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Debate on Work Guideline of Chinese Academy of Sciences in 1981–1983

“Focusing on fundamental research and improvement, and serving for national economy and defense construction” was formally put forward by the Chinese Academy of Sciences as work guideline in 1981. Soon it was questioned by central leaders of China. And it brought about a debate on whether the work guideline of the Chinese Academy of Sciences needed to modify. The paper tries to hackle the specific process of the controversy and explore its significance.

Keywords: Chinese Academy of Sciences; work guideline; debate; fundamental research; applied research.

“Focusing on fundamental research and improvement, and serving for national economy and defense construction” was formally put forward by the Chinese Academy of Sciences (CAS) as work guideline in 1981. Soon it was questioned by central leaders of China. And it brought about a debate on whether the work guideline of the CAS needed to modify. Whether to modify or not, is a sticky subject for CAS at that time.

Part I. CAS Determined Work Guideline for the First Time

CAS described its major task and direction many times in its early developmental history, and formally put forward the words “work guideline” to conclude its major task and direction until the early 1980s.

After the Cultural Revolution, the Chinese government redeployed the science and technology system to promote development of science cause. According to the 1978-1985 Outline of National Science & Technology Development, as the national comprehensive research center of natural science, CAS’ major task was defined as follows: researching and developing new theory and technology of natural science, solving comprehensive and significant scientific and technical issues in the national economic construction in cooperation with relevant departments, and focusing on the fundamental research and improvement.¹ According to the definition, CAS described its work guideline as focusing on fundamental research and improvement, serving for national economy and defense construction at the enlarged work meeting of CAS in 1979.

On January 29, 1981, CAS reported to the Secretariat of the Central Committee and clearly proposed its work guideline: focusing on fundamental research and improvement, and serving for national economy and defense construction. Its main contents include: 1. Mainly engaging in fundamental science and some technological sciences research. By research classification, mainly responsible for fundamental and application researches as well as a small amount of development research; and strengthen basic work in the whole research. 2. Mainly involved in and responsible for science and technology tasks necessary to economic construction and national defense construction, and solving critical and pioneering issues in technology development and so on.²

The work guideline of CAS met the approval of Hu Yaobang and other central leaders at the meeting. According to the meeting minutes, Zhao Ziyang, premier at the time, was absent from the meeting.

On March 6, 1981, the Chinese government clearly stated that CAS was the supreme academic body and a national comprehensive research center of natural sciences, and its work guideline was completely correct.³ After obtaining affirmation by the Chinese government, CAS formally announced its work guideline in the Statute of Chinese Academy of Sciences (Tryout) obtained on May 18, 1981: “Focusing on fundamental research and improvement, and serving for national economy and defense construction; mainly responsible for fundamental and application researches as well as a small amount of development research. Enriching and developing theories, methods or technologies of natural science in science studies, and solving important and comprehensive issues in national construction in cooperation with relevant departments.”⁴ Till then, CAS first formally established its work guideline.

¹ The 1978-1985 Outline of National Science & Technology Development, Chinese Academy of Sciences Annual Report (1977, 1978). P. 80.

² Outline report on the work of the Chinese Academy of Sciences, Chinese Academy of Sciences Annual Report (1981), pp. 8-9.

³ Chinese Academy of Sciences Annual Report (1981). P. 1.

⁴ The Statute of Chinese Academy of Sciences (Tryout), Chinese Academy of Sciences Annual Report(1981). P. 245.

Part II. Query from a Central Leader

On December 25, 1981, Zhao Ziyang wrote a letter to Hu Yaobang and Deng Xiaoping to query on the work guideline of CAS. He said that he agreed with Yang Zhenning's view that Chinese scientific and technological circles (including CAS) should put more human resource, material resource and financial resource in technology development and product research, but not fundamental research. He mentioned in his letter that Tian Changlin also advocated this view.⁵

Yang Zhenning's view came from a letter he wrote to former Vice-Premier Fang Yi on December 1, 1981. He believed that developmental study investment in Chinese scientific and technological research system was very weak, and recommended Chinese government to concentrate forces on developing technology and product researches.⁶ In addition, Tian Changlin, in his speech at CAS in June 1981, suggested that China should learn the developing experience of Japan to emphasize and strengthen technological science research and to develop economy.⁷

In fact, Lin Jiaqiao, a Chinese American scientist, has proposed to Deng Xiaoping that China should grow applied science as early as 1978. The query from central leaders of China on the work guideline of CAS was caused by not only Chinese American scientists' proposal but also the background of the times.

The third technological revolution that began in the late 1940s, especially the new technological revolution after the 1970s, brought enormous changes in the social productivity, and many countries began to use science and technology to develop national economy. The rapid economic development in Japan and West Germany after the World War II attracted high attention around the world. Many countries restudied the matters on their science and technology systems, science and technology policies, and the relationship between science research and production. They gradually adjusted their development strategies and policies of science and technology. Many countries adjusted their development strategy from defense - research dual structure to industry - research dual structure, which has brought new inspiration to Chinese leaders. After the Culture Revolution, the Chinese government established the development strategy of "taking economy construction as center". On April 16, 1981, the Chinese government officially published new development policy of science and technology, "developing national economy must depend on science and technology, scientific and technical work for the development of national economy".

At that time, there was much criticism on the effect of CAS in national economic construction. A number of ministries held that CAS has no obvious effect for directly promoting economic development. The media repeatedly called on that scientific research should serve for national economical construction.⁸ Some people advocated that CAS should mainly deal with fundamental research and hand over applied research and development research to industrial sectors. Some argued that CAS should

⁵ Chinese Academy of Sciences Files: 1982-1-1.

⁶ Ibid.

⁷ Chinese Academy of Sciences Files: 1982-1-8.

⁸ Comrade Guangzhao we know — Zhou Guangzhao scientific thinking and scientific spirit collected works, (Beijing: Science Press, 2010). P. 190.

mainly engage in applied research and hand over fundamental research to colleges and universities.⁹

As stated above, many factors including the discussion on scientific and technical issues, adjustment of science and technology system, changes of science and technology policy both at home and abroad made the work of CAS face adjustment.

On December 28, 1981, three days after Zhao Ziyang dispatched the letter, Deng Xiaoping and Hu Yaobang instructed successively and proposed CAS to organize scientists and management staff to discuss and draft new work guideline.¹⁰ On February 6, 1982, Hu Yaobang gave some opinions to CAS: fundamental research should not be weakened; however, the main mask of CAS was to strengthen applied science and technology research.¹¹ Here, central leaders pointed out the development direction of CAS.

Part III. Discussion on Work Guideline at Work Meeting of CAS

According to leaders' instruction, CAS held a work meeting to discuss the work guideline on February 20, 1982. The participants include managers and scientists from CAS, relevant ministries, some colleges and universities, and scientific research institutions. Participants were more than 100.

In the discussion, most people held that the work guideline of CAS was appropriate and should not be changed. Some scientists hoped that the work guideline should be stable, and worried about that the policy modification would lead to adverse effects on science research. Many scientists believed that they could improve the wording of the work guideline, but the original basic content and meaning did not need to modify.

Many found that the understanding of "fundamental research" in "focusing on fundamental research" actually related to the general understanding of the work guideline, which may cause some people's misunderstanding on the work guideline. Most participants expressed that the "fundamental research" in "focusing on fundamental research" includes not only purely fundamental research but also applied research.

During the discussion on the concept of fundamental research, how to classify scientific research became an important meeting topic. The confusion of the concept of fundamental research and applied research was relevant to classification method of scientific research work in CAS. In the 1960s, CAS classified scientific research work into four types as follows: fundamental research, applied fundamental research, applied research, promotion research. Hereafter, this classification method was used by CAS. Until the early 1980s, CAS decided to adopt the international classification method. Most scientists at the work meeting proposed to adopt the classification method of UNESCO. According to the UNESCO' definition, scientific research activities can be divided into three categories: fundamental research, applied research, and experimental development.

At the work meeting, many participants repeatedly stressed that fundamental research has extremely important significance for scientific undertakings and the national development, so it could not be weakened.

⁹ Outline report on the work of the Chinese Academy of Sciences, Chinese Academy of Sciences Annual Report (1981). P. 7.

¹⁰ Chinese Academy of Sciences Files: 1982-1-1.

¹¹ Chinese Academy of Sciences Annual Report (1982). P. 6.

For the ratio of fundamental research and applied research in CAS, a lot of people made a detailed analysis. Some pointed out: at that time, China's civilian research funding was 2.8 to 3 billion Yuan RMB each year, national fundamental research funding was about 110 to 120 million Yuan, making up less than 5% of the total funding for civilian research. In CAS, funding for applied research and development accounted for about 85% to 90%, and fundamental research accounted for about 10% to 15%. In the view of nationwide scientific funding situation, fundamental research proportion of CAS was appropriate in general, and absolute amount was not too much.¹² Participants generally agreed that the funding for fundamental research of CAS did not account for significant proportion, even small.

Many scientists believed that it was difficult to clarify only by talking about the work guideline of CAS. The impression of limited success caused by CAS to the society related to a lot of factors, and the reason was very complex. According to the analysis of the participants, the reasons included lagging of the research evaluation system, dispersion of scientific research force caused by subject allocation model, rigidity of the personnel management system, aging of science and technology team, and unreasonable structure of CAS staff and so on. In addition, defects of the Chinese government on a range of systems and policies including the planned economy, financial and taxation, price and so on also restricted the development of CAS. Thus, so-called "problem" of CAS was not due to the work guideline, which related to all aspects of the factors. It was related not only the scientific research system and management system of CAS but also scientific research system, political system and economic policy in China.

The work meeting of CAS lasted for a week. Most people believed that the work guideline should not be modified. Even if the work guideline needed to be modified, it only needed a brief explanation or modification the wording. But, the topic on modification of the work guideline of CAS did not stop.

Part IV. Recommendations on Modification of the Work Guideline and Introduction of New Work Guideline

In September 1982, Twelfth National People's Congress in Chinese Communist Party took science and technology as a strategic important point of national economy, and placed great emphasis on the great role of science and technology to promote economic development. The conference report enhanced science and technology's position as an element for promoting national economic growth, in the meantime, proclaimed the great expectation of China government to rely on science and technology to promote rapid economic growth.

In October 1982, Premier Zhao Ziyang, at the National Awards Conference of Science and Technology, pointed out in his speech, "scientific and technological work must serve for economic construction, and economic construction must rely on science and technology, which is a basic strategic principle."

In the end of November 1982, Zhao Ziyang stressed again at a meeting, that both applied research and fundamental research should be in accordance with the subject

¹² Chinese Academy of Sciences Files: 1982-1-9.

characteristics for the economic construction as much as possible. Popularization and application of the results of scientific research should be raised to the equally important status with scientific research itself.¹³

On January 5, 1983, Hu Yaobang again spoke, during a visit to CAS' scientific research exhibition, that "to promote scientific research and researchers to the four modernizations and increasing of productivity. Fundamental scientific research should be valued; however, current research focus should be placed on strengthening applied research."¹⁴

From September 1982 to January 1983, just a few months, China's leaders made a series of decisions and instructions about the position, function, and development of science and technology in constructions of four modernizations, further demonstrated the attitude and determination of China government to rely on science and technology for the rapid development of the national economy. So, the work guideline of CAS became a problem that must be resolved by Chinese government and CAS.

On October 21, 1982, Li Chang sent a letter to CAS and China's central leaders and put forward, with the progress of four modernizations, the work guideline of CAS did not meet the requirements of the four modernizations and national science policy, and it should be changed.¹⁵

On October 22, 1982, Fang Yi expressed his opinions in a conversation as follows: he thought that the work guideline related to the future of CAS, and he hoped CAS could consider carefully the problem and show work effect as far as possible in order to reverse the passive situation and fight for better development environment.

Faced with the new scientific and technological work policy and requirements proposed by leaders, at the work conference in January 1983, Lu Jiayi, President of CAS, put forward a serious proposition as follows, "How should CAS do?" What should be of CAS? How should CAS play its role in development of the national economy, society and science and technology?¹⁶ At that time, there was no answer on how to modify the work guideline.

In order to promote institutional reform of CAS, in March 1983, Reform Working Group of the Central and State Organs and Institutions entered CAS to investigate work. They submitted an investigation report to the State Council on August 6. The report claimed that the work guideline should be modified; scientific research work of CAS should face the economic construction and emphatically strengthen applied research and actively participate in research and development, at the same time, continue to improve basic theoretical research.

In 1983, the State Council Leading Group of Science and Technology also did work survey in CAS. They also obtained the conclusion that the work guideline of CAS needed to modify.

On December 15, 1983, state leaders and leaders of CAS again sat together to discuss the work guideline. Zhao Ziyang expressed that he agreed with the view of the two investigation reports on the task of CAS, "CAS must vigorously strengthen the applied research, actively participate in the work of the research and development, and pay emphasis on fundamental research. The central point is to strengthen the applied research." He fully agreed that it

¹³ Chinese Academy of Sciences Annual Report (1983). P. 8.

¹⁴ Ibid. P. 1.

¹⁵ Chinese Academy of Sciences Files: 1982-2-3.

¹⁶ Chinese Academy of Sciences Annual Report (1983). P. 319.

was not enough to execute only applied research but no fundamental research.¹⁷ Formed opinion of the work guideline at the meeting was approved by Fang Yi, Lu Jiaxi, and Yan Dongsheng and so on.

Immediately, the 103rd meeting of Central Secretariat made a formal decision as follows: “the work guideline and task of CAS should be clearly defined as vigorously strengthening applied research, actively participating in the work of the research and development, and putting emphasis on fundamental research. The central point is to strengthen the applied research, which is also the key.”¹⁸

On January 1984, according to the Central Committee’s decision, CAS officially announced its new work guideline: “vigorously strengthening applied research, actively participating in the work of the research and development, and putting emphasis on fundamental research.”¹⁹ The new work guideline made clearly different location of three types of research work, and more clearly expressed the attitude and determination of the national emphasis on applied research and development. Till then, the debate on work guideline of CAS for two years finally came to a close.

Part V. Conclusion

In fact, the work guideline’s modification is the problem about the adjustment of tasks and development direction in CAS. Throughout the history of CAS, with the adjustment of the national development strategies, changes in science and technology policy, and changes in science and technology system, the focus of the work and tasks of CAS repeatedly had appropriate changes. In the history of the development of CAS, China government raised urgent requirements many times to CAS, including the development of “Atomic Bomb, Missile and Man - made Satellite”. The debate on work guideline of CAS in the 1980s appeared in the beginning period of Reforming and Opening, with the urgent requirement by China government that science and technology must to contribute to economic development.

However, the work guideline identified in 1984 didn’t really solve the problem of CAS and did not achieve longer stability. Thereafter, the work guideline of CAS was adjusted in 1987 and 1992, which was the further development of work guideline in 1984. For total requirements of the national scientific and technological work, the work guideline of CAS was marked with national science and technology development policy in new period.

This debate on the work guideline of CAS is not only the problem about CAS how to deal with fundamental research and applied research, in a deeper level, but also the problem about selection and transformation of the national science and technology development strategy. In the process of amending the work guideline, problems highlights including: the tension between scientists and government, choice space of CAS about its work guideline. The debate also shows understanding and views of Chinese scientists and leaders on science and technology and economic development issues in initial stage of Reforming and Opening. This is also an important case to study Chinese modern history of science and technology.

¹⁷ Chinese Academy of Sciences Files:1984-2-72.

¹⁸ Chinese Academy of Sciences Files:1983-1-2.

¹⁹ Chinese Academy of Sciences Annual Report (1984). P. 24.