Promoting Scientific Spirit to Cultivate Scientific Culture

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Scientific culture is an advanced culture that is based on scientific knowledge and supported by the scientific method, with scientific thinking as its core and scientific spirit as its soul. During the process of modernization, it has profound impacts on human society in terms of values, ethics, mode of thinking, lifestyle and code of conduct, offering human civilization an important ideological source, physical foundation, technological tool and effective carrier.

During the prosperous advancement of China's S&T enterprise over the past six decades or more since the founding of New China, we have established and constantly developed a scientific spirit with such key components as patriotism, serving the people, dedication, seeking truth, innovativeness, meticulosity and cooperation, which is the specific embodiment of socialist core values in science, technology and innovation activities. In the new era, energetically upholding the scientific spirit and constantly enriching and developing advanced scientific culture are important for boosting our capacity for indigenous innovation, building an innovative country and giving a full play to the leading and supportive role of science and technology in socioeconomic development.

To energetically promote scientific spirit and develop advanced scientific culture, we must stick to the ideology of patriotism and serving the people, and carry forward the spirit of hard work and dedication.

Serving the nation and benefiting the people are the historic mission and social responsibility of S&T workers, as well as the starting point and final goal of S&T activities. In the early years of New China, a thousand and one things waited to be done in terms of socioeconomic reconstruction. Having experienced the hardships of warfare, a group of patriotic scientists, such as ZHU Kezhen (Coching Chu) and WU Youxun (Y. H. Woo), chose to stay in China, despite having the opportunity to go abroad. Many outstanding overseas scientists, such as QIAN Xuesen (H.S. Tsien), GUO Yonghuai (Yung-huai Kuo) and ZHAO Zhongyao (C.Y. Chao), returned to their motherland by giving up favorable living conditions in foreign countries and overcoming various difficulties. In spite of a rather weak S&T foundation at that time in China, its severe lack of resources and the great hardship of work and life, they devoted themselves to various S&T undertakings in this country with a lofty patriotic sentiment, including the development of the newly-established Chinese Academy of Sciences (CAS), the formulation of the National 12-year Long-term Plan for S&T Development, and the studies of A-bombs, satellites and missiles. Their efforts safeguarded the rapid development of many emerging S&T fields in China, filled many academic niches and opened a new chapter for its S&T development. In 1994, CAS started its Hundred Talents Program, China's first worldwide talent program with the objective of recruiting and training high-caliber academic leaders. This has received an active response from overseas scholars. Today, many winners of the program have become leading or backbone researchers at CAS.

The spirit of patriotism, serving the people and dedication is the specific embodiment of China's national spirit and outstanding traditional culture on China's scientists. It is also a valuable spiritual legacy of the Chinese S&T community, and a source of power for the constant advancement of China's S&T enterprise in spite of various difficulties. In the current key period of China's rapid socioeconomic growth and leapfrog development for science, technology and innovation, S&T workers should: strengthen their ideals and beliefs; raise cultural consciousness; keep a correct outlook on life and values; give priority to national interests and people's trust; integrate personal wisdom and value realization with national prosperity, people's

wellbeing, and S&T progress; and carry forward the patriotic spirit in the practice of S&T innovation.

To energetically promote scientific spirit and develop advanced scientific culture, we must possess the willpower to unremittingly pursue scientific truth, and establish the confidence and courage to make constant explorations and innovation.

The road of S&T innovation is full of challenges and risks. Only those who do not flinch in the face of difficulties and obstacles, and struggle to explore new fields and scale the height of science, can achieve their innovation objectives. After many years of hard work, Chinese mathematician Chen Jingrun made breakthroughs in Goldbach's conjecture. *Flora Reipublicae Popularis Sinicae*, currently the world's largest flora, is now completed after 45 years of arduous research. To achieve major original breakthroughs, one has to establish the confidence in, and the courage for, innovation and leapfrog development. He or she must have the determination to innovate and explore by trial and error, to challenge authority, to strive to rank among the world's best, and to continuously and independently raise critical scientific questions and key technological problems in the light of national socioeconomic development and modernization. They must be versed in finding new directions at the frontiers of science, and putting forward original thinking, scientific theories and innovative methods in line with the laws inherent in the development of a knowledge system.

At present, in line with urgent demands of national socioeconomic growth, S&T activities in China must be targeted at major S&T issues arising from industrial restructuring and upgrading, the cultivation of emerging strategic industries, and the improvement of people's living standards. Efforts should be made to achieve breakthroughs in key S&T problems; to develop a series of systematic solutions; to accelerate technology transfer; and to promote demonstration and industrialization of major S&T results. At the same time, we should have a long-term view and spare no efforts in addressing major S&T problems of fundamental, strategic and long-standing importance and with a bearing on the overall development of the country. We will strive to score world-leading achievements, take favorable positions for future S&T development, and offer S&T support to accelerate the change of mode for economic growth by: seizing strategic opportunities of the sixth S&T revolution; making a comprehensive plan for basic research, applied research and high-tech development; arranging strategic priority research and important fundamental frontier research in advance; and building up the capacity for indigenous innovation, systems innovation and critical, core and general technology innovation.

To energetically promote scientific spirit and develop advanced scientific culture, we must advocate seeking the truth from facts and meticulosity, and cultivate a cultural environment featuring teamwork, cooperation, relaxation and harmony.

Chinese mathematician Hua Luogeng (Lo-keng Hua) once said that science is a branch of learning that one has to pursue in an honest way and based on facts without any sophistry. The marrow of scientific research is to purseu knowledge and truth and to advocate innovation. Showing respect for other's research achievements and the contribution of collaborators, and promoting rational questioning of existing knowledge are important driving forces of S&T progress. It is the social duty of S&T workers to abide by a strict code of conduct in scientific research and S&T ethics, to promote the public sharing and wide application of S&T findings, and to help the public understand science in a comprehensive and correct way. As scientific research is an uphill innovative activity with great complexity and uncertainty, it needs teamwork and coordination. In addition, a relaxed and harmonious environment should be fostered by "making plans for forests and letting the trees grow freely." On the other hand, S&T workers should remain unmoved by fame and wealth, and apply themselves to scientific studies.

We should keep enriching and developing the connotation of scientific spirit in the practice of S&T innovation. We should energetically advocate scientific spirit, popularize scientific knowledge, promote scientific approaches, disseminate scientific concepts and raise the public's scientific literacy. We should also offer powerful S&T support for achieving the grand objective of building China into a nation with strong culture influences by arousing public passion and vitality for innovation, facilitating advanced scientific culture taking strong root in Chinese culture and carrying it forward, and promoting the prosperity and development of socialist culture in China.

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