Introduction: One hundred years of striving—Chinese scientists in the 20th century

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Scientists are regarded as elite because of their deep knowledge and great social contributions, but, on the other hand, they are also relatively distant from the public because of their long years of study and the profundity, and sometimes the confidentiality, of their research. Even in the academic community, the systematic study and summarizing of the life experiences of scientists and their academic growth from a historical and social perspective have only recently begun.

In 2010, the China Association for Science and Technology, together with 11 ministries and commissions, including the Organization Department of the Central Committee of the Communist Party of China, the Ministry of Education, the Ministry of Science and Technology, the Chinese Academy of Sciences (CAS) and the Chinese Academy of Engineering (CAE), launched the Project on Collecting the Historical Data of Chinese Scientists’ Academic Life (PCDS). The project mainly covers CAS and CAE academicians who are over 80 years old and have rich academic experience, or old scientists who are not academicians but have made outstanding contributions to the progress of science and technology in China. PCDS focuses on the academic growth of old scientists, collecting and presenting the oral history data on their education, mentorship, academic achievements and key moments and events in their academic lives, as well as objects and images that reflect the development of their academic views and ideas.

One important feature of PCDS is that it is ‘person-centred’. This feature is reflected in the fact that the information is collected mainly from individual scientists and a small number of scientist groups. This research is also focused on the growth of the scientists, using their personal experiences to demonstrate changes over time and the development of science and technology. Research on the life experiences of individual scientists presents typical cases in the construction of the Chinese scientific community and the development of science and technology in modern China based on the internal logic of personal growth. Seeking commonalities in a collection of personal data and answering specific questions framed in historical terms should become the focus of the research and the application of historical data on scientists.

This special issue includes five research papers on the history of science. It is based on the PCDS data and aims to explore the academic growth of scientists and their relationship with the external environment during the development of modern science and technology in 20th-century China. It is also an attempt to conduct academic research on the PCDS data. Four of the articles in this issue use the historical data collected in PCDS. Although Zhang Jiajing’s article does...
not use the PCDS data, the case it cites – the National Defence Science Movement – helps to present a complete picture of the relationship between scientists and Chinese society in the 20th century.

‘The economic lives of American-trained Chinese scientists after they returned to China in the 1950s: A case study of Huang Pao-tung and Feng Zhiliu’ by Wang Xin is based on a diary provided by Huang and Feng’s family members that recorded the couple’s monthly income and expenditure from 1955, when they returned from the United States, to 1960. It analyses the couple’s salary levels, the sources of their income, their expenditures and changes in expenditures, and compares their income and expenditures before and after their return to China, thus illustrating the economic lives and working conditions of scientists in the early days of the People’s Republic of China. It also studies the attitude of the new government to the economic benefits of scientists who returned from the United States, and changes in that attitude, based on China’s political, social and economic situation, wage systems, and policies towards intellectuals in the 1950s.

‘The “neglected” chemistry: Fuels and materials preparation in China’s “two bombs and one satellite” project’ by Zhu Jing aims to find out what Chinese chemists did in that world-famous project. It explores the work of chemists in the preparation of materials for the project and their subsequent research, and analyses how the evolution of science and science policies affected their academic disciplines. The paper is a response to the call for the transnational circulation of scientific knowledge in research on the history of science. At the same time, by reviewing chemical research under this national project, the paper also examines how Chinese scientists understood and conducted basic and applied research and provides a complementary explanation of the uniqueness of basic and applied research in different national contexts.

‘Science and national defence: Special editions on the National Defence Science Movement during the Anti-Japanese War’ by Zhang Jiajing focuses on the National Defence Science Movement in China in the first half of the 20th century. The movement was officially launched by the National Government in 1941, when the war against Japanese aggression reached a stalemate. Many magazines and newspapers published special issues on the movement. The paper chooses six leading journals in that period and analyses the scientific issues covered, the changes in authors and content, and the influence of those special issues. It concludes that the authors of the special issues were from the political, military and scientific fields in the early period of the movement, but that authorship gradually shifted to scientific and technological circles, and the content of the articles changed accordingly. Given its important value in modern national defence and nation building, science inspired a number of young people to embark on the path of ‘saving the nation with science’.

Slightly different from the above three papers, ‘Born to do science? A case study of family factors in the academic lives of the Chinese scientific elite’ by Wang Huibin adopts the analytical framework of the sociology of science. In the 100-plus years of modern science development in China, a number of Chinese scientific families have emerged. While sharing the characteristics of both traditional Chinese scientific families and Western scientific families, they are also unique in their own way. The Wang–He family covered in this paper is a microcosm of the localization of Western scientific culture and the modernization of Chinese family culture. Through this case study, the paper examines the family influences in the academic growth of three CAS academicians – He Zehui, Wang Shouwu and Wang Shoujue – and discusses the role of the family in shaping the cultural and social characteristics of scientific elites. The rise of scientific families, although somewhat coincidental, provides an entry point for observing how scientists are influenced by their families.

‘Collecting and compiling the oral accounts of Chinese scientists trained in the Soviet Union in the 1950s and 1960s: Practice and reflection’ by Wang Liyuan discusses how to conduct historical studies of the rich oral history materials of PCDS. Through data collection, candidate selection, framework construction and concrete presentation, the paper sorted through oral interviews of 16 Chinese scientists to present the life details and real feelings of scientists who studied in the Soviet Union in the early days of the People’s Republic of China, thus revealing a full picture of the academic growth of
scientists against a specific historical background. The paper stresses that the oral histories must be examined with specific questions and perspectives in mind. Scholarly annotations may be added to provide additional information on the historical background and significance of the scientists’ experiences. Such a principle and method can provide useful references for future research on scientists’ oral accounts.

In the 10 years since the launch of PCDS, hundreds of thousands of pieces of data have been collected. They are not only visible footprints in the academic journeys of individual scientists, but also the original records of how modern science and technology have taken root, sprouted and grown in China. Data involved in this special issue is only the tip of the iceberg of the PCDS database. In the history of science and technology in the People’s Republic of China, many scientists went through a unique historical stage of readjusting their academic paths and restarting their research careers to serve the country’s development needs. Through their joint efforts, China achieved major breakthroughs in science and technology. The similar growth patterns and generational features of the scientists also revealed their common life goals. It is therefore very important to explore their academic growth and their relationship with the external environment and dig deeper into the important historical events experienced by the scientists during a specific historical period. We look forward to more research results emerging from this important field.

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