

## SECTION XIV. INFORMATION TECHNOLOGIES AND SYSTEMS

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### CHALLENGE FOR THE FUTURE

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As technologies develop, they cause hard changes in the economy, which sometimes destroy the social balance. Analyzing history, it will be easy to find that “bubbles” and crises in the economy occur from time to time. Historians and economists have written a lot of works about the crisis of 2008 trying to understand why it happened, looking at a wide variety of factors: human nature, greed, corruption, shortcomings of legislation, insufficient control [2].

In an economic context, a “bubble” usually describes a situation where the price of something (an individual stock, financial asset, or even an entire sector) exceeds its fundamental value by a wide margin [1]. Therefore, the development of science, like the economy, is uneven, it occurs in waves. One great discovery often entails lots of other inventions that cause an avalanche of innovations and create a large amount of wealth.

Waves of scientific development must and will occur in the economy. The first wave caused steam engine which led to the creation of the locomotive at the beginning of the 19th century. Most of the resources were invested in assets of locomotive companies on the London Stock Exchange. The “bubble” began to grow, and since rail transport was in its infancy, the “bubble” was unstable. Finally, it popped and caused the biggest crisis in 1850.

The second wave of scientific development was driven by Edison’s electricity and Ford’s car, but this time it took place on the American stock market. The “bubble” was in the form of automobiles and energy companies. The market could not accommodate them, and in 1929 the “bubble” burst, causing the Great Depression. [5].

Not so long ago there was a third wave of science development. High technologies were invented, such as computers, lasers, the Internet, space satellites, electronics. All this wealth had to be invested in something and it was invested in realty. Real estate prices rose, people began to take loans for their own housing, bankers issued mortgages right and left, and this accelerated the growth of the “bubble” that burst in 2008 and caused a new crisis [2]. The irony is that the development of computer networks connecting the whole world is already taking place, and the peak of the information revolution is yet to come. So the question is what will be the next fourth wave? Nobody knows, but it will probably be a

combination of artificial intelligence, nanotechnology, telecommunications and biotechnology.

This is a challenge that humanity will have to meet in the future, and one of the losses will be unskilled work. The question of what robots cannot do will partly help answer another question about what professions will be relevant in the middle of this century. An artificial intelligence doesn't have at least two things: pattern recognition and common sense [3]. So, in the future there will be mostly professions that require these two skills.

People who only perform mechanical operations, blue collar workers, will lose their jobs because robots are second to none. The winners are those who perform non-mechanical work that requires distinguishing images – scavengers, construction workers, plumbers, gardeners. Agents, accountants, and bank tellers among the white-collar workers will also suffer, because today you can buy anything on the Internet without sales agents' help.

As for the people of art, they will not lose, because the Internet has an insatiable need for creativity. Computers can't understand what makes us cry or laugh, because they don't know how to do it themselves and they don't understand what is sad and what is funny. The ability to manage, communicate and be a leader will also be valued in the future. For example, lawyers will not be left without work. Although a robot lawyer can answer simple questions about legislation, it is constantly changing along with social standards. With regard to leadership, its difficulty lies in being able to inspire and guide other people, each of whom has his own weaknesses. This requires a deep understanding of human nature, which no computer can do.

So, every revolution has its winner and loser. The only question we have is how this technological revolution will change our society, because every time science advances, there is a new leap. Each new wave of scientific development is based on a certain resource, and now it is a human resource.

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