

TOPIC OF THE WEEK

MAR'19 (28 Mar to 3 Apr)

History of Science & Technology

Science and Technology can be traced from the origin of human life 2 million years ago and each era has significant advancement. The earliest known form of S&T were human artifacts found during prehistoric time about 2.3 million years ago, they were roughly shaped stones used for chopping and scraping, found primarily in eastern Africa. Some of the earliest record of science came from Mesopotamian cultures around 400 BC, disease symptoms, chemical substances and astronomical observations were some of the evidence of emerging science. During the same period in the Nile Valley of Egypt information on the treatment of wounds and diseases and even some the mathematical calculations you are currently doing now in fifth form such as angles, rectangles, triangles and the volume of a portion of a pyramid have been around for thousands of years.

In 1859 (mid-way through the Victorian Age), Charles Darwin published a work that opposed the conventional way of thinking about religion. The Origin of Species proposed the theory that man actually evolved

from a lower species rather than having been created by a higher power. The idea of this notion was devastating to many Victorians. Darwin's work was responsible for a huge cultural debate between the old way of thinking and the new. A conflict arose because Darwin eliminated the possibility of a designing God (Landon). Some of the literature written during this time directly reflected the writer's attitude toward the revolutionary ideas that were being presented. In *Memoriam*, by Alfred, Lord Tennyson depicted one man's struggle with Darwin's ideas of existence.

Doubt is inherently human and it has a useful purpose. It often forces more rigorous scientific analysis, which can sometimes lead to amazing new ideas and discoveries. When Galileo first claimed that the Earth revolves around the sun few believed him. But because he thought he could prove his hypothesis with evidence, Galileo was compelled to spend his life observing, documenting, and calculating. When Christopher Columbus wanted to sail from Spain to Asia in the 1400s he faced opposition over the size and roundness of the Earth and whether he would succeed. This was despite the fact that Pythagoras proposed the Earth was round over 1,000

years before. Even until 1956, just before the Soviets launched Sputnik, there was a flat Earth society that promoted skepticism about Earth's roundness. Few people today would question whether the Earth is round or that it rotates around the sun. What were once unproven hypotheses are now undeniable fact because of scientific advancements and new technologies.

However, the road for science of scientific progress has not been a smooth one. Religious intolerance has been common, with George Bernard Shaw famously saying, "**All great truths begin as blasphemies**" (from his play *Annajanska*, 1919). Less well known is that intolerance has often come from within the ranks of the scientific community itself. The dictum that "**science progresses funeral by funeral**" (see his *Scientific Autobiography*, 1948) proves that scientists are just as much victims of the human condition as the rest of us, with all the prejudice and frailties that entails. On finding one flaw in a theory, scientist starts from scratch to develop a new theory that fits the new evidence as well as the old. After a great deal of testing, and with enough solid evidence, often with much modification as more evidence is gathered, a new explanation may eventually

be accepted for the exalted title of **Theory**. Then they are written and published in books or textbooks.

It was in the 17th century that modern science was really born, and the world began to be examined more closely, using instruments such as the telescope, microscope, clock and barometer. In the 18th century much of basic biology and chemistry was developed as part of the Age of Enlightenment. The 19th century saw some of the great names of science: people like the chemist John Dalton, who developed the atomic theory of matter, Michael Faraday and James Maxwell who both put forward theories concerning electricity and magnetism, and Charles Darwin, who proposed the (still) controversial theory of evolution.

In the modern world today, people cannot live without technologies, which have slowly taken an essential part in people's day-to-day lives and being without them would be unimaginable for some of us. The evolution of technology is beneficial to humans for several reasons. When observed more closely, new things are discovered every day. Let's take for instance when radio waves were discovered, radio broadcasts followed suit almost

immediately. Technology has also increased the productivity of almost every industry in the world. Thanks to technology, we can even pay with Bitcoins instead of using banks. The digital coin has been such a game changing factor, that many realized that this is the right time to open a account. But on the other hand, the use of technology certainly needs rule and new laws. For example internet use is an individual freedom. However, the invention of the atomic bomb cannot be an individual freedom. In fact, regulations are difficult to implement when these technologies are introduced – such as regulation surrounding the impending arrival of autonomous vehicles.

Martin Ford issues an equally strong warning. In his book, *The Lights in the Tunnel*, he argues that “as technology accelerates, machine automation may ultimately penetrate the economy to the extent that wages no longer provide the bulk of consumers with adequate discretionary income and confidence in the future. If this issue is not addressed, the result will be a downward economic spiral.” Continuing, he warns that “at some point in the future—it might be many years or decades from now—machines will be able to do the jobs

of a large percentage of the ‘average’ people in our population, and these people will not be able to find new jobs.”

Henceforth, we can say that the role of a scientist is very challenging from the beginning till the end of time. Modern societies often praise themselves for their science-driven progress, while paradoxically, scientists often struggle to communicate their research. Such communication is hindered by several factors. Science is inherently complex and scientific jargon tends to make it even more difficult to grasp, means of communication with society are lacking and the progress in scientific careers often promotes academic merit rather than contribution to the society.

References:

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- <https://www.lifehack.org/articles/lifestyle/6-world-changing-ideas-that-were-originally-rejected.html>
- <https://www.bbvaopenmind.com/en/articles/technological-progress-and-potential-future-risks/>

Additional Reading:

- <https://www.theguardian.pe.ca/opinion/editorials/editorial-self-checkouts-rise-of-the-machine-294834/>
- <https://www.theguardian.pe.ca/opinion/editorials/editorial-weathering-extremes-293923/>
- <https://www.nytimes.com/2019/03/04/opinion/algeria-protests-bouteflika.html>
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