

Research on Xi Jinping's Scientific and Technological Thoughts in New Era*

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Xi Jinping's Scientific and Technological Thought in the New Era is one of the main contents of Xi Jinping's socialist thought with Chinese characteristics in the new era. The main theories of scientific and technological thinking in the new era are derived from the scientific and technological thinking of classic Marxist writers and the scientific and technological thinking of the Chinese Communists in the past. Its content is rich, especially in the report of the 19th National Congress of the Communist Party of China, which emphasizes the importance of the world's scientific and technological frontiers and basic research, and deepens science and technology. Institutional reforms, promotion of the transformation of scientific and technological achievements, and training of a large number of international-level strategic scientific and technological talents. Xi Jinping's scientific and technological thinking in the new era is the latest theoretical contribution to the scientific understanding of the development law in China. It not only enriches and develops the Marxist content of science and technology, but also deepens and improves the theoretical connotation of socialist technology with Chinese characteristics.

Keywords: Xi Jinping, New Era, scientific and technological thought

Introduction

Socialism with Chinese characteristics has entered a New Era. Xi Jinping's thoughts on socialism with Chinese characteristics in the new era are based on a combination of theory and practice. What kind of socialism with Chinese characteristics should be adhered to and developed in the new era? Founded on the basis of this major era issue, Xi Jinping's new era science and technology thought is one of the main contents of Xi Jinping's new era socialism thought with Chinese characteristics. We should make a systematic study of the new era science and technology thought based on the new practice to guide the new science and technology practice.

Theoretical Basis of Xi Jinping's Scientific and Technological Thought in New Era

Xi Jinping's Scientific and Technological Thought in New Era is an ideological system established under the guidance of Marxist dialectical materialism and historical materialism, combined with the current development of China's economy, society, and technology. It is a product of the combination of theory and practice. The theoretical basis is mainly derived from the scientific and technological thoughts of classic

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Marxist writers and the inheritance and development of the Chinese communists' scientific and technological thoughts in the past.

Marx and Engels were in an era of rapid development of science and technology. Marxist interpretation of science and technology is rich in content, enriching the essence of science and technology, science and technology as a productive force, and the role of science and technology in promoting the change of human society. And these can be called one of the important contents of Marx and Engels' scientific and technological thought. For the first time, Marx and Engels clearly put forward the view that "science is productivity". As they pointed out, this kind of reproduction of "constant capital" is presupposed everywhere by the role of scientific power, and the latter includes both the scientific power itself and the possession of production, and has achieved science power in production.

The outbreak of the scientific and technological revolution and the rapid development of productive forces are the foundation on which Marx and Engels' scientific and technological thoughts are established. In the 19th century, countries, such as Britain, France, Germany, and the United States completed the industrial revolution one after another, opening an era in which large-scale machine production replaced small-scale manual labor, and the bourgeois dominance was established. The wide application of science and technology not only shows a huge driving force in improving productivity, but also brings profound social changes. For the first time, the capitalist mode of production made science and technology directly serve the production process. As a form of productivity, science and technology became an important means of creating wealth. Marx and Engels formed an ideological perspective on science and technology by critically examining production under the capitalist economic system.

First, science and technology is a kind of productivity. When explaining the question about wealth, Marx believed that science is not only the wealth of ideas, but also the development of actual wealth. "It is an aspect and a form of the development of human productivity, that is, the development of wealth" (Marx & Engels, 2009, p. 170). Marx regarded science as wealth, and human productivity is equal to wealth, thus proving that science is a part of productivity; in "Capital", Marx regarded the level of scientific development when summing up various factors that determine labor productivity and the degree of its application in craftsmanship as one of them. When discussing the development of the machine system and the application of science, Marx further clearly pointed out the relationship between science and productivity, that is, "capital is premised on a certain existing historical development of productivity. ... Science is also included in these productive forces" (Marx & Engels, 2009, p. 188). All of Marx's expositions have organically linked science and productive forces, and science and technology are summarized in productive forces. According to Marx's point of view, productive forces are essentially objective and material in nature. The development of science and technology is effectively transformed into the improvement of production tools and the innovation of production technology, which are materialized into direct and realistic productive forces. Before the birth of modern science, the objects of labor were mainly natural objects. Science and technology "expanded the scope of objects of labor and promoted the deep processing of natural objects" (Mai Peng, 2019, p. 26). At the same time, productivity is also subjective and conscious. Man as the main body of production is an entity with objective reality. However, since production is a conscious and purposeful activity to transform the world, human subjective thinking is inevitably involved in the production process. Science and technology are concentrated on the main body of production in the form of knowledge, which is not only reflected in the professional level and personal skills of the workers, but also reflected in the creativity of thinking and the innovative ability of production. From this,

science and technology is transformed into productivity by using the worker as a medium. Second, workers need knowledge and skills. In the mid-18th century, some manual workshops tended to choose people without any knowledge to do simple work, because the finer the division of labor, the simpler the work, without the need for physical or intellectual skills, and the special skills of workers did not have any value. Unconscious hand and foot habits can ensure production efficiency, but this monotonous work will make workers lose their creativity and aggressiveness. The advent of the great industrial era has brought about changes in the functions and labor processes of labor workers with the continuous development of the technical foundation, thus requiring laborers to have certain professionalism and technicality. Marx believes that the labor force itself should have the normal nature, that is, the labor force must have “the average proficiency, skill, and speed of the dominant position” in its profession (Book writing group of Introduction to the basic principles of Marxism, 2018, pp. 160-166). In discussing Richard Jones’s thoughts on the impact of capitalist production on the development of productive forces, Marx pointed out that only within the limits of the continuity of labor to improve the personal skills of workers, the productivity of labor will be increased, clearly emphasizing the personal skills to the workers. Importantly, the professional level of laborers determines the level of labor productivity. Engels also mentioned that “all workers without formal apprenticeship training are shut out by many old workers’ unions”, which fully shows that in capitalist society workers must have skills to have the opportunity to work. At the same time, Marx also put forward the idea of cultivating the professional skills of the labor force through education. In order for ordinary people to acquire certain skills and skills in the labor sector and become a developed and specialized labor force, they must undergo certain education or training. And for different labors, very different education should be provided, so that workers have different values. Third, technology promotes social change. Marx believes that the value of science and technology lies in its creative role in human history. Science is a revolutionary force that has played a role in promoting history. First of all, with the advancement of science and technology, productivity has been developed. The traditional manual workshop was replaced by the large-scale industrial production of machines. “The efficiency of tools was liberated from the physical limitations of human labor” (Liu, 2019, pp. 99-110). Productivity achieved a qualitative leap. Secondly, the development of science and technology has promoted human freedom to a certain extent. Not only has the production of tools replaced the labor of workers, but also the skills of using labor tools have been transferred from workers to machines, and human hands, feet and physical strength have been liberated. The ability to work mentally is expanded.

Lenin was also very concerned about science and technology, and proposed a series of guidelines that were in line with the reality of Soviet Union’s economy, technology, and culture at that time. To consolidate socialist construction through science and technology, and to propose that the key to strengthening economic construction lies in the effective use of new scientific and technological achievements, rational organization of the labor process, every effort is to increase labor productivity, and the development of the country’s economic production. At the same time, it also actively uses science and technology experts, attaches great importance to scientific and technological talents, and affirms that intellectuals, including scientific and technological talents that are the main force in developing productive forces. Lenin regarded experts as the only wealth of technological culture and the key to realizing communism. In February 1921, Lenin proposed to organize the establishment of the National Planning Commission, which will lead, coordinate, and balance the various sectors of the national economy according to a unified economic plan. In the personnel organization of the National Planning Commission, he strongly advocated that science and technology experts and scholars should

form the main body of the National Planning Commission, and the enthusiasm of scientific and technological personnel to participate in economic construction should be widely mobilized. The leaders of the agencies must also have rich experience and much experience in technology. In the article “On the Unified Economic Plan”, Lenin (1921) explained the importance of the formation of the State Planning Commission and the necessity of broadly absorbing non-party experts to participate in the work of the State Planning Commission. He pointed out that the party organizations within the State Planning Commission should not be keen to issue orders, but to learn respect scientific and technological experts for their down-to-earth work. After all, intellectuals, including scientific and technological talents, are the main force in developing productive forces. When formulating economic plans, a large number of outstanding experts should be attracted to participate and actively listen to the opinions of experts to ensure the scientific and rationality of economic plans.

The combination of scientific and technological thoughts with my country’s specific national conditions has brought forward distinctive scientific and technological thoughts. From Mao Zedong’s emphasis on “starting a revolution in technology”, Deng Xiaoping’s assertion that “science and technology is the first productive force”, to Jiang Zemin’s strategy of “rejuvenating the country through science and education”, and then to Hu Jintao’s pioneering the scientific and technological concept of “building an innovative country” is put forward, which fully embodies the scientific and technological concept of the Chinese Communists in the past dynasties, which fully embodies the logical approach of the Chinese Communists’ scientific and technological ideology in the past through the same vein and with the times. The new leadership of the CPC Central Committee with Xi Jinping as the general secretary fully inherited and developed the scientific and technological ideas of the Chinese Communists represented by Mao Zedong, Deng Xiaoping, Jiang Zemin, and Hu Jintao, and put forward a series of power views on the issues of scientific and technological reform and development. When it comes to many important issues, such as science and technology status, science and technology strategy, science and technology system and mechanism reform, science and technology people’s livelihood, science and technology innovation, science and technology talents, and green technology, this is a close and interrelated integrated ideological system, which is beneficial to confirm Xi Jinping’s internal law of science and technology development. With a deeper understanding and grasp, it also fully demonstrates that Xi Jinping’s scientific and technological thoughts are an important theoretical crystallization of the sinicization of Marxist scientific and technological thoughts, which opens up a new realm of Marxist scientific and technological thoughts.

The Main Content of Xi Jinping’s Scientific and Technological Thought in New Era

Xi Jinping’s scientific and technological thinking in the new era is an important achievement of the Sinicization of Marxism, and it has important guiding significance for the current development of science and technology in my country. Since the 18th National Congress of the Party, Xi Jinping has placed scientific and technological innovation at the core of the country’s overall development from the perspective of history and the situation at home and abroad. On the basis of inheriting and developing Marxist scientific and technological thoughts, Xi Jinping put forward a series of forward-looking, strategic and overall scientific conclusions on scientific and technological reform and development, which enriched the theoretical treasure house of socialist scientific and technological thoughts with Chinese characteristics. In the context of the new era of building a well-off society in an all-round way and realizing the Chinese national dream of a great rejuvenation, Xi Jinping’s scientific and technological thought is undoubtedly a guide for the reform and development of my

country's scientific and technological undertakings. Therefore, actively and in-depth discussion of Xi Jinping's ideological and theoretical crystallization of scientific and technological reform and development has important realities for cultivating and fostering innovative scientific and technological talents for the construction of socialism, realizing the leap-forward development of China's scientific and technological undertakings, and promoting the construction of ecological civilization in China.

The relevant thinking on science and technology in the report of the 19th National Congress of Communist Party of China is the new connotation of the content of science and technology in Xi Jinping's New Era. The report mentions that

we must aim at the world's technological frontiers, strengthen basic research, achieve forward-looking basic research, and achieve major breakthroughs in leading original achievements. Strengthen due basic research, expand the implementation of major national scientific and technological projects, highlight key common technologies, cutting-edge leading technologies, modern engineering technology and disruptive technological innovation provide strong support for building a strong country in science and technology, a strong country in space, a strong country in aerospace, a strong country in network, a strong country in transportation, a digital China, and a smart society. It is "a major strategy for the country and the nation" proposed by Comrade Xi Jinping Significant scientific and technological decision-making, if you think about it, you have to make a decision, otherwise you may miss the historical opportunity, or you may even pay a greater price. Vision to plan and promote innovation, improve the environment for talent development, strive to achieve key breakthroughs in advantageous areas and key technologies, and form a batch of core technologies to promote industrial development as soon as possible. (*Excerpts from Xi Jinping's Report of the 19th National Congress of the Communist Party of China, 2017*)

Xi Jinping attaches great importance to technological innovation and emphasizes that the most fundamental aspect of technological innovation lies in the enhancement of independent innovation capabilities.

The most fundamental thing for implementing an innovation-driven development strategy is to enhance independent innovation capabilities. The most urgent thing is to break the institutional barriers and maximize the liberation and stimulation of the huge potential of science and technology as the first productive force.

Implementing an innovation-driven development strategy is the inevitable requirements and strategic measures for accelerating the transformation of economic development mode and improving China's comprehensive national strength and international competitiveness must firmly grasp the core of scientific and technological innovation and the key to cultivate innovative talents, aim at the world's frontier fields of science and technology, and continuously improve independent innovation of enterprises ability and competitiveness. (*Excerpts from Xi Jinping's Discussion on Scientific and Technological Innovation, 2016, p. 13*)

The reason why technological innovation has the core position is that science and technology are the primary productive forces of modern society. Only technological innovation can promote the continuous development of productive forces and further promote the economic and political system of society (Li, 2016). And cultural ideology are constantly changing and improving. Only by grasping the core of scientific and technological innovation, can we give full play to the true driving force of innovation-driven development strategies. The report of the 19th National Congress also mentioned the need to strengthen the construction of a national innovation system and strengthen strategic scientific and technological forces. In addition, it is necessary to eliminate the difficulties that hinder scientific and technological innovation, especially to deepen the reform of the scientific and technological system, establish a technological innovation system that is enterprise-oriented, market-oriented, and deeply integrates industry, education, and research, and strengthen support for SME innovation. In terms of promoting the transformation of scientific and technological

achievements, Xi Jinping proposed to

adhere to the orientation of science and technology for economic and social development, deploy an innovation chain around the industrial chain, improve the capital chain around the innovation chain, eliminate the “island phenomenon” in scientific and technological innovation, and eliminate restrictions on scientific and technological achievements. Transfer the obstacles to diffusion and enhance the overall effectiveness of the national innovation system. (*Excerpts from Xi Jinping’s Speech at the Ninth Collective Study of the Eighteenth Central Political Bureau*, 2013)

At present, my country has the largest total number of scientific and technological teams in the world. The level and structure of scientific and technological talents cannot meet the actual needs. Moreover, there is a lack of world-class scientific and technological masters (Yang & Jia, 2017). Some leading scientific and technological talents and top talents are inadequate. Engineering and technical personnel training is out of touch with production and innovation practices.

In the report of the 19th National Congress, it is emphasized here that “the cultivation of a large number of strategic scientific and technological talents and leaders with international standards talents, young technology talents and high-level innovation teams”.

Xi Jinping put forward:

First, we must make good use of live talent, establish a more flexible talent management mechanism, improve the evaluation of the baton, open up the institutional mechanisms and obstacles in the flow, use, and function of talent, and coordinate and strengthen high-level innovative talents and youth. The construction of talent teams in scientific and technological talents, practical technical talents, etc. supports and assists scientific and technological personnel in innovation and entrepreneurship to the greatest extent. (*Excerpts from Xi Jinping’s Discussion on Scientific and Technological Innovation*, 2016, p. 60).

Conclusion

Xi Jinping’s new era science and technology thought is one of the main contents of Xi Jinping’s new era socialist thought with Chinese characteristics (Han, 2017). It is proposed by an investigation of the rapid development of science and technology in the world today, as well as the economic development power engine and the reality of China’s economic, social and technological development (Zhou, 2016). The guiding ideology and systematic in-depth study of it have important theoretical and practical significance (Wu & Wang, 2016).

At the theoretical level, it helps to enhance the grasp of the latest development findings of our party’s scientific and technological thoughts and lay a theoretical foundation for the construction of an innovative country (Yin, 2019). Xi Jinping’s scientific and technological thoughts in the new era both acutely grasp the new characteristics of the rapid development of science and technology in today’s world (Ni & Liu, 2019), and follow It is the latest theoretical contribution to the scientific understanding of the development of science and technology in China, which not only enriches and develops the Marxist concept of science and technology (Yang & Yue, 2020), but also deepens and perfects the spiritual treasure trove of the theory of socialist science and technology with Chinese characteristics (Sheng, 2019). First of all, Xi Jinping’s scientific and technological thoughts have pointed out the realistic direction for the reform and development of China’s scientific and technological undertakings, provided scientific force guidance for China’s relevant scientific and technological departments to issue relevant scientific and technological policy measures, and have very important practice for the leap-forward development of China’s scientific and technological undertakings (Lei & Pang, 2019); secondly, the green science and technology concept in Xi Jinping’s scientific and technological

ideology provides useful value enlightenment for the realization of green development and the construction of a socialist ecological civilization in China (Chen, 2019); finally, it can clarify the path selection and promote the scientific and technological cause for the advancement of Chinese science and technology sustained, healthy, stable, high-speed development and promote the integration of technology and society (Chen, Mo, & Jiao, 2019).

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