History of the scientific revolution

History, Revolution

What we call today as Modern Science and Technology is in fact not that modern, but was born nearly half a millennium ago at the time of Renaissance in Europe. According to traditional accounts, the scientific revolution began in Europe towards the end of the Renaissance Era lasting from 15 th century to 18 th century. Ancient people who are considered the first scientists called themselves “ natural philosophers” or “ practitioners of a skilled profession” or as “ followers of a religious tradition”. Both institutionally and conceptually, science was not the independent practice what we see today. Much of what we know as science originally was undertaken by priests and monks, and scientific knowledge was taught in temples and monasteries.

The scientific revolution was not marked by any single change, but a century long process of discovery in which scientists further elaborated and developed the findings of those who had come before—from the scientific learning of the ancient Greeks to the scholarly contributions of the Islamic thinkers, to the work of the late medieval and early Renaissance Europeans. The Medieval Islamic Science period lasted from 7 th century to 15 th century, during which the Muslims were the leading scholars and the heirs to the scientific traditions of Greece, India and Persia. The Islamic Science suffered a gradual decline in the early 12 th century which provided the Europeans an opportunity to seek and translate the works of Islamic philosophers and scientists. Beginning in the late 11 th century and over the next two centuries the Islamic world was under pressure by The Crusades and Mongol conquests, during which libraries, observatories, hospitals, and universities were destroyed. In addition to Mongolian invasions and the crusades,

political mismanagement and the stifling of ijtihad in the 12 th century in favor of taqlid thinking played a part. The destruction of the intellectual center of Baghdad the capital of the Abbasaid Caliphate in1258 is traditionally seen as the approximate end of the Islamic Golden Age. The translation of the Islamic texts into Latin during the 12 th and 13 th centuries had a great impact on the European Renaissance and helped Europe seize the initiative from the Muslims when political conditions in Islam brought about a decline in Islamic science. By the end of the 18 th century, the Scientific Revolution had given birth to Industrial Revolution which dramatically transformed the daily lives of people around the world. During the 19 th century, the practice of science became professionalized and institutionalized in ways that continued through the 20 th century.

According to many, scientific revolution was the prelude of a much bigger transformation, the Industrial Revolution which began in 1760's. The Industrial Revolution marks a major turning point in history and a shift to powered, special-purpose machinery, factories and mass production. The iron and textile industry, agriculture, and the invention of steam engine played central roles in the Industrial Revolution, which also saw major changes in transportation and banking systems. These changes had a profound effect on the socio-economic and cultural conditions in England, and then subsequently spreading throughout the world. The first Industrial Revolution which took place from 1760 to somewhere between 1820 and 1840 evolved into the Second Industrial Revolution around 1850 and continued through the 19 th century. However, the date of origin is still a

highly debated topic among historians. While it is difficult to explain all of the examples of how technology has influenced culture and vice versa, reviewing a few examples from the last few centuries it is clear that the technology developed during and after the Industrial Revolution has changed cultures from simple farming villages to modern hustling cities and sprawling suburbs.

What then is the relationship between Science, Technology and Culture? It is an intricate relationship that forms a figurative circle of influence with no real start or end points. Science, Technology and Culture continue to influence one another as they evolve and change over time. From 19 th century onwards science, technology and culture have significantly influenced one another. As cultures change so does the technology they develop. A contemporary writer Raymond Williams, in his book Culture and Society regards the concept of culture as consisting of four jointly applicable meanings:

- A general state or habit of mind, having close relations with the idea of human perfection;
- A general state of intellectual development in a society as a whole;
- The general body of arts; and
- A whole way of life–material, intellectual, and spiritual.

Culture is thus the totality of the technological, sociological and ideological features of a given society. Rationality, utility, ethics, freedom, and sociality are the central cultural elements of our societies. Because science and technology rest on these central cultural elements, the adoption of new

knowledge and new devices does not always imply their acceptance. We often accept an innovation owing to its evident utility at the individual level, and then criticize it for its consequences at the collective or cultural level. Science and technology can contribute to the preservations and advancement of a culture. At the same time they can also help cause its mutation and destruction. Science has contributed a great deal to human welfare. It has produced miraculous cures for diseases which for a long time, were regarded incurable. It has brought the marvels on industrialism, technology and space exploration. But science has created as many problems as it helped to solve. It has led to an undue stress on materialism and economic barbarism in the absence of controlling mental and moral ideas. The knowledge and power of science need to be harnessed to the service of man through the culture the finer sense and sensitivity of man.

For instance, beginning in the mid 1950’s, the post war years in Western Germany were marked by enormous obstacles. Due to extensive bombing destruction and dismantling of factories, various cultural and traditional supply networks were destroyed. Under this circumstance what role did culture play in the technological development of Western Germany? Stokes had argued that the way Western Germany approached technological change bound economic miracle both German past and to the country’s present day industrial structure. The Western German approach, in other words, has drawn upon a set of German technological traditions that emerged in the large 19 th and early 20 th centuries, major characteristics of which include a drive for technical excellence tempered by gradual implementation of new technologies.

There are two views about culture and Germany’s Technological and Economic Miracle one view advanced by scholars about culture and Germany’s technological and economic miracle is that the experience of skilled workers and the persistence of socio-economic relationships were important factors in permitting an economy to reconstruct itself after a disaster. A second, and a more recent view is that the important cultural factor that was responsible for Germany’s technological and economic miracle was the ability of Western German technologists and industrialists to embrace technological alternatives. What then is the relationship between culture and technology? The culture of a society determines the nature of technological development and the evolving technological culture. Technology is thus a cultural enterprise is thus accepted that technology has had an important influence on Western civilizations for the last 300 years. But partly because of the diverse cultures found in human societies, the contribution of some cultures to the pool of technological advances has been comparatively modest. However, technology has always been too important to be measured purely in terms of the activities of technologists. Just as history is not made by historians, but by society, so technology is not developed only by technologists but the wider community.

Every human society possesses its own distinct culture, so that the members of one society behave differently in some significant respects from members of every other society. Furthermore, human societies are also distributed over very varied regions differing markedly in climate and environment. There are also very large ethnic, social and cultural differences between the various human communities and their economic conditions. In recent years

the impact of culture on technology in most traditional societies has tended to bear on two opposing directions at once. On the one hand western technology is being sought virtually without limits on the other hand there is opposition to certain aspects of western lifestyles, attitudes and value. This phenomenon is termed as the techno-cultural gap between traditional values and western technology. Now, if we take these issues into full consideration, we are left to conclude that what is needed at this moment is not just an increase of international technology transfer nor even the setting up of a screening mechanism permitting only appropriate technologies to be transferred, but rather a major at two levels: the domestic and the international.

At the domestic level, it is important to build a popular technological awareness crossing the borderline between the so-called indigenous and modern technology people should become aware of the issues in culture and technology and they can improve their livelihood by modifying and improving indigenous and modern technologies.

At the international level, the re-orientation and restructuring of science and technology must touch on two areas:

1. On the study of science and technology in schools, scientists, technologists and science educationists of different cultures, languages and social systems must build new paradigms for science and technology education from a multicultural perspective. Science and technology must be seen as existing in all cultures, the issues must be

taught and the potentials of these must be explored in situations of everyday life.

2. An acceptance of the restructuring of R&D systems could permit the developing and the industrialized countries to engage in a dialogue on alternative R&D, assessment of technology for development, concrete measures to redirect government R&D from technocratic to need-oriented technology development, etc and joint R&D for alternative technologies.

In the west, the pervasiveness of technologies like televisions, telephones, and computers is affecting the way we perceive the world and how we interact. In addition many new developments, like cloning, challenge fundamental cultural beliefs and traditions. While Western nations have become relatively accustomed to technological change since the industrial revolution, developing nations are just beginning to grapple with the problems of the rapid introduction of industrial and scientific technologies. There is growing awareness of the consequences of the interaction between science, technology and culture. However, we are just beginning to understand how to reconcile the benefits of science and technology-such as higher standards of living, longer life spans, more leisure time, and improved communications-with the possibility of reshaping, many cultures and possibly redefining fundamental aspects of society.

As science and technology continue to advance, the ways in which people communicate, perpetuate, and develop their knowledge and attitudes toward individuals, as well as local, national, and international communities, will continue to undergo radical change. The continuing development of

science and technology is not inherently bad. However, it has the potential to endanger our diversity and traditional knowledge. We must work together to determine how to preserve and foster our cultural heritages at the same time we embrace the future.