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THE RELATIONSHIP OF SCIENCE AND TECHNOLOGY

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ВЗАЄМОЗВ'ЯЗОК НАУКИ І ТЕХНІКИ

Development of science and technology are closely related, and it is dialectic. Since prehistoric times technology had been based on handicraft. Knowledge was primitive and empirical experience and transmitted under conditions where apprentice received continuous mentoring. At the same time general knowledge about the world had abstract and contemplative character and was evolving beyond the scope of production. Such interaction of spiritual and practical sides of human activities continued till the end of XVII century. A new stage is characterized by the evolution of empirical sciences and penetration of quantitative methods of research into theoretical disciplines. Thereby, the first scientific revolution had prepared natural sciences for manufacturing. Since manual production could not satisfy all social material needs, industrial manufacturing has appeared. However, a machine could function only with a set of other machines. Systematized use of equipment required systematic scientific knowledge. As a result, academies and scientific associations appeared in Germany (1750), Italy (1600), England (1660), France (1668). On January 5, 1665 in Paris the first scientific journal “Newspaper of scientists” was published. In the next three hundred years science developed in accordance with basic principles of XVII century, its impact on industry increased and became a productive force. It has been revealed that science is not knowledge itself, but social activities aimed at production of knowledge, i.e. scientific production.

Scientific and technical progress was more visible in the middle of XIX century, it was a time of the first industrial revolution (which was preceded by the revolution in natural sciences). In 1884 a telegraph appeared, in 1846 – a topographical rotary machine, in 1867 – a typewriter and dynamite, in 1876 – an internal combustion engine and a telephone. Changes in production, technical and household sectors that took place in XX century are the most impressive, beginning with the first airplane in 1903 up to the development of World Wide Web.

Revolution in science and technology is the second industrial revolution, which was at the same time the second scientific revolution connected with automation of manufacturing, achievements of science in sphere of theory of automatic management processes and mechanisms, telecommunication systems, development of computing hardware, microelectronics, biotechnology.

Industrial robots, new biochemical technologies, atomic energy are being widely used. Production is increasingly becoming the scope of science, driven by huge financial investments in it. Nowadays the number of scientists double every 10-15 years. The value of scientific knowledge has considerably increased in the recent years. Science and bionics develop such prospects that go beyond usual comprehension – I mean the symbiosis of a living organism with technology and nanotechnology. To conclude, the revolution in technology is accompanied and conditioned by the revolution in science, engineering and technical thinking.