

From 1956, when the national S&T awards were set up, to 2009, CAS have been recognized by more than 1,000 national S&T prizes as a lead performer of research activities with outstanding research findings, including 390 prizes from the State Award for Natural Sciences (accounting for 42 % of the national total), in which 19 were first-class prizes (making up 59 % of the national total); 181 prizes from the National Award for Technological Innovation, in which 4 were first-class prizes; 536 prizes from the National S&T Progress Award, in which 39 were special or first-class prizes. Regarding the number of the awards, it is no doubt that CAS is the top research institution in China S&T community. However, in terms of international S&T awards and world-renowned scientists, both CAS and the Chinese S&T community have a long way to go. In this regard, CAS shoulders heavy responsibility in the years to come.

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Soviet Experts in Chinese Academy of Sciences: Historical review of cooperation and exchange between Chinese and Soviet Academy of Sciences in the 1950s

After the establishment of The People's Republic of China in 1949, to learn from Soviet Union was the most realistic fast way to build a new country. Under the advocacy of Chairman Mao Zedong, the whole China was fired with the zeal of learning from Soviet.

As a whole, in the scientific and technological exchange and cooperation between Chinese and Soviet Academy of Sciences during 1952–1966, there were three most distinctive and representative points. Since 1954, dozens of Soviet advisors and experts came to China in succession to help Chinese Academy of Sciences draw up the plan, establish new research institutes and disciplines, and launch numerous highly effective research activities. Since the signing at the end of 1957, the cooperation agreement between Chinese and Soviet Academy of Sciences had lasted for nearly 10 years and now still plays an active role in the academic progress of Chinese Academy of Sciences. Numerous Chinese students studying in Soviet Union are now the research backbone in each discipline after their return to China, and exert great influence so far. This article will narrate and assess the work of Soviet experts in Chinese Academy of Sciences during this period.

Keywords: Soviet expert in China, planning and organization of the national scientific research, the plan of scientific and technological development, the Chinese Academy of Sciences.

I. From the Soviet Advisors for President of CAS to experts in different disciplines

Chinese Academy of Sciences started to receive Soviet experts since October 1954. At that time, CAS invited Ковда Виктор Абрамович (a pedologist and a communication academician of Soviet Academy of Sciences, 1904–1991) as the Advisor to President. Over the more than a decade later, dozens of Soviet experts in different fields were successively employed to work in China.

In April 1953, as instructed by Premier Zhou Enlai, the Culture & Education Commission of Government Administration Council planned to employ 279 Soviet experts in addition to the 140 Soviet experts to train up senior officials for every relevant department. Every department under Culture & Education Commission proposed a list, including 8 Soviet experts to be employed by the CAS as chief advisor and advisors in applied physics, high polymer, petroleum, metallurgy, plant ecology, soil and earthquake. However, in August, 1954, the plan was adjusted to employ only 3 advisors, i. e. 1 chief counselor, 1 advisor in geology/metallurgy, and 1 advisor in polymer chemistry.

On October 13, 1954, Ковда as the advisor to President of CAS arrived in Beijing and welcomed by Guo Moruo, the President of CAS. В. А. Ковда contributed greatly to the development of CAS and China's science. After numerous visits to the research institutes of CAS in Beijing, East China and South China and the reading of numerous materials, in January 1955 Ковда proposed Chinese government to draw up a national plan for scientific research and "Fifteen-Year scientific development plan". Under his proposal, China drew up the first long-term scientific technological development plan in 1956, i. e. "*National Long-Term Plan of Scientific Technological Development*". His wife also came to China, but later returned to Soviet Union in April 1955 for medical treatment on her worsening heart disease. Out of work, Ковда did not accompany his wife to return to Soviet Union. On June 26, his wife died of illness in Moscow. On the next day, Ковда returned to Soviet Union and ended his tenure as the Advisor to President all in a sudden.

Besides В. А. Ковда (Advisor of President), the other two Soviet advisors, С. Р. Рафиков (polymer chemistry) and Г. П. Сердюченко (linguistics, 1904–1965). Soon came to China in end-1954 to take up their posts.

By the first half of 1955, many Soviet experts in different disciplines worked in CAS, but only the above served as the Advisors to CAS. Apparently, this cannot meet the need of fast development of CAS. In the beginning of 1955, CAS planned to employ 7 Soviet advisors, which has been approved by the Vice-Premier Chen Yi. However, А. Ф. Мальцев, the Culture & Science Counselor and Deputy Chief Advisor of Soviet Union in China, thought that emphasis should give Soviet experts full play to their talent instead of employing more Soviet experts. Finally, CAS decided to reduce the number of Soviet experts. At the end of April 1955, CAS employed 4 Soviet advisors in geology, steel metallurgy, useful mineral selection, and artificial petroleum.

After В. А. Ковда returned to Soviet Union in June 1955, Soviet Academy of Sciences recommended Лазаренко Борис Романович (1910–1979) to take over the work of Ковда as the chief advisor to CAS. On December 25, 1955, Б. Р. Лазаренко arrived in Beijing. During his stay in China, Б. Р. Лазаренко participated in the drafting of Fifteen-Year development plan for CAS and China's Twelve-Year scientific development plan in 1956 from the beginning to end. Б. Р. Лазаренко spelled out the mission of Task 43 —

electrical processing and electric new application. In February 1958, Б. П. Лазаренко completed his task and returned to Soviet Union.

Here, it is necessary to briefly describe the difference between Soviet advisors and experts during this period. In view of the actual conditions of CAS, Soviet advisors were generally senior scientists of very high position and academic level. In China, they served as the Advisor to President of CAS or the advisors in a certain discipline to help solve major problems and provide consultancy, including organization set-up, rules/regulations, management system and general plan. Soviet experts were all professional researchers, and employed under the contractual requirements of aid projects. They generally worked in research institutes/stations or expedition teams to solve the actual issues. CAS applied to Foreign Experts Bureau for Soviet advisors and experts, and employed them only after the review and approval of the State Council. In China, especially in low-level unit, the titles of advisor and expert were often mixed at that time, until uniformly used expert after 1957.

In fact, around 1956, Chinese leaders began to change the viewpoint on Soviet Union. Soviet advisors enjoying large power caused great conflict in some Chinese administrative and military departments. China and Soviet Union then started to adjust the policy of sending and inviting the Soviet advisors/experts. In July 1955, State Council required that “any expert for solving purely technological problems should be employed as technical-aid experts, not to be included into the list of advisors”. New rule stated that “only advisors for urgent work and necessary for starting work can be employed, Otherwise, suspend or no employment”. By the end of 1957, State Council announced a circular that all Soviet experts were uniformly called as “Soviet expert” thereafter.

After Б. П. Лазаренко, CAS did not employ Advisor to President but Soviet experts for guiding and participating in the research of different disciplines for some time. In December 1955, State Council approved CAS to employ Soviet experts for the year 1956. In February 1957, as requested by different and research institutes in drawing up the national scientific plan, CAS applied to Foreign Experts Bureau for 19 Soviet experts in 1957 (including 5 experts for long-term (1-year) and 14 experts for short-term. The application was then approved by State Council.

From the end of 1957 to the beginning of 1958, China and Soviet Union signed the Scientific Technological Cooperation Agreement for “122” projects. Chinese and Soviet Academy of Sciences also signed the scientific cooperation agreement. As one of main terms of these agreements, the scientists of China and Soviet Union should engage short-term academic visits, a big change from the long-term employment of numerous Soviet experts in China during the 1st Five-year Plan. Later, Soviet experts were employed according to the cooperation plan between Chinese and Soviet Academy of Sciences, not employed by the Chinese government. Then, more and more Soviet experts worked in CAS. The number of Soviet experts working in China in 1958 was more than 3 times of that in 1957. Moreover, Soviet experts substantially changed their job nature and scope, from guidance, planning and management of research and organization work in CAS to mutual cooperation in research and expedition projects.

According to statistical data, by 1960, CAS had received 780 Soviet experts (person-times), among them, there were 68 Soviet academicians and many others at the level of associate PhD or higher. They greatly helped the development and research of CAS. Before 1957, the Soviet advisors/experts employed by Chinese government worked in China for long time. Later, the majority of Soviet experts taught, guided and researched for short time. Among these Soviet experts, most of them engaged in natural science as technical-aid experts. Few Soviet experts

engaged in social science, they came to China to collect materials, exchange experience or further study. Meanwhile, Soviet experts came to China mainly through the temporary assignment or, invitation between the academies of sciences of the two countries.

II. Withdrawal of Soviet experts and its influence

On July 16, 1960, Soviet government suddenly informed Chinese government to unilaterally withdraw Soviet experts. Up till this time, 44 Soviet experts and students (further study) worked in CAS, (including 41 natural scientists and technological experts and 3 social scientists) and 4 wives and 3 children of the Soviet experts.

Under the arrangement of Soviet embassy, Soviet experts began to leave China. Among Soviet experts working in CAS, 13 experts left China by July 30, and 41 experts left China by August 29, including 22 experts completed their tasks and 19 experts not yet completed their tasks but left early. They left China starting from August 2 in different batches. By September 14, the final two Soviet experts left China. Till then, all Soviet experts working in CAS were withdrawn.

The withdrawal of these Soviet experts affected the research work of CAS in different degrees according to their discipline and job nature. Accurate and unbiased assessment can only through in-depth analysis. Among 19 Soviet experts leaving China latest, 9 experts worked as technical-aid experts in China under the Scientific Technological Cooperation Agreement for “122” projects, 1 expert working in China for 2 years (came to China three times), 2 experts working in China for 1 year and 3 experts working in China for 6 months. The other 3 experts working in China for 10 months, 9 months or 3 months. The rest of 10 experts were employed for 3 months to 1 year according to the cooperation agreement between Chinese and Soviet Academy of Sciences. Most of them came to China during March-June 1960. Few of them had completed the tasks when they left China in August.

After the early withdrawal of Soviet experts, the cooperation in expedition suffered from a certain loss. Both field and office work of expedition teams were temporarily suspended, only some repair and arrangement work.

The withdrawal of Soviet experts affected more the disciplines requiring concrete guidance of Soviet experts in terms of organization, academic and technological. In the 1950s, China did not engage any research on the precious metal and platinum. The withdrawal of Soviet experts left many problems and difficulties to Chinese researchers who were completely lack of research experience.

Since Soviet Union withdrew their experts in 1960, CAS did not invite any Soviet experts to give lecture or aid in China and stop inviting in the mid-1960s (1964 and 1965). This marked the end of scientific and technological exchange and cooperation between Chinese and Soviet Academy of Sciences for more than a decade.

III. Role and historical function of Soviet experts in the early development of CAS

As mentioned above, due to the complexity in employing Soviet experts to work in China — how they came to China, their job identity, time, disciple and nature, it is difficult to accurately summarize the number of Soviet experts who worked in CAS. However, the role

and function of Soviet experts in CAS could still be classified into two types according to the cooperation and exchange between Chinese and Soviet Academy of Sciences from the establishment of CAS to the beginning of the Great Cultural Revolution in 1966.

First, the two advisors to president (В. А. Ковда and Б. П. Лазаренко). For sudden reason, Ковда, the first Soviet chief council in CAS, worked in China for only 8 months, but his *Proposals for Planning and Organizing the Nationwide Scientific Research Work in the People's Republic of China*, had contributed to the formulation of China's first national scientific development plan and CAS' whole set of systems, including regulations on postgraduate and ordinance on academic committee of research institutes. Лазаренко, the second Advisor to President of CAS, worked in China for 26 months. Despite the limitation, Лазаренко participated in the formulation of Fifteen-Year development plan of CAS and China's twelve-year scientific development plan. He played an active role in the establishment of electric processing and electric new application disciplines in China. In addition, just like the above two advisors to president, С. Р. Рафиков as a polymer chemist and Г. П. Сердюченко as a linguistics were outstanding Soviet scientists before they came to China. They acted as the advisor to decision-making and designer of China's science activities during their job in CAS. They contributed to the establishment and rapid development of some blank disciplines.

Secondly, when compared with the few Soviet advisors who planned, guided and engaged in the every research work of CAS, it was the large number of Soviet experts who worked in every research institute and experimental station of CAS. Most of them were associate PhD or above working in China for different periods. They closely cooperated with Chinese scientists in the research and expedition activity. In fact, they were the special important research force in CAS, and the main body of Soviet experts working in CAS.

Actually, among being regarded as "Soviet experts", some were doing further study in China. Their main task to come to China was to understand China situation, collect materials and receive further study, especially in the social science and natural science where China has obvious advantage, e. g. geology and marine organisms. They obviously did not have the mission and qualification to provide technical aid to China, but were still called as "Soviet experts", which could be interpreted as the friendship and respect of Chinese people to Soviet Union.

In a word, during more than 10 years in the middle of 20th century, Soviet experts working in CAS gradually weakened their job nature, job scope and role, from the guidance, planning and management of research and organization work of CAS in early period to the mutual cooperation in scientific research and expedition projects. The assistance from Soviet experts played a critical role in building the mechanism, system and talent team of CAS in early establishment, accelerating its scientific research, and setting up of blank urgent scientific fields. They contributed greatly to the development of CAS.

The role and job nature of Soviet experts in CAS varied with the ideology of China and Soviet Union at different stages and the adjustment of Chinese Leaders in Soviet policies. This was completely consistent with the conditions of other Chinese industries and fields at that time, and highly coincided with the diplomatic policies of the Communist Party of China. Before the marching from Yan'an to Beijing, the Communist Party of China was not experienced in organizing and leading the modern scientific programs. Therefore, after the complete elimination of "imperialism harmful influence", it was necessary to rely on Soviet

experts and learn from Soviet model in designing the organization and system and engagement in the research activities.

However, due to the foundation established during the Republic of China, Chinese and Soviet Academy of Sciences shared experience in a unique way. As mentioned in the beginning of this article, CAS was based on several national research institutes during the Republic of China. Although the People's Republic of China did not accept old scientific system based on the model of the western developed countries, the 20-year scientific engagement during the Republic of China left an intangible valuable wealth for the People's Republic of China, especially in some fields such as geology, plant taxonomy, archaeology, philosophy and mathematics. This complicated the relation between Chinese and Soviet Academy of Sciences in the 1950s. Soviet experts working in CAS not only contributed unilaterally, but gathered more and more data and materials for research through Chinese unique natural resources or existing scientific achievements. In this sense, Soviet experts were fully paid off from the technical aid to China.

The large-scale employment and dispatch of Soviet experts were a unique phenomenon in the socialist block under the world political pattern in the mid-20th century. In the context of political and diplomatic, this means antagonism through alliance and common development, and inevitably affected by various factors among countries inside the same bloc (interest conflict, military contest and power/status struggle). By the late 1950s, such fields as semiconductor and computer technology had been considered as confidential projects by Soviet Union, and titanium alloy was even regarded as top secret. Therefore, the request of CAS for experts was delayed, reduced, or even refused completely. In some fields, Soviet experts working in China could not perform their duty as expert or impart the knowledge and technology to Chinese, according to relevant regulations of Soviet government. The science is of no national boundary, but the scientists and scientific application are of national boundary.

On other hand, the political atmosphere and national ideology of China in the 1950s also dominated the scope and direction of scientific and technological exchange between Chinese and Soviet Academy of Sciences. This results in mistakes of different degrees in core issues (how to consider the role of Soviet experts and how to launch the cooperation on a mutual and fair basis). Chinese government blindly believed Soviet experts and emphasized the political significance. For example, in some fields with better research foundation, China needed to just employ several Soviet experts of higher level, but actually invited numerous expert teams (even including some experts of low level), which played a limited role in the expedition/research and wasted the human and material resources. In 1957, regarding the Soviet participation in the joint expedition team of Heilongjiang basin, Gu Zhun, then Deputy Director of General Expedition Commission of CAS, strictly condemned Soviet Leaders' great chauvinism and irresponsibility, and sharply criticized some Chinese partners for the thought that the cooperation with Soviet Union could improve their value and the extravagance in receiving Soviet experts. However, the anti-rightist movement started soon, and Gu Zhun was regarded as rightist due to his anti-Soviet idea.

Today, global science, technology and economy tend to integrate. From the historic review of exchange and cooperation between Chinese and Soviet Academy of Sciences half a century ago, most of the Soviet experts working in CAS might pass away. Their experience and story faded as they left us. However, the research and recognition would still continue and deepen in the history during this period.

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Examples drawn from the cooperative projects between Chinese and Soviet Academy of Sciences in 1960, in biological field, 37 Soviet experts came to China (excluding those in paleontology), among which 27 experts (73 %) were proposed by Soviet Academy of Sciences and only 10 experts were proposed by Chinese Academy of Sciences. Archive of Chinese Academy of Sciences: 60-4-43.

Another typical example. On August 18, 1956, Chinese and Soviet government signed the “Agreement on the Joint Scientific Research for Surveying the Natural Resources and Productivity Development Prospect at Heilongjiang Basins and the Exploration Design for Overall Utilization Plan in Argun River and Heilongjiang Upstream”. This agreement was signed mainly according to the urgent Soviet’s need of development far-east region and the advocacy of Soviet Union. It was a major scientific and technological cooperation project between China and Soviet Union led by Chinese Academy of Sciences.

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