ChinaRxiv

AI translation · View original & related papers at
chinarxiv.org/items/chinaxiv-201805.00114

The Far-reaching Significance of "Springtime for Science" Postprint

Authors: Zhang Baichun

Date: 2018-05-10T00:00:00+00:00

Abstract

Full Text

The Significance of the "Spring of Science"

Preamble

Following the founding of the People's Republic of China, the central government established the Chinese Academy of Sciences (CAS), research institutes in industrial sectors, and national defense research institutions, while also restructuring higher education institutions and formulating science and technology development plans. These efforts gradually built a relatively complete scientific and technological system alongside an industrial system, yielding major scientific achievements exemplified by the "Two Bombs, One Satellite" program[1]. However, the Cultural Revolution inflicted severe setbacks and damage upon China's scientific, economic, and cultural endeavors, widening the gap between China and the global frontiers of science and technology.

After the smashing of the "Gang of Four" in 1976, the Chinese Communist Party (CCP) Central Committee focused on restoring the healthy development of all undertakings and actively promoted modernization. On May 30, 1977, Chairman Hua Guofeng proposed convening a National Science Conference to "clarify thinking and mobilize everyone's enthusiasm" while listening to work reports from CAS leaders[2]. During the preparatory period for the conference, from August 4–8, 1978, Vice Chairman Deng Xiaoping presided over a symposium on science and education work, where he resolved to restore the national college entrance examination as soon as possible and considered sending students abroad for study. On August 12 of the same year, Hua Guofeng delivered a political report at the 11th National Congress of the CCP, calling for "marching toward the modernization of science and technology" and announcing that the National Science Conference would be convened at an appropriate time.

Following meticulous preparation by CAS, the National Defense Science and Technology Commission, and numerous other departments, the Central Committee held the National Science Conference in Beijing from March 18–31, 1978, with over 5,000 delegates in attendance (Figure 1 [Figure 1: see original paper]). Hua Guofeng chaired the opening ceremony, and Deng Xiaoping delivered an important speech on behalf of the Central Committee. Prior to the conference, Marshal Nie Rongzhen composed a poem for the occasion: "The bright sun emerges from the valley, illuminating the world; the haze is swept away, and all of China is open."[3] In his written speech titled "The Spring of Science," CAS President Guo Moruo declared: "Let us open our arms and warmly embrace this spring!"[4] Forty years of practice have demonstrated that the National Science Conference was not only a significant milestone in the history of modern Chinese science and technology but also a meeting of special political significance that exerted profound influence on the reform and development of the nation's science, education, politics, economy, society, and culture.

Science and Technology as Productive Forces

As early as January 1963, Premier Zhou Enlai incisively pointed out at the Shanghai Science and Technology Work Conference: "To achieve agricultural modernization, industrial modernization, national defense modernization, and scientific and technological modernization, and to build our motherland into a socialist powerhouse, the key lies in realizing the modernization of science and technology."[5] On the opening day of the National Science Conference, Deng Xiaoping further emphasized: "In the Four Modernizations, the key is the modernization of science and technology."[6]

To march toward the modernization of science and technology, it was first necessary to remove ideological obstacles, set things right, and emancipate minds. Deng Xiaoping later reflected that his speech at the National Science Conference focused on two main points: "One is that science and technology are productive forces; the other is that China's intellectuals have become part of the working class. At the time, these two points had to be made because they were controversial."[7] At the conference, he affirmed: "Science and technology are productive forces—this has always been the view of Marxism"[8] (Figure 2 [Figure 2: see original paper]). After another decade of exploration, Deng Xiaoping made a further judgment in September 1988: "In my view, science and technology are the primary productive force."[9] This insightful assertion elevated the status of science and technology to an unprecedented height, directly influencing the Party and state's major policies for developing science, technology, and the economy and society.

Laborers are the most decisive factor in productive forces. Deng Xiaoping explained: "To acknowledge that science and technology are productive forces, one must consequently answer a question: How should we regard intellectual labor in scientific research?"[10] As early as January 1956, Zhou Enlai had announced that intellectuals were part of the working class. In March 1962, he

and Vice Premier Chen Yi delivered speeches to "remove the hat and add the crown" for intellectuals, demanding respect for them. Tragically, during the Cultural Revolution era when "taking class struggle as the key link," intellectuals were reduced to the "stinking ninth category" and even persecuted. By May 1977, Deng Xiaoping stressed in a conversation: "Those engaged in mental labor are also laborers… We must value knowledge and those engaged in mental labor."[11] This correction of the erroneous perceptions of the ultra-leftist line held profound significance for implementing the Party's intellectual policies and fostering an atmosphere of "respecting knowledge and respecting talent."

The Status of Intellectuals

At the opening ceremony of the National Science Conference, Deng Xiaoping reiterated on behalf of the CCP Central Committee that the overwhelming majority of intellectuals "are already part of the working class itself"[12]. He stated: "The overwhelming majority of scientific and technical personnel love the Party and socialism, strive to integrate with workers, peasants, and soldiers, and devote themselves enthusiastically to their scientific and technological work… As a whole, such a force truly deserves to be called our working class's own contingent of scientists and technicians who are both politically conscious and professionally competent"[13]. This effectively "removed the hat and added the crown" once again for scientists, engineers, teachers, and other intellectuals, stripping away "tightening-curse" labels such as "bourgeois academic authorities" and "revisionist sprouts," and elevating their political and social status from the "ninth category" to a respected "first"[14], allowing them to cast off ideological burdens and devote themselves enthusiastically to modernization. Consequently, the destiny of scientists, engineers, and other intellectuals underwent a major transformation; they became an important force relied upon by the Party and state, unleashing tremendous work enthusiasm and creativity.

Role models inspire people to strive for improvement. After the founding of New China, combat heroes were widely celebrated and hailed as "the most beloved people" during the Korean War period. In the 1960s, Wang Jinxi and Chen Yonggui became paragons of industry and agriculture respectively. In the "Spring of Science," scientists emerged as new role models deeply respected and emulated by youth (Figure 3 [Figure 3: see original paper]). Xu Chi's reportage "Goldbach's Conjecture" made mathematician Chen Jingrun almost a household name, and "loving science and learning science" became a common trend. Since then, hundreds of millions of young people have pursued scientific knowledge, with countless among them growing into professional scientific and technological workers, including many pillars of the nation.

Reforms and Opening Up

In the spring breeze of science, scientific and technological work began a comprehensive recovery and even became an important breakthrough point for the Central Committee's attempts at opening up and reform. Addressing past erroneous

concepts, Deng Xiaoping stated clearly at the National Science Conference: "Independence and self-reliance do not mean closing the country to international intercourse, and self-reliance does not mean blind xenophobia. Science and technology are wealth created jointly by humanity. Every nation and country needs to learn the strengths of other nations and countries, and to learn their advanced science and technology."[15] Following the National Science Conference, international scientific and technological exchanges and cooperation further warmed. By introducing advanced foreign science and technology, China continuously raised the starting point for its scientific and industrial development, and while digesting and absorbing advanced technologies, also sought innovation, achieving a series of major scientific and technological results that brought thriving development to the nation.

After the National Science Conference, the Party and government proposed new measures and made new strategic choices. In May 1978, the article "Practice is the Sole Criterion for Testing Truth" triggered a major discussion on the criterion of truth, paving the way for ideological emancipation. The Central Work Conference held in November–December of the same year discussed major issues including shifting the Party's work focus to socialist modernization construction. Subsequently, the Central Committee held the Third Plenary Session of the 11th CCP Central Committee from December 18–22, deciding to shift the Party's work focus from "taking class struggle as the key link" to "taking economic construction as the center," and implementing policies of domestic reform and opening up to the outside world.

On March 7, 1985, speaking at the National Science and Technology Work Conference, Deng Xiaoping pointed out: "Reforms in both the economic system and the science and technology system aim to liberate productive forces."[16] On March 13, the Central Committee issued the "Decision on the Reform of the Science and Technology System," requiring that science and technology must face economic construction, and economic construction must rely on science and technology.

Innovation-Driven Development

How to give full play to the role of science and technology as the "primary productive force"? This is an important question for China's scientific, technological, and socioeconomic development. As construction and reform progressed, by the mid-1990s the Central Committee and the scientific community achieved a new breakthrough in understanding the "primary productive force," recognizing that "innovation" is the key to promoting scientific and technological development, moving beyond the stage of tracking and imitation, and enhancing comprehensive national power. In 1998, the CCP Central Committee and the State Council decided to build a national innovation system and approved CAS to launch the pilot Knowledge Innovation Program.

In January 2006, the CCP Central Committee and the State Council convened

the National Science and Technology Conference again, calling for following a path of independent innovation with Chinese characteristics and building an innovative country. In November 2012, the 18th CCP National Congress decided to implement an innovation-driven development strategy. In July 2013, General Secretary Xi Jinping required CAS to take the lead in achieving leapfrog development in science and technology, in building a national highland of innovative talent, in building a national high-level science and technology think tank, and in building a world-class scientific research institution. In March 2015, General Secretary Xi Jinping made a new judgment: "Innovation is the primary force leading development"[17]. In October of the same year, he put forward new requirements: "We must take innovation as the primary force leading development, regard talent as the primary resource supporting development, place innovation at the core of the country's development, continuously advance theoretical innovation, institutional innovation, scientific and technological innovation, cultural innovation, and innovation in all other aspects, let innovation run through all the work of the Party and the country, and let innovation become prevalent throughout society."[18] These new judgments and requirements further clarified the focal points for implementing the national innovation-driven development strategy.

Today, China's total economic output has risen to second place in the world, and Chinese science and technology have also made remarkable and eye-catching progress. For example, the U.S. National Science Foundation's *Science and Engineering Indicators 2016* shows that China already ranks second in the world in important indicators such as scientific paper output and R&D investment, and even leads in certain scientific and technological fields. From 2012–2017, CAS has topped the Nature Index global rankings for six consecutive years. Nevertheless, despite such progress, the broad masses of scientific and technological workers still have a long way to go.

Looking back at the "Spring of Science" and the 40-year footprint of reform and opening up, scientific and technological workers in the new era can draw wisdom from the struggles of their predecessors, strengthen their convictions and confidence, and with a lofty sense of historical mission, strive to seize the opportunities of the scientific and technological revolution and industrial transformation, deepen systemic reforms, and lead socioeconomic development with innovation. The new era demands that we focus on enhancing original scientific innovation capabilities, have the courage to solve key technical problems in critical fields, and work hard to build our country into a prosperous, strong, democratic, civilized, harmonious, and beautiful modern socialist powerhouse and a world leader in science and technology, realizing the Chinese Dream of the great rejuvenation of the Chinese nation.

Author Information

Director and Research Professor, Institute for the History of Natural Sciences,

ChinaRxiv 中X

Chinese Academy of Sciences; Editor-in-Chief, *Chinese Annals of History of Science and Technology*. Research focuses on the history of technology, history of knowledge dissemination and comparative history, and science and technology development strategy. Author of monographs including *Dissemination and Integration*, *Transfer of Soviet Technology to China*, *Investigation and Research on Traditional Machinery*, *Europeanization of Astronomical Instruments in the Ming and Qing Dynasties*, and *Transformation and Transmission*. Currently leading the compilation of the *Encyclopedia of China: History of Science and Technology* (3rd edition).

Note: Figure translations are in progress. See original paper for figures.

Source: ChinaXiv — Machine translation. Verify with original.