

THE ORIGINS OF MODERN SCIENCE

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Introduction

Western civilization became more different and powerful than other civilizations due to the occurrence of a series of revolutionary changes such as the Scientific Revolution, the French Revolution, the industrial revolution, the professionalization of science, the close interaction between science and technology and the twentieth century revolutions in science that followed one another and affected not only the West, but eventually the whole world. If we notice, in these revolutions the most important factors are technology and science. Technology, which encompasses practical knowledge, had started with the first human beings and science began with the first Greek philosophers around 600 B.C. However, before the Scientific Revolution, *science* and before the Industrial Revolution *technology* were subject to intermittent rises and declines within different civilizations. With the Scientific and Industrial Revolutions both science and technology became the foremost features of the Western civilization, but until the mid-decades of the nineteenth century they followed different and independent paths. Technology, in particular, developed without any scientific input.

However, in the mid-decades of the nineteenth century with the chemistry-oriented dyestuff industry, science and technology for the first time began to interact in the real sense and from then on science-based technology became a crucial factor in drastically changing the modern society. There is no doubt that with the interaction of science and technology the Western civilization reinforced its superiority over other nations and ensured its dominance and ascendancy.

Science, being the foundation and the engine of tech-

nology, was and still is the secret and powerful weapon of the West. Since it is an invisible and abstract endeavor, it is easy to forget and ignore its significance. That is why Islamic or eastern nations wrongly identify Western civilization with technological gadgetries such as automobiles, electrical appliances, television, radio, telephone, aeroplanes, nuclear weapons, etc., and try to imitate only the technology of the West to their detriment. We must be aware that science is not technology. Science deals with ideas in an abstract way whereas technology aims at producing usable objects in order to raise the standard of living. In other words, technology is the application of scientific knowledge, and without understanding and mastering the scientific foundation, to just produce technological gadgets through imitation is a risky undertaking. Unless Muslims or eastern nations take over the scientific leadership from the West, the supremacy of the West in science-based technology will continue.

Italian humanists in the Renaissance period divided cultural history into ancient, medieval and modern periods and identified the modern period with change and progress.

In this paper, we will broadly trace the origins of the differentiation of the West from the rest of the world by examining the change and progress of science in the medieval and modern periods. However, in doing so or to get the big picture on this topic, it is necessary for us to compare and contrast Islam and the West. Although Muslims did not want to break away from the paradigms of Aristotle in physics, of Ptolemy in astronomy and of Galen in medicine, they prepared the ground for the Scientific Revolution and even made very important contributions concerning the main building blocks of modern science. Westerners first learned and assimilated what Muslims had achieved in all areas, then through some revolutionary changes took the leadership particularly in technology and science and also in military and political affairs. When they finally merged science and technology in the nineteenth century, they rein-