Integrating ethical concepts into scientific and technological development

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The 23rd meeting of the Central Committee for Comprehensively Deepening Reform, presided over by General Secretary Xi Jinping, adopted the Guiding Opinions on Strengthening the Governance of Science and Technology Ethics on 17 December 2021. On 20 March 2022, the General Office of the CPC Central Committee and the General Office of the State Council issued the Opinions on Strengthening the Governance of Science and Technology Ethics. This is China’s first national-level guiding document on the governance of science and technology ethics and is a landmark in this domain in China. This shows the commitment of the CPC Central Committee and the State Council to strengthen the governance of science and technology ethics and represents a new step in the construction of a corresponding system in China.

1. Science and technology ethics is an important part of the scientific culture

Science and technology ethics has been an integral part of the scientific culture since the birth of modern science. Ethics usually refers to the moral codes regulating interpersonal relations. It includes value concepts and behavioural norms reflecting the pursuit of values. Culture likewise represents the social choice and historical accumulation of ideas and behaviours worthy of promotion and emulation. As such, ethics has become a key component of social culture.

As the crystallization of the practices of human rationality, science and technology have had an increasingly profound impact on the development of human society, and advances in them have been accompanied by the evolution of ethical concepts and social culture. Modern science and technology gained prominence with the creation and communication of the spirit of reason and the humanistic spirit. Delivering happiness to humanity through the discovery and application of new knowledge has been a primary driver of modern science. In 1627, Francis Bacon, one of the founders of modern science, observed in his book The New Atlantis that the purpose of scientific and technological advances was to fully liberate human beings and continually enhance people’s welfare. Remarkable progress has been made in science and technology since then, and their influence on society has grown in breadth and depth. The ethics of science and...
technology has also become an important issue for academics, administrators and the public.

2. Science and technology ethics is a contemporary global issue

The invention and use of nuclear weapons sparked a debate on the ethics of modern science and technology. Initially, scientists explored the threat posed by nuclear warfare to human civilization. As time went by, the number of participants and topics in the debate gradually expanded. The book *Silent Spring* by Rachel Carson led to a reflection on the environmental impact of chemical pollution. Ethical controversies surrounding the Chernobyl and Bhopal accidents as well as the ozone hole, climate change and cloning technology caused the ethics of science and technology to emerge as a global issue. In the 21st century, new technologies such as genetic technology, synthetic biology and artificial intelligence continue to test the ethics of science and technology. They have also led to the examination of deeper issues in the fields of anthropology, natural philosophy and technological philosophy.

Science and technology have penetrated into human society at an unprecedented scale and have had profound impacts in the political, cultural and other spheres. When the exploration and application of science and technology conform to ethical norms, and are guided in a positive and responsible direction, they can better contribute to social progress and people’s welfare. On the contrary, if scientific and technological explorations violate the norms of ethics, they can cause great harm to society.

In the light of scientific and technological advances, countries around the world have begun paying more attention to the governance of science and technology ethics. In 1975, the United Nations adopted the Declaration on the Use of Scientific and Technological Progress in the Interests of Peace and for the Benefit of Mankind, which underscored the importance of scientific and technological advances to global development and the betterment of humanity. UNESCO adopted the Declaration on Science and the Use of Scientific Knowledge in 1999, reaffirming the ethics of science and the social responsibility of scientists. The United States, the European Union, Japan and the Republic of Korea have also strengthened relevant legislation and supervision on a continual basis and have built a sound system for the governance of science and technology ethics. For example, starting from 1995, the United States has gradually established a national ethics committee.

3. Strengthening the governance of science and technology ethics has great significance for China

Strengthening the governance of science and technology ethics is imperative for China. First, it is necessitated by China’s goal of high-quality development and determines whether the country can achieve social prosperity while pursuing higher quality development. Second, it is an inherent demand for China to achieve self-reliance and self-improvement in science and technology and become a world leader in this domain. Third, science and technology ethics is an important component of the global governance of science and technology. In recent years, individual incidents of ethical misconduct have sounded alarm bells for the governance of science and technology ethics in China. For example, He Jiankui’s experimentation with genetically edited babies in 2018 caused considerable debate in the academic community and triggered a public outcry. It also raised concerns in society over the ethics of science and technology. As an important and responsible member of the world community, China must establish a sound system of governance for science and technology ethics and advocate for the development of science and technology in a positive and responsible direction.

The Chinese government and scientific community attach considerable importance to the governance of science and technology ethics. In 1988, the Ministry of Science and Technology promulgated the Regulations on the Administration of Laboratory Animals, and in 2003 issued the Ethical Guidelines for Human Embryonic Stem Cell Research together with the Ministry of Health. In 2007, the State Council issued the Regulations on Human Organ Transplantation, and the relevant health authorities issued and revised Measures for the Ethical Review of Biomedical Research Involving Human Beings in 2007 and 2016, respectively.
The governance of science and technology ethics has been high on the agenda in China since the 18th CPC National Congress. On 24 July 2019, the ninth meeting of the Central Committee for Comprehensively Deepening Reform adopted the Proposal for the Establishment of a National Science and Technology Ethics Committee. This opened the construction of a system of governance of science and technology ethics. In this context, the Opinions on Strengthening the Governance of Science and Technology Ethics was issued in March 2022 and provided the direction for the governance of science and technology ethics in China in the new era.

4. Ethical concepts should be integrated into the development of science and technology

The form and organization of scientific and technological innovation are undergoing profound changes, leading to new trends in science and technology ethics. While the traditional ethical issues in science and technology have yet to be resolved, science and technology ethics has attained greater depth and subtlety. The expanded involvement of new technologies in R&D activities introduces new variables to the ethics of science and technology. In response to the new situation concerning the governance of science and technology ethics, China should make efforts in four areas to comprehensively promote agile governance and encourage the construction of a forward-looking system to shape scientific culture in the new era.

First, China should place greater emphasis on the guiding role of values and the use of science and technology for good. We need to foster the common values of the Chinese scientific community and boost its cohesive force to promote a sound atmosphere of science and technology ethics.

Second, China should strengthen its ethical norms and institutional establishment to reinforce the ethical norms of the academic community. Following the instructions of the central government on the governance of science and technology ethics, the various societies and associations in different disciplines should work out detailed ethical guidelines dealing with the specific issues in their respective fields and develop feasible paths for the implementation of those guidelines.

Third, China should cultivate a scientific culture that encourages the public to pay more attention to issues concerning science and technology ethics. We need to strengthen the construction of publicity platforms, promote the public understanding of science and technology ethics through various channels, platforms and forms of science communication, and integrate scientific culture into the core of social culture.

Fourth, China needs to actively participate in the international governance of science and technology. It needs to strengthen scientific and technological exchanges with the rest of the world, make proactive efforts to shape the agenda and share its own experience, and participate in international cooperation on science and technology ethics to make a greater contribution to promoting the well-being of the human community in a shared future.

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