anglo-American culture, and by extension, on the developing global culture, is found in the chapter of Mill's *Utilitarianism*, entitled, "Of what sort of proof the principle of utility is susceptible." It goes as follows:

1. "The sole evidence it is possible to produce that anything is desirable, is that people actually desire it."
2. Everyone desires pleasure for its own sake.
3. **Therefore, pleasure is an intrinsic good.**
4. The sole evidence it is possible to produce that pleasure is the ONLY desirable thing, is that nobody ever desires anything else.
5. The only thing anyone ever desires for its own sake is pleasure.
6. **Therefore, pleasure is the only intrinsic good.**
7. **Therefore the good is that which is either a means to, or part of, pleasure.**

But what is the argument that the only thing anyone ever desires for its own sake is pleasure? It is simply to define 'pleasure' (a term Mill uses interchangeably with 'happiness') as whatever one desires for its own sake. Mill's strategy, in responding to the objection that some people desire, for instance, virtue, for its own sake, is simply to say that, in that case, virtue is their pleasure. It turns out to be impossible to give any definition of pleasure that is both objective and substantive: it is just whatever happens to please. So the only thing we can really say about the intrinsic good is that it is desire satisfaction. Therefore, there is no rational, non-arbitrary way to determine what it is good to desire**.** And, since what one desires

is ultimately arbitrary, there is no non-arbitrary conception of the good. But, if there is no non-arbitrary conception of the good, then it follows that there are no objective moral facts, and we are left with moral nihilism.

This critique of utilitarianism is not original. But I think it is valid, and it is worth revisiting here because the argument in question, much like the diversity argument for cultural relativism, has had, insofar as philosophical arguments go, a disproportionally deep impact on Anglo-American culture, which is broadening, by extension, with globalization. And this bothers me because I believe, for reasons I just gave, that, though it holds out the promise of providing a non-arbitrary conception of the good, by means of which moral conflicts can be resolved, liberal utilitarianism is really just a sophistic sleight of hand. It leads us, first unconsciously and then consciously, to moral nihilism.

To resist that slide into moral nihilism, I have found it necessary, first, to deny that there is no non-arbitrary way to determine what it is good to desire. And that means I must deny that the only intrinsic good is desire satisfaction. I have to reject Mill's obfuscation in using the terms 'pleasure' and 'happiness' interchangeably. My happiness is not just whatever I desire, but an objective condition independent of what I may actually want, or think that I want. So while we may all desire happiness for its own sake, we may not know what it actually is, which is equivalent to saying that we all desire the good, without necessarily having a clear conception of it. And this is the real moral question, which utilitarianism actually evades while pretending to answer. It is the path of self-discovery represented by Socrates and Ghazali, among others, and which the utilitarian logic precludes.

The fatal pivot of this evasion is the premise that 'the only evidence for something's being desirable is that people actually desire it'. In economic terms, this translates to the notion that there is no logical distinction between a thing's market value and its real value; that real value just is market value. And this, I would argue, is really the fundamental premise of capitalism. It makes possible the liberal notion of 'the market place of ideas', where the validity of an idea is measured simply by its ability to sell. Indeed, if the only proof of the value of something is that people desire it, then whoever commands the desires of the people, commands the moral reality. So the endgame of this idea is not to resolve moral conflict in a non-arbitrary manner, but to grant a monopoly on our moral

discourse, to a global advertising industry that spends hundreds of billions annually to, as they say, 'create value.'

If the only conception of the good we can have is that it is the satisfaction of our desires, then the only substantive measure we can have of it is in terms of our relative ability to satisfy them; that is power, the availability of means for achieving our ends. The prospect of considering the relative value of various ends themselves, substantively construed, is cut off, since desire is arbitrary. And, amid the irreconcilable diversity of the latter, the one thing that remains as a universal value is just the availability of the means of satisfying those desires. As far as meaningful discourse is concerned, expanding the means of satisfying desires becomes the only end - effectively the end in itself. So as capitalism monopolizes the form of our moral discourse, technology – the logic of means - monopolizes its content. We are creating a world in which we can do anything we want, except to deliberate, in any ultimately meaningful way, over what we want and should want, a world in which such a process of self-discovery cannot even be admitted as a meaningful possibility. I do not think it is inappropriate to describe that as a nihilistic world.

Global communications technology expands our means of accessing and broadcasting information. The discursive habit, under the technological paradigm, is to use the term 'information' and 'knowledge' interchangeably. But the difference is that false information is still information, while 'false knowledge' is an oxymoron. Truth is not an essential part of the concept of information, as it is of knowledge. The contemporary habit of treating the two terms as synonymous indicates that information, rather than knowledge, is the real commodity under the current paradigm. And this is because, under this paradigm, usefulness is the only measure of value.

Apparently, graphic violent information is useful, because more and more of the information being produced and broadcast is of this nature. It is not only about, but part and parcel of, the allegedly intractable conflicts from which liberal utilitarianism, as the official religion, or ultimately arbitrary moral paradigm, of global capitalism promises to deliver us. Such conflicts, according to a prevalent narrative mentioned earlier, are a result of people still clinging to culturally specific, arbitrary values, and trying to impose them on others as if they were universal, and

will only be resolved when the parties embrace liberal utilitarianism, and so refrain from attempting to impose on each other in the name of any value other than what, according to that paradigm, is truly universal.

But what if the opposite is the case? What if these conflicts are not between factions fighting over irreconcilably diverse values, but are instead between people fighting over the same things? How can we describe a fight between a Sunni who cannot account for why he is Sunni beyond the fact that he was 'born' into it, and a Shia who likewise cannot account for why he is Shia beyond the fact that he was born into it; when both have either never considered the question, or simply dismiss the necessity or even the possibility of asking it. How should we describe a fight between parties like this, if the primary concern of both is which group is going to control positions in government, and therefore access to global investment capital? Is this really a fight over irreconcilably divergent and arbitrary basic values, or is it actually a fight over shared arbitrary basic values – the same basic values imposed arbitrarily by the logic of liberal utilitarianism as exclusively objective and universal?

Should we describe the government-condoned anti-Muslim riots in Burma and Sri Lanka as a manifestation of the irreconcilable opposition between the supposedly arbitrary, irrational basic values of Islam and Buddhism? When the propaganda of the perpetrators there sounds nothing like the Four Noble Truths or the Eightfold Path, but sounds identical to European neo-fascist fear mongering about Muslim birth rates and threats to national identity, I think we have prima facie evidence that the roots of these conflicts are more universal, than they are specific to religion or culture, though no less arbitrary for all that. We should note that this wave of state-sponsored violence against the Rohingya began just after the Burmese government was welcomed with much fanfare into the global capitalist fold. Have they learned how profitable a 'war on terror' can be for the power elite of a fledgling capitalist country, and so have decided to plant the seeds for one of their own?

If the rationale behind most of this conflict fits snugly into the logic of liberal utilitarianism, as I believe it does, then it does not represent a region of backwardness that has yet to assimilate to the global capitalist order, but the natural outcome of that order. It is not the "bloody borders" of Islam, Christianity, or Buddhism that

we are witnessing here, but the bloody frontiers of an expanding Empire of Desire, under whose ideology, religion and culture are only some of the many arbitrary identities in the guise of which desire delivers its inscrutable demands. The 'fundamentalists' of any religion – today's Euthyphros who permit no reflective inquiry into the basis of their treasured identities, reveling in arbitrary demands they call 'piety' - turn out to be the guardians and enforcers of this empire's official cult. Is there any other explanation of why the governments of the United States and Saudi Arabia are such close allies?

In this way, the Empire of Desire distracts and cuts us off from our historical resources for resistance. Many conflicts fought for its sake, are portrayed as having been fought for someone else's god. Ideological secularists are in denial when they depict these thoroughly twenty first century wars as if they were medieval 'jihads' and 'crusades'. And the depression that seems to afflict them over their view that the world is slipping 'back' into what they see as 'primitive superstition' is really the effect of the moral nihilism that their world is slipping into, on the basis of its own premises.

I don't intend this as a thoroughgoing indictment against technology. Technology as such is a tool that can serve human interests, so long as it remains a means to independently conceived ends, and is thereby prohibited from monopolizing the content of moral discourse. Communications technology specifically, having historically provided the medium for the conditions under which this perennial moral challenge has emerged, has also served to broadcast the moral insights for which those conditions functioned as the catalyst. If today's communications technology can be harnessed in such a way as to facilitate, and make accessible to the general public, the kind of moral discourse that can chart a path beyond the horns of moral chauvinism and moral relativism, and thus beyond the moral nihilism in which they both meet, then there is hope. And the believers never lose hope.

DOES TECHNOLOGY CREATE VALUE?

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There has been an ongoing dispute on 'whether technique and technology create value' for more than half a century in Turkey. Is technology an indispensable element of need which shall definitely be acquired? What is it behind the obvious technique and technology that has a power to create value? What is the philosophical basis of the idea "Human Machine?" Can we use the technology we purchase with an ease of mind by satisfying our needs? Should we continue to buy more technology without damage awareness just because it satisfies our needs? Should we produce technology instead of importing it? Can we prevent the damage if we manufacture our own technology? How did technology affect our values and in what way? If technology creates a value, how and with what means does it do that? Does technology mechanize humans? Can humans become machines? Can robots replace humans? Can humans become robots? Can the human, mechanized and robotized, lose its liberty? Can humanistic features be preserved? The statement is in search of answers to these questions.

If we regard the universe and humans in it as a whole, we can give more accurate answers to these questions. It is worshiping and working in the direction of his beliefs that will grant humans the highest place in nature. Humans have an honorable place in the universe. Societies and civilizations can be easily dissolved if human cultural characteristics are not known. In this case culture will nurture unconscious, unrealistic, machine-like people without any ideals. By seeing man as a machine or an instrument, humanity will fail to strengthen the spiritual level of man. According to distinguished Professor Hilmi Ziya Ülken, the dispersion that we see in the West is a result of the fact that cultural features of the West see people as machines, without acknowledging them as a whole. For, according to him, man is not only a rational being, but also a spiritual being.[1] The reason for this is that emotions and the feeling of love are what people get in touch with each

[1] Hilmi Ziya Ülken. *Felsefeye Giriş* (Istanbul: Türkiye İş Bankası Kültür Yayınları, 2009), 2: 11.

other, enabling them to understand others, before the mind. Erich Fromm (1900-1980) defines educational sciences, which ignore these features of man, as follows: "Education produces machines that behave like people; and people who behave like machines..." According to him, a human being is a *machine* which is running on a certain level of sexual energy called "libido" due to influence of materialistic ideas of 1900's and dominance of Freud's libido tendencies.[2] Again, according to E. From, the modern man has become an object for the blind economic focuses of power that is running his life; worshipping his own hands and transforming himself into a product of its own."[3] He asserted that; the man has become to be a robot, a machine which starts to worship its own efforts. This pagan-like machine, alienates the man from his own lively, vital, powers."

On the other hand, Fromm states that the principle behind monotheism relies on the fact that humans have no limits, but neither of their own features can represent the whole being of man. Humans are created as a resemblance of God and hence they are the carriers of his unlimited powers.[4] However, the modern secular approach is interpreting this human nature as materialized people who have been turned into machines and thus have lost their supreme qualities from their birth, and become worshippers of their own products.

On the other hand, the real question should be how dependent are the humans and social life on technique and technology. To answer this question, of course, we shall first ask what is technology and technique. The concept "technique" is derived from the Greek word "*tekhne*" which has been given many different meanings. Heidegger states that this word is originally related to the concept of knowledge/episteme at first, but later on it was also given different meanings, such as "bringing to life." According to him, this provisional feature is not about production or ability to produce; but is about *creating something new*.[5] In that case we need to discuss this concept further in its application today.

[2] Ibid, 41-42.

[3] Ibid, 92.

[4] Ibid, 71.

[5] Martin Heidegger. *Die Technik und Die Kehre*, translated into Turkish as *Teknik ve Dönüş* by Necati Açа (Ankara: Bilim ve Sanat Yayınları, 1998), 18.

I. WHAT IS TECHNIQUE?

As science is the continuous practice of learning and understanding the universe and beings it needs to be applied, realized with certain actions. As it also shows itself at the level of technique we may describe technique as modifying different tools for attaining a specific goal or for a certain purpose to meet present needs. Therefore, technique can be regarded as a product of man's will to control the surrounding environment. It shall also be noted that this will also serves as an agent for man to dominate the world spiritually.

Oswald Spengler states in his book *Man and Technique* that the most basic instinct of living beings is to compensate their weaker side and accomplish superiority among other beings. Therefore, technique can be regarded as a natural tactic of human life.[6] Man shall use technique as an agent, a medium to impose its influence upon its surroundings. Technique, from this perspective, and according to the statement of Heidegeer, is a form of resurfacing other elements. He, defines technique as a medium, rather than a goal. Technique, as a medium, alienates people from each other. And unfortunately, this alienation results in many different issues.

Technology, on the other hand, includes all scientific concepts, intellectual researches, defined rules, data and methods which are developed for acquiring new products by means of techniques. Technology, then, can be regarded as the concept of acknowledging features of tools, materials and objects in terms of their effects on man's perspective. Through this perspective, technology becomes a cultural activity. In fact, technique and technology, even though primitive, has been present since the first man on earth. In some manner, technique and technology can be found everywhere that man resides. Therefore, the Qur'an includes a chapter (*sûrah*) called "Hadid/Iron". In this chapter, it is said that God provided man with iron as a strong and beneficial material to distinguish the ones who will use it to help others with the belief of Allah and Muhammad the Prophet in their minds (Hadid, 57/25). Also, the Prophet David was taught how to make armor. The fact that Allah has filled a valley between two mountains with iron to prevent a wild tribe from attacking others, the wise man Dhulqarnayn sealed the gates with copper

[6] Quoted by Nabi Avcı, "Teknoloji ve İnsanî Değerler Meselesi", *Türk Yurdu*, 27 (1989), 53-54.

to protect them. This shows us that technique and technology were both rather advanced even in those times.

Yunus Emre; shared the following poem for a reason:

"*İdris nebi Hulle biçer,*	Prophet Idrîs sews heavenly dresses,
biçer Allah deyu deyu."	And he sews saying Allah Allah.

We can infer from these lines that technique and technology is taught and used even in Heaven. A contemporary Turkish thinker M. İzzet has interesting ideas about technique and technology. He asks the question of how dependent is social life to technology. "In fact, technique is a means which the civilization uses to process its surroundings." Techniques are between nature and man because major industrial movements which are created by development of techniques is a common consequence of focusing human ideal towards nature. Thanks to the technique, humans have major control over soil, its products and nature. Human beings also develop, mature and rise above his nature "because it adapts its habitat to surrounding nature". This way he creates both its tools and himself. Unless our technological research progresses, our knowledge of civilization will be based on missing or even decaying principles.[7]

Techniques which have been used by men in the Stone Age or Bronze Age continuously changed and evolved. Along with military technology, civil technology and scientific developments it has reached higher levels. In other words; humanity has never been far away from technique and technology and has always lived alongside it. Today, the same also applies. Nobody seems to be able to live without (credit, etc.) cards, planes, buses, telephones, radios, TV, dishwashers or washing machines. On the other hand, nobody goes to the pilgrimage on camels. Therefore, we can say that development of new tools, techniques and usage of these for communication, teaching, travelling, information and livelihood is an essential part of humanity. In this respect, human beings are in need of technology. They have to develop and use it. They will not be able to live without it. Therefore, to blame technology in a dramatic way is not a logical action. Is not applying a technique using our mind skillfully within the world of realities and controlling the natural forces that may harm us?

[7] Mehmet İzzet. *Makaleler*, ed. Coşkun Değirmencioğlu (Ankara: Kültür Bakanlığı Yayınları, 1989), 240-242.

In fact, technological advancements have many benefits for us. Our knowledge of civilization and society would be based on a corrupt structure without technology. Also, one of the major benefits of science and technology is its ability to assist clearing misleading information from minds of men. The main issue here is whether the technique itself represents spiritual value. It is not possible to refuse technology and mechanization because refusing consequently leads to discontinuation, backwardness and devastation. On the other hand, is a machine with freedom possible?

Technology on the one hand facilitates people's work and as such it is an essential part of our life, but on the other hand it leads us into competition for destroying people, even mass massacre and wars. There is also a competition for new weapons because of technology, human societies are inventing ever new weapons. How can we get over this? Modern technique is of course totally different from the past one. Why? Because, modern technology is based on natural sciences of the New Age. Heidegger states that; *modern technique challenges nature*. Why a challenge? Because, according to him, technique has a constant requirement to acquire all the energy it can get from nature. Heidegger warns us about this danger of modern technique while he informs us that technology also involves the ability and power to protect us from this constant challenge. Therefore, it has been believed that the appearance of technique will also prevail its protective features for man because, through this perspective which approaches with a dialectic focus, just like the inert "being" concept of Hegel which involves mutual presence with the opposite, we see that technology may have the ability to protect itself from the danger it creates. But, the present state of affairs is not exactly like Heidegger explains. The main problem of this philosopher arises at the exact point that he regards man and nature as being sufficient in themselves.

His claims do not seem very accurate because, technique is only a means for creation. This instrumentation, makes people become instruments themselves. In this case, how can we say that man is sufficient by himself? It is always possible that the concept of *tekhne* may dominate man. For, contrary to Heidegger's claims, the human being is not an independent being itself. He cannot be! Because man needs to be connected to a Creator more strongly than he needs other people and beings. On the other hand, is it not a logical assumption that storage and the ability

to use the environment can make a person a superior human? Is this not going to refer to humanity as the absolute dominion of the earth? Yes, humanity has started to think that everything that can be produced in nature is a product. It is always possible to be deceived. Here again, humans face the threat against human beings.

II. NEGATIVE IMPACTS OF TECHNOLOGY

Is there a danger here against the human spirit? Such a danger may be resulting from sacralizing, uprooting a technological mindset. Behind this sacralization lies the belief that technique and technical thinking give us the most accurate and true knowledge about reality. We can call this "technological worshiping". The greatest danger of technological thinking is the fact that it leads man to think that he is the sole creator of values because *this* technological worshiping mentality regards nature, environment and the universe as a resource of satisfying humane desires. Of course, here a practical "human-centrism" is the dominant approach. Such a person and such an understanding does not accept a being, an authority, an agent, a Creator other than his own being; moreover, this approach does not accept the possibilities and values that come from metaphysical sources, trusts or believes in things he has done with his own technology. Thus he will be able to glorify himself. Therefore, as seen in the period of enlightenment, such a person puts his mind in place of the Creator thus turning himself into a machine and a god.

A. NATURALISTIC CONCEPTION OF GOD

But, where does this ideology of sacralizing human mind come from? The first candidate for this is the naturalistic conception of God primarily represented by Spinoza (1632-1677) who identified God with nature and created a naturalist mindset which asserted that, nature is God itself. Thus, God of Western mindset, so to speak, was lost in the universe. A new step has been taken when the age of enlightenment arrived: "Man's continuous tendency to highlight egoistic values as well as its practices which brought him far away from himself has led to the expansion of ego across the universe; resulting thus in adopting power and authority of God in a misguided way."[8]

Thus Newton's conception of the universe, which was based on God, has

[8] George Frankl. *Western Civilization: Tragedy and Utopia*, translated into Turkish by Yusuf Kaplan (Istanbul: Açılım Kitap, 2003), 175.

been isolated from divine basics and relied on a solely positivist mindset. Now, people have started to rely on unmistakable rules and formulas of mathematics and geometry to explain the Universe in a mechanized manner. Kant was expelling god from the field of information and morals. This way, man has been alienated from envisagement of the Universe. It was like he was lost in a mechanical universe. Due to advances in Natural Sciences; adjectives which were previously related to God such as holiness, divinity, dynamism and mysticism were started to be used for defining the Universe. Humanist mindset which relied on the ideas of the Enlightenment Age was claiming to be liberalizing the ego of man while trying to remove the dependency of the human mind on a divine will. This is based on the words of Descartes (1596-1650); "*Cogito ergo est*" (I think, therefore I, myself create the reality in the universe). Encouraged by these ideas, supporters of the mindset characteristic of the Enlightenment Age have tried to establish principles which are independent of God subsisting by themselves and are solely based on a naturalistic way of thinking. Descartes inaugurated a new pathway for the mindset of enlightenment by creating a mechanical world conception which conceives the universe as working like a machine. At the same time this conception led to the idea that an animal is a machine. Three-quarters of a century later, De La Metterie (d. 1751) has taken these ideas of Descartes further and declared that humans are also machines in his book *Machine Man*.[9] Today, there are men of science and philosophy who adopt this materialist mindset. Another representative of the materialist mind and human being is the French cytologist and 1965 Nobel Prize winner Jacque Monod (d. 1976). He said: "a cell is a machine; animal is a machine; therefore, a human being is also a machine."[10]

The idea of automatic machines eliminates the human element as an actual agent. It represents domination of automation in machinery and technology. Machines cannot adapt themselves to all conditions. Likewise, living beings, despite the machine-like appearance, are not machines because they have a purpose. A machine cannot set a goal for itself and then run after it. If a person becomes mechanized then will not be a "machine man" be nothing but a robot which has been deprived of its spirit, mind, heart, faith and love? We have asked whether

[9] See Julien Offray De La Metterie, *L'homme Machine* (Paris: Denoël/Gonthier, c1981).

[10] Frankl, op. cit., 207.

machines or technology can create values and it seems that our answer is “yes”. But what kind of a value? As we see in the poem by the Turkish national anthem poet, the great, Mehmet Akif’s depiction of Western civilization and technology as “the monster with a single tooth” is surprisingly a successful explanation of this technology created value. We can easily see an accurate example of this by looking at the following poem of the renowned communist poet Nazım Hikmet:

Trumm trumm
Trum trick trock
I want to be a machine
My brain, my flesh hungers to be,
A machine I want to be;
I am dying to have all these generators and dinamos,
My tongue licks the copper wires,
Automatic trains chase locomotives,
In my veins mechanized,
I want to be a machine,
Trumm trick track,
There needs to be a cure,
And I’ll be only happy then,
A turbine I’ll put on my stomach
And I’ll wear a propeller on my tail,
Trumm trick track,
I want to be a machine,

As is known, machines do not have a homeland in the true sense. A car belongs to the one who drives it. The one who has invented the cell phone should be the one using it. Nazim Hikmet’s crazy desire to be mechanized gives us a true depiction of mechanized human model. In any case, this is one of the most accurate examples of automated people, created by technology, rather than values. So if a human being melts in nature and society, if ideology translates him/her as a robot, then a person in the example of Nazim Hikmet becomes crazy to become a machine. Why? To produce more. To create more values as a byproduct. More for prosperity ... But does life just consist of these?

B. CAN MACHINERY AND AUTOMATION REPLACE HUMANS?

Hilmi Ziya Ülken has dealt with the concepts of technique, machinery and mechanization for a long time. He asserts that mechanization, cybernetics, automats and robots, which are practical and technical results of naturalism, cannot replace human beings. He confronts the idea explaining humane functions mechanically

as if a machine and regards humans as redundant with automated controls. Mechanization means development of the automatism. Man behaves as himself with the guidance of his mind, using his will and freedom. Machines do not have this feature. "It just tries to fulfill its intended and established purpose." At this point, Ülken asks: "Is a machine with free will possible?" Seeing this impossible he adds: "Looking for made-up, mechanical reasons for providing an answer to the question of the reason of nature is an inert practice."[11]

C. RELATIONSHIP BETWEEN TECHNIQUE AND CULTURE

Nureddin Topçu has come up with influencing ideas half a century ago about the relationship between technique and culture. According to him, technique is "a mandatory result of culture. It is a fruit of the culture tree, a natural leakage of culture." He adds further "separation of technique from culture is like a boy, denying his father." In his perspective, "the concept of culture penetrates in our souls. Our lives can only flourish with its guidance." If you ignore it, the clash between spirit and body will bring devastation. European civilization could not prevent this danger."[12] Topçu in this way relates technique and culture with social ethics and states that "technique shall always stand one step behind culture, this is an ethical mandate, technique shall serve to the ruling of culture, and otherwise technique poses an important danger" and warns us that "*technique shall be a blind and destructive danger if it is not led by culture*." On the other hand, it becomes impossible to avoid hearing the voice of technique in phrases such as "I want to be a machine" when culture is ignored completely.[13]

Here we can ask the following question: Cannot technique produce a unique culture for itself, with all its predominance and allure? We say yes it can and it does. On the other hand, this culture that has been created by the technique, is not a spiritual and moral one such as the one Topçu states, but a completely materialistic concept which totally depends on mechanization and production. If we remember the famous movie producer Charlie Chaplin then I would like to remind us about his movie, in which he makes fun of mechanization and the device craze. In the film Charlie Chaplin shows the ridicule of mechanization as follows: A man sits at

[11] Ülken, op. cit., 107.

[12] Nurettin Topçu. *Kültür ve Medeniyet* (Istanbul: Hareket Yayınları, 1970), 13.

[13] Ibid, 17.

the table, eating dinner. A mechanical hand puts the food into his mouth. Another mechanical hand wipes his mouth after each bite. Then, suddenly a malfunction occurs in the hand which gives the food. But, the other hand automatically continues to wipe the man's mouth... Could there be a better example than this to depict the fact that a machine will continue to do what it has been told to do without mind or spirit even if it is broken with zero efficiency and any bit of rationality? This extreme worship like addiction to technology makes people see that everything around them is a product of their own technique. This approach and understanding, as also stated by Eric Fromm, become an act of idolatry leading the masses into worshipping their own efforts and products.[14]

III. WHO WILL PAY THE BILL FOR TECHNOLOGY?

Technology is a product of the human mind, imagination, dreams, researches and actions. Of course this rapid advancement of technology in the last two centuries would have a price to pay; and indeed it requested that price. So, what's that price? This bill has begun to be paid for over 250 years of industrialization and mechanization, with machines starting to dominate technology. A number of people who say that technology causes important problems for human life, is not low. Of course major technological changes and developments appeared after the industrial revolution and emergence of technologically developed communities. These changes are also considered as a technological bombardment. Under such a bombardment; traditions, beliefs and cultures of societies have witnessed deep traumas, changes, and even material, spiritual and moral devastations.

Interpersonal and inter-social relationships were mechanized, and materialized even more, so to speak. Harmonious relations between people and societies have lost their value. Industrial societies which have advanced in the direction of industrial and technological development; have lost the control of the continuously developed culture without any moral value. It has become a virus which destroys the other surrounding cells. The values which are reflected by Western science and technology have always been materialistic concepts based on human greed to earn more wealth. These values have been transformed into an always-unsatisfied ambition of winning, a Darwinist competition and exploiting ideology and an

[14] Eric Fromm. *Yeni Bir İnsan ve Yeni Bir Toplum*, translated into Turkish by Necla Arat (Istanbul: Say Yayınları, 1984).

uncontrollable mentality of growth. The world has been filled with billions of products waiting for buyers. Natural sciences have been guided to new researches by using many of these technological products. Then, Naturalism produced new elements of information and imposed these on to the rest of the world as the unchangeable, sole truth. It directed individuals and societies to manufacturers with endless propaganda and advertisements. It has created new and unlimited needs. For example, how many people are there on earth that do not use cell phones?

These are all done in the same way. And what is that way? Of course it is *rationalization*. What does this concept involve? The following words have been widely used together with this expression: "*Freedom, personalization, communication and spread of these values*." Rationality involves different elements such as appreciation and evaluation. "*Rationalization*" of society is about industrialization of scientific and technical *progress*. The key issue here is not mere usage of technique but using it as an instrument to acquire dominance on nature and overrule mankind. This is of course a good calculation and a calculating rule. Machines and mechanization grinds down the humane characteristics of man, and it deeply intervenes in his being. For example, our ability to think is reduced by using a calculator and becoming dependent on it while we are using the pen and pencil and some of our organs it actually progresses. Intervention of machines to humane characteristics can blunt the creative powers of man. A sociologist goes to a region, a village and hands out questionnaires. Then he picks them up and enters the results into computer. The rest is up to the computer. It calculates, evaluates and decides on features of that particular region. Is it wrong? Of course it is not. It is beneficial in saving time. On the other hand, mechanization imposes particular molds that make humans artificial, standardized beings. Back in the olden days people would test and then choose with their own free will. With mechanization everyone has to use the same products almost every time. The choice is based solely on brand recognition. The arrangement of the houses of the family, the decoration, the arrangement of the cities are almost the same. Is not subjectivity and creativity going to disappear in such an environment?

Machinery and mechanization save time and of course, certain needs can be satisfied in a quicker manner by working with machines. On the other hand, the capitalist market creates much more needs for people in return for this time saving.

On one hand technology eases the work of man, and creates indispensable benefits. But on the other hand, it puts people into competition which may lead to mass clashes and warfare. Man take sides in a race of armament and warfare inventions, as well as start wars to try their new toys. How can these be solved? As Russell says, of course, our only solution will be including morals and ethics into the great power of science. Philosophy, will fail to prevent the clash by itself. All beings need to have strong faith, only this way we can "love others, because of our love for the Creator."

Machines will not consider race, religion, morality, nation or tradition of others because it cannot adapt itself to other's characteristics. With a continuous deterministic production tendency, it is busy with flooding the earth by producing masses of unnecessary goods. Consultants called technocrats invent new ways and methods to beat and destroy competitive companies. They change the quality, the ingredients or the secrets of the goods they produce. Companies which are left behind in this race are damaged or expelled from the market. In other words, this is the exact Darwinist, tiger-like, live-or-die life struggle. These "tecnocrats" who started to emerge as a new social class with the development of technology, create a monopoly. These people control and designate the fate of societies. This mechanization and technocracy, lead to a new *economic fascism,* which is more dangerous than the fascism we know. Other fascist regimes can be eliminated, but this one cannot.

A. ONE DIMENSIONAL MAN

Technology, in the words of Herbert Marcuse is creating a "one-dimensional man" almost everywhere. According to him, advanced industrialized civilization fails to provide a safe, reasonable and democratic environment of civilizations. Here, rights and freedoms are surrendered to the hands of society's highest echelons. Traditional principles and their meanings are lost.[15] According to Marcuse, industrial society strangles libertarian needs and ideas in an effective manner, while it maintains the dominant pressure of a welfare community.[16] This way, technology is able to rationalize the loss of human freedom and makes a free

[15]Herbert Marcuse. *One Dimensional Man*, translated into Turkish as *Tek Boyutlu İnsan*, by Aziz Yardımlı (İstanbul: İdea Yayınları, 1986), 21-22.

[16]Ibid, 26-27.

order of living technically impossible. Thus, according to Marcus, technological rationality protects the injustice of power rather than prevailing it; which consequently leads to a totalitarian society. The most annoying side of industrial civilization is the fact that irrationality has been given a rational character. In this civilization objects alienate people from the world. People identify themselves with material goods; and find their souls in music players and cars. The instrument which connects individuals to society has been changed. Thus, not the sole usage of the technique, but the technology itself has become a dominant power over nature and man.

Today, people and organizations can be watched or eavesdropped even as they relax in their bedrooms. New and reliable behavior-modifier education and propaganda techniques, mind-stimulation tools posing as practical utilities of communication, new and effective counter-guerilla techniques, mind blowing types of drugs for controlling and regulating the human mind; are only a few of the dangerous instruments which have been produced, and stocked in masses by authorities. Erol Kılıç defines this single-dimensional person as differing from materialists as follows:

> A person who relies on materials to go on with his life, is living in exile from his heart... Modernism, which increases the gap between the material and the meaning, has made Man a single winged being. Modern man is more like a robotic being; machine without remorse, spirit or will... Entirely focusing on dominating nature; adopting earning and interest as the only goal; doing anything he can to attain his goal, even in return for his life...Ecological disasters, chemical weapon, dispersed countries and people with wars that fill the headlines everyday... Okay, violence and death have been around since Kabul; but it won't be wrong to day that, lethality of our time is fueled by the inverted values of modernism.[17]

B. GENETIC ENGINEERING

Developments in genetic engineering are one of the direct consequences of technology's intended purpose. This branch of engineering creates "new beings with new features" by modifying human genes. On the other hand, we know that studies in the field of genetic engineering is intended to solve some crucial problems of people. Yet, these studies have important biological, psychological, sociological, economic and moral issues. Problems arising from consumption of

[17] Mahmud Erol Kılıç. *Hayatın Satır Araları* (Istanbul: Sufi Kitap, 2013), 15.

genetically modified products still dominate the headlines in our country as well as the rest of the world. Also, diseases and side effects resulted by these products have become a major concern for governments. In addition to these; implementation of concepts such as fertilization via sperm banks, in-vitro fertilization, and surrogate motherhood; create important problems in families and cause family disasters. Mechanization takes moral values into account during its efforts of increasing the number of consumers. It denies these values and forces people to ignore ethical principles.

It seems that technology aims at evaluating people according to the comfort, luxury and consumption they possess. For; mechanized and industrialized societies are based on wasting, not saving. Machines to mechanization save time. We become more competent to meet our vital needs by the help of machines. But in return, capitalist market puts new problems, bills and other burdens on our shoulders. Thus Enlightenment and rationalization approaches praise as a monotonous, mathematical, technical, mechanized world perspective which is based on materialism, nature, and mechanized elements.

IV. DOES TECHNOLOGY CREATE A VALUE?

We are now in a better position to answer our question which is definitely "yes". It indeed created added values. It makes people wealthy; enable them to live a rich, comfortable and luxurious life. It makes him one of the richest people in the world. It makes him embrace a life which is based on wasting everything. It increases the reputation of businessmen and industrialists around the world. On the other hand, all these values are materialistic. The values we try to emphasize here are moral, spiritual principles. Is technology capable of creating an ethical system such as Christianity, Buddhism, or Islam? It certainly cannot. This brings us to discuss the nature of actual values which are beneficial for humanity and at home with their primordial nature.

A. WHAT IS "VALUE"?

We can give the following answers to this question: Man acts in accordance with a certain ethical and moral system of which he himself constitutes a part. In fact, "values" are parts of man's existence, belonging to his spirit. They do not come from the outside world. Value is an action, an activity. Values are established

to prevent conflicts and unrest which may occur if acts of man are performed randomly in an uncertain environment. These values enable man to choose what is more valuable for himself and acknowledge its surroundings accordingly. As these values expand and open themselves, man is also elevated to higher levels of humanity. His personality develops and his actions become more meaningful. For example, the Selimiye Mosque in Edirne continues to enrich the value of both Selim the Second, who built it and its architect, Mimar Sinan ("Sinan the Artchitect").

In this sense a value is something to be desired, sought after. A value in this sense is something to be desired, and sought after; more importantly it is something bestowing meaning to life and that which mainly protects one from evils, sins and false addictions. Spiritual values are values of metaphysical origin. Thanks to these values, humans can protect their hearts from darkness, or they can become able to clean and purify their selfish desires. A value does not impose itself on people, people adopt it voluntarily. Sartre and similar thinkers had claims that life is "ridiculous". On the other hand, if life is ridiculous, then in life values are absurd, not true values. If values are wound up because of such insights, then values start to be seen as ridiculous, which leads to an anarchy of values.

Also, it should not be forgotten that value has a goal and a rhythm. It is only necessary to establish harmony between the purpose and the means. In addition to this, it is necessary to consider the correct rhythm between the values system and the goals toward which that system aims at. If God does not exist, as Sartre and other atheists say, then values which define man do not exist either. In such a case, there will be no value or personality, but egoism. In fact, as values are adopted accordingly, a "commitment" is present to these values. This commitment is only possible with faith, a religious belief.

From this perspective, it can be easily understood that the main question is whether technique can represent moral/spiritual values. Technology tries to cut the relationship between the mind and superior beings; as it tries to eliminate all differences in perspectives towards life because technique gives us information only about reality of an object in the outside world. On the other hand, it fails to provide any information about metaphysical realities.

B. WHAT SHOULD BE DONE AGAINST THE DANGER OF MECHANIZATION?

Technology comes from a different belief and cultural environment, together with its own principles. Also it brings values such as problem solving, or increased productivity together. It establishes its own system by imposing its own values to civilization. "If technique becomes the main element of materialistic production then it will be able to re-shape the entire culture and design a new historical integrity and world conception."[18] What is the main element to determine direction, speed and function of technological advancement? According to Habermas, "social interests are determined."[19] Moreover, "scientific-technical developments have already started to impose re-organization of social infrastructure in terms of its rational intentions; making these rational goals more and more mandatory."[20] On the other hand, elements of national culture can resist technology if historical heritage has not been damaged and cultural elements have not been dispersed. These elements, if suitable conditions are established, can resist the fundamental influence of technology by creating new cultural principles. The important thing here is the fact that, elements of national culture, especially a conscious religious life shall be kept alive. To acquire this goal, today's conditions must be evaluated and designed according to previous developments.

C. IS IT POSSIBLE TO STRUGGLE AGAINST TECHNOLOGY?

Technology may feel the need to modify itself as a result of the strong opposition leveled by local cultures and traditional values. But, is it possible to struggle with this technology? Is it possible to make products of technology inert? Of course this shall be realized by means of keeping religion, the real pillar of national culture, alive. This struggle can only be accomplished by means of considering man as meaningful spiritually and filling his heart with love of Allah, His holy Prophet Muhammad (pbuh) and our country. This will surely fill his heart with a divine light. Every person shoud be supported by his family, his society, his state and other relevant assisting organizations during this struggle and shall never be left

[18] Jürgen Habermas. *Technik und Wissenschaft als Ideologie* (Frankfurt am Main: Suhrkamp, 1968). Translated into Turkish as *İdeoloji Olarak Teknik ve Bilim* by Mustafa Tüzel (Istanbul: Yapı Kredi Yayınları, 1997), 40.

[19] Ibid, 54.

[20] Ibid, 65.

helpless. Obligatory responsibilities of the community shall be evaluated clearly. There is a tradition of Islamic culture and wisdom. Human beings are God's caliph on earth, but, they shall not forget that, each human being is helpless, destitute and weak against the divine power of Allah. Only this way, man can avoid worshipping himself.

On the other hand, we should not surrender ourselves to technology. In other words, man shall not be a captive of technique and machinery, but shall dominate and control it. How can this be possible? This depends on how we understand human nature. The successful perspective is the one that does not perceive human nature in a materialistic way. A human being should not be isolated from spiritual values and turned into a machine like being. Man, as a being is indeed not self-sufficient, and hence needs a creator fulfilling his needs. In fact human beings are in utter helplessness when left by themselves. For example, in the midst of all the abundance man still feel needs for many other things that are missing and he thus feels his poverty; moreover, he feels helpless before the concept death in the depths of his soul. But, unfortunately, he forgoes his helplessness and begins to worship his ego.

Actually a human is a divine being. He has been created from the breath of his Creator, as stated in the Qur'an and other holy books in other religions. This is a divine status which has also been set forth by religion. This status assigns the title of God's vicegerent (Qur'anic term *khalifah*) on earth to Man. If man manages to use these values and divine features accordingly, he can free himself from animal instincts and the carnal desires of his lower being. Only this way he can go beyond his physical features. *A mechanized man only produces and thus fails to think of anything else. He continuously consumes what he produces and creates artificial values with production.* For, ruling organizations create needs first. Other people are forced to feel the need to share these needs. Therefore, we shall struggle against this approach so that people shall not worship machines, and be alienated from each other. This can only be possible with strong spiritual, moral principles and mental strength.

It is possible for man to protect himself from falling into captivity to nature and same thing he has turned himself into from these conditions. Otherwise, he can neither transcend himself nor renew himself. In modern paganism, man submits to

the projection of some of his qualities, and worship them. However, in monotheism, and especially in Islam, the fact that man has no restrictions on his feelings is the dominant principle that none of his individual qualities can represent the whole of his being. As God's creature man has unlimited qualities as the embodiment of His eternal names. Therefore, the person who believes in God's unity and binds himself firmly to this belief does not turn his production and work into an idol and worship it.

Endless respect towards technical mentality leads to belittlement and even to the denial of a life based on traditional and spiritual values. Technical and technological mentality or machine guided mentality can neither protect, nor console man about his worries and fear for death and sufferings of life. Will technological achievements naturally lose hope if they make man dependent on technique and make it a shelter for him? Will technical thinking connect us with life and provide values that will guide us in life? If not, will it not turn us and our societies into ruthless crowds without any significant roots, and souls? Does not technology develop weapons of mass destruction instead of providing a better life? Does it not lead even the higher power of science devoid of wisdom to the wholesale extermination of humanity? Does not technology bring societies in which family values, privacy, respect, and morality to the brink of aimless herds? If the values that constitute the soul of people and societies have disappeared and technology and materialism replaced them, then does not it cause the loss of human dignity and honor? I think it does. For when man abandons the guidance of virtue, prudence and mercy which the Creator has granted, he has neither human dignity left nor any honor and respect.

Not even that much. It is an apparent truth that the West uses science and technology to penetrate into countries it desires to use as a colony, deteriorate their culture and social balance to acquire its constant goal of total world domination. And through this perspective, when we consider the argument of whether "technology creates any value" in our country; then we shall easily state that, it creates new values to demolish the social values in its future colonies, and deteriorate previously established cultures of that society. Modern production techniques replaced traditional and family values with productivity principles and personal interests to create an imposed, artificial lifestyle. What is not natural here is that the modern production culture does not esteem the traditional and does

not distinguish the material from the non-material; moreover, it puts the means in front of the goal which is neglected in the backward plane in which case the goal becomes the means. In a true culture, all the activities of the people were within a whole which was very meaningful for them. However, in contemporary culture the needed meaningful spheres were imprisoned in a limited amount of confined spaces. What is dominating today's life is the machanized industry, which keeps the system up to date, continues on its way with the soulless specialists under its control. What is noteworthy here is the process that changes the significance which is attributed by a being called man to modern knowledge and technology. This process is an axis shift in the sense of value that initiates the great change called industrialization. Modern technology instead of making new knowledge an occasion for offering thanks turns it into an opportunity for pride.

Reducing the meaning of man to sole positive ideologies results in massification of man and in dissolving his being which is then lost within masses. This massification enables external factors to dominate internal factors as a result of the strong and reckless tendency towards technology. Inner values are ignored, sacrificed to technology and mechanical civilizations which fed on one-dimensional development of natural sciences and materialism. The structure of technology deteriorates not only material, but also spiritual and mental features of man; aiming to cut his connections with the Divine Creator; therefore, eliminating the metaphysical dimension and spiritual depth of man.

However, what is to be done in technology and science / knowledge production is to establish a balance in every way, to understand the human nature and penetrate more deeply to understand the universe, to give an opportunity to establish the bonds between man and Revelation. In establishing the balance metaphysical truths must be in central place. Technology is dominating society wherever it enters today and it carries the mentality of that place to its own sphere. What is more specifically emphasized here is the mechanization and technology developed after the 18th century in order to develop and protect Western colonialism behind which is the contemporary Christian mindset and modernization mentality. Technology exploits modernization, and Christianize it as it exploits. Therefore technology is an instrument for spreading Christianity in developing countries by means of corrupting their cultures and using them as colonies.

In this century mechanization and technology are not entirely suitable for cultural lives of other nations as these are concepts developed in foreign, particularly western cultural environments; according to the common history, traditions, and principles of living and faith of Western nations. These elements of technology are subjected to different changes by the dominant culture as technology penetrates into that particular society. The host culture also experiences different influences of this technology. Technology and technique do not create love. There was once a famous song in Turkey which was sung by youth long ago with the following lyrics: "She has a car, so beautiful. Also has a driver, private and exclusive." And the song, especially the chorus, ended as follows: "Unfortunately, it does not have a soul." The song is saying that unfortunately the car, the machine, does not have a soul. Then the machine does not have a spirit. Therefore, it would be pointless to expect a mindless instrument to enrich divine and moral values of individuals, families or societies.

In that case, the fact that technology prepares the ground for globalization, and the resistance of cultures to a uniform community structure and urbanization; yet at the same time these cultures try to absorb technology, shows that the nature of technology, even its content, and essence can be changed. This is a fact that the elements of national culture can survive or be revived, even if they have suffered destruction.

Therefore, here, no matter whatever culture, whatever invasionist mentality, which ever conception of science and power technology may represent it will find in one way or another an indigenous culture in opposition and indeed it must find such a reaction; and these are national cultures. The basis of national culture includes religion and language. Just as it was in the past, unified nature of civilization is protected by the language and the religion in today's world also because both of these make up the common ground for the diversified societies. Religion, has become an ideal of the Turkish nation throughout history. Religious ideals have been merged with the ideals of the state. Therefore religion should definitely be given the upmost importance in terms of culture and moral values. Only this way, deformation of cultural changes, resulting from the clash between civilization-culture and technology can be avoided.

We can protect our own genuine values and create new values for ourselves with

the guidance of our own cultural structure if we manage to produce technology and science according to our perspective towards life. An individual shall not base his/her morale and ethical values on concepts of others but shall determine the best and the most beneficial approach on a personalized level. Continuity and maintenance of ethics and ethical values depend on adoption of a divine and absolute source, a creator. For, this will enable commitment to the rules of an Absolute Being. Only this way, ethical values and rules may be universally valid. Even people who claim to be atheists will benefit from the ethical environment relying on the application of these strong values.

TECHNOLOGY AND ITS PLACE IN ISLAMIC CIVILIZATION

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Knowledge production, science and art have only been offered to the service of humanity by the nations that have magnificent civilization and culture in history. Nations with such a civilization and culture could raise knowledgeable people who contribute to universal humanitarian work. These important people have been recognized and respected as members of all nations, regarded as values for entire humanity. For, knowledge and systematic data produced by such great persons provide benefits not only to their own communities but also to many different nations and cultures that accept them. Knowledge and scientific concepts have always been present throughout history of man and gradually developed into what they are today. Not every culture and civilization have participated in this progressive process. On the other hand, many different nations and cultures have carried this knowledge to their communities and benefit from it greatly. In the course of history, scientific and technological developments never stopped but slowed down and kept on moving forward. The only thing that changed has been the civilizations and cultures that performed these developments. For this reason we can trace the movement of technology in different cultures, in Egypt, Mesopotamia (Babel, Akkad, and Sumerians), and Ancient Greece, Islamic civilization (Arabs, Persians and Turks), Europe (different nations) and American societies. All these cultures have acquired scientific heritage of others and developed further. The same civilization and culture is not always blessed with this precious gift. This is an interesting phenomenon which should be investigated in a detailed manner. Civilizations which have failed to contribute to development of knowledge, science and technology shall start to evaluate their past and to reconsider the elements that prepare the ground for the emergence of science and technology. They should also know that the cultures and worldviews of nations play a primary role in

this process. Important conclusions can be acquired by looking at production of information, science and technology by societies. Therefore, a nation cannot put its sign to sustainable, fundamental scientific studies without strong moral values, culture, religion and a belief system.[1] People may believe in the illusion that may be generating original knowledge in a society which dresses, behaves and thinks like other societies. Even if someone performs scientific studies with the culture and perspective of other societies, s/he cannot truly implement these into her/his own culture. In fact, such a scientist will be forced to use the language of other societies for writing new works, which will cause history to regard these works as the success of other societies.

Having said that, importance of language, culture, tradition, and moral values can be understood, especially in terms of performing scientific studies in a society. Therefore, a country or a society shall look into its own cultural values for inspiration, rather than embracing the values imposed by imperialism, to perform their scientific activities. On the other hand, if a culture has not experienced any production of knowledge, scientific studies or technological progress, then it shall benefit from the sources of knowledge in other civilizations in order to assimilate them creatively by developing important concepts and ideas to implement these works. When history of science is carefully studied one can see that societies need to implement beneficial concepts of science according to their cultural perspective, language, traditions and moral values rather than adjusting their culture and moral values to the societies where scientific enterprise is progressed.[2]

The true aim of science is to discover quantity, features and characteristics of events in nature on every aspect and level as well as to evaluate the relationships between different beings and concepts. This way, science is able to acquire the required knowledge which may be used to predict what may happen in the future and how events in the future can be controlled. On the other hand, scientific studies are also performed to satisfy man's need to understand and know the unknown. Today, science has provided advanced technological developments by providing

[1] Zekai Şen. *Philosophy, Logic, Science and Ethics in Engineering* (Istanbul: Su Vakfı Yayınları, 2011). For the second edition see *Philosophical, Logical and Scientific Perspectives in Engineering* (Cham, Heidelberg, New York, Dordrecht, London: Springer International Publishing, 2014).

[2] For more information see George Sarton, *Introduction to the History of Science*, 3 vols. (Baltimore: The Williams and Wilkins Company, 1927).

the foundation that is essential for the development of useful tools and devices for people. In fact, the development of tools and equipment called technology began before the phenomenon called science, and it has constantly progressed since early times. Following the cutting tools of the Stone Age; man has continued to create new tools with copper, iron, etc. to satisfy his needs, without having any scientific basis. Invention of the plow to till the field, the discovery of the wheel and the discovery of gunpowder are all technological developments. All of these developments have been created to satisfy a certain need. Hence, today the organized body of knowledge obtained through systematic thought with a specific methodology, is called "*science*".

Activities that we call science today had a close relationship with philosophy during the centuries when Islamic civilization had its golden age in scientific advancement. Philosophy may simply be defined as the love for wisdom or acquisition of knowledge with systematic and critical thinking. Knowledge, technology, philosophy and religion have moved from one civilization or culture to another welcoming it; and served humanity perfectly. The Middle Ages, is the term between the end of the West Roman Empire in 476 and invasion of Istanbul by the Ottomans in 1453, marking the end of Byzantine Empire, which had been a successor of the Eastern Roman Empire. This period witnessed an immense activity by Islamic civilization in terms of science, philosophy, technology, military, education and social solidarity. At that time, the West was struggling to take a breath of relief from political instability of feudalism, coupled with darkness, filth and absence of human rights. With the order of the Pope, the West attacked Eastern Roman civilization to acquire their wealth and heritage, by showing Jerusalem as an excuse and calling these wave of attacks "Crusades". Many of their fellow religious peers were killed; cities, even Istanbul, which was then Constantinople, the center of the Orthodox world, were raided and pillaged. Later in the 16th century this period in Western history is referred to as the Dark Ages by their historians when ignorance dominated due to the dark, self-centered, inhumane behaviors that the world had witnessed. This adjective may be very accurate for that age, but not for all civilizations that lived at those times. As it may be suitable for Europe, the term "Dark Ages" was the exact opposite of what Islam was right at that time because, especially when we consider the period between the 7th century and 12th century there has not been a single scientist in the West that could be recognized as

peers to Turkish - Muslim thinkers or scientists of that time.[3] For The Middle Ages has been the most beneficial, rich and bright era for Muslims up to date. For this reason, the term of Dark Ages shall not be used especially in education systems of Muslim countries. Unfortunately, Turkish students and the general public are deprived of the fundamental knowledge concerning philosophy, science and technology of their ancestors. As a result they apply the term "Dark Ages" referring to this bright age of Islamic civilization due to the modern, western mindset. In some way, the education system of Turkey, has been left very weak in terms of its own science and religion. Our younger generations do not know the history of science and technology in their own civilization. Therefore, roots of abundant trees have been cut, only western philosophy and culture have been inoculated. On the other hand, one side of these grafted trees can give their own fruits. Our education system ignores Islamic sciences and technology completely. Our youth have been raised with an inferiority complex, stating that we are not capable of developing such high and mighty products of science. Consequently, we have found ourselves in an inert position, imitating scientific history, scientists, cultures and traditions of others. Especially, the history of Islamic science and technology should be known and taught. The mindset and philosophy of the Antique times, which are far darker and older from the aforesaid eras, have dominated the world. On the other hand, even in the West al-Farabi (d. 950) was regarded as the "Second Master" (*al-Ustadh al-Thânî*) after Aristotle. The year 1950 was confirmed and declared by UNESCO as "The Year of Farabi" to commemorate his 1000th birthday as a reputable philosopher and scientist. Even many scientists in our country are still unaware of this fact.

Unfortunately, as a result of forgotten sources, the Islamic intellectuals today claim that they are only doing imitative investigations in the direction of the West. The small amount of scientific contribution from these countries as we see today, creates an important contradiction when compared to their past. This should not lead us to say: "we should boast about our past". But, we should not despise it either. Instead of mechanically writing scientific articles in international magazines, we should embrace our past and diffuse the awareness in the minds

[3] See ibid, vol. 1. In fact Sarton thinks that in these centuries it is not worth studying any civilization other than the Muslim world where original scientific works were produced primarily in this part of the world, 1: 543ff.

of the public to change this sad portrait that we face today. Otherwise, the act of looking for solutions in a mechanized and artificial manner, will become permanent. Especially, the idea which claims that "the distance between the West and us in scientific progress is growing further, that is pointless to try catching up with them" confines our minds in a narrow scope. We shall be absolutely positive about the fact that we are at an equal distance, and sometimes, may even be superior to the West, especially when we consider the huge contributions which have been made by Islamic scientists and technology researchers, despite our present inability to contribute right now. Otherwise, we will not accomplish anything by regarding pioneers of today's science, who are worshiped but not respected at all. Especially, the act of despising our own culture, society, history and resources while worshiping and aggrandizing the West, which has dominated Anatolia for the past 200 years, has become the most influential element which holds us back in terms of scientific and technological developments. Especially, adoption of such an idea by the pioneering thinkers of our country, has reflected its negative influences onto the public and started deteriorating our wellbeing and self-confidence, preventing us to be happy and continue creating, just like a computer virus. Therefore, our pioneering thinkers shall definitely be aware of our major contributions in the arena of science and technology; and convey this self-confidence to the public, as we are successors of those great Islamic thinkers. The West, has become what it is today, thanks to the heritage of the Muslim world. On the other hand, the West has wrongly based these values to Ancient Greece, which had been regarded culturally similar to themselves, and created their own Christian foundation for science and technology while ignoring major contributions of Islamic civilization to science and technology. Western civilization, which had a feeling of inferiority especially in terms prior to 16th century, had inverted this status and started to feel like they were superior to other cultures and societies. We start our lives by accepting superiority of the West, even without needing them to state this expressly. In the Middle Ages, Islam has not acquired anything from the West. Without the past products of Muslim contributions and movements, the West would have been in a far more backward condition today. We can eliminate this feeling of inferiority only if we start to imitate, so to speak, the Western ideas only in certain areas. For example, they have created their own world views and moral values without sacrificing much from their traditions, cultures and religious beliefs. The only opposition

came from the authoritarian pressure of the Church. Similarly, we should base our scientific and technological future on our own traditions, beliefs, language and culture. None of the cultures, which have strong influences in the history of science and technology, has made a sacrifice from their culture, language or religion, but successfully blended the new knowledge they developed or even borrowed from others with their own culture. While it is an apparent fact that doing otherwise will not be a wise choice in the future, changing our culture, traditions and beliefs to imitate the West seems preposterous. Historical realities show us that we do not need to subject ourselves to Christianity, change our language or culture to become successful. Just like Muslims, who have acknowledged and blended the products of Greek, Indian and other scientific traditions without sacrificing their language, religion or culture, European civilizations also preserved their values while they acquired the intellectual products of Islamic civilization. Nobody has changed his/her clothing, language or belief. On the other hand, they have succeeded in advancing to even a higher level of development.

Which scientists and engineers do you think created the first drafts for automation systems and robotics industry that are admired and thought to be performing many hard tasks for mankind? Most of us would probably think that they were from the West or at least, we would not think that such a person was possibly a Muslim scientist. Similarly, most of the Muslims who live in the "modern" "information society" of our time most probably think that these ideas have come to life in Ancient Greece, developed in Middle Ages for a thousand years, and finalized to be what they are today following the Renaissance movement in Europe. On the other hand, we must see that this is not the case when we refer to Western books which interestingly approach this issue objectively. But unfortunately, in the modern age of today when we cannot even trust our own resources; we insist on acquiring our scientific and cultural heritage from the west, and keep on ignoring these fundamental facts of history with a skeptical mindset. Even people who refer to these resources, refuse to adopt, acknowledge and embrace this information, therefore resulting in an inability to develop our own resources. The first lesson that we learn from all these are the facts that the scientists of our own cultural heritage, have the right to be embraced and taught at the same level with thinkers of Ancient Greece. This is not only their right but also a basic need of our young

students, who will be thinkers, scientists and technologists of the future, as they may inspire greatly from their own culture, lose this pointless sense of inferiority and even succeed in eliminating this feeling. For many people who do not know their history, their past, their family learnt from history with bitter experience that it is not possible to advance without the light to illuminate their way from their past. While important works of Islamic thinkers have been translated into Latin, the mostly accepted language of science in Europe, different nations have translated these resources again to their respective languages, enabling them to benefit from these works, creating their own resources by planting their own, adapted seeds.

Especially the wave of terror which has been created in Islamic countries and societies, make everyone think that knowledge, science, technology and even human rights are only products of ancient Greece and today's West. Civilizations that have lost their touch with their histories and repelled their own historical values, have become blind followers of the West. These societies have even ignored and despised all scientific and technological ideas and developments in their own country and accepted ideas and movements from other cultures with blind imitation. This is such a pitiful state and a miserable position to be in. History tells us the fact that societies may only acquire the age of enlightenment by creating their own sources of knowledge with their own cultural resources. Today, all societies and particularly Muslim nations, struggle to maintain their origin in an environment which has been invaded harshly by foreign and western approaches.

One definite example which may even serve as an accurate illustration of today's world of science and technology is Bediuzzaman Abu'l-'Iz al-Jazari's technological automation researches. 800 years ago, and before capitalist and imperialist so-called technological and scientific products were presented to humanity for the purpose of material gain, a Muslim scientist produced the same kind of technical devices solely for serving humanity, making us feel the need to start reconsidering our heritage. This scientist engineer is al-Jazari, whose complete name is Abū'l-ʿIzz ibn Ismāʿīl ibn al-Razzāz al-Jazarī, who has been the only and most influential thinker throughout history. Abū'l-ʿIzz al-Jazarī developed highly admired ideas of "cybernetics", "automation" and "robotics" which are held highly important today. His "engineering" and "innovation" capabilities have been so unique that only a few scientists showed to have this kind of expertise throughout the following

history of man. Also, he has based his technological ideas on objective concepts rather than speculative, abstract ideas as it was in ancient Greece, nor did he express his ideas with symbols.

In the rest of this article because of his importance in the field, I would like to highlight the works of Abu'l-'Iz al-Jazari and his contribution in the field of technology and its significance for the technology-value relationship. This way I hope to spread awareness about his rich capabilities as a Muslim Scholar. The main aim of this article is to provide a brief perspective towards works of mechanical devices and automation concepts which have been created by Muslim scientists between the 9th and 13th centuries as well as evaluate works of Abu'l-'Iz al-Jazari. He is indeed one of the most notable and progressive Muslim scientists working in this area. The work of al-Jazari had been inspired from the works of previous researchers before 12th century and thus created important exemplary works which have acted as a basis for conical threads, suction and force pumps and even steam machines. Unfortunately, even imitations of these works, which have been products of Muslim scholars that have been blended with their own culture and resources, could not be made in the following centuries, resulting in the lack of ability to acquire further developments in this area. Moreover, another objective of this article is to embrace these important examples of mechanics and automation by Muslim scholars due to their historical importance. Particularly, contributions of Muslims to automation, have been the most ignored efforts of this unique society, which are unfortunately overlooked and almost forgotten completely.

I. A BRIEF HISTORY

During the time of the Abbasid caliphates in Baghdad, many works of antique Greek have been translated into Arabic. The intention was to enable scholars who are competent in Arabic to benefit from previous studies. Among these translations, the most notable ones were works of Byzantine Philon's works on pneumatic (air powered) devices in 2nd century B.C. as well as mechanical works of the Egyptian scholar, Heron, which had been performed in Alexandria in 60 A.C. Also, works of Archimedes on water counters were also translated into Arabic. Particularly, works of Archimedes has been noted in the studies of Abu'l-'Iz al-Jazari's whose works also took into consideration previous studies of Archimedes, Philon as well as Arabic scholars, more particularly the Banu Musa brothers. Involvement of

Muslims in the field of mechanics start with the works of the Banu Musa brothers in 850, and reached the peak level thanks to the works of al-Jazari in 1206, who was an Artuk Turk living in Diyarbakır.

One branch of Turkish tribes had started to head west, as Sultan Alparslan had stepped in Anatolia in 1071. The Artuk Tribe, being one of these Turkish tribes, established a state near Diyarbakır. Abu'l-'Iz al-Jazari, who lived at the time of this state, caught the attention of state authorities thanks to his knowledge and capabilities; and was able to continue his studies in a confident and relaxed manner thanks to direct support from the ruling class. At this time he wrote a book on robotics and automation devices.[4] By also applying his drafted works on real machines, he received admiration of the public. The title of this scholar is Badīʿ al-Zaman (we shall spell it as it is pronounced in Arabic as "Bediuzzaman") which means "the prodigy of his time." By only taking his pictures and drawings into consideration and comparing these to machines and robots of our time; we can easily see that his works were spread to the subsequent centuries. Additionally, as we can clearly see that the idea of "cybernetics" has been created by western scholars in the 19th century by evaluating his books and drawings; the influence of al-Jazari can be better understood. First information about our robotist can be found in the foreword of his book. Based on this information we know that he served the ruling family, especially Nasreddin himself, his father and his brothers for a total term of 25 years during the time of Artuk Turks. This reign continued during the rule of Melik Shah, the sultan of Anatolian Seljuks in the 11th century. Then they were divided into two branches as Ilghaz and Sukman Artuklus. Especially in the 12th century, the Artuk Turks established a state in Diyarbakir during the time of the Seljuks who were stronger than themselves, Byzantines and the Crusaders who also came occasionally to their regions.

[4] Abu'l-'Iz al-Jazarî. *The Book of Knowledge of Ingenious Mechanical Devices* (*Kitāb fī Ma'rifat al-Hiyal al-Handasiyya*), translated and annotated by Donald R. Hill (Dordrecht, Holland: D. Reidel Publishing Company, 1974).

II. ISLAMIC TECHNOLOGY AND AL-JAZARI

The title of this section is taken from the first book of al-Jazari that have been translated into English by Hill.[5] In some way, works of al-Jazari are regarded as "Islam technology". Especially, among works of all Muslim scholars in the Middle Ages which served as a basis for scientific and technological developments in following centuries, works of al-Jazari have been the only one which has been included as practical and objective examples. Sarton has accepted the fact that, works of al-Jazari can very well be considered as the peak works which had been performed by Music scholars up to that date.[6] Unfortunately, a number of books which include works of Muslims in fields of technology and science is rather low. Among these, information and technological developments that have been provided by Nasr serve as an important resource.[7] Especially, the works of Wiedemann and Hauser and engineer Fritz Hauser have been the most important examples of studies involving al-Jazari in the Western world.[8] Widemann was a physicist who knew Arabic. Therefore, study of his works by physicists and engineers, instead of historians, social scientists and lectures shows us the fact that, works of al-Jazari have important economic, practical and up-to-date benefit which may be used in terms of engineering designs with correct physics principles. It has been known that, drawings and explanations in al-Jazari's book involves important plausible information for practical development in terms of their design and technical applicability.

Other thinkers and scientists which have contributed to Islamic technology before al-Jazari was Banu Musa (The Musa Family) heritage, Khwarizmi and Rıdvan. In the Musa Family, there has been three notable scientists including Abu Ja'far Muhammad, Abu Qasim and Hasan. These thinkers have been raised under the rule of Caliph al-Ma'mun, following the death of their father. Three brothers seem to have influenced al-Jazari in his works. Works of these brothers include 100 different devices. These involve seven different designs of fountains, four automatic shaving (chipping) machines, one automatic music instrument, one gas

[5] See Sarton, op. cit.

[6] See Ibid.

[7] Seyyed Hossein Nasr. *Three Muslim Sages* (Cambridge, Mass.: Harvard University Press, 1964).

[8] E. Wiedemann and F. Hauser. "Über die Uhren in Bereich der Islamischen Kultur", *Nova Acto Academiae Caesarae Leopoldino*, 100 (1915), 167-272.

mask for working on a dirty well, and one mechanical containment device for excavation in wells. The rest of their works mainly includes different mechanisms with water depots. Designs of these scholars were influenced by some ancient Greek thinkers such as Philon and Heron, who had similar concepts in their works. Therefore, Muslims of those times have also used the principle of referencing, which is still a respected rule of scientific practice. Works of the Musa family are more systematic and automation works as technological devices.

Al-Jazari used the idea of a water counter, which had been set forth by Archimedes. As also explained by Drachmann,[9] insufficient features of Archimedes' design have been modified, adapted and corrected by Muslims who have also invented the first working water counter in the world. Another example of mechanical device parts developed by Muslim scientists for the first time in history and that could not be found in prior ages is conical valves. This mechanical part is used in different parts of al-Jazari's book. According to Western sources, the idea for the conical valve, started flourishing in the 8th century, and developed fundamentally in the 9th century.[10]

Moreover, the book of Abû Abdillâh Muhammad ibn Ahmad ibn Yûsuf al-Kâtib, known for short as "al-Khwârizmî" (d. 997), entitled *The Key of Sciences* (*Mafatih al-'Ulum*), included important technological information which is used by Muslim scholars. The section which catches our attention in Khwarizmi's book is called "*hiyal*" (inventions) which involves an in-depth knowledge of different mechanisms. Fundamental definitions which have been used by al-Jazari are also included clearly in this book.

Another important work, which influenced al-Jazari belongs to Fakhr al-Din Ridwan ibn Muhammad al-Sa'atî (d. between 1220-1229) who was a scholar and mechanical engineer, author of the book *'Ilm al-Sā'āt wa'l-'Amal bihā*[11] in which he described the public clock set in Damascus by his father. Being a doctor, Ridwan set forth important opinions in different areas such as rhetoric, logic and

[9] A. G. Drachmann. "Ktesibios's Waterclock and Heron's Adjustable Siphon", *Centaurus*, 20, 1 (1976), 1-10.

[10] See Hill, op. cit.

[11] For the sake of practical reading for the layman we did not follow the Arabic transliteration very meticulously. Only in certain cases we followed the general convention to make sure the correct reading of the words.

philosophy. On the other hand, the insufficiencies in his drawings show his lack of competence in these areas. Nevertheless, even insufficient drawings of Ridwan have played an important role in development of Islamic technology. Ridwan does not have a technical background, but his works include even minute details, unlike al-Jazari.[12]

Lack of importance given to automatic devices which were also designed and explained widely by the Banu Musa brothers and later by al-Jazari and other Muslims in the following centuries, have led to the loss of the light of Middle Age Muslim Science. Unfortunately, this has been also felt by al-Jazari as he pointed out these matters in the foreword of his book; and stated: "I have put in so much effort to this work and I am deeply worried that my works will be lost with the blowing wind, and erased like the night does to the day." Muslims have not paid the required level of attention to works of al-Jazari, especially to his book called *Kitab al-Hiyal* (The Book of Inventions), despite the fact that he provided important explanations in this book. This fundamental issue may be set forth as an important reason which neutered the development of automation science in Muslim societies, which held indeed a potential to make an important revolution. Many scientists, who were influenced by this book have made science and technology what they are today. Al-Jazari not only developed important device mechanisms that pioneered technology but also provided many influential concepts and ideas that have later contributed to science, philosophy and engineering. This can also be understood from the foreword of al-Jazari's book. Because of its importance I would like to list these as follow:[13]

1. The inventor starts his book with the "basmala" (saying "in the Name of God, most merciful most beneficent"), and continues, stating that the real secret and power of everything on the land and in the sky, belongs to the Allah, the most high.
2. He asks more of these scientific discoveries from Allah, and respects his powerful ruling and decision. Such a request can be also found similar to the desire of Einstein; to know how God wanted to create the earth and what

[12]For more information see also Donald R. Hill, *Arabic Water Clocks* (Aleppo: Institute for the History of Arabic Science, University of Aleppo, 1981).

[13]See Zekai Şen, "Robot ve Otomasyon Biliminin Öncüsü Ebu-l 'Iz al-Jazari" (Robotic and Automation Science Pioneer Abu-l 'Iz al-Jazari) presented (in Turkish) in the *Osmanlı Su Medeniyeti Sempozyumu*, Feshane, İstanbul, 2000.

was the divine design behind creation.

3. It has been also noted that al-Jazari has researched all the works in world literature previosly. Therefore, al-Jazari provides us with an excellent example of Muslim's indebtedness to other works which were written prior to them by showing references, in the history of science. Such a behavior is expected morally by the scientific community.
4. The foreword of al-Jazari's book also tell us that he has researched works on how objects can be used to move other objects as well as other articles which prove different laws involving the sky and earth; and decided to focus his energy on the field of robotics. This means, works which had been made prior to him gave him the will to perform his own studies. Here, we also understand that al-Jazari was also interested in physics, and the philosophy of nature.
5. Reading the previous works without criticism is good for only transmitting the knowledge acquired in this way and that is why he wanted to free himself from being a simple transmitter. This way he was able to keep himself from just repeating what others have done, and return to his problems to investigate with his own insight. Thus, he continued the work independently to produce original works and do research freely.
6. He also stated that he had to pass through subtle and difficult ways during his studies and felt himself in distress from time to time, but he continued to work for years. Al-Jazari is so determined and stated: "I have awakened my ideas of drowsiness by extraordinary effort to stimulate my determination." In this, he has done all he can in order to make every effort to do more research. At the end of this, he became a scientist who excelled in the society he lived in.
7. Despite all his successes, competence and achievements, he could not help to save himself from skepticism, just like Rene Descartes, a thinker of 16th century 400 years after his time, who states his famous methodical skepticism.
8. Another sentence in the foreword of al-Jazari's book, which is so well-thought that can still enlighten the world of industry and science today, states that "a technique (technology) will be left stranded between right and wrong if not realized and brought to application. With these words, he has expressed his desire for all researches to be realized and transformed into machines and mechanism that may be used to serve humanity.
9. Another important fact which has been given in the foreword of his book is his success in creating basic elements of science by gathering previously acquired dispersed sources of knowledge and then organizing them

systematically. He highlights the fact that difficulties will arise in all fields of work, while these can be eliminated by means of systematic working and organization of findings during the course of scientific studies.

10. Al-Jazari not only wanted to satisfy his curiosity but also wanted to teach his findings to others. He has stated this as follows: "I wanted to leave a decent work behind me which will convey what I wanted to teach and enable others to write what I have accomplished in my works." Therefore, he also took into consideration the connection with other generations after him. On the other hand, he decided not to follow this decision as he explains this in the following way: "But I gave up on this idea because I was afraid that an influential critic would find my mistakes."
11. Later on, the adherents of the people of benevolence appealed to al-Jazari to discover various aspects of his beautiful wisdom. He expressed his feelings by stating "I have received such interest and assistance of rulers and thinkers of my time that I was able to see the products of my work." Ruler of Diyarbakır, Abu'l-Fath Mahmun bin Muhammad ibn Qaraaslan, who was aware of his studies told him once: "You have created unique plans, realized these as if from absence into existence. Do not waste all this effort and the foundation you have created. I want you to create a book for the projects you made and drawings you drew." Therefore, the book of al-Jazari, *Kitab-ul Hiyal* flourished with state support and encouragement, and was thus transmitted up to date. Unfortunately we do not see any such work after that until today.
12. Another message that we can receive from the foreword in this book is the fact that, humans should be wise when deciding upon something; and everyone has been created with the competence required to perform a task easily. Everyone is also required to share what he/she has. He thus said: "I am sharing what was given to me. Nobody should keep useful information to himself and nobody should be obliged to perform something beyond his/her ability." He points out here that information can spread towards society easily.
13. Another message of al-Jazari in his book is his engineering concept. He explains, these concepts with drawings and annotations he provides. As engineering has just started to be acknowledged as an "applied science", al-Jazari's flowmeter is an important example with fine details.

The focus of al-Jazari's works have been "brilliant" technological devices called "hiyals" (inventions). At his time, these devices were using water and air pressure, as there were no valuable resources of energy to empower devices. His empirical knowledge is also based on the sources of that date, as he produced such operating

systems and devices. Especially, copper depots, pipes, pontoons and wheels were his creations with these materials. He used syphons, nozzles, orifices, taps and valves to control the movement of water. All kinds of wheels were manufactured from wood or iron, and settled on shafts.

While al-Jazari had a wide knowledge of numbers, the Banu Musa brothers had used letters to represent figures. Even though mathematical relations were not known very well, experiences up to that date were used during studies. Even though the Banu Musa brothers did not know the concept of pressure difference, they have successfully designed devices based on hydraulics and air pressure.

III. AUTOMATION, ROBOTS AND COMPARISON WITH TODAY'S TECHNOLOGY

Works of other scholars and scientists prior to al-Jazari were not recorded in a written manner but successfully conveyed from one generation to another verbally. Usage of these transmitted technical knowhow by al-Jazari and the Banu Musa brothers have resulted in the creation of many brilliant technological devices. Al-Jazari's efforts in accumulating this technical knowhow and organizing them in a book subsequently enabled engineers after him to produce works of technical devices. Mathematics, space geometry and other different measurement systems have been used in designing of these devices. Also, Abu Abdullah al-Khwarizmi's book called *Mafatih al-'Ulum* which was written in 991, managed to enlighten the path of future studies as a science and manual of technology. This book also included etymological data about meanings of different parts used in those brilliant inventions. An important feature of this book is the fact that it involves the common terminology, used by Muslim engineers up to end of that century. 200 years after this incident, in the year 1203, al-Sa'ati provided an important source, indicated above, concerning mechanical operations and performances of technical devices, which was intended to be used as a guidebook for repairing clocks. Besides these works, different books of Muslim engineers and scientists of nature also included certain sections on engineering, technical devices and mechanics. Organized and careful research should be carried out to collect all these works and present them for scholarly use. Notable works among Muslim philosophers, scientists and thinkers belong to al-Biruni, al-Hazini, Ibn al-Haytham and Jabir ibn Hayyan.

Of course the only book which has directly influenced modern engineering is the book of al-Jazari because his book included drawings and information about materials, methods, and simple explanations that anyone can easily understand. By considering his works with today's technology, the most notable invention is most probably the mechanical device which involves moving pistons placed in cylinders. This machine involves a wheel with scoops, which is used as a source of movement. This movement is controlled with a gearing system to harmonize the movement of a slot shaft. The movement of the slot shaft is transferred to horizontal movement to move the cylinders on sides, for the purpose of pulling water continuously according to open/close status of valves. This device involves three important characteristics which is still used in water pumps we use today. The first is presence of bidirectional pistons; the second is conversion of the rotation, the harmonic movement, to horizontal forward and backwards movement, and the third is its exemplary features for a water pump today. For all these reasons, al-Jazari's double water pump system, has provided an important mechanism for drafting the vapor machines in the 19th century. In fact, many mechanical device models of al-Jazari has served as a basis for modern mechanical engineering.

Another element that has been used by al-Razzaz al-Jazari is conical valves. Although there is a claim that these valves were used by Leonardo Da Vinci for the first time in the 16th century it has now been proved that al-Jazari's first book of drawings did actually include conic threads which means that this valve has been invented by al-Jazari in the 12th century.

Drop-type buckets are also one of many robotic mechanic devices which have still been used today. Drop-type buckets are essential elements of rain meters we use today. This bucket drops with certain intervals and prepares itself for the next fill. Also, al-Jazari has successfully discovered the correct orifice diameter to use by expanding the diameter slowly until he reached the correct level, despite his lack of knowledge about orifice formulas. In other words, empirical manual works have been performed rather than theoretical studies. This also shows the fact that al-Jazari was the first to perform empirical studies which have flourished in Islamic cultures. He has also used rules of geometric similarities, by creating paper models of his invention designs before. He is also the first engineer who invented usage of oil dipped wooden shafts to prevent scraping. One of his water rising devices

involved transfer of power by means of a crank shaft. This can be acknowledged as one of the first examples for today's modern crank shafts used widely in different machines. Crank had been known before him but had been used manually before him.

Conclusion

Technology, especially in early ages, have been developed independently from philosophy and scientific theories. The first human beings were struggling to satisfy their most basic needs such as shelter, protection from the outside world, and finding food. China, India, Mesopotamia, Egypt, ancient Greece, Islamic civilization and today's Western culture have all contributed to the development of technology throughout history. Information about technology in early ages could only be acquired from excavations. Also, different cultures have written records involving development of technological literature. As these technological developments could easily be written with the Arabic alphabet, rapidly, many scripts successfully conveyed this information to us. Particularly, primitive technologies of ancient Greece and other civilizations have been carried to their prime condition by the help of Islamic civilization and other centers of interest (namely Andalusia); before being successfully carried to Western societies devoid of this kind of knowledge then, Africa, Andalusia (Spain), and Islamic nations of Middle East. This influential development wave sparked Europe, and enabled it to become what it is today. Although Islamic civilization is the most influential spark of Western science and technology, this truth is not known even by most Muslims today. Many convoluted ideas flood these nations, asserting that technology has always been created by Western civilization.

This article has given a brief information about the history of technology in different civilizations and provided information about Islamic technology, especially before, during and after reputable al-Jazari. This Muslim thinker, inventor and scientist, who created prime examples of technology before the Renaissance, has enlightened the path of future studies. The article has also tried to highlight these important contributions of al-Jazari with brief examples. Also, examples of first pistons, cylinders, crank shafts and water pumps in Islam society throughout 1200's have been explained to support the idea that; Islam societies have also been pioneers in benefiting from human, animal, water and wind power.

Unfortunately, today's Muslims turn their backs to great contributions of Islamic civilization to science and technology, and turn their face towards the Western civilization as they regard it the only way towards development. This mindset is surely confined and sterile, as history has not witnessed a single civilization which managed to provide innovative and developed products of high science and technology without preserving its own traditions and cultural heritage. In the future, this issue shall be taken into consideration and our nation shall first start to embrace its own values and features while remembering the contribution of our successors to the world of science and technology.

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.[1] 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

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

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.

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 {اقْرَأْ بِاسْمِ رَبِّكَ الَّذِي خَلَقَ} and then it goes on to say; "He who had taught the use of the pen, taught men that which was unknown to him."[2] In this part of the Qur'an, 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 (إِنَّمَا يَخْشَى اللَّهَ مِنْ عِبَادِهِ الْعُلَمَاءُ).[3] 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 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).

[2] The Qur'an, 96/al-'Alaq, 1-4.

[3] Surat al-Fâtir, 35: 28.

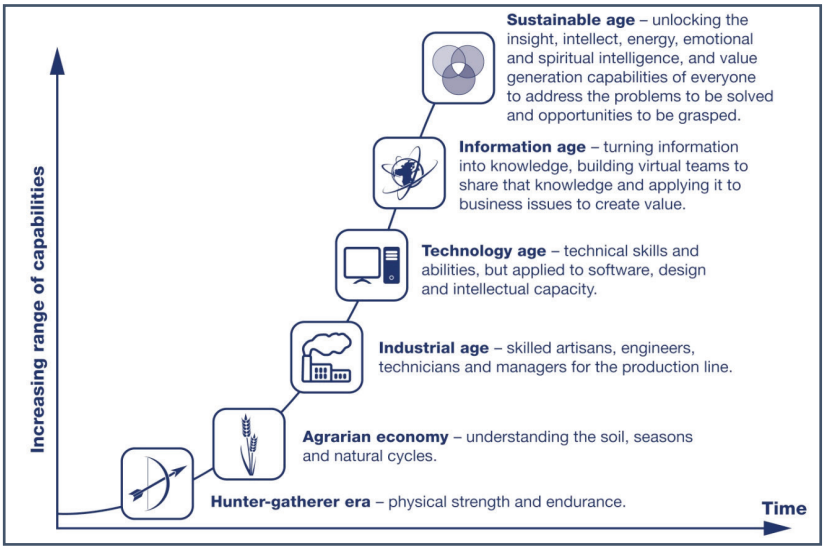

Figure 1- Human mission diagram

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 look 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 an 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.[4] 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 All-Knowing" (*al-'Alīm*) is one of the Beautiful Names of God in Islam. The Qur'an declares that knowledge comes from God.[5] Islamic

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

[5] Surat al-Baqarah 2: 239.

scholars, theologians and jurists as well as scientists are often given the title *'âlim*, 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 individual behaviour, while the truth is an objective state independent of an individual. Interestingly philosophy traditionally defined knowledge as justified true belief[6] 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 foundation of the personality, physical, intellectual, moral and spiritual which the scientific methodologies alone cannot capture all those elements of the personality.[7] 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 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 human experience and involve the confession that our knowledge is partial.

There are three levels of new knowledge that could be defined. This is

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

[7] Karl Popper. *The Logic of Scientific Discovery* (New York: Basic Books, Inc., 1956).

depending on how 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 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 reason 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").[8] It means it is a continuous learning process because there is a limit to how much we know and can comprehend. However those principles they will once be known.

For example, speaking of a mobile phone a hundred years 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.[9]

There is another level of knowledge which 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 then 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 the definition of chance! What is missing is that new knowledge comes from God by inspiration and God favours the prepared minds for obvious reasons!

(وَمَن يَتَّقِ ٱللَّهَ يَجْعَل لَّهُ مَخْرَجًا وَيَرْزُقْهُ مِنْ حَيْثُ لَا يَحْتَسِبُ)[10]. "The one who is the believer and

[8] (سَنُرِيهِمْ آيَاتِنَا فِي الْآفَاقِ و فى انفسهم) Surat Fussilat 41: 53.

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

[10] Surat al-Talaq 65: 6.

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 characteristics 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 who are most conscious of Allah; who believe in the ***Unseen***" (بسم الله الرحمن الرحيم (الم (١) ذَلِكَ الْكِتَابُ لَا رَيْبَ فِيهِ هُدًى لِلْمُتَّقِينَ (٢) الَّذِينَ يُؤْمِنُونَ بِالْغَيْبِ)[11] As mentioned before 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 new knowledge. Faith provides the base and the trust in accessing this knowledge and this goes back to 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 prompt the question about the fairness of God for giving to one but not to someone else. The idea of faith is believing in the unknown to acquire new knowledge. It is to do with our own understanding of things around us and the choices we make. Helping a hard working student to advance 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)[12] 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.

The third lower level of 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 the car, telephone, computer, chair, scientific community and publications and so on. These all are inventions not discoveries. Invention is the making of known knowledge and principles.

[11] Surat al-Baqarah 2: 1-2.

[12] Surat Taha 20: 114.

Today, there is a conflicting view taken by many scientists that there is non-compatibility between 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 an effort 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 the 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 such as pollution due to the unsustainable use of technology.

Science and technology are consistent with faith, as they are both true beliefs.[13] 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.[14] Science provides the knowledge to reflect on and understand the existence of God, while technology provides the tools to serve society. Science provides the means to understand physical reality and questioning its origin, its initiation and the link to faith.

Science inspires intellectual curiosity 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 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 an 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.

[13] Bas. C. van Fraassen. *The Scientific Image* (Oxford: Clarendon Press, 1980).

[14] Alvin Plantinga. *Warrant and Proper Function* (Oxford: University Press, 1993).

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 confined to a specific race such as Arab or Persian or 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.[15]

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 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.[16]

[15] Surat al-Baqarah 2: 132-133.

[16] 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.

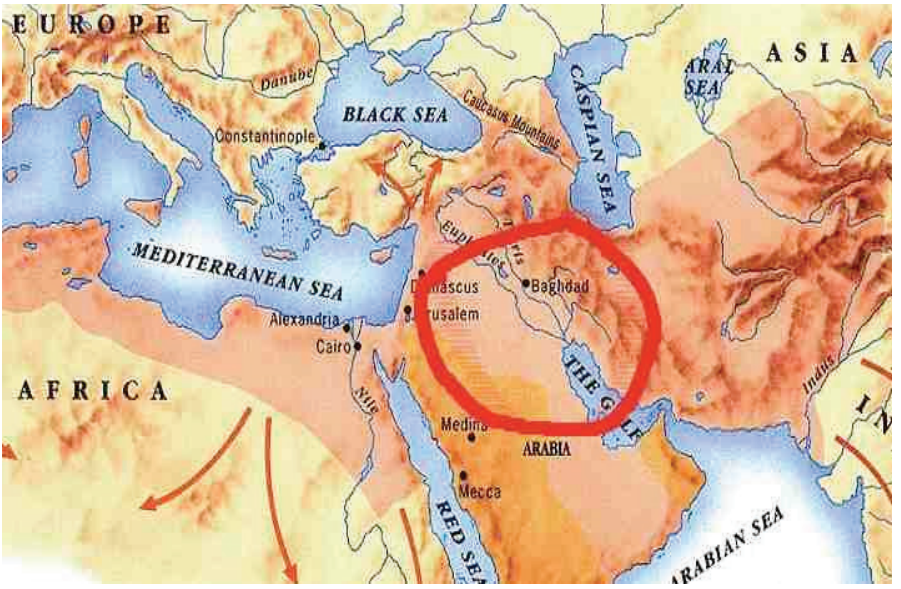

Figure 2- Baghdad (Gift of God) was at the cultural crossroads in the early ninth century.

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 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 discord with Islamic thought and religious belief. There are many religious scholars who 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.[17]

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

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 translates as 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.[18]

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 a 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, with geometry as a tool worth developing.[19]

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 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

[18] Charles M. Falco. "Ibn al-Haytham and the Origins of Computerized Image Analysis", International Conference on Computer Engineering & Systems (ICCES), 2007.

[19] Jim Al-Khalili. *Pathfinders: The Golden Age of Islamic Science* (New York: Penguin Books, 2012).

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-zajat*), 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[20]

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

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

[20]Roger Forster. Paul Marston. *Reason, Science and Faith* (Oxford: Monarch Books, 1999).

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".[21] 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."[22]

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. Half of students participated in 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 element. I want to know His thoughts, the rest are details."[23]

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 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 among which have been considered in international development goals "Millennium Goals" to achieve by 2015. Interestingly these three fundamental elements, food-water-energy, are highly interdependent; 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.

[21] John Hudson Tiner. *Issac Newton: Inventor, Scientist and Teacher* (Milford, Mich.: Mott Media, 1975).
[22] Franklin L.V. Baumer. *Main Currents of Western Thought* (New York: Alfred A. Knopf, Inc,, 1970), 324.
[23] Iain Paul. *Science and Theology in Einstein's Perspective* (Edinburgh, Scottish Academic Press, 1986).

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."[24] If we look to the meaning of the Arabic text, it is much deeper and wider than just the conventional sea water and fresh water. When it says مَرَجَ (maraj) means 'a dense' solution or generally every two solutions of different densities, there is a barrier that exists between them. In scientific terms when there is a barrier between a dense solution and a less dense solution, it means there is 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.[25] 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.[26] 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 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.

[24] Surat al-Rahman 55: 19-20.

[25] 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).

[26] 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-Taee, "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.

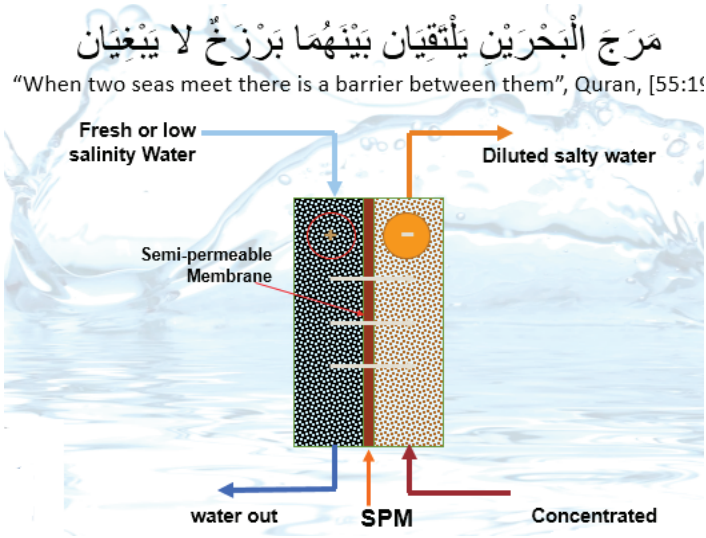

Figure 3- Power generation by using direct osmosis process

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 water 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.[27]

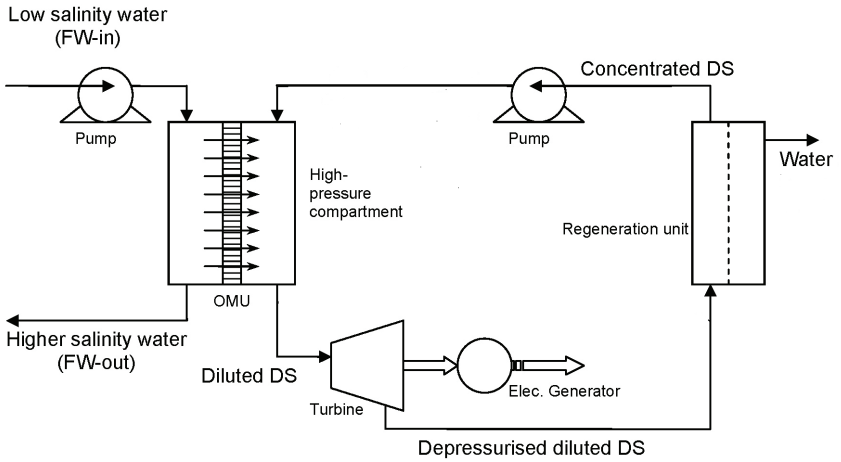

Figure 4- Schematic diagram of the Osmotic power generation and clean water production process

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."[28] 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.

[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).

[28] Surat al-Furqân 25: 53.

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.[29]

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

INCULCATION OF VALUES INTO TECHNOLOGY: AN ISLAMIC PERSPECTIVE

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The rapid development of science and technology, with all the advantages and benefits has brought for man a negative effect on moral and human values in society. The age of technology has caused a type of mechanization of human life and human behavior. It has caused people to drift far away from virtues and the accepted traditional values of society. The main reason for this is the industrial development of most of the countries without adequate attention to the values dominating that society. Therefore it is the appropriate time, if it is not too late, to discuss and propose the inculcation of values into modern science and technology. However, this is not simply a cosmetic addition of religious values and terminology to modern sciences and applied technology, neither is this an attempt to lend a sort of religious legitimacy to technology by grafting of relevant Qur'anic verses on technology as well as science. On the contrary, it is a holistic approach involving in the first place the evaluation of modern science and technology that emerged out of Western philosophy of science which is diametrically incongruent with the Islamic one, traceable from the worldview that Islam and the West have.

Moreover, since technology is the product of the creative mind of technologists, the value inculcation should be through them as the producer, yet the society that needs technology also have rights to demand from the technologist certain requirement for solving their problem of life including religious ones. In order to discern the *rationale* of value inculcation in technology it is worth discussing the sources of the problem namely modern science and technology. Subsequently the value inculcation that will be proposed here are three *first* shifting the worldview of the scientist or technologist, *second* by infusing the principle of *maslaḥah* in technological works by referring to the social expectation or demand to technology and third through knowledge transformation at university education.

I. MODERN SCIENCE AND ITS PROBLEMS

Before dealing with the process of how to inculcate values into technology from an Islamic perspective, it is imperative that we define the meaning of sciences. There are disagreements among scholars regarding the status of modern science, whether it is neutral or value laden. Some believe that science is cognitive in attitude and aiming to obtain "objective" knowledge, therefore there is little room for morality or in other words it is neutral. Others argue that that natural objects and physical laws are considered neither "good" nor "bad" and science is pursued to discover the natural laws and therefore no value in this objective of knowledge.[1] However, others argue that science in the West is problematic, for it is no longer associated with religion, the source of moral values. So it is neutral from religion but it is not free of secular values. So it is said that "Religion and science are separate and mutually exclusive realms of human thought and consequently it leads to "misunderstanding of both scientific theory and religious belief".[2] Due to its separation from religion it is called "science without God" to borrow the term of Arnold E. Loen.[3]

Historically, the separation of science from religion is back to the conflict between science and religion as early as the 17th century, when Galileo (1632) was persecuted by the Roman Catholic Church for his view that the earth went round the sun. He also asserted that physical science must be separated from theological studies. This is because, he argues, the goal and the job of the two disciplines are totally different. The job of the scientist is to examine nature, while the business of the theologian is to make sure that the Bible agrees with it. In the same century Bacon also emphasized that religion is not a means of establishing physical truths, because it does not rely on practical experimentation. He also suggests that since the Bible was written centuries ago, it lacks the information of scientists established from natural experiments. This means using it to explain the natural phenomena is not appropriate.[4] This separation was also driven by Renaissance of the Western civilization (14th-17th centuries) with its new spirit of inquiry and discovery that opened the gates to new scientific

[1] Susan Ella George. *Religion and Technology in the 21st Century: Faith in the E-World* (London-Melbourne: Information Science Publishing, 2006), 7, 187.

[2] National Academy of Sciences. *Science and Creationism: A View from the National Academy of Sciences* (Washington, D.C.: National Academy of Sciences Publications, 1984), 6.

[3] See Arnold E Loen. *Secularization, Science without God?* (London: SCM Press Ltd., 1967).

[4] George Bugliarello. "Science, Technology, and Society—The Tightening Circle" in Glenn

and technological developments. This separation was affirmed rigidly by the French Revolution (1789–1799). From these historical facts, it is clear that modern science is separated from religion from its early inception.[5]

The above separation has resulted in the rise of the principle of duality between "fact" and "value", by which science is regarded as neutral or having no values. This duality is based on the myth of ethical neutrality in a value-free social science discussed by G. E. Moore in his *Principia Ethica* (1903), where he argues that science is restricted to what can be empirically proven. This means, only facts in the empirical sense are considered to be capable of being known *scientifically*. In this viewpoint the truth is measured only from objective facts separated from values.

The dual vision that separate fact from value led to another epistemological dichotomy of "subjective truth" and "objective truth"[6] Not only has science been limited to empirical phenomena that everyone could analyze and evaluate quantitatively without interference of the subject but could also be assumed as fully independent of time.[7] What they mean by the objective refers to two modes: *first* is a specific characteristic of scientific methodology, which is systematic, empirical of nature that leads to truthful generalization that could be empirically verified by repeating the experiment. *Second* is the characteristic of the orientation and practice of scientists. In other words, is the behavior of researchers and practitioners of science objective?[8]

However, what is claimed as objectivity in science is not really objective in the real sense of the word. For we only make up our vision of reality and our

Schweitzer (ed.), *Science and Technology and the Future Development of Societies, International Workshop Proceeding* (Washington, D.C.: National Academy Press, 2008), 106.

[5] Douglas G Long divided the period separation of science from religion into three: *first* is a period when the philosophy of science is a branch of theology, and scientific inquiry arrive at truth or certainty by confirming religious truth; *second* is a period when science has been secularized in a negative sense: confined to the realm of the secular, cut off from ultimate truth, having lost the capacity for unmitigated certainty as believer might lose the capacity for faith. The last period is a period when science has really been secularized. See Douglas G Long, "Science and Secularization in Hume, Smith and Bentham" in James E Crimmins (ed.), *Religion, Secularization and Political Thought, Thomas Hobbes to J. S. Mill* (London and New York: Routledge, 1990), 96.

[6] Peter R Senn. *Social Sciences and Its Method* (Boston: Holbrook Press, 1971), 55.

[7] Alanc Isaak. *Scope and Method of Political Science: Introduction to the Methodology of Political Inquiry* (New York: The Dorsey Press, 1969), 24.

[8] Helen E Longino. *Science as Social Knowledge: Value and Objectivity in Scientific Inquiry* (New Jersey: Princeton University Press, 1990), 66; see also Nasr Arif, "Science, Objectivity and Ethic in Research Methodology", *The American Journal of Islamic Social Science*, 15: 1 (1998).

perception of the world in general according to its reflection in our subjective natures. In this sense, there is no purely objective world which we are bound to regard as representing reality. The world is the interaction between the human selves reflecting upon multiple meanings and then imposing them over things. So, we cannot separate the thinker from his thought and the scientist from his responsibility. More generally, we cannot separate man from the reality he studies with this approach because reality is very complex and the world's elements are shaped according to our perspectives and interpretation. The more we examine the element of reality from a different perspective the more aspects we can see.[9] Therefore, the perception we gain is totally different from the actual reality.[10]

Science is not practiced within a cultural or societal vacuum. It is not only the product of logic, but is an integrated part within this impure world in which we live. Science, is thus subject to the economic and political power that abuse science for political, commercial or military interests. So there is no empirical proof for the claim concerning the objectivity of scientific research. In the mid-70s, for example, excessive writings on sciences suggests that works of scientists in various fields including medicine and technology were not really neutral. It was because those works had been influenced by politically dominating power, especially in their job of formulating a certain perspective for science and technology.[11] Even in certain cases, science depends on government, institutional and organizational funding, and that scientists interact with and are dominated by the interest of various economic, political and military powers.[12]

In addition, the principle of duality brought about a dichotomy between physical and metaphysical reality that can hardly be reconciled. This is exactly what has been asserted by Silver that "the polarization between science and religion weakens societies and continues to be unresolved."[13] Seyyed Hossein Nasr criticized this by asserting that sensualist and empirical epistemology that dominated the horizon

[9] David Halbrook. *Education and Philosophical Anthropology* (London Associated University Press, 1987), 150-151.

[10] Harold Brown. *Observation and Objectivity* (New York: Oxford University Press, 1987), v.

[11] Les Levidow, ed. *Science as Politic* (London: Free Association Books, 1986), 3.

[12] Steward Richards. *Philosophy and Sociology of Science* (Oxford, Basil, Blackwell, 1987), 127-128.

[13] L. M. Silver. *Challenging Nature: The Clash of Science and Spirituality at the New Frontiers of Life* (New York: Ecco, Harper Collins 2006), ix.

of Western people in this modern era, has successfully reduced the reality of the world of experience into sense perception. This has limited the meaning of reality and eliminated the concept of God's reality.[14] Human domination of searching the truth implies that the Ultimate reality i.e. God is forgotten or left behind. There is no principle higher than the human being. More fundamentally modern science was founded on the Western worldview which was colored with Western culture and psychological perception. At least there are five characteristics of Western civilization:

First, relying merely on reason to guide the life of human beings;
Second, following the validity of dualistic view about reality and truth;
Third justify the aspect of temporal Being that project secular worldview;
Fourth advocate the doctrine of humanism.[15]
Fifth so, modern science is value laden and not neutral at all.

A. TECHNOLOGY AND ITS PROBLEMS

Having delineated so far the problem of value in modern sciences, we shall now elaborate such a problem in technology since the former related closely with the latter. Technology is a complex phenomenon and therefore it has no single meaning. There had been much effort devoted to work out precise definition of technology but it finally failed. Be that as it may, there are still some definitions that can be used for basic understanding of technology. Etymologically, the word "technology" comes from the Greek word "*techne*" meaning a systematic treatment of an art or craft and suggests craftsmanship. Other definitions summarized from *Answers.com* (n.d.) show that there are at least five definitions of technology:

1) The application of science, especially to industrial or commercial objectives.
2) "Applying a systematic technique, method or approach to solve a problem" (Computer Desktop Encyclopedia).
3) "The discipline dealing with the art or science of applying scientific knowledge to practical problems".
4) "The creation of products and processes for the purpose of improving

[14] Seyyed Hossein Nasr. *The Need for a Sacred Science* (New York, SUNY Press, 1993), 7 & 20.

[15] Syed Muhammad Naquib al-Attas. *Islam and Secularism* (Kuala Lumpur: Angkatan Belia Islam Malaysia (ABIM), 1978), 127– 132. See also by the same author *The Concept of Education in Islam* (Kuala Lumpur: Muslim Youth Movement of Malaysia, 1980), 45.

human chances for survival, comfort level, and quality of life".[16]

5) "The practical application of knowledge, especially in a particular area such as engineering"[17]

It was these senses, in which 'technology' is used to refer to a body of knowledge about the useful arts that prevailed from Renaissance times well into the industrial era.[18] However, when technology is defined from other discipline of knowledge it appears somewhat different. In relation to economic discipline 'technology is simply anything that is important in constraining the feasible combinations of certain inputs to produce certain outputs'.[19] In the Standards for Technological Literacy, technology is also defined as: "…the diverse collection of processes and knowledge that people use to extend human abilities and to satisfy human needs and wants."[20] Another definition that emphasize social and environmental factors in technology is this:

> The use of knowledge, skills and resources to meet people's needs and wants by developing practical solutions to problems, taking social and environmental factors into consideration.[21]

All those meanings show that technology can be understood as the practical application, creation, method, technique, approach of scientific knowledge. In this sense technology applies the finding of scientific research or in other words science "comes before" technology enabling advances in technology. It could also be assumed that technology come first before the next scientific breakthrough can be made. It is through technology that science is enabled to advance. So in fact, there is a reciprocal relationship between science and technology.

Those diversified definitions of technology can be simplified into its types. Foucault, for instance, proposed four types of technology:

[16] www.geog.ouc.bc.ca/conted/online courses/enviroglos/t.html.

[17] www.projectauditors.com/Dictionary/T.html. See also Susan Ella George, *Religion and Technology*, 7.

[18] T. J. Misa. "The compelling tangle of modernity and technology" in T. J. Misa, P. Brey & A. Feenberg (eds.), *Modernity and technology* (Cambridge, MA: The MIT Press, 2003), 1-30.

[19] Sonja Vandeleur. "Indigenous Technology and Culture in the Technology Curriculum: Starting the Conversation: A Case Study", unpublished Ph. D. thesis, Rhodes University, January 2010, 12.

[20] International Technology Education Association. *The Standard for Technological Literacy* (2002), 2.

[21] The National Curriculum Statement: Technology, South Africa, Department of Education (2002), 4.

1) Technologies of production, is technology that allow us to produce, transform or manipulate things;
2) Technologies of sign systems, is technology that permit us to use symbols, signs or meanings;
3) Technologies of power is that which determine individual behavior and;
4) Technologies of the self is an approach to study the ethics of the individual.[22]

According to Foucault, these four types of technologies always function together but they are not reducible to one another as each type is associated with a certain domination. It is a framework that enables researchers to better identify patterns, structures and relationships in a socio-technical system.

Be that as it may, technology is related closely to sciences in at least three points. *First* science (*episteme*) is about the unchangeable, while technology (*techne*) is about the changeable. *Second*, science starts from sensations of concrete things, whereas technology goes one step further and applies general knowledge back to concrete things. *Third*, scientists look for theoretical knowledge (*theoria*), that is, an activity having an end in itself; technicians produce new things (*poiesis*), and such an activity has always an end in something else.[23] In this sense technology has been seen as "flowing from" science.

Just as it is proven that science is not neutral, while technology has a reciprocal relation with science, it can be inferred that technology cannot be "neutral" too. Technology is applied and it cannot escape the question of whether its use is moral and ethical or not. Technology should answer the question of what is done with the "product." Hence, we have the situation where machines and technological products are developed with no moral guidelines on their use.[24] In technology, there are questions of what applications are made and what is done with the technological product.

[22]M. Foucault. "Technologies of the self" in L. H. Martin, H. Gutman & P. H. Hutton (eds.), *Technologies of the Self: A Seminar with Michel Foucault* (Cambridge, MA: MIT Press, 1988), 16-49.

[23]Susan Ella George, *Religion and Technology*, 6.

[24]Ibid, 187.

B. EVALUATING TECHNOLOGY

In the situation where technology is not "neutral" and is not developed with moral guidelines on their use, one of the most poignant questions is the extent to which technology is "under the control" of society versus the extent to which it controls society. In most of the cases the change and innovation of technology is so rapid that society cannot control it and even could be trapped on using certain machines. Instead of looking at root causes problem, people continue to apply one technology after another to solve their problems, making them dependent on new machines. For example, too much of rich food and a life of physical ease means people need new anti-obesity technologies or machines to enhance the "natural" diet. This means that each time we create a technology it has both positive and negative implications. The next time technology is created it is to correct the negative aspects of the previous one in such a rapid way that it creates a never-ending cycle of increased complexity. Similarly in a society with a certain lifestyle and culture that depend their life on technology, machines demand machines, people no longer have much say in determining direction, let alone values. So it can be inferred that human being in certain cases cannot control the advancement of technology as well as the technological product. On the contrary technology even can change the ways the society live and thus requires examination in the question of technology's impact upon society. The presence of television at home, for example, could destroy the tradition of family gathering in an extended family where the relationships are primary and everyone feels as a part of it. Let alone the presence of game technology (like play station) that practically waste much time of students.

In such situations where technology cannot be controlled by human beings there is an attempt to evaluate it. The issue is raised by Dreyfus and Spinosa regarding the role of technology in humanity and the way it should be evaluated.[25] In this issue the pivotal point is that to evaluate one would depend on a worldview by which all merits of technology such as efficiency, ease, freedom, pleasure, usefulness for social and cultural life, and even religion can be measured. The issue was then advanced to the problem of philosophy of technology. The renowned figure who

[25]H. L. Dreyfus & C. Spinosa (1997). "Highway Bridges and Feasts: Heidegger and Borgmann on how to affirm technology". Retrieved from http://www.focusing.org/dreyfus.html.

began developing the field of philosophy of technology was Martin Heidegger. In his essay entitled *The Question Concerning Technology* he analyzes the true nature of technology and criticizes modern technology. However, he is also interested to find the way how to have a free relationship to modern technology but under the condition that technology should be perceived as an instrument that we can retain it in the hand in will to master it.[26]

One who started classifying and bridging two philosophical approaches to technology was Carl Mitcham. He categorizes the approach into two: "engineering" approach and the "humanities" approach.[27] Engineering philosophy of technology – posits that technology is central in human life as the philosophical project aimed at understanding the phenomenon of technology as instantiated in the practices of engineers and others working in the technological professions. Here technology is approached as a tool and machine experienced in everyday life as material objects (from kitchenware to computers). Humanities philosophy of technology, on the other hand, consists of more general philosophical projects in which technology *per se* is not the principal subject of concern. Technology is approached as a case study by examining how technology affects human life especially within the moral and cultural boundary. In other words technology is discussed as knowledge (including recipes, rules, theories, and intuitive "knowhow"), as activity (design, construction, and use), and as volition (knowing how to use technology and understanding its consequences). By elucidating these multiple aspects, Mitcham establishes criteria for a more comprehensive analysis of ethical issues in applications of science and technology.

However Mitcham finds that using the approach of engineering philosophy of technology is more successful where the engineers are requested to think about their works and to distinguish technology from science as the object of evaluation.

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[26]Martin Heidegger. *The Question Concerning Technology and Other Essays*, trans. by William Lovitt (New York: Harper and Row, 1977), 50.

[27]The explanation of these two approaches are as follows: 1) Engineering philosophy of technology: Uses technological thought and action as a model for understanding even non-technological thought and action; 2) humanities philosophy of technology, this approach regards technological thought and action as only one aspect of human thought and action; delimits the technological thought within a larger framework such as life world or culture. C. Mitcham, "Notes toward a philosophy of meta-technology" in D. Baird (ed.), *Society for Philosophy and Technology* 1 (1-2). Retrieved from http://scholar.lib.vt.edu/ejournals/SPT/v1_n1n2/ mitcham.html.

However, unlike Heidegger's position who criticizes modern technology, engineering approach praise modern technology uncritically and thus failed to deal with its problem. In contrast, the "humanities" philosophy of technology is regarded as not an effective instrument for evaluation and it is unnecessarily obscure and not easily comprehensible. In fact, the critique of humanities philosophy of technology is plausible, because there is a growing hegemony of technology with the orientation of temporality and efficiency that constitutes a threat to meaning in life.[28] In other words, technology removes "meaning" from the world.

In addition to the above approaches to technology there is another attempt that introduces a new name of technology, that is meta-technology, hyper-technology, virtual technology, or post technology.[29] Meta-technology has the mission of a re-contextualization of technology, which in turn become a technology that form a new culture of its own, and it is named trans-cultural culture or technoculture that transcends traditional particular culture and becomes global culture. The term which was coined by Mitcham, intended not only to distinguish meta-technology from modern and premodern technology,[30] but also to capture the progressive development of a global electro-media infrastructure and its culture. It is because science depends on technology as much as technology has been reputed to depend on science. This "inter-connecting of the realms" is applicable to economics and politics and vice versa; politics and religion and vice versa; art and economics and vice versa. The best instance of this meta-technology, according to Mitcham is the World Wide Web. It is from this latest type of technology that the inculcation of values is possible.

The foregoing discussion suggests that there were attempts among scholars to inculcate values into technology albeit the values meant therein are more cultural, social and moral in the humanistic sense rather than religious. Moreover, from

[28]Susan Ella George, *Religion and Technology*, 31.

[29]C. Mitcham and R. Mackey, eds. *Philosophy and Technology: Readings in the Philosophical Problems of Technology* (New York: The Free Press, 1983), 254; see also C. Mitcham, *Thinking through Technology: The Path between Engineering and Philosophy* (Chicago: University of Chicago Press, 1995), 58.

[30]Pre-modern technology or *technics* is technology where *technics* is embedded in a life world or culture that can be examined by general philosophy. Modern technology or autonomous technology: is a technology which is decontextualize or disembodied from society, in which its instrumentality was studied separate from culture. Susan Ella George, *Religion and Technology,* op. cit., 4-5.

an anthropomorphic approach we can use technology as a vehicle to understand humanity, or some other aspect which technology impacts. From a sociological approach we examine whether technology is compatible with the need of society. Using a philosophical approach we examine the underlying worldview within which technology is produced. With reference to an economic approach we examine whether technology is instrumental for the process of production and distribution. This implies that technology opens its gate to be discussed from a religious perspective or to be infused with religious values.

II. INCULCATION OF VALUES INTO TECHNOLOGY

From the above discussion of science and technology, it is obvious that despite their secular orientation and application there are still spaces to inculcate value into technology. We would like to argue that there are at least three mediums of value inculcation into technology. I shall try to evaluate these means of value inculcation: through shifting worldview or paradigm; introducing objectives of *sharî'ah* and public goods; and modifying university curriculum.

A. SHIFTING WORLDVIEW

The basic problem of science and technology is a dualistic worldview adhered by most of Western scientists, which in turn bring about various epistemological implication as has been alluded above. Therefore the inculcation of Islamic values into Western science and technology requires a shift of paradigm or worldview revolution. In other words, in order to infuse Islamic values in technology we have to liberate the worldview of the Muslim scientist and technologist from Western influence and infuse them with the worldview of Islam.

The worldview of Islam projected by the revelation is a conceptual edifice that consists of seminal concepts that are subject to further interpretation and explanation with the support of prophetic tradition, reason, experiences and intuition in order to be instrumental for understanding reality as a whole. This explanation, demonstrate the structure of the metaphysical foundation of Islam which is the basis of epistemology.[31] The definition of this worldview according to al-Attas "...the vision of reality and truth that appear before our mind's eye

[31] Syed Muhammad Naquib al-Attas, *A Commentary on the Ḥujjat al-Ṣiddīq of Nūr al-Dīn al-Rānirī* (Kuala Lumpur: Ministry of Education and Culture, 1986), 464-465.

revealing what existence is all about". This vision is not only limited to the vision of human reason towards the physical world or the world of sensible experience, but encompasses both the worldly aspect (*al-dunyā*) and that of the hereafter (*al-ākhirah*). The former must be related profoundly to the latter and even the latter has ultimate and final significance.[32]

The vision of two aspects of reality in an integrative fashion in Islam is manifest in analogous depiction of the Qur'an that is composed of symbolic form (*āyāt*) and the world of nature that consist of symbolic form (*āyāt*) like words in a book.[33] Certain people call the symbolic form of the Qur'an as linguistic symbol (*āyāt qawliyyah*), while the symbolic form in the world of nature is named symbol of the nature (*āyāt kawniyyah*). Since the Holy Qur'an and nature have both ambiguous and clear or established symbolic forms one needs to employ allegorical interpretation (*ta'wīl*) to detect, discover and reveal the concealed meaning of the ambiguous sign and symbols, yet it should be based on the interpretation of those that are apparent (*tafsīr*). Based on this method of interpretation al-Attas define Islamic science as:

> ...ultimately a kind of *ta'wīl* or allegorical interpretation of the empirical things that constitute the world of nature. As such science must base itself firmly upon the *tafsīr* of interpretation of the apparent or obvious meanings of the things in nature.[34]

From the other viewpoint the neutrality of science can be repudiated from the theory of worldview. The connection between worldview and sciences is traceable from the relation between worldview and epistemology. Scientific activity is within the domain of epistemology, while epistemology is developed within a certain worldview and even influenced by it and vice versa in a vicious circle. A belief in God, for example, could influence the way someone comprehends the nature of knowledge. It is because God and other non-empirical reality is regarded as the source of knowledge. On the contrary, if the existence of God is denied in a certain worldview all non-empirical reality is excluded from sciences. The statement of Thomas F. Wall below regarding this notion is interesting:

[32]Syed Muhammad Naquib al-Attas. *Prolegomena to the Metaphysics of Islam: An Exposition of the Fundamental Element of the Worldview of Islam* (Kuala Lumpur, ISTAC, 1995), 1.

[33]Ibid, 133.

[34]Ibid, 137.

> It (belief in God's existence) is very important, perhaps the most important element in any worldview. First if we do believe that God exists, ... we will have to believe that knowledge can be of more than what is observable and that there is a higher reality – the supernatural world. ... if on the other hand, we believe that there is NO GOD and that there is just this one world, what would we then be likely to believe about the meaning of life, the nature of ourselves, and after life, the origin of moral standards, freedom and responsibility and so on.[35]

The foregoing quotation suggests that belief, either in the existence or in the nonexistence of God, is related closely to the way human beings comprehend the nature of reality and knowledge, including the method to attain and utilize them in their life. The connection between worldview and science as well as technology is clearly defined by Professor Alparslan Açıkgenç, who asserts that "worldview is the foundation of all human conduct, including scientific and technological activities. Every human activity is ultimately traceable to its worldview, and as such it is reducible to that worldview."[36] This implies that scientific and technological activities are carried out within the ambit of worldview. Thomas Kuhn who was well known as one who coined the term "scientific paradigm" connected conceptually the term "paradigm" with worldview,[37] as he asserts that *paradigm shift* can be deemed *weltanschauung Revolution* (worldview revolution). Paradigm consists of values, standards and methodologies which are the very meaning of worldview, but at the same time it is also conceptual framework required by scientific studies,[38] and that paradigm "determines the way science should be practiced".[39] Therefore it is quite plausible when Garry Gutting asserts that "to accept a paradigm is to accept a comprehensive scientific, metaphysical and methodological worldview".[40] From

[35]Thomas F. Wall. *Thinking Critically About Philosophical Problem*: *A Modern Introduction* (Belmont, CA.: Wadsworth, Thomson Learning, 2001), 126-127, 532.

[36]Alparslan Açıkgenç. *Islamic Science: Towards Definition* (Kuala Lumpur: ISTAC, 1996), 29; see also Alparslan Açıkgenç, "The Framework for a History of Islamic Philosophy", *Al-Shajarah*, *Journal of The International Institute of Islamic Thought and Civilization*, 1: 1&2 (1996), 6.

[37]Kuhn states: "scientific research are directed towards the articulation of phenomena and theories where the paradigm is already provided." Thomas S Kuhn, *The Structure of Scientific Revolutions*, International Encyclopedia of Unified Science, vol.2, no 2 (Chicago: University of Chicago Press, 1970), 24.

[38]See Edwin Hung, *The Nature of Science: Problem and Perspectives* (Belmont, California: Wardsworth, 1997), 340, 355, 368, 370.

[39]Ibid*,* 368.

[40]Gary Gutting, "Introduction" in *Paradigm and Revolution: Appraisal and Application of Thomas*

the preceding delineation it is clear that the basis of scientific and technological activities is a worldview or paradigm. So, to inculcate values into technology one has to change the way he looks at science and technology in the real sense of the words.

As a matter of fact, employing a worldview perspective for looking at technological issues is rarely considered by scholars.[41] From this perspective technology might be more than just the material artifacts or conditions of our lives, more than just a mean to accomplish an end. Infusing a worldview requires a more holistic approach for it based on an integrality of a spiritual-rational view of the Qur'an and the *Sunnah* (the Prophet's sayings and practices). Such an approach provides a better alternative of philosophical framework for a person's interaction with nature and his/her fellow human beings.[42] It is the Qur'an that has such an approach, since according to al-Shāṭibī, the criteria whether something is beneficial and harmful cannot be left to human reasoning alone, like the social contract theory and the normative stakeholder theory advocated by most Western theorists. Human reasoning plays a role only in a framework guided by the Sharī'ah.[43] Islam recognizes the role of reason and experience in theorizing the affairs of worldly life only in a manner that embraces the transcendental aspect of human existence, because human beings' have inherent limitations that requires divine guidance, especially to ascertain what is right and what is wrong."[44] Hence, our rational faculties can – and should only – be used to complement, support, and strengthen ethics and morality as defined by the *sharī'ah*. Now, we shall elaborate the objectives of *sharī'ah* and the public good (*maslaḥah*).

Kuhn's Philosophy of Science, (ed.) (Notre Dame, Ind.: University of Notre Dame Press, 1980), V, 1.

[41]Commenting on this matter James P Buchanan asserts that "None consider that technology is a profound worldview and ontological shift that changes not only the way we are in the world but also the ways in which we should reflect upon it". James P. Buchanan, "Critical Literacy: Technology and Cultural Values (Comparative Philosophy and Philosophy of Technology in Conversation)" in Peter D Hershock, et. al., *Technology and Cultural Values, On the Edge of the Third Millennium* (Honolulu: University of Hawaii Press, and East West Philosopher Conference, 2003), 583.

[42]Khaliq Ahmad. "Islamic Ethics in a Changing Environment for Managers" in *Ethics in Business and Management: Islamic and Mainstream Approaches* (London: Asean Academic Press, 2002), 97-109.

[43]Cited in Imran Ahsan Khan Nyazee, *Islamic Jurispudence (Usul al-Fiqh)* (Islamabad: Islamic Research Institute Press, 2000), 65.

[44]Nyazee's argument is supported by a number of Qur'anic verses, among them 23: 71.

B. APPLYING OBJECTIVES OF *SHARĪ'AH*

The values that are to be inculcated in technology are derived from understanding *sharī'ah. Sharī'ah*, as one of the most fundamental elements of Islamic worldview cannot be separated or isolated from basic belief and values. It is also a system of ethic and values covering all aspect of life such as individual, social, political, economic and intellectual.[45] In other words, it reflects the holistic view of Islam, which is a complete and integrated code of life encompassing all aspect of life, be they individual or social. In Islam, all activities in life including technology cannot be isolated from the moral and spiritual aspect and vice versa. The relevance of *sharī'ah* in relation to technology can be discerned from the objectives defined by al-Ghazzali in the following:

> The objective of the *sharī'ah* (*Maqāsid al-Sharī'ah*) is to promote the wellbeing of all mankind, which lies in safeguarding their faith (*din*), their human self (*nafs*), their intellect ('*aql*), their posterity (*nasl*) and their wealth (*mal*) whatever ensures the safeguard of these five serves public interest and is desirable.[46]

The foregoing Shari'ah objectives listed by al-Ghazzali are approved by al-Shatibi thereby indicating that they are the most preferable in terms of their harmony with the Shari'ah's essence.[47] Generally, the Shari'ah is predicated on benefiting the individual and the community, and its laws are designed to protect these benefits and facilitate the improvement and perfection of human life in this world which corresponds to the purposes of the Hereafter. In other words, each of its five worldly purposes (viz., preserving faith, life, posterity, intellect, and wealth) is meant to serve the single religious purpose of the Hereafter.

The ultimate objective of Shari'ah rest within the concepts of compassion and guidance,[48] which seek to establish justice, eliminate prejudice, and alleviate hardship by promoting cooperation and mutual support within the family and society at large. Both of these concepts are manifested by realizing the public

[45] Muhammad Hashim Kamali. "Sources, Nature and Objectives of Shari`ah" *The Islamic Quarterly*, 35 (1989), 215.

[46] M. Umer Chapra. *The Future of Economics: An Islamic Perspective* (Leicester: The Islamic Foundation, 2000), 118. Since the Arabic words are known to the experts we shall not always follow the standard transliteration in order to make it easier for the general reader to pronounce them.

[47] Nyazee, *Islamic Jurispudence*, 121.

[48] These attributes correspond to Qur'an 21:107 and 10:57.

good that Islamic scholars have generally considered to be the *Shari'ah's* all-pervasive value and objective that is, for all intents and purposes, synonymous with compassion. The objectives of the *Shari'ah* (*Maqasid al-Shari'ah*) sometimes connotes the same meaning as public good (*Maslaḥah*), and scholars have used these two terms almost interchangeably.[49]

Maslaḥah (pl: *masâliḥ*) is etymologically "welfare, interest, or benefit. Literally, means seeking benefit and repelling harm. It is defined as a juristic device used in Islamic legal theory to promote the public good and prevent social evil or corruption. *Maslaḥah* and *manfa'ah* (benefit or utility) are treated as synonyms. However, *manfa'ah* is not a technical meaning of *maslahah* , which Muslim jurists define as seeking benefit and repelling harm, as directed by God or the Shari`ah.[50] Al-Ghazzali defines *maslahah* as follows:

> *Maslahah* is essentially an expression for the acquisition of benefit or the repulsion of injury or harm, but that is not what we mean by it, because acquisition of benefits and the repulsion of harm represent human goals, that is, the welfare of humans through the attainment of these goals. What we mean by *maslahah*, however, is the preservation of the *Shari'ah's* objectives.[51]

Since *maslahah* is synonymous with *maqasid*, al-Ghazzali emphasizes the importance of preserving the *Shari`ah's* objectives as *maslahah's* fundamental meaning. By preserving those objectives we may gain flexibility, dynamic and creativity in policy, in economics, science, technology, environment and politic.[52] Al-Shatibi, closely following al-Ghazzali's taxonomy, defines *maslahah* in his *al-Muwafaqat* as a principle that concerns the subsistence of human life, the completion of one's livelihood, and the acquisition of what his emotional and intellectual

[49]Many classical-era Islamic legal scholars advocated the principle of the public good (*maslahah*) and the Shari'ah's objectives (*maqasid al-Shari'ah*) in Islamic legal thought (*fiqh*): e.g., al-Juwayni (d. 1085), al-Ghazzali (d. 1111), al-Razi (d. 1209), al-Umidi (d. 1233), al-Salmi (d. 1261), al-Qarafi (d. 1285), Ibn Taymiyyah (d. 1327), al-Shatibi (d. 1388), Ibn al-Qayyim al-Jawziyah (d.1350), and al-Tûfi (1316). Cited in Deina AbdelKader, "Modernity, the Principles of Public Welfare (*Maslahah*), and the End Goals of the Shari`ah (*Maqasid*) in Muslim Legal Thought," *Islam and Christian-Muslim Relations*, 14: 2 (2003), 164-74.

[50]Cited in Nyazee, *Islamic Jurispudence*, 161.

[51]Al-Ghazzali, *al-Mustasfā Min 'Ilm al-Usûl*, (edited by M. Sulayman al-Ahqar), vol. I, Mu'assat al-Risalah, Beyrut, 1997), 416-417; see also Ahmad al-Raysuni, *Nazariyat al-Maqasid `inda al-Imam al-Shatibi* (Riyadh: Dar al`Alamiyyah Kitab al-Islami, 1992), 41-45.

[52]Wael B. Hallaq. *A History of Islamic Legal Theories: An Introduction to Sunni Usul al-Fiqh* (Cambridge: Cambridge University Press, 2004).

qualities require of him in an absolute sense. He further classifies *maslahah* into three categories: *daruriyat* (the essentials), *hâjiyât* (the complementary), and *tahsîniyât* (the embellishments).[53] These categories are briefly discussed below:

Darûriyat (The essentials): these are the self-interests upon which people essentially depend, such as faith, life, intellect, posterity, and wealth. These elements are, by definition, absolutely necessary for the proper functioning of a person's religious and mundane affairs, to the extent that their destruction and collapse would precipitate chaos and the collapse of society's normal order. Thus, protecting them reflects the effective way of preserving the *Shari'ah*, as outlined in its objectives.[54]

Ḥājiyāt (The complementary): this category is complementary to the essentials and refer to those interests that, if neglected, would lead to hardship but not to the total disruption of life's normal order. In other words, they are needed to alleviate hardship so that life may be free from distress and predicament. An example is seen in the sphere of economic transactions, where the Shari'ah validates such contracts as forward buying (*sallam*) and lease and hire (*ijarah*), because people need them, notwithstanding a certain anomaly attendant in both.

Taḥsiniyyât: The embellishments refer to those interests that, if realized, would lead to refinement and perfection in the customs and conduct of people at all levels of achievement. For example, the Shari`ah encourages charity (beyond the level of zakat) to those in need and, in customary matters and relations among people, urges gentleness, pleasant speech and manner, and fair dealing.

Relevance to the three principle of public good (*maslahah*) there are three groups of technologies to support national development: a) technology for basic needs equal to the first principle, essential (*darûriyyât*)); b) technology for the

[53] Abu Ishaq al-Shatibi. *Al-Muwafaqat fi Usul al-Shari'ah*, (ed.), Abdullah Draz (Beirut: Dar al-Ma'rifah, 1996), 2: 25; see also Hallaq, *History*, 168.

[54] According to Hallaq, the essentials are maintained by two means: on the one hand, they are enhanced and strengthened, while on the other, all potential harm that may arise to affect them is averted. For example, protecting life and intellect are examples of important elements of the essentials that can be enhanced by providing proper food, shelter, clothing, education, and so on. On the other hand, any potential harm that might threaten these essentials may be averted by means of a penal law or punishment that prohibits alcohol or dumping toxic waste that may cause harm to one's intellect and life, respectively. Cited in Hallaq, *Histor*y, 168.

improvement of quality of life, equal to complementary (*hâjjiyât*) and c) technology for wealth creation, which is the same as embellishment (*tahsiniyyât*). Science and technology strategy must therefore be holistic and comprehensive, addressing the role and needs of the main players in a nation, which are government, industry, science and technology community and society at large.[55]

The above classification does not only seek of benefit and repel harm as directed by the lawgiver (Allah and His messenger), but also to ensure that society's interests are preserved in the best fashion both in this world and in the Hereafter. The above principles of public good and theories of objectives (*maqâsid*) tend to be concerned only with the individual rather than society and humans in general. Those principles also exclude the most universal and basic values such as justice and freedom. It is therefore quite reasonable that contemporary thinkers such as Ibn Ashur (d.1907), Rashid Rida (d.1935), Muhammad al-Ghazali (d.1996), Yusuf al-Qaradawi (b. 1926) and Taha al-Alwani (b. 1935) proposed a new additional principle of public good and objectives of Shari'ah.[56] Some of the new principles of public good are knowledge, wisdom, freedom, social-political and economic reform and women rights, preservation of natural disposition (*fitrah*), justice, human dignity and right, purifying the soul, restoring moral values, and developing civilization on earth. So, when those principles are elaborated further in so comprehensive a manner we could provide a framework for making a decision and a mechanism for adapting change and producing as well as utilizing technology.

Before applying the principle of *maslahah*, it is imperative that we delineate the reciprocal relation between society and technology. The society (through social organization) may exploit or expect from technology in order to meet their objectives and needs, whereas technologists diffuse their technological products to support the advancement of social wellbeing. Eliezer Geisler categorizes the expectation of society to technology in his work *Creating Values with Science and Technology* into three categories: mission and objective, internal functioning and intangible factors. The detail can be clarified below:

[55] George Bugliarello. "Science, Technology, and Society: The Tightening Circle" in Glenn Schweitzer (ed.), *Science and technology*, op. cit., 104-5.

[56] Jasser Auda. *Maqasid al-Shriah as Philosophy of Islamic Law, A System Approach* (London, Washington: The International Institute of Islamic Thought, 2008), 5-7.

1. Mission and objectives: this is the expectation to accomplish the mission of social institution within budgetary constraints, and also to perform maximum satisfaction of recipients of services, expectation of constituencies, meeting performance standard of higher order of national and social goal. This is more ideal in nature rather than practical.
2. Internal functioning: this is related to the social expectation for technology to provide efficiencies in administration and management, procedure and methods, cost-saving and cost cutting, also efficiencies in empowering inter-organizational coordination and cooperation. This expectation is more practical in relation to the operation of organization or institution.
3. Intangible factor: such as prestige, maintaining traditions, and recognition by funding bodies and public at large are an important expectation. So technology is expected to assist in maintaining the high level of these factors.[57] This concerns about some factors that are more practical.

Obviously, the foregoing categories refer to modern secular society of the West, where their ideal expectation to technology are limited only to develop materialistic society. Therefore that social norm, ethics and morality are regarded as an insubstantial factor, whereas in Islamic society ethic and morality is part of the essential element of *maslahah.* However, in order to inculcate values to technology, we shall accomplish the expectation of Western society to technology with principle of *maslahah* discussed previously.

The first expectation of technology is to accomplish the mission and objective of social institution which could be infused with factors mentioned in *maslahah* as *darûriyyât* (The essentials). In this category, technology is expected to enhance the protection or the preservation of five essential factors namely: faith, life, intellect, progeny and wealth. It is not the matter of engineering a technological product but about the worldview of the technologist. It is because the preservation or protection of five objectives of Shari'ah is affirming one's worldview. The protection of faith or religion means the betterment of the man-God relation, by which the mode of his relationship with his fellow human being would consequently be better. This would bring about the good relationship between staff and his manager in a social organization. In this situation there will be no conflict of interest, since everyone

[57] Eliezer Geisler, *Creating Values with Science and Technology* (London: Quorum Book, 2001), 245-246.

has a unity of purpose in his life that is to serve Allah. This also would inevitably lead to the formation of a society whereby every member will cooperate with each other rather than compete, to obtain ultimate happiness (*falāh*). If the whole member of society including the producer and procurer of technology were guided by a proper relationship with God, the working ethic of every person would be inspired by the values of truthfulness, firmness, fairness, and respect for the law, kindness, forbearance, tolerance and uprightness, instead of deceit, haughtiness, class consciousness, ostentation, insubordination, envy, jealousy, backbiting and the like.[58] This should naturally be manifested in the individuals' involvement in producing and procuring technology.

In terms of technological products the technologists are expected to produce technology that protects man's essential needs according to the dictates of Shari'ah i.e. faith or religion, life, intellect, progeny and wealth, in all walks of life. The technologists, for example, are expected to create safety and health facilities in working places in order to protect human life; the technologist in the field of communication created the of cell phone by embedding a compass in it, in order to help Muslims find the direction of Mecca to perform their prayers whenever they need it.

However, in the field of architecture or in urban planning certain aspects of "essentials" are not taken into consideration. In designing a modern building, such as a shopping complex, airport, hospital and others, Muslim architects used to forget to provide adequate prayer rooms. Seyyed Hossein Nasr, for example depict the criteria of a Muslim architect as the following:

> The heart of many Islamic cities today still display this remarkable unity of space and function within the mosque, *madrasah*, bazaar, private home and the like. Needless to say, secularism destroys this vision of unity and the integration of all human activity within a divine norm and pattern. [59]

So, in Muslim society or other society where religious rituals need a space to perform, architect or urban design technologists should take this seriously into consideration that all necessary or essential aspects of social life are to be provided

[58] See M. K. Hasan, "Worldview Orientation and Ethics: A Muslim Perspective" in A. M. Sadeq, *Ethics in Business and Management: Islamic and Mainstream Approaches* (London: Asean Academic Press, 2002), 67.

[59] Seyyed Hossein Nasr. *Traditional Islam in the Modern World* (Lahore: Suhail Academy, 1987), 232.

adequately in their urban design.

The *second* expectation is to provide efficiency in administration and management of organization that could be practical in nature, but still related to the first expectation i.e. to accomplish a mission and objective or essential needs. If the expectation to accomplish a mission and objective can be infused with the essential needs (*darûriyyât*), we could also infuse this second expectation with the accomplishment of complementary needs (*the hâjiyyât*). The complementary needs are the whole supplementary to the five essential values especially on protecting life and intellect. However, this complementary principle focuses on avoiding hardship in the life of the community and giving convenience to human life including efficiencies demanded by modern secular society.

The Internal functioning as the expectation of society of the technologist can be accomplished by creating technology that can avoid hardship in working places, in school, in the mosque, in the airport and the like. Also for the purpose of efficiency computer and communication technology are an appropriate product, yet it should be controlled by an objective to fulfill essential needs. Technology of producing alcohol should be directed only for the purpose of medication; also technology of printing should be directed not to trade with or manufacture or sell pornographic magazines that promote indecent behavior in society. The principle that should be held by the producer and user of technology is that self-interest should be linked to the overall concept of the public good and justice. Technology should be protected in order not to create social disruption or violation of the norm of Islamic justice.

The *third* expectation of technology is to create a positive image of a social institution including promoting success of institution in its program as traditions. This point has been accomplished by the second principle of *maslahah* discussed above. This third principle is beyond the discussion of Eliezer Geisler's expectation of society for technology. In the principle of embellishments (*tahsiniyyât*) the corporations are expected to discharge their social responsibilities by engaging in activities or programs that may lead to improvement and quality of public life. With regards to charity or giving donations to the poor and needy; providing scholarships to the less fortunate students and providing sufficient, correct and clear information or notices regarding products offered to customers are some of the examples of commitment with respect to achieving the embellishments for

society. In the light of this principle, technology is expected to fulfill the duty of embellishing the quality of life or the improvement and attainment of perfection of public life conditions. For example technology is expected to create transportation with free air pollution, technology for water purification and the like.

To integrate the social expectation to technology proposed by Eliezer Geisler above and three principles of *maslahah* proposed by Muslim scholars we may infer generally that both *maslahah* and a Western expectation need the common good or public good by having peace, economic prosperity, justice and mechanism to keep and perpetuate them. However, it should be in accordance with different levels of importance and severity of consequences. In other words priority should be given to the accomplishment of the essential needs (*darûriyyât*). Therefore one must not focus on attaining embellishments while jeopardizing the essentials. Similarly, one must not be obsessed with the attainment of benefits to the extent of creating harm or inflicting injury to others. The duty of science and technology can be simplified into two: 1) related to the common good of social life such as maintenance of system of government, economic prosperity, civil stability, national defense, environment protection, national prestige, justice, exploration etc. 2) related to public benefit in relation to everybody's business such as healthcare, transportation, social service, taxation and redistribution of resources, full employment, housing, law enforcement, education, administration of justice, administration of national and local affairs and the like.

In short Islamic guidance, enshrined by its principle of justice, brings about a balance between individuals' rights and their duties and responsibilities toward others, and between self-interest and altruism. Islam recognizes self-interest as a natural motivating force in all human life, but it has to be linked to the overall concepts of goodness and justice.[60] Therefore, social responsibility is not solely a duty of the government, rather, it is a duty of all members of the community, including scientist, technologist, corporations, social organizations and institutions. Thus, individuals and society as a whole are encouraged to sacrifice, and protect the faith, the life, then intellect, the progeny and wealth of the society. This sense of duty, responsibility, and spirit of sacrifice, which Islam nurtures, actually helps

[60]Syed Nawab Haider Naqvi. *Perspective of Morality and Well-Being: A Contribution to Islamic Economics* (Leicester: The Islamic Foundation, 2003), 99-110.

remove self-centeredness and greediness and promotes compassion, caring, cooperation, and harmony among people.

Thus, the political system of a society, culture, and organizations are the essential ingredients for the creation and enhancement of science and technology. Only well-organized societies are able to build large public works and logistic networks. Today global corporations, financial institutions, and venture capital have become key enablers of discoveries and technological development. In general, the culture of the nineteenth century encouraged a great flourishing of science and technology, which in turn led to modernistic culture of the twentieth century. However, society is not a monolith. Scientific and technological developments may impact certain aspects or parts of society faster or differently from others, whether one considers laws, the attitudes of leaders, military prowess, commerce, health, or education.[61]

Moreover, the technologist must possess certain characteristics in order to play its pivotal role as a connecting link between society and the industrial sectors. The general belief is that an engineer must possess broad information skills that transcend his technical and technological skills. A good engineer, over and above being skilled in analyzing theories and their practical applications, must possess an analytical mind in critical situations. He must possess the ability to cope with prevailing work conditions, managerial skills, and the capacity to learn and to teach in the long run. He must also possess virtuous moral qualities.[62]

C. MODIFYING UNIVERSITY CURRICULUM

Since the university is the very place where various technologies are studied and applied, it is the proper place to inculcate moral, social and environmental values to technology. The good start is to inculcate an Islamic ethic to students of sciences and technology or students studying in the faculty of engineering and other related faculties of applied technology.[63] This has to be under the supervision

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[61] George Bugliarello. "Science, Technology, and Society: The Tightening Circle" in Glenn Schweitzer (editor), *Science and technology and the Future Development of Societies, International Workshop Proceeding* (Washington, D.C.: National Academy Press, 2008), 120.

[62] This has been experienced by certain university in Iran. See Mehdi Bahadori and Mahmood Yaghoubi, "Ethics in Engineering as a Prerequisite for Technological Development of Societies" in Glenn Schweitzer (ed.), *Science and technology and the Future Development of Societies, International Workshop Proceeding* (Washington, D.C.: National Academy Press, 2008), 120.

[63] The courses of engineering ethics were conducted for the first time in the United States in the 1960s.

of a professor experienced in engineering, who has close connections with industry on the one hand and technical innovation on a world scale on the other. The other subjects might include the following:

1. The worldview of Islam,
2. History of technology in Islam and in the West,
3. Working relations and industrial laws,
4. Islamic economic and production relations,
5. Standards of design and productivity,
6. Professional ethics,
7. Human values and ethical engineering,
8. Environmental protection and sustainable development,
9. Relation of industry and university.

Moreover, each student should present a seminar on any of the topics listed above. Students trained not only in engineering subjects but also in ethics can lead the way to developing a profession that responds to societal interests in a rapidly changing world. By teaching them such subject we will help the future technologists to build a well-integrated character.

In addition to the curriculum the university should provide centers relating to ethics where student can consult in matters pertaining to ethics in technology and engineering, make research in order to write articles and books about ethics in science and engineering that can be published. To enrich the concept of ethics in relation to technology the university could manage scientific and technical cooperation with other universities, so that students at the undergraduate, graduate, and postdoctoral levels could study abroad or be trained by other professional professors. Another form of cooperation is the undertaking of joint projects between two university laboratories, with exchanges of personnel and ideas and joint publications of results.[64] This is in order to improve student awareness of this responsibility. Finally, the commitment of the student to apply Islamic values in their profession should be proven during their graduation, in which they have to sign a text of oath mentioning their future responsibility to take into account

In the present Iran the subject is also taught to students at engineering department.

[64]Norman Neureiter. "The Role of International Scientific and Technical Cooperation in National Economic Development", in Glenn Schweitzer (ed.), Science and technology and the Future Development of Societies, International Workshop Proceeding (Washington, D.C.: National Academy Press, 2008), 55-56.

the importance of protecting and safeguarding the welfare of human beings throughout the world based on the above principle public good (*maslaḥah*) or the five objectives of Sharī'ah.[65]

A Concluding Note

I would like to conclude that inculcation of values into technology is not so simple, for it involves understanding the worldview that underlines the sciences as the source of technology. The worldview upon which Western science and technology refer to, is secular. This secular worldview is the main problem of modern sciences and technology that should be liberated and Islamized. One of the problems of modern sciences and technology is that they are separated from religion. This problem should be resolved by the process of a worldview revolution and the shift of paradigm, by which science is integrated with religion and technology. Technology that relies on religious values could be invented or created based on the objective of sharī'ah or public good, which is exactly the same as a trilogy of fulfilling human basic needs, improving quality of life and creating wealth. The final task to be done is to enforce this concept of value inculcation in university education, the place where the forthcoming generation of scientists and technologists are prepared.

[65]This has been experienced by certain university in Iran. See Bahadori and Yaghoubi, "Ethics in Engineering as a Prerequisite for Technological Development of Societies", op. cit., 118.

MAIN INDICATOR OF MODERN GLOBAL CIVILIZATION: FISCAL CAPITALISM IDEOLOGY

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This brief study is presented here as a contribution to the problems surrounding technology and value relationship. As I believe that the problem has deeper issues than the ones seen on the surface I shall try to evaluate the global situation to indicate only some of these problems that are hidden embedded under the apparent ones. First of all, let us see what a cultural value is. All material and intellectual products created by a society and social environment are what we call cultural values. These creations are unique for that society. Societies create their own cultures. We cannot think of a society without its own culture. As a being, humans cannot exist without creating a cultural value because human beings lack the physical-biological conditions which are necessary for keeping their lives. Therefore, humans establish and maintain their own culture to compensate for the vital (biotic in French) physical conditions which they lack.

We can gather similar cultures under the roof of a fundamental common concept or in other words, a paradigm, which we term "civilization". Each civilization has a tendency to spread and maintain its cultures. This phenomenon should not be understood as globalization. For, it is merely a tendency or "will" to universalize. Of course while some societies advance forwards on this road to universalization, yet some others are left behind. Of course, this advancement or lagging behind is not relative. In fact, there are civilizations which have created great cultural values but failed to universalize. For example, Chinese and Indian civilizations have rather failed to achieve such universality. Chinese civilization indeed arose out of a particular culture.

The fact that only Chinese culture has attained the stage of civilization has

also become a reality which we refer to with the same name, rather than merging of multiple cultures according to a particular example forming a civilization. For Indian culture, this issue is different. In Indian culture, two different societies, eponyms and cultural origins have confronted and clashed with each other. One of these cultures is the ancestors of today's Tamils, the dark-skinned Dravits who have been living in the Indian peninsula. The other is the Arian tribes or the Indian-Europeans, who are ancestors of European societies, Iranian Meds and the Parthians. Some of these aforesaid tribes have moved to the Indus Velley by passing through the Hayber Gate over Transoxiana and Afghanistan from the north in 1800s B.C. These people who were taking their light skin, eyes and hair from the cold and harsh climate of the North, have proceeded to the very hot and humid regions across the Indian land by proceeding forwards from the Indus plains. They fought against the native Dravit tribes and took them under their control. Consequently the meeting of these two cultures led to the emergence of the great historical Indian civilization. In terms of universalization, we can say that Indian civilization has acquired a higher level of universal aspects than the Chinese.

On the other hand, first Medieval Christian civilizations, followed by Islamic civilization, have emerged with memorable distinctions, yet having universal values addressing all civilizations as they have been inspired and fed by monotheistic religions that was born with Prophet Abraham (peace be upon him).

But, what can we say about the differences between universalization and globalization? Certain earthly-humane features and moral values, which are common for all humanity, constitute the concept of what we call universalism. The most fundamental one of these moral values, is the claim, or the idea, which asserts that, humans are created from the breath of the Merciful. Also, the Ten Commandments, which are included in the Torah and emphasized as well in the Qur'an, such as "thou shall not kill, steal, fornicate or lie". These are all universal values. Universalism, therefore, is a set of values which has been originated from religion, getting its source from divine-religious nature of man. There are two fundamental manifestations which we may assert for this characteristic of universalism: Morals and beauty (aesthetics). On the other hand, globalization is the phenomenon inserting material and moral values of a certain culture in a direct or indirect manner upon other societies.

For the first time in history, we witness a cultural movement which strives not to move towards its religious origin. This cultural movement takes its roots from Western Europe of the 1500's. Of course we should be more specific about the geographic origin of this movement. For example, where exactly is the West? We therefore, need to clarify this geographical and yet also cultural concept. "West", in this sense, defines a concept rather than a location. According to Japan, west is China, while for Malaysia, west is Burma. In Europe, west is Lithuania and Estonia; and even Czech, Georgia or Russia. These do not share a common ground with the aforesaid civilization except that they have all joined in it afterwards.

I would like to name this contemporary development in the West "non-religious West European civilization of the New Age", which is not an extension of Medieval Christian Western civilization. If the present Western civilization is understood as such it would be an important mistake. Non-religious European civilization of the New Age, has emerged as a result of the confrontation with Medieval Christianity. Among these two, the latter is, as the name implies, Christian. Religion is fundamentally a moral concept which tries to balance, harmonize and regulate material beings, developments and issues. On the other hand, non-religious European Civilization of the New Age is based on economics. The spreading tendencies generally relied on the will to earn more. There was no limit for earning more and more. People of non-religious Western Europe of the New Age, have started to attack and dominate the world to gain more and more. This obviously required elimination of religious obstacles.

Nothing happens in history without a reason. Protestantism, which arose against Catholicism at a certain period of history did not emerge just accidentally. Martin Luther did not intend to create a religious movement which will support capitalism and national financial interest. His intention was to rebel against the prohibitions of Vatican-based Papacy, which he thought were indeed against Christianity. His actual goal was to bring Christianity, which he told to be damaged, degenerated and changed, to its original principles as an inspirational monotheist religion. On the other hand, things did not go as he expected. At the end of the 1500s, North European Civilizations, namely the nationalist states which supported the British based finance capital movement, have tried to use the religious reform movement of Martin Luther for their own sake. Referred to as Protestantism (rebel and

opposition) by its opponents, this aforesaid religious reform movement, has been used to create the basis as required for finance capitalism. This new religious-spiritual space with its wrong interpretation provided legitimacy to liberal capitalist countries led especially by the British world.[1] Similar to Catholicism, in national Protestantism churches have been established to serve this purpose instead of centralist and universal church. Universalism of Christian Catholicism, which is claimed to be an inspirational monotheistic religion has left its place to globalism, which means making others to adopt national-individual-financial values. Restriction of excessive earning, and therefore exploitation of others by universalist religion movement, which has been believed to be a Will of God, was eliminated by means of the aforesaid replacement. France, where Catholicism was not defeated by Protestantism, has proceeded to capitalism on a later date, following the Reforms of 1789 with the French Revolution. Here, religious movements have not been replaced with others, but totally eliminated all-together, inside the framework of *laicist* (secular as understood in France)-positivist movements.

Spread of Protestantism, especially its dominance in Germanic countries, is a result of two certain reasons:

First: The new economic order, which has changed from mercantilism to capitalism, required elimination of all forces which were posing restrictions.

Second: National sensitivities, reactions and reflexes were all manipulated. Germanic world had lived under the materialistic-moral rule of Catholic Latin world, for hundreds of years. Protestantism had become the meaning of the opposition against this dominant rule. Adoption of Protestantism by the non-Germanic French society, while enforcing laicism, may be a result of the reason which we have pointed out above.

Consequently, Vatican Catholicism is believed to be maintaining universal facts of truth. All monotheistic inspirational religions have these features. When finally, the unifying, regulating, centralizing force of Catholicism has been eliminated and restrained, the way in front of Northeast European Germanic world, as well as France, was cleared from a huge obstacle. Globalization has started to emerge after this point. In fact, globalization relies on economic considerations. The Bible says

[1] This means England, U.S.A., Canada, Australia and New Zealand.

that, "man cannot survive solely on bread." This belief is dominant in all spiritualist cultures and generally in spiritualist civilizations. The fundamental acceptance of man as both a material and moral being is common among different religions, interacting cultures and inter-cultural relations. This fundamental acceptance, eliminates the idea of determining a person's life solely by other people or beings. A person with religious, spiritual richness is free and unique. This, on the other hand, is a subject which can never be accepted by capitalism - or other ideologies - which strive to replace religion. Therefore, the harsh struggle between ideologies has resulted in scraping off the religious, spiritualist ideas from people's minds. Education has become an important aspect of this effort. While the other aspect has witnessed to be advertorial propaganda. "If I can make you feel that you are similar to me, then you will need to buy what I think that I need. You, therefore, can expand my market by purchasing what I produce."

All relationships, therefore, have been developed according to production-consumption balance. Capitalism, has also brought a well-known support for itself, "Imperialism" which has changed its name to globalization today. The true definition shall be "globalizing". When you say globalization, you are referring to a natural process. On the other hand, what we are confronted with, is not a natural process, but a forced one. This is an action which is forced to others whether by caressing or beating. Economic facts, have also brought important cultural values together with them. They have started to eliminate old, traditional cultural elements one by one. Materialistic - financial elements of culture are now accepted as if they are natural data of our moral values, which we now never question. This is, in fact, the success of globalization.

People may be led by a different idea, a different alternative, if a movement can confront globalization correctly and this poses a danger to globalizing. This is the reason why every other single alternative attempts to be eliminated. When we look from this perspective, the opponent of globalization is not only Islam. Communism, national socialism, fascism have all been regarded as an opposition to globalization as they have provided other options. Today, countries which lead capitalism, regard National Socialism as a crucial sin or a crime.

Globalization force people to dress, eat, and behave in a single, unified manner. According to the idea of globalization, each person shall have a unified *persona*,

just like soldiers in their uniforms. The "turban" (or head scarf) struggle in Turkey, can also be given as an example of forcing people to participate in this unified form.

Each civilization has a unique belief system and different assumptions towards life. Therefore, what we should do is to claim the rights and civilization framework, which we acquire from our ancestors in the past. Through this perspective, we can define a different design for civilization, by benefiting from suitable elements of our civilization heritage, and use it as guidance for the present material and moral conditions of our age. This new civilization design, of course, will still be Islamic. Therefore, we should look for the main principles in Islam, both in terms of religion and as a model for a classical civilization.

For example, there is a basic principle called "duty towards others". If we call this "rightful due" we may interpret it as the principal of social justice because Islam commands that other people around you have rights on you; hence you need to respect their rights. Also, it is a mandatory rule for Islam. Marxism has stolen this principle from Islam and eliminated its moral, spiritual values. Just like Lutheranism, which was inspired theologically by Islam; Marxism also reflects important similarities with Islamic elements. As an important example, Marxism defends an effort-based earning and protection of rightfully acquired earnings. Islam requires people to work for themselves and instructs people not to make others dependent on them. This is also defended by Marx as an opposition to colonialism by means of social justice. Social justice is in fact the basis of Islam. Acts of worship such as prayers and fasting are practices to keep people away from taking others' rightful due, and fight against this hard tendency within. Each act of worship serves spiritually as an instrument towards a more disciplined, complete way of living in which people will respect the concept of rightful due.

The efforts to prevent the use the materials belonging to global civilization are doomed to failure and at the same time unnecessary. We can avoid from being crushed under the offerings of global civilization as well as surrendering ourselves to its endless hunger by adopting basic Islamic principles such as the "rightful due" and respecting our limits.

Globalization is the opium of the masses. The main goal of global civilization is to render people incapable to think, and make their ideas numb. When we think

of drugs, usually hashish, opium and marijuana come to our minds. But what is the difference between mediums like television, computers, mobile phones and drugs? These are all instruments that freeze our thoughts and make us incapable of thinking. You cannot oppose or revolt to anything if you do not think. Revolting means looking for options to current circumstances. Globalized civilization tries to eliminate these acts of searching, or even our ability to do so. On the other hand, we should be able to produce what works for us. Differences are the main requirements for producing different options. Therefore, these differences shall never be underestimated.

The ways of living and thinking which are imposed on us are not the only requirements for civilization because civilization is also possible in other ways. It is does not have a single fundamental form. The irreligious modern day globalized Western civilization found another identical mindset among certain Jewish quarters and thus formed an alliance which can be named now "Globalized, modern English-Jewish Civilization". It is this broader alliance that conveys its "forms" through education. Therefore, the true origin of new options shall be schools. This education starts in schools, continues with mass media, and finalizes itself thanks to advertisements. People are influenced, modified and manipulated this way. This is an unconscious and underlying influence. The modern civilization modifies all human beings with biological developments and instruments; therefore eliminating the difference between men and animals. Throughout its two hundred years of history, modern English-Jewish civilization has forcefully crushed all points of resistance, while today, it does the same thing by means of education, teaching, propaganda and advertisement. Unfortunately, today's new techniques make resistance even harder.

I want to focus your attention on one single thing: Global civilization conceals some of the things that happen in front of our bare eyes. We are conditioned to look only at certain points of focus. Therefore, we are unable to see what actually goes on around us. On the other hand, it is even late to establish a new basis for civilization by noticing what actually is going on around us and adopting the basic principles of Islam, to acquire a new aforethought civilization.

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 the environment is considered. The people with environmental-oriented consciousness hold technology responsible for the most significant problems of 21st century. That is why, when the reasons of environmental issues are discussed, we need to question modern science the result of which is 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 the human-environment relationship (*fasâd fi'l-ard*), 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."[1]

[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

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 trying to dominate it, started contaminating the earth, destroying it and became miserable as a result. Like the 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 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.[2]

The number of people who argue that environmental issues were born and became widespread due to the dominant sense of science and world the 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 a 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 insight and introspection. In other words, Heidegger analyzed modern technology "by settling scores with Western philosophy, especially Western metaphysic."[3] For this reason, his criticism of technology can also be considered as the criticism of

The Question Concerning Technology and Other Essays (New York: Harper Troch Book, 1977), 4. The references are to the English translation.

[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.

Western philosophy and metaphysics. The majority of environmentalist thinkers looked for the cause of environmental problems by being inspired/affected by Heidegger and they felt the need to argue with the 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. Bu 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 of 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.[4]

Going back to where we started, the first steps of the technology era were taken when the understanding of science by the ancient Greeks started to change. With Descartes, who is considered to be the 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 the 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 by alienating it.[5]

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

[5] Özlem, op. cit.

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*).[6]

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.[7]

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.[8]

"The urge of the modern human to dominate over everything that comes across his way" rises with the perception.[9] The thing we call "technology" tries to handle and understand everything with "objectivity" and then tries to control it.[10] 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

[6] Heidegger, *Question Concerning Technology*, 12.

[7] Ibid, 53.

[8] Ibid, 55.

[9] Özlem, op. cit., 20.

[10] Ibid, 20.

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 to self-consciousness... Cogito exposes everything with its own design. Modern philosophy and science was based on the image of how the subject sees itself."[11]

According to Capra, the most significant feature of the Cartesian differentiation is the domination of "soul" over "body", which also shaped the following developments.[12] 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.[13]

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,

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

[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.

"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."[14]

Heidegger argues that this approach of modern science is in conflict with the origin of science. Science protests against reality being 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.[15] 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.[16]

As a result, the human (industrialized and developed, so to speak) has reached a power that could change the balance in the 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 specimens became extinct and all these show how serious the consequences will be.

[14]Ibid.

[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).

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 the modern sense of morals, we do not witness any kind of moral responsibility 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 know that 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 the 17th century, deontological, opportunistic, hedonistic and similar moral theories do not hold future situations 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.[17] 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.[18]

As environmental problems point out and environmental science has proven, the fundamentals of our actions have changed dramatically. Our current actions

[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.

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 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 the 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 we look from the perspective of the 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."[19]

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 the universe and environment by taking energy from our own traditions. That is why, unlike Heidegger, I am quite hopeful about the future.

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