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Marxist View of Science and Technology and its Contemporary Value

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Abstract: *At present, the world is undergoing great changes unseen in a century. Science and technology has become an important standard to measure the comprehensive strength and international influence of a country. The understanding of the nature of science and technology, the law of development and the value utilization cannot be ignored. This paper takes the literature research method of Marxist theory discipline, takes the expression of scientific and technological thought in the original Marxist theory as the main line, analyzes the essence of nature, society and human beings, and summarizes its contemporary value for the realization of Chinese modernization. As an inclusive and open and advancing theoretical system of keeping pace with The Times, the Marxist view of science and technology is of an accurate understanding and scientific interpretation of its important theoretical guiding significance for comprehensively promoting the great rejuvenation of the Chinese nation with the Chinese-style modernization.*

Keywords: *Marxist view of science and technology, science and technology, Chinese-style modernization*

1. Introduction

In the past quite a long period of time, the Marxist view of science and technology has not attracted great attention from the academic circles. After entering the industrial society, with the comprehensive penetration of science and technology on the mode of production, life style and way of thinking, as well as the subsequent prominent negative effects of ecological imbalance, environmental pollution, and the slavery of technology on people, people began to re-examine the profound scientific and technological ideas contained in Marx's writings.

At present, for the Marxist view of science and technology, foreign studies mainly study through the perspective of human social development and material data production, and discuss the functional view and duality of science and technology from the perspective of historical materialism, and then combined with the practical problems of the development of capitalist society, emphasizing the practicality. However, the research of domestic scholars on Marxist view of science and technology mainly tends to discuss the personal view of science and technology, lacking of holistic and systematic research, and most of the research on Marxist view of science and technology still stays at the level of text and lacks deep thinking.

"Science and technology has always played a very important strategic position and played a very important strategic role in the cause of the Party and the people."This is an important judgment made by CPC central on the contemporary value of science and technology. In every process from the establishment and development of the Marxist concept of science and technology, it attaches great importance to the relationship between science and technology and the natural environment, science and technology and productivity, and science and technology and the essence of human beings. Therefore, the accurate understanding and scientific interpretation of the Marxist view of science and technology is of important theoretical guiding significance for comprehensively promoting the great rejuvenation of the Chinese nation with the Chinese-style modernization.

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2. The theoretical source source and basic content of Marxist view of science and technology

2.1 The theoretical source of the Marxist view of science and technology

The 19th century was the golden development period of modern science and technology, and the major breakthroughs made in many disciplines in this period provided a strong natural science theoretical support for the formation of the Marxist view of science and technology.

In 1755, the German classical philosopher Kant published an Introduction to the History of the Development of the Universe, in which he proposed the nebula hypothesis of the origin of the solar system, which not only denied the "first push of god", but also criticized the creationism of the universe, providing an astronomical basis for the emergence of the Marxist view of science and technology."The question of the first push was cancelled; the Earth and the entire solar system were something that was gradually generated in the course of time.[1]"

The British geologist Ryle published the Principles of Geology in 1830, proposing the —— gradual geological theory of the slow evolution of the Earth's strata. This provides the geological basis for the emergence of the Marxist view of science and technology.

In 1824, the German chemist Viler first realized the artificial synthesis of organic matter —— urea, which "proved that chemical laws apply equally to organic matter and inorganic substances, and largely filled Kant as the forever insurmountable gap between the inorganic world and the organic world.[2]"In addition, the discovery of the periodic law of elements and the proposal of the atomic-molecular theory provide the chemical basis for the emergence of the Marxist view of science and technology.

In terms of physics, the law of energy conservation and law of transformation and the establishment of electromagnetic theory provide the physics foundation for the generation of Marxist view of science and technology.

In terms of biology, the theory of cells and biological evolution provide a biological basis for the emergence of the Marxist view of science and technology.

2.2 The main content of the Marxist view of science and technology

2.2.1 The relationship between science and technology

In surplus Value, Marx pointed out that "the mother of skill is science"[3]. And clarified the dialectical relationship between science and technology: only together with science can technology form a greater and more powerful social production effect. Engels argues, "... technology depends so largely on the state of science, and then science is so much more dependent on the state and needs of technology.[4]"It can be seen that the demand of technology in production is the first driving force to promote the development of science and technology. With the deepening of industrialization, science and technology have gradually become an inseparable and unified whole.

2.2.2 Technology is productivity

Science and technology is the productive forces is the core of Marx's view of science and technology. After Marx fully demonstrated, he got the idea that science and technology is a productive force. " Capital is based on the certain existing historical development of the productive forces, and —— also includes science in these productive forces.[5]"Science and technology as the potential productivity first for knowledge form, and direct realistic productivity is both linked and different, between the laborer, labor tools, labor object the penetration of three substantive elements realize mutual transformation, through the factors of productivity and human factors of intelligent transformation and promotion to achieve. In science and technology from the potential productivity, on the basis of direct productivity, Marx issued exclamation: " general social knowledge, has become a direct productivity, and the process of social life process itself in how much degree under the control of general intelligence and according to the intelligence.[6]”

2.2.3 The role of science and technology in promoting society

Science and technology plays an important role in promoting the development process of society. Marx clearly pointed out that " with the acquisition of new productive forces, people change their way of production, and with the way of production is the way of making a living, people will change all their social relations. Hand grinding produced the feudal society, and steam grinding produced the society of industrial capitalists.[7]"It can be seen that science and technology play a vital role in social

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productivity, development and reform of production relations. The development and dissemination of science and technology have established the capitalist mode of production on a global scale, and the world capitalist market has broken the lock of previous isolation between countries. Science and technology not only improve social labor productivity, but also improve the cultural quality of workers, which promotes the society's way to attach importance to culture and promotes the reform and development of education. Technology has also had a huge impact on people's lifestyle and promoted changes in the way of thinking.

2.2.4 The alienation of science and technology

Technology is a double-edged sword. Marx analyzed it from the perspective of dialectics and holism, affirmed the development of science and technology in human society and productive forces, and denied the deterioration of science and technology in nature and enslaving people. As Engels said, " Don't be too intoxicated with our victories against nature, and for every such victory, nature has retaliated against us.[8]"Science and technology is a double-edged sword, promoting the rapid development of productivity under the background of the industrial revolution era, but also caused irreversible damage to the natural environment, and even today, people are still affected by the result of this damage. On the other hand, the development of science and technology has changed the way capitalists exploit workers. Marx said: " The machine itself shortens labor hours, while its capitalist application extends labor; because the machine itself is a victory between human beings and natural forces, and its capitalist application has enslaved people to natural forces; because the machine itself increases the wealth of producers, and its capitalist application makes the producers poor in need of relief.[9]"The hegemonism in the world also relies on its scientific and technological advantages, forcing other countries to accept the unfair rules in international trade, transfer their own economic crisis, and even invade other countries.

3. Three-dimensional interpretation of the Marxist view of Science and technology

3.1 Nature dimension: people need to use technology to develop the potential value of nature

In the 1844th Manuscript of Economics and Philosophy, Marx clearly pointed out that: " Nature, abstracted, understood and clearly separated from man is not human.[10]"Marx believed that the natural nature outside the scope of human practical activities has no direct value to people, but can only be regarded as a simple material form of free existence. The potential value contained has not been developed through people's materialized labor. Marx found the link between man and nature and the bridge of —— human technical practice, he once said: "The whole so-called world history is no more than the process of human birth through human labor, is the generation process of nature and people.[11]" From the history of the development of artificial nature, nature has gradually gotten rid of its own wildness and been brought into the scope of human control, reflecting the victory of man's knowledge, experience and will over nature. From the perspective of the evolution process of human civilization history, the progress of human civilization reflects the process of human use of science and technology to refute nature. Marx believes that the humanized nature is "real nature" under the premise of giving play to human subjective initiative and constantly using science and technology to transform nature according to human needs is "real nature". "Therefore, the nature formed through industrial ——, though in the form of alienation, is a true, humanistic nature."

Marx also believes that in the process of material transformation of man and nature, people as the subject of practice, is not blind energy transfer between nature, but by means of science and technology, according to the established goal, plan to conquer nature and transform nature, make the combination of labor and natural material, and create the process of use value. The transformation of nature by using science and technology should not exceed the ability of nature to repair and purify itself. Once it exceeds the carrying capacity of nature, it will inevitably be punished by natural laws.

3.2 Social dimension: the reaction of social needs on the development of science and technology

The development of science and technology comes from the needs of social practice, and the needs of production and life practice are the source and power of promoting the development of science and technology. As Engels said, " Once the society has a technical need, this need will push the science forward more than the ten universities.[12]"Technology in the society, innovation and development can also leave the economy, politics, education, philosophy and other aspects of the support, Marx stands in the height of historical materialism, regard capitalism as the insurmountable social foundation of

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science and technology development.[13]" only in the big industry has reached a high stage, all science is used to serve the capital, the machine system began to develop on this road; on the other hand, the existing machine system itself has provided a lot of means. In this case, invention will become a profession, and the application of science in direct production itself becomes a decisive and driving focus on science. "Marx always reveals the powerful role of social needs in promoting the development of science and technology from the economic structure of the society, which is an important feature of Marx's view of science and technology.

3.3 Human dimension: the alienated influence of science and technology on human nature

Marx, in his "Outline on Feuerbach, clearly stated that" the essence of man is not an abstract object inherent to a single man. In its reality, it is the sum total of all social relations.[14]"The essence of human beings is the unity of natural attributes and social attributes, and human sociality needs to be explored in the material production activities, which are linked with a certain technical level and production conditions. Thus Marx believes that: technology is the fundamental attribute of man. "Because the materials of labor are converted into automata, it stands out as the capital in the process of labor itself, and as the dead labor that governs and sucks the living labor force.[15]"Marx believed that although the application of science and technology under the condition of capitalism has effectively improved labor productivity and promoted social progress, but due to the institutional limitations of capitalism itself, science and technology has become a hostile force for the workers, which restricts or even enslaves the workers themselves. The alienation of science and technology not only seriously persecutes the body and mind of workers, but also leads to the comprehensive alienation of the relationship between society and people, and brings bad consequences.

4. The Contemporary value of the Marxist view of science and technology

The Marxist view of science and technology is an open and progressive theoretical system that keeps pace with The Times. Although it has undergone changes year after year, it still has a profound value of The Times today. It is not only the theoretical source of the Sinicization of the Marxist view of science and technology, but also the philosophical basis for realizing the sustainable development of resources, environment and society and realizing the modernization of Chinese style.

4.1 To provide philosophical wisdom for the development of Chinese-style modernization

To promote modernization, we should vigorously develop science and technology. The level of science and technology development is an important indicator to measure the degree of modernization. Modernization is not a static concept, but a historical process of dynamic development. As a large developing country, China is also faced with various difficulties in the process of modernization, and modernization, as a necessary stage for mankind to realize the communist society, covers many elements, such as political democratization, market liberalization, the enhancement of human consciousness of subject, rational technology and so on.

The 20th Congress of the Party proposed to build a great modern socialist country in all respects, and the overall strategic arrangement is to take two steps: basically realize socialist modernization from 22 to 235; and build China into a great modern socialist country, prosperous, strong, democratic, civilized, harmonious, and beautiful from 235 to the middle of this century. The next five years will be a crucial period for comprehensively building a modern socialist country. We will continue to focus on economic development and scientific development as the theme, accelerate the transformation of the economic growth model, strengthen the new drivers of innovative development, and unswervingly adhere to the Chinese-style path of modernization. Science and technology is the core variable of promoting social development and economic growth, and also the embodiment of the overall national strength. To realize modernization, we must rely on science and technology and vigorously develop the productive forces. This is not only the ideological nourishment that we get from the Marxist view of science and technology, but also the primary task facing the current Chinese-style modernization drive.

4.2 Provide ideological inspiration for the construction of ecological civilization

At present, China is still far away from the requirements of ecological civilization construction. China's current ecological crisis is mainly manifested as soil erosion and desertification, air pollution, water pollution and fresh water resources exhaustion, soil heavy metal pollution and so on several main

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aspects, has formed a comprehensive "three-dimensional pollution", brought serious threat to people's health, also become a big bottleneck restricting the development of Chinese modernization. In Das Kapital, Marx also pointed out that the capitalist mode of production destroyed the normal "material transformation" between man and nature, and the imbalance of the proportion of human demand and return from nature eventually led to "the rupture of material transformation".

The Marxist view of science and technology has an important ideological enlightenment significance for us to get out of the trap of ecological predicament today, accelerate the process of Chinese-style modernization, realize sustainable development, and promote the harmonious coexistence between man and nature. Firstly, vigorously develop the multi-dimensional values and attributes of natural resources through vigorously developing science and technology, and replace non-renewable energy with renewable energy; secondly, vigorously develop circular economy and reduce environmental pollution. In Marx, in Das Kapital, he mentioned the recycling of production and domestic waste, believing that it can effectively reduce the pollution to the environment and maintain the smooth "material transformation"; finally, establish the concept of sustainable development and green consumption, reduce the discharge of production and domestic waste. In the third volume of Das Kapital, Marx proposed economical ways to reduce environmental pollution: first, to recycle industrial and domestic waste, and the other is to "reduce production".

4.3 To guide the implementation of the strategy of rejuvenating the country through science and education

The Marxist view of science and technology emphasizes that knowledge and education are of great significance to the working class, especially for the growth of young workers. Marx believes that education can eliminate the one-sidedness caused by the division of labor and create conditions for the all-round development of people. Since entering the 21st century, under the guidance of a new round of scientific and technological revolution, human beings are moving forward from a traditional industrial society to a knowledge economy society. Therefore, at the 20th National Congress of the Communist Party of China, CPC central pointed out according to the trend of The Times: " Education, science and technology, and talents are the basic and strategic support for comprehensively building a modern socialist country. We must ensure that science and technology are the primary productive force, talents are the primary resource, and innovation is the primary driving force. We must fully implement the strategy of rejuvenating the country through science and education, through human resources, and innovation-driven development, open up new areas and new tracks of development, and foster new drivers of growth."

Since entering the 21st century, the competition of science and technology and talent has become the focus of the competition of comprehensive national strength. As a scarce talent of the country, high-level talents undertake an important mission in scientific and technological innovation activities, and they are the core force and mainstay of China's modernization drive. We should continue to put the construction of high-tech talents in a strategic position related to the future and destiny of the nation, constantly optimize the environment for talents to stand out, vigorously deepen the reform of the science and technology system, accelerate the training of the young generation of scientific and technology talents, and at the same time strengthen the ethical norms of science and technology and the awareness of moral responsibility of scientists.

5. Conclusion

On the one hand, the guidance of the Marxist view of science and technology can draw on the rational spirit, accelerate the pace of Chinese modernization, deepen the reform and development of the socialist economic system and political system; on the other hand, fully absorb its ideas on the alienation of science and technology, promote the change of economic growth mode, try to avoid the possible negative effects of science and technology on nature, society and people, and realize the "real use" of science and technology.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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