Science And Engineering In Middle Eastern And Islamic Cultures

Executive Summary

Soon after Islam burst in the Arabian Desert in the 7th Century, it divided into two major distinct sects, Sunni and Shia. Since the beginning of Islam the initial ideology dictated that the seeking of knowledge, any useful knowledge, was considered an honourable cause and true calling. The movement began with the eradication of illiteracy and continued with the tabulation, assimilation and the building upon of any useful knowledge uncovered (Science, Medicine, Philosophy, etc.) or acquired during the expansion of the Islamic State.

The Islamic State reached two peaks. The first peak was around the 8th century centered in Bagdad and under the Shite ideology. The second was around the 13th Century, centered in Istanbul and under the Sunni ideology. Both states declined. The first objective of this project is to research and compare the role of science in the rise and fall of these two states and find out if their different ideologies had an impact on how they viewed and handled science in particular. The Second objective is to address how Modern Era Islamic cultures handles Science and Engineering and what needs to be done to bring the Islamic and Middle Eastern culture back to its previous glory. This paper is targeted towards Educators in Islamic Cultures in order to layout the framework required to allow Islamic cultures to once again become one of the leading contributes of science and engineering technologies.

The Golden Age refers to the period when a great Islamic empire was formed and was the foremost civilization in the world. The period is generally defined as starting in 622 AD with the establishment of the first Islamic state, until 1258 AD when the Mongols sacked Baghdad, and centers around the Abbasid Caliphate between 750- 1258 AD. During this time, the Muslim world became the leading intellectual centre in virtually all areas, including science, engineering, philosophy, medicine and education. They built upon progress and achievements of the past and made countless contributions of their own that would have lasting effects on the world. Notable contributions include the first book on algebra, Ibn al-Haitham's theory of optics, and Ibn Sina's *al-Qanun fil Tibb* (*The Canon of Medicine*). This period was made possible by a variety of factors – a large empire, free from internal boundaries and external attack, positive political influence on science, the ability to mass produce paper, and religion.

The Ottoman Empire spanned the period between 1299 - 1923 AD. It emerged in the power vacuum caused by the Mongols' obliteration of the previous empire in that geographical area, the Rum Seljuks. The Ottoman elites spoke the Ottoman-Turkish language with its Arabic and Persian vocabulary, the peasants spoke Anatolian Turkish. The words "of engineers" in Turkish, "hendise", has its roots in the Persian word "Anddaza", meaning measurement. The word "Engineering" was sometimes used for building (shipbuilding) or construction. Although Ottoman rule would establish the Sunni interpretation of Islam as the politically dominant one, the Ottoman Empire recognized the protected status of minority religions. There is no evidence to suggest that adhering to either the Sunni or Shiite ideologies had a different effect on perception

and handling of science or realization and understanding of engineering. The Ottoman started constructing their intellectual wealth building mostly on Arabic/Islamic science then later put a great deal of effort to catch up with western scientific advances and engineering, but along the way their over infatuation with western society combined with various pressures from many enemies on their large Empire's borders, turned the "catching-up" into a lazy intellectual reliance which persists to this day in the majority of the Arabic/Islamic nations which sprung up on lands previously held by the Empire.

Today, in order for Engineering, Science, and Medicine to continue to flourish in Islamic culture, Educators, politicians and the people themselves must continue focusing on education. For the general populous, the pursuit of a higher education must become a primary objective. However, in order for this to be possible educators and politicians must work together to provide adequate budget for education which will focus on ensuring accessibility to education and increasing the literacy rate. With that, a focus on practical applications rather than theoretical shall be the stepping stone for further development. This can also be done with following what is in Islamic scripture NOT what extremists, political leaders, and culture dictate with a possible move towards a more secular state. Thus, the rebuilding of nations torn by war and focusing on the importance of Engineering education will allow countries to become as strong and influential as many Western countries. One only needs to look at China and its current political/economic scheme to realize the potential of Engineers in a society that fosters it especially in political leadership roles.