

Islam, Technology and Civilization: Searching for Compatibilities

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Abstract

The current engineering workforce place much emphasis on internationally recognized engineering education with engineers able to work in remote and alien environments, highly mobile and adaptable to local cultures. It is common today that engineers from the West be placed in predominantly Muslim countries. Inadequate exposure to these cultures and insufficient understanding of the societal values and structures create difficulties in their new workplace. In this paper, the authors highlight the importance of understanding a multi-cultural society, their belief systems and basic needs with special reference to Muslim communities in developing countries. The paper relates experience gained by the team in developing and implementing an *Islam and Engineering* course in the International Study in Engineering at the Universität Duisburg Essen (UDE) in Germany, and a similar course, *Technology and Civilization* at the Faculty of Engineering, Universiti Kebangsaan Malaysia. The *Islam and Engineering* course is offered as an elective to students taking up their studies in UDE. It covers the fundamental worldview of Islam, its teachings and practices, its contribution to science and technology, its views on professionalism and a discussion on the engineering profession and ethics. The course provides the necessary exposure to students on the multi-cultural nature of the Muslim communities in the East. The same emphasis is given in the course offered at UKM. It is greatly hoped that by introducing these courses, students and future technologists will be able to appreciate the inherent compatibility between Islam, Technology and Civilization.

Keywords: Islam, Engineering, Technology, Civilization, Worldview

1. Introduction

Men since the early ages have been struggling towards perfection in life, moving from nomadicity to a community-based way of life. Civilizations throughout the ages have been influenced by the community evidenced by their sets of beliefs, values and cultures. These sets of beliefs, values and cultures have a term i.e. worldview [1].

Having a certain kind of worldview will influence the way man conducts his life and achievements in creating and developing buildings, artifacts, clothing and technology. Hence, technology and civilization are not valueless outcomes, but are rooted in the worldview of the community where they emerged. Thus we have terms such as Islamic Civilization, Western Civilization, Greek Civilization, Chinese Civilization, etc. [2]

Since man is dynamic, a leading community usually

influences its neighbors. This transfer and sharing of civilization sometimes involve friction in what is now known as the clash of civilizations [3]. The clash of civilizations is actually the misalignment of different worldviews which are the bases of different civilizations.

Migrations and cross-boundary movements of a large group of people from the same worldview to another part of the world has also the potential of creating this phenomenon. Muslims living in the West had difficulties in the early generations to adapt to the occidental way of life. Similarly, Westerners working in a predominantly Muslim country face similar problems.

Much efforts have been done by both the East and the West to integrate especially after the tragedy of September 11, 2001. This tragedy has created a new wave of interest in both the western and eastern communities to start new dialogues and initiatives towards bridging this huge civilizational gap.

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Westerners need to understand Islam for a variety of reasons such as to broaden their markets, technology transfer and partnerships. On the other hand, the East needs assistance and support from the West to develop their countries.

The formation of strategic alliances on the basis of respect and understanding and to develop operational structures based on shared values is very important. It is timely to promote the environment of self-respect for each other's beliefs, cultures and values, and redesign the disparate worldviews to sets of commonly shared universal values.

Technology is a systematic technique and methodology of getting things done. Technology helps man to fulfil his needs, functions and duties. Muslim technology is developed in the frame of the Islamic worldview but not necessarily founded by the Muslims. The Muslim world has been recognised for its foundation in art, calligraphy, architecture, algebra, astronomy and medicine. However, there are some acceptable limits for current technology development issues such as in biotechnology, medical, transplants, cloning, transfusions and weapons technology. Technology is good and acceptable as far as it helps mankind fulfil the duty as 'abd and khalifah (servant and vicegerent) [4].

Civilization is developed on the foundation of knowledge, science and technology. Civilized society normally refers to a society that has developed physical (achievements in science and technology), social (having a social code of conduct or system) and spiritual (guided by certain ideology or philosophy) constructs. It is manifested at the individual level as having a good manners and personal conduct [5]. Civilization is achieved through knowledge and education. Therefore Islamic Civilization is founded on the basis of the Islamic Worldview, and guided by the Divine Revelation, manifested in its code of life. It has also brought development to mankind in order to fulfil the Muslim individual's function as a khalifah. Islamic Civilization is achieved through acquiring the truth and "good" knowledge, holistic education system [6], communal understanding and inter-civilization dialogue.

Worldviews function primarily as general schemes through which we perceive everything, including ourselves [7]. It is formed by our minds as matters of habit. They are dominant in our daily lives, either through culture, technology, scientific, religious and speculative ideas that we acquire through education and other means, or a conscious effort to acquire knowledge, or both [8]. Furthermore, a worldview is that vision of

reality and truth, which acts as the non-observable foundation of all human conduct, including scientific and technological activities [9].

2. Living in a Multicultural and Industrial Society

In many communities all over the world, people of different nationalities, skin color and religious beliefs live together in one place. The eastern culture is based on the subordination of man to a superhuman force while the western culture upholds the autonomy of the individual. Communication, awareness and understanding of intercultural matters are of great importance. Sometimes communication between the different ethnicities is good but most of the time they do not mix. Whatever the case, it is very important to uphold peace so that different ethnicities can live and work together.

Living in a multi-cultural society has its advantages. People can get to know many different cultures, lifestyles, traditions, cuisine, etc. In big cities there are many different restaurants which offer a superb array of ethnic food and drinks. Experiencing and understanding different cultures are the first parts of acceptance. In a truly multicultural society you will find people of different backgrounds or religions living together and even accepting intermarriage.

The Islamic concept of community has certain unique characteristics that relate to the foundation of the community, its historic mission and purpose, its status among other communities, its identity, and its continuity. The community in Islam is not founded on race, nationality, locality, occupation, kinship, or special interests. Its foundation however, designates submission to the will of Allah, obedience to His law and commitment to His cause [10].

A new industrial culture addresses the changing cultural values of industrialization, and focuses on the gradual transformation of the industrial economy. This means that industrialization is not viewed retrospectively, but is seen more as a process which will continue to determine social values in the future [11]. The relationship between the industrialist-capitalist and workers is covered under collective bargaining, mutual respect and workers' rights.[12]

In comparison, the Islamic viewpoint of economic enterprise and industrial culture is coined in the term 'al-mudharabah'. This concept emphasizes on 'profit-sharing' and mutual benefit to all parties, leading to

better living conditions and improvement of social well-being and quality of life [13].

3. The “Islam and Engineering” Workshop

In end of 2001, The Faculty of Engineering, University of Duisburg-Essen (UDE) acquired approval and funding from the German Academic Exchange Services (DAAD) for organizing and conducting a workshop on “Islam and Engineering” together with its partner universities; UI (Indonesia), and UKM (Malaysia). [14]

The first workshop was held for two days at UKM in November 2002. The presented topics included “Islamic Worldview” that gave an insight on the principles of Islam from a religious point of view, background information of the DAAD program “Dialog with Islam”, and an overview of “Professionalism and Islam” that explained the religious basis of engineering ethics and specifications of product design and production processes. The discussions were focused on the development of Islam and the engineering course for ISE students, and also to engineers who would be working in Asian countries and vice-versa.

The second workshop was held in Bruckhausen, Duisburg in January 2003. The region of Duisburg was particularly affected by a structural change which had influenced the structure of jobs and population. Bruckhausen therefore presented an ideal melting pot of cultures and offered a high potential for new and attractive ways of living together. For this reason, Bruckhausen was chosen as the venue for the workshop with the following aims: [15]

- To attract the public’s attention to this issue;
- To emphasize the potential of dialogs with Muslims, particularly regarding technically oriented work in the Duisburg-Bruckhausen area;
- To show the important role Bruckhausen can play as a bridge for a constructive and durable dialog with Islamic communities.

During the workshop sessions, the main discussions were on the relevance of religion, particularly Islam, in the occupational activity of engineers. Based on this discussion the curriculum of a one-year program, “Islam and Engineering” and the integration of this course in the UDE Engineering Degree Programs were discussed. Furthermore, a Public Lecture on Understanding Islam as a Way of Life: Living Islam was delivered to ISE students.

4. Joint Curriculum Development

The complete curriculum was developed based partly on courses offered at UKM (Technology and Civilization) and UI (Religious Study). The curriculum was finalized during an Islam and Engineering workshop held in Bruckhausen, Duisburg. The result was the introduction of two courses with different foci, namely “Islam and Engineering 1” and “Islam and Engineering 2”. These are catered to students with diverse cultural and religious backgrounds. Students are given an introduction on the basic principles and concepts in Islam. They will research the influence of Islam and the contribution of Muslims in the development of technology and civilization. A discussion on integration issues in a multi-cultural community is included. The main objectives of “Islam and Engineering 1” course are as follows:

- To give an introduction on the basic principles and concepts in Islam;
- To research the influence of Islam and the contribution of Muslims in the development of technology and civilization;
- To discuss the integration of Muslims in a multi-cultural community.

For the “Islam and Engineering 2” course, students will be introduced to the importance of ethical values in engineering practices as well as the Islamic principles in organization and economic system. In addition, students are taught to understand the manifestation of the ethical values and Islamic principles in product design, society and environment. Meanwhile, the main objectives of this course are as follows:

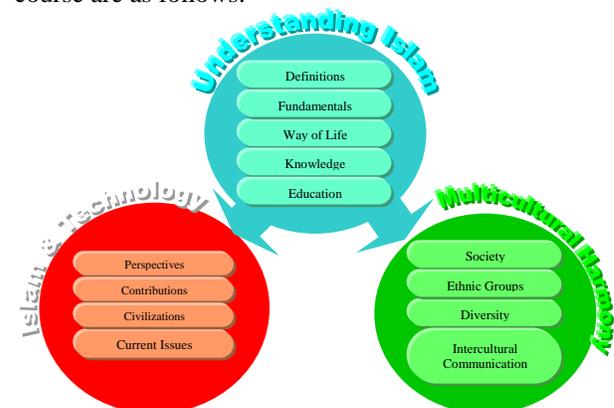


Figure 1 (a): Islam and Engineering 1

- To introduce the importance of ethical values in engineering practice;
- To present the Islamic principles in organization and economic system;
- To understand the manifestation of ethical values

and Islamic principles in product design, society and environment.

Figures 1(a) and (b) show the main topics included in both courses.

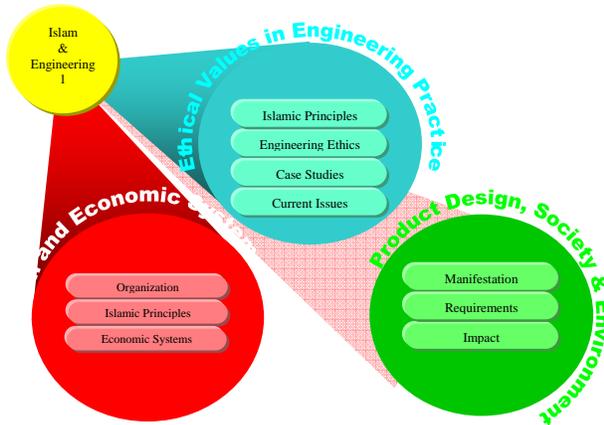


Figure 1(b): Islam and Engineering 2

5. Course Implementation

The course "Islam and Engineering" was first offered at UDE during the Summer Semester of 2004 by a guest professor from UKM. The content of both Islam and Engineering 1 and 2 was covered in a single elective course offered to Bachelor and Masters students at ISE. The depth of the topics had to be compromised because of the broad subject area. The course included discussions on the basic precepts of Islam, influence of scientific techniques, philosophy and religion on technology development, and ethics and moral issues in engineering practice such as security, environment, professionalism, conflict of interest, corruption and computer ethics.

The course was conducted through a weekly one-hour lecture and one-hour discussion. There was also a requirement for each student to prepare a 15-minute presentation to the class. Additionally, students are required to submit a paper on a topic related to the syllabus. Finally, students were also required to sit for a final examination. Students from diverse countries such as Bangladesh, China, Egypt, Ethiopia, India, Indonesia, Jordan, Pakistan and Turkey enrolled in the course. In terms of representation from various faiths, the attendees were from Muslim, Christian, Hindu and atheistic backgrounds.

The students were initially apprehensive of the purpose and relevance of the course in the Engineering

program. Only four students attended the first class. Explanation was given on the background of the course development and its relevance to an engineering program especially in the multicultural context. The class gradually grew in number reaching a total of 24 of which 20 completed all requirements of the course. There were also enquiries whether the course would be offered in the following semester.

6. Conclusion

Islamic technology and civilization does not only refer to Muslim achievements of the past. What is more important is the understanding of Islam and Muslims by non-Muslims so that both Muslims and non-Muslims can develop human civilization for the benefit of mankind. Offering the course 'Islam and Engineering' is only a small contribution towards a better world future. In future, we need to promote greater understanding between both eastern and western citizens, cross-cultural cooperation, tolerance and harmony. Creating a peaceful world through engineering education should be the common aim of engineers all over the world.

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