



**Saving China through Science: The Science Society of China, Scientific Nationalism, and Civil Society in Republican China**

Zuoyue Wang

*Osiris*, 2nd Series, Vol. 17, Science and Civil Society. (2002), pp. 291-322.

Stable URL:

<http://links.jstor.org/sici?sici=0369-7827%282002%292%3A17%3C291%3ASCTSTS%3E2.0.CO%3B2-6>

*Osiris* is currently published by .

---

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at <http://www.jstor.org/about/terms.html>. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at .

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

---

JSTOR is an independent not-for-profit organization dedicated to and preserving a digital archive of scholarly journals. For more information regarding JSTOR, please contact [support@jstor.org](mailto:support@jstor.org).

# Saving China Through Science: The Science Society of China, Scientific Nationalism, and Civil Society in Republican China

*Zuoyue Wang\**

## ABSTRACT

The Science Society of China, the first comprehensive Chinese scientific association, was actually organized in 1914 by a group of Chinese students at Cornell University in the United States. Four years later, many members returned to China, where the association, until its dissolution by the Communists in the 1950s, played a crucial role in Chinese science and society, not the least by publishing the *Kexue* (Science) monthly. This paper presents a twofold thesis: first, the Science Society of China and the *Kexue* represent attempts by Chinese scientists to create a civil society and a public sphere in Republican China. Second, in contrast to the conventional Western model, the Science Society, even as it critiqued government actions in public, maintained intimate and complex connections with successive regimes in the Republican era. If professionalism drove the Science Society's rhetoric of autonomy, scientific nationalism, I argue, moderated the association's interactions with the state in practice.

## INTRODUCTION

ON AUGUST 16, 1910, in Shanghai, Zhu Kezhen boarded the SS *China* to embark on a journey that would change his life. Less than a month before, he had passed a rigorous national examination and earned one of the seventy Boxer fellowships for studying science and engineering in America that year. Standing on the deck as the ship prepared to leave port, Zhu, still a diminutive figure at age 20, certainly recognized the significance of the moment as he and the other Boxer students bade farewell, if only temporarily, to a homeland on the eve of radical transformations.<sup>1</sup>

\* Department of History, California State Polytechnic Univ., 3801 W. Temple Ave., Pomona, CA 91768; Zywang@csupomona.edu.

The author thanks Thomas Broman, Lynn Nyhart, Kathy Olesko, and anonymous referees for critical and helpful comments on earlier drafts of this paper and Zhang Li for assistance with materials. Unless otherwise noted, most Chinese names are rendered in *pinyin* with family names first and given name second, and translations from Chinese into English are my own.

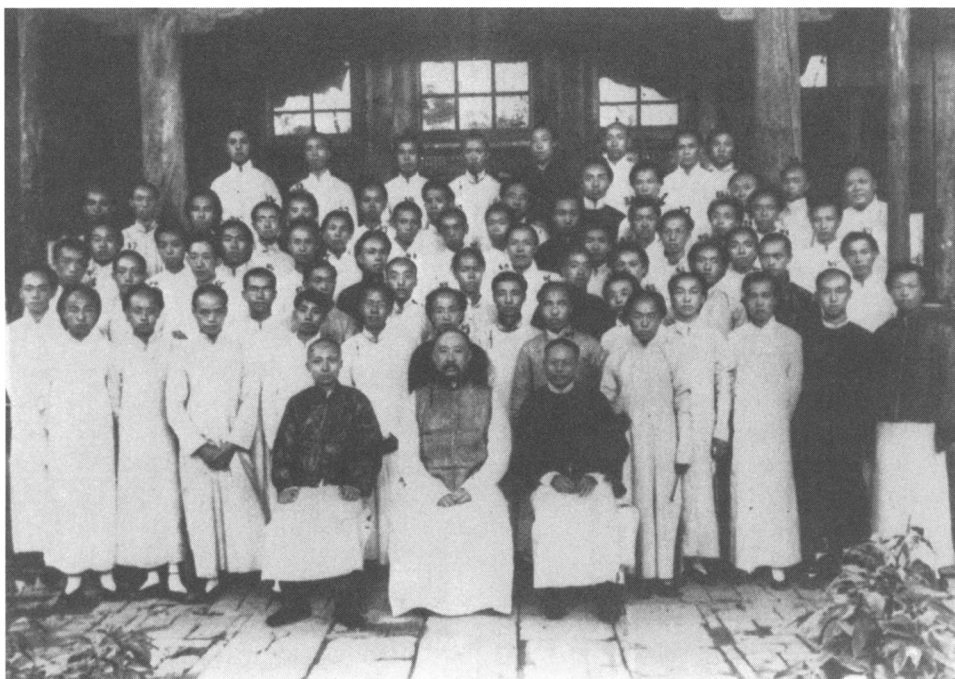
<sup>1</sup> Xie Shijun, *Zhu Kezhen zhuan* (Biography of Zhu Kezhen) (Chongqing: Chongqing Press, 1993), pp. 30–7. See also Zhao Xinna and Huang Peiyun, eds., *Zhao Yuanren nianpu* (Chronological biography of Zhao Yuanren) (Beijing: Commercial Press, 1998), pp. 57–8. The *nianpu* is a Chinese literary genre especially valuable to historians because it usually reconstructs the subject's life based on letters and diary. This Zhao Yuanren *nianpu* is based on his papers deposited in the Bancroft Library, University of California, Berkeley.

If there was one desire that united this group of Boxer students, it was a dream of saving China through science and technology. Convinced of the fundamental importance of farming for China, Zhu had decided to study agriculture at the University of Illinois.<sup>2</sup> Fellow student Hu Shi also would be studying agriculture, though he would be attending Cornell University. Accompanying him to Cornell were Hu Mingfu, a thin young man with training in business administration, and the shy, lanky Zhao Yuanren, gifted with a knack for acquiring local dialects. Both of them looked forward to learning physics and mathematics. Zhou Ren, who wanted to help “sharpen the tools for a strong [Chinese] nation,” planned to major in mechanical engineering at Cornell.<sup>3</sup> As Zhu and his fellow Boxer scholars sailed for America on the SS *China*, they had no idea that once they returned to China, their faith in science and technology would be severely tested in successive waves of revolutions, wars, triumphs, and tragedies. They could not know that many of them would become prominent figures in modern Chinese history: Zhu Kezhen, for example, as a meteorologist, geographer, and science and education administrator, and Hu Shi, as a philosopher, intellectual, and diplomat. Neither could they realize that the informal ties they started to form with each other aboard the ship would blossom into the Science Society of China, an association destined to play a significant role in Chinese science, society, and politics during the first half of the twentieth century.

Founded by these and other Chinese students in the United States in 1914–1915, the Science Society became the largest and most influential general scientific organization in China after it moved its activities there in 1918, a position it would maintain until its dissolution in 1950. What happened to the Science Society of China and its members’ dream of saving their country through science is the topic of this case study of science and civil society in modern China. The experiences of Zhu and several other leaders of the Science Society will be used to illustrate the collective aspirations and struggles of the first generation of modern Chinese scientists. The central argument of this paper has two parts. First, members of the Science Society sought to reshape China’s destiny not only by making scientific contributions, but also by offering a significant, if embryonic, model of civil society and a liberal public sphere in Republican China. The Science Society rendered itself as an autonomous and voluntary association capable of critiquing state actions and public policies, especially through its journal *Kexue* (Science). Second, the Science Society represented a different kind of civil society from the conventional Western model: it was not an institution conceived in opposition to the state but rather one that maintained intimate and complex connections with successive governments, both national and local, throughout the Republican era. If professionalism—the scientists’ pursuit of professionalization—drove the Science Society’s rhetoric of autonomy, a sense of nationalism moderated their interactions with the state in practice. This tension between autonomy and dependence, rhetoric and reality, played itself out against a backdrop of extraordinarily turbulent social and political forces, including

<sup>2</sup> Zhu Kezhen zhuan bianjizu, *Zhu Kezhen zhuan* (A biography of Zhu Kezhen) (Beijing: Science Press, 1990), p. 11.

<sup>3</sup> For Hu Shi’s description of his voyage, see Hu Shizhi (Hu Shi), “Huiyi Mingfu” (Recollections of Mingfu), *Kexue* 13 (1928): 827–34, on pp. 827–8. On Hu Mingfu, see Zhang Zugui, “Hu Mingfu,” in *Zhongguo xiandai kexuejia zhuanji* (Biographies of contemporary Chinese scientists), ed. Lu Jiaxi, 6 vols. (Beijing: Science Press, 1991–1994) (hereafter cited as ZGXDKXJZJ), vol. 4, pp. 1–10. On Zhou Ren, see Zhou Peide and Dong Deming, “Zhou Ren,” in *ibid.*, vol. 5, pp. 783–91, on pp. 783–4.



**Figure 1.** Boxer Fellows in 1910 just before their voyage to the United States to study science and technology. Reprinted from Yuen Ren Chao, *Yuen Ren Chao's Autobiography: First 30 Years, 1892–1921* (Ithaca, N.Y.: Spoken Language Services, 1975).

nationalism and wars in Republican China. In what follows, we will first take a look at the broad political background of modern China, then at the debate of civil society and science, before moving to examine the political and social roles of members of the Science Society of China, using the lives and careers of Zhu and several other society leaders as examples.

#### SCIENCE AND POLITICS IN MODERN CHINA

Back in 1910, when Zhu and other Boxer fellows hoped to use the science and technology they would learn abroad to serve and save China, they did not have a clear idea of who would be governing their beloved homeland in the future or how it would be governed. They certainly did not think highly of the present government, even though the imperial Qing regime busily asserted its authority over the students.<sup>4</sup> While still in Beijing following the July examination, the Boxer fellows were summoned to the Foreign Ministry for official “admonitions” before their trip overseas. (See Figure 1.) According to one report, they were told to carry a golden dragon flag of the Qing Empire with them at all times and never to join any revolution against

<sup>4</sup> Zhao Yuanren, for example, recalled that as early as 1908, when he was a high school student in Nanjing, he and his classmates looked forward to a revolution, “believing that the days of the Qing were numbered.” They laughed, instead of cried, during the official mourning service for Emperor Guangxu and Empress Dowager Zixi in 1918, but nobody could tell the difference. Yuen Ren Chao (Zhao Yuanren in pinyin), *Yuen Ren Chao's Autobiography: First 30 Years, 1892–1921* (Ithaca, N.Y.: Spoken Language Services, 1975), p. 67.

the Qing. They also could not convert to foreign religions or marry foreign women.<sup>5</sup> The fearful and defensive Qing officials did not give Zhu and his colleagues much confidence in the Chinese state. Furthermore, the material and spiritual condition of Chinese society under the Qing greatly concerned them. For example, Zhu's family in rural Zhejiang, while jubilant about the honor of his being selected a Boxer fellow, could not afford to travel to Shanghai to see him off. When Zhu went to a barbershop in the port city to have his queue removed and hair cut before the voyage, the Chinese barber refused, fearing a capital punishment for disobeying the Qing rule about maintaining the queue. After arguing in vain that such measures were officially required before going abroad, Zhu had to find a Japanese barber to do the job.<sup>6</sup>

The introduction of modern science in China took place against a turbulent social and political backdrop. A survey of the modern Chinese political landscape might begin with the turn of the twentieth century, as Zhu and other members of the first generation of modern Chinese scientists went through their secondary education. The half century following it could be divided into four periods. From 1900 to 1911 the Qing government, headed by the ethnically Manchu imperial family in a predominantly Han Chinese nation, tried to implement political, social, and cultural reforms in the face of rising anti-Manchu sentiment at home and growing encroachment on Chinese national sovereignty from Western and Japanese powers from abroad. The reform measures proved to be too little and too late. In 1911–1912 the last emperor of China, the boy monarch Puyi, abdicated amid a republican revolution led by Sun Yat-sen's Revolutionary Alliance, thus opening the Republican era. The revolution did not, however, result in a unified, strong nation. Instead, regional warlords reigned in China under a nominal national government in Beijing from 1912 to 1927. It was not until 1927 that Sun's Nationalist Party, under the leadership of Jiang Jieshi (Chiang Kai-shek), established a true national government in Nanjing, where it remained until 1937 (thus the period came to be known as the Nanjing Decade). That year witnessed the start of the war of resistance against Japan and World War II (1937–1945), during which the Nationalist government moved the national capital to Chongqing in southwest China. The year the world war ended a civil war began between the Nationalists and the Communists under Mao Zedong. It raged until 1949 and resulted in Communist control of the mainland and the end of the Republican era (1911–1949).

Superimposed on this political-historical map were events and developments crucial to the experiences of first-generation scientists such as Zhu Kezhen. One incident that would have enormous impact on the history of modern science in China was the so-called Boxer uprising of 1900. An antiforeign movement eventually supported by the Qing government, the Boxer uprising not only resulted in the humiliating defeat of China by Western and Japanese forces, but also led to a treaty that specified a huge indemnity fund of \$333 million (nearly twice the Qing's annual income), amortized until 1940, to be paid to the Western countries and Japan for their damages and loss of life during the incident. By the early 1900s, however, it was clear that the U.S. claim of \$25 million was greatly exaggerated. The U.S. government then decided to return the surplus portion of the Boxer indemnity funds to China with the stipulation that they be used to send Chinese students to study

<sup>5</sup> Xie, *Zhu Kezhen* (cit. n. 1), p. 33.

<sup>6</sup> *Ibid.*, pp. 36, 54–7. See also Zhao, *Yuen Ren Chao's Autobiography* (cit. n. 4), pp. 71–2.

science and technology in the United States. American policy makers expected that these students, when they returned to China, would extend American influence and help facilitate trade between the two countries.<sup>7</sup> The first batch of students was selected and sent to the United States in 1909. The next year Zhu and his fellow voyagers on the SS *China* were the second group to go. Over the next three decades, hundreds of other Boxer students followed in the footsteps of these pioneers. After they completed their studies in the United States and went back to China, these “returned students” did indeed, as American policy makers had envisioned, play a prominent role in Chinese science and education.<sup>8</sup> But ironically, aware of the origins of the Boxer funds, these scientists and engineers often harbored intensely nationalistic feelings and therefore were not always as pro-American in their political orientation as Washington had hoped.

The single most important cultural change in the Republican era was the May Fourth Movement of 1919. It started as a nationalist protest against Western and Japanese encroachment on Chinese sovereignty at the Versailles treaty negotiations but eventually evolved into a far-reaching intellectual revolution. The so-called New Culture Movement that was a part of the May Fourth Movement has often been termed the Chinese Renaissance or Chinese Enlightenment. Leaders of the movement, mostly literary figures but also a few scientists, called for the introduction of “Mr. Democracy” and “Mr. Science” into China to reform its traditional pattern of culture and politics.<sup>9</sup> It was against this backdrop of national crisis that Zhu’s and other Chinese scientists’ aspirations for science as a means to national salvation played out.

#### THE DEBATE OVER THE SEARCH FOR CIVIL SOCIETY IN CHINA

Amid the call for democracy and modernization in the first half of the twentieth century, did a civil society emerge? This question has been part of the general search for civil society in China that has attracted both excitement and controversy in recent decades. In the early and mid-1980s works on the possible existence and evolution of Chinese civil society began to appear, in an attempt to break away from the traditional view of Chinese society as essentially unchanging until the West came knocking on its door in the mid-nineteenth century.<sup>10</sup> Though it is thus clear that the search for civil society in China predates the student uprising in Tiananmen Square and the successful toppling of Communist rule in Eastern Europe in 1989, these tumultuous

<sup>7</sup> Michael H. Hunt, “The American Remission of the Boxer Indemnity: A Reappraisal,” *J. Asian Stud.* 31 (May 1972): 539–59.

<sup>8</sup> For a study of the returned students before 1949, see Y. C. Wang, *Chinese Intellectuals and the West, 1872–1949* (Chapel Hill: Univ. of North Carolina Press, 1966). For the impact of returned students in China after 1949, see Li Peishan, “The Introduction of American Science and Technology to China before 1949 and Its Impact,” in *United States and the Asia-Pacific Region in the Twentieth Century*, ed. Shi Xian-rong and Mei Ren-yi (Beijing: Modern Press, 1993), pp. 603–18.

<sup>9</sup> On the May Fourth Movement, see Chow Tse-tung, *The May Fourth Movement: Intellectual Revolution in Modern China* (Cambridge, Mass.: Harvard Univ. Press, 1960); and Vera Schwartz, *The Chinese Enlightenment: Intellectuals and the Legacy of the May Fourth Movement of 1919* (Berkeley: Univ. of California Press, 1986).

<sup>10</sup> For a recent discussion of this historiographical change and its implications for the history of science in China, see H. Lyman Miller, *Science and Dissent in Post-Mao China: The Politics of Knowledge* (Seattle: Univ. of Washington Press, 1996), pp. 22–6.

events undoubtedly generated new energy for this search among Western scholars.<sup>11</sup> As is well known, the publication of Jürgen Habermas's 1962 work on *The Structural Transformation of the Public Sphere* in English translation that same eventful year further stimulated the interest of many scholars.<sup>12</sup>

Trying to explain the contours of modern Chinese history, several China scholars have advanced a twofold thesis on Chinese civil society. On the one hand, they have argued that an incipient civil society began to emerge in Ming (1368–1644) and Qing (1644–1911) China and, certainly by the early twentieth century, came to reshape the urban landscape as merchants, city residents, professionals, and intellectuals organized various institutions within the public sphere, including voluntary associations, newspapers, and periodicals. These new institutions played a mediating role between the state and society. On the other hand, these scholars have acknowledged that in the face of wars and revolutions and in the absence of a stable and tolerant state for much of the twentieth century, various efforts at civil society often failed to establish long-lasting institutional changes.<sup>13</sup>

Critics of the searches for civil society in China have expressed doubts about the degree of autonomy the various examples of public sphere and civil society enjoyed from state control.<sup>14</sup> They have also questioned whether such work is teleological in the sense that searchers are often imposing present-day concerns about social-political structure on historical settings. More radical challengers have even denied completely the validity of these searches. One critic, for example, accused those looking for civil society in Chinese history of being Eurocentric, of explicitly or implicitly assuming that the development of civil society was a necessary and desirable stage in social development in China just as in the West.<sup>15</sup> Indeed, Habermas himself has warned in his book against universalizing the concepts of civil society and public sphere. They cannot be “transferred, idealtypically generalized, to any number of historical situations that represent formally similar constellations.”<sup>16</sup>

Interestingly, science and scientists have rarely figured in the debate on civil society in China. Is there value in searching for signs of civil society/public sphere among scientists in China? My view is that we can proceed with such investigations as long as we are aware of the inherent limitations and potential pitfalls. The concep-

<sup>11</sup> See, e.g., David Strand, “Protest in Beijing: Civil Society and Public Sphere in China,” *Problems of Communism* 39(3) (1990): 1–19. See also Gu Xin, “A Civil Society and Public Sphere in Post-Mao China: An Overview of Western Publications,” *China Information* 8(3) (1993–1994): 38–52.

<sup>12</sup> Jürgen Habermas, *The Structural Transformation of the Public Sphere*, 2d ed. (Cambridge, Mass.: MIT Press, 1991); originally published in 1989.

<sup>13</sup> These works include Mary Rankin, *Elite Activism and Political Transformation in China: Zhejiang Province, 1865–1911* (Stanford, Calif.: Stanford Univ. Press, 1986); William T. Rowe, *Hankow: Commerce and Society in a Chinese City, 1796–1889* (Stanford, Calif.: Stanford Univ. Press, 1984); idem, *Hankow: Conflict and Community in a Chinese City, 1796–1895* (Stanford, Calif.: Stanford Univ. Press, 1989); Marie-Claire Bergère, *The Golden Age of the Chinese Bourgeoisie, 1917–1937* (Cambridge: Cambridge Univ. Press, 1986); and David Strand, *Rickshaw Beijing: City People and Politics in the 1920s* (Berkeley: Univ. of California Press, 1989). Rowe provides an excellent review of this literature in “The Public Sphere in Modern China,” *Modern China* 16(3) (1990): 309–29.

<sup>14</sup> See the papers in the special issue of *Modern China* 19(2) (1993), devoted to “‘Public Sphere’ and ‘Civil Society’ in China?,” especially Frederic Wakeman Jr.’s “The Civil Society and Public Sphere Debate: Western Reflections on Chinese Political Culture,” pp. 108–38; and Philip C. C. Huang’s “‘Public Sphere’/‘Civil Society’ in China? The Third Realm between State and Society,” pp. 216–40.

<sup>15</sup> Adrian Chan, “In Search of a Civil Society in China,” *Journal of Contemporary Asia* 27(2) (1997): 242–51.

<sup>16</sup> Habermas, *Structural Transformation* (cit. n. 12), p. xvii.

tual difficulties are not insurmountable as we take a closer look at them. First, on the question of exaggeration of autonomy, we should not presume a priori that, because of the weaknesses of some well-known cases, all cases will fail to measure up to the high bar of civil society and public sphere. The fact that few China historians, with or without a specialty in science, have examined the experiences of Chinese scientists in light of this debate on civil society perhaps reflects a continuing general indifference of historians of science to the civil society debate (and the general failure of China scholars to take science seriously). Second, on the question of teleology, one can only say that while we should not judge historical actors by our present standards, neither can we free ourselves entirely from bias in our historical research. Insights from our own lives and times are often useful in guiding such research as long as we and the reader are aware of the situation.

Finally, is the employment of civil society/public sphere in Chinese history intrinsically Eurocentric or ethnocentric? It is a complex issue because concepts such as “modernization,” “freedom,” “national distinctiveness,” and “civilization” have certainly been used to justify various questionable political designs and ideologies. Yet we cannot be deterred from using these concepts because they could lead to abuses or because they are ideologically loaded. Even such commonly used terms as “science,” “technology,” “class,” and “race” are, of course, culturally bound. If we deny the universality of “civil society” and “public sphere” a priori out of respect for the special local conditions of the Chinese society and culture, are we not falling into another form of ethnocentrism that says the Chinese are intrinsically unable to produce a civil society and liberal public sphere? As the China historian William T. Rowe explains: if one exempts China from Western liberal-democratic demands on the grounds of historical cultural differences, “we are justly suspected of orientalism: other, less ‘civilized’ societies cannot be expected to live up to the standards we [Westerners] set for ourselves.”<sup>17</sup>

In many ways, the problems associated with the discussions of science and civil society in China parallel those engendered by Joseph Needham’s famous question of why modern science did not arise in China, given its outstanding ancient technological achievements. For years historians have disputed, in the Needham debate, the meaning of key concepts such as science, modern science, theoretical science, technology, and national culture. Charges of teleology and ethnocentrism have also figured in the Needham discussion as some scholars have felt that the question is misplaced and China has been unfairly judged by what happened in modern Europe.<sup>18</sup>

Habermas’s well-intentioned warning notwithstanding, I believe that it will be useful to apply the concepts of civil society/public sphere in historical situations other than seventeenth- and eighteenth-century Europe. Just as we use “science,” “technology,” “gender,” and “class” in varied national, cultural, and historical contexts, we can use “civil society/public sphere” to study, perhaps most interestingly, how ideas and institutions “idealtypically generalized” are transformed and reconfigured when they cross those boundaries. As Thomas Broman points out in his

<sup>17</sup> William T. Rowe, “The Problem of ‘Civil Society’ in Late Imperial China,” *Modern China* 19(2) (1993): 139–57, on p. 141.

<sup>18</sup> For a recent review in English of the debate on the scientific revolution in China, see Roger Hart, “On the Problem of Chinese Science,” in *The Science Studies Reader*, ed. Mario Biagioli (New York: Routledge, 1999), pp. 189–201; Robert Finley, “China, the West, and World History in Joseph Needham’s *Science and Civilisation in China*,” *J. World Hist.* 11(2) (2000): 265–303.



study of Enlightenment science, the conceptual framework of civil society/public sphere can also serve as a great heuristic tool: “Its specific utility hinges on the way it helps our understanding of the ‘public’ for science in the period.”<sup>19</sup>

In the case of science in Republican China, I believe the concepts of civil society and public sphere will help us bring out aspects of the interactions between science and civil society that other perspectives leave hidden, allowing us to better understand the political and social significance of science’s professionalization and institutionalization in this setting. In one traditional narrative of professionalization, for example, the public’s role is conspicuous for its disappearance: a field is “professionalized” when it bars amateurs. From this perspective, it is easy to interpret the formation of scientific organizations such as the Science Society of China as simply a step toward professional status. Attention to civil society, however, allows us to see much more clearly the extent to which the emergence of an autonomous scientific community in China actually depended on the presence of a civil society for funding and public support. The Science Society did indeed represent professionalization, but professionalization here was not just about the exclusion of amateurs: it was also about relative autonomy from the state; the freedom of members to order their own organization; the reliability of the state/government to act as a guarantor of civil society; and the readiness of amateurs to fight for, or at least to tolerate, the rights of experts to form their own associations. All of these conditions began to take shape in Republican China only to largely disappear during the Maoist era. In addition, the focus on Chinese scientists and civil society allows us to move beyond the confines of the traditional history of Chinese science and open a new frontier where we can examine Chinese science in the context of mainstream Chinese history and make cross-national comparisons. Recent scholarship seems to indicate that in contrast to the strict dichotomy between civil society and the state that existed in early modern western Europe and in modern Eastern Europe, the Chinese experiences are dominated by examples of civil society/public sphere institutions that involved much more interaction between state and society. As the China historian Philip C. C. Huang points out, “We need to employ instead a trinary conception, with a third space in between state and society, in which both participated.”<sup>20</sup> Huang calls this intermediate space the “third realm” and explains its advantages:

A value-neutral category, it would free us of the value-laden teleology of Habermas’s bourgeois public sphere. It would also define more unequivocally than Habermas’s public sphere a third space conceptually distinct from state and society. Such a conception would also prevent any tendency to reduce the third space to the realm of either the state or society. . . . We would see it as something with distinct characteristics and a logic of its own over and above the influences of state and society.<sup>21</sup>

Does the Science Society of China fit into this third realm model of a civil society/public sphere? In what follows I will try not only to demonstrate that the answer is a qualified yes, but also to go beyond the question to explore the dynamics behind the apparently more intense interaction between Chinese state and civil society insti-

<sup>19</sup> Thomas Broman, “The Habermasian Public Sphere and ‘Science in the Enlightenment,’” *Hist. Sci.* 36 (1998): 123–49, on p. 124.

<sup>20</sup> Huang, “‘Public Sphere’/‘Civil Society’ in China?” (cit. n. 14), p. 216.

<sup>21</sup> *Ibid.*, p. 225.

tutions. Simply put, these dynamics hinged, in the case of the Science Society, on a tension between Chinese scientists' demand for professionalism as scientists and their equal, if not more strongly felt, desire to strengthen Chinese nationalism.

Before we examine the Science Society as a civil society/public sphere institution, a few more preliminary remarks on terminology are in order. The concepts of public sphere and civil society are notoriously ambiguous, in the context of both western and Chinese history. Indeed, as Rowe points out, whereas the Chinese political lexicon had long contained the word *gong*, which corresponds in general with "public," not until the late twentieth century, it seems, did a Chinese phrase for "civil society" appear.<sup>22</sup> Thus, instead of attempting precise definitions of these terms, I will follow Thomas Broman in viewing the "public sphere . . . as the cultural and political expression of the self-consciousness of members of civil society."<sup>23</sup> With the "third realm" modification in mind, we might use civil society to refer to public, nongovernmental institutions formed by private individuals, based on self-governance but not necessarily in opposition to the state. These could conceivably include chambers of commerce, voluntary associations of various kinds, and professional organizations such as the Science Society. The public sphere these institutions helped to create took the tangible forms of newspapers, periodicals, books, public meetings, and lecture series, among others.

Compared with "public sphere" and "civil society," "professionalism" and "nationalism" are more familiar terms but no more easily defined. In the context of this paper, I use "scientific professionalism" to refer to the ideals associated with science as a profession, such as freedom of conducting research without external interference, social respect for scientists' cognitive and professional authority, and internationalism. "Scientific nationalism" here is used to describe Chinese scientists' desire to create a strong, unified, and prosperous Chinese nation, free from foreign domination, based in part on the utilization of science and technology. In this sense, Chinese scientific nationalism is slightly different from, for example, the feeling of Japanese scientists who wanted their science to excel at the international level, or that of the German scientists who sought to use their superior science to redeem Germany's place in the world following World War I.<sup>24</sup>

#### PROFESSIONALISM, THE PUBLIC SPHERE, AND THE ORIGINS OF THE SCIENCE SOCIETY OF CHINA

The origin of the Science Society can be traced to a June 1914 gathering of about a dozen Chinese students at Cornell University, including several of those who had journeyed with Zhu on the SS *China* four years before. The tension in the world on the eve of World War I stirred nationalist sentiment among these Chinese students, who wanted to do something for their country. The group, mostly composed of science students, felt that what China lacked most was science: in all of China not a

<sup>22</sup> Rowe, "Problem of 'Civil Society,'" (cit. n. 17), p. 42.

<sup>23</sup> Broman, "Habermasian Public Sphere" (cit. n. 19), p. 125.

<sup>24</sup> On Japanese science, see James R. Bartholomew, *The Formation of Science in Japan* (New Haven, Conn.: Yale Univ. Press, 1989), especially p. 263. On the German case, see J. L. Heilbron, *The Dilemmas of an Upright Man: Max Planck as Spokesman for German Science* (Berkeley: Univ. of California Press, 1986); and Paul Forman, "Scientific Internationalism and the Weimar Physicists: The Ideology and Its Manipulation in Germany after World War I," *Isis* 64 (1973): 151-80.

single journal devoted itself to the field.<sup>25</sup> Subsequently, nine students signed a proposal establishing a science society (*kexue she*) with the main purpose of sponsoring a new journal in Chinese, titled *Kexue* (Science), to introduce science to their homeland.<sup>26</sup>

A closer examination of the background of the society's founders reveals remarkable historical connections between these students' scientific nationalism and the Republican revolution taking place inside China at the same time. Among the nine founders, seven were Boxer fellows who had come to Cornell in 1909–1911, including Hu Mingfu, Zhao Yuanren, Bing Zhi, and Zhou Ren. As Zhao Yuanren recalled later, few of the Boxer fellows were sympathetic to the Qing government and most were jubilant about its overthrow in 1911.<sup>27</sup> It is doubtful, however, that those seven would have initiated the idea of a science society or *Kexue* without the instigation of the two other signers of the proposal who were not Boxer fellows: Ren Hongjun and Yang Xingfo.

Born in 1886, Ren studied chemistry in Japan from 1908 to 1911, with the specific intent of learning how to make dynamite for the Republican revolution against the Qing. As an activist in Sun Yat-sen's Revolutionary Alliance in Japan, Ren returned to China in 1911 as soon as he heard the revolution had started. During the brief period (January to April 1912) when Sun Yat-sen was provincial president of the Republic of China, Ren served as one of his aides in Nanjing. After Sun turned over the presidency to the military strongman Yuan Shikai in April, as the result of a political compromise, Ren persuaded the new government to send him and a number of other young revolutionaries to study abroad. Ren had long wished to pursue studies in the West, as had Yang Xingfo, seven years Ren's junior, who had studied at the same middle school in Shanghai that Ren and Hu Shi had attended before becoming an aid for Sun in Nanjing.

While Ren and Yang waited for the bureaucracy to work out the details of their study abroad, they went to work for *Minyi Bao* (Public opinion press), a newspaper in Tianjin, a major city near Beijing. Ren became its editor-in-chief, and Yang its correspondent in Beijing. In their hands, the paper became a critical voice against Yuan Shikai's government in Beijing, and Yuan had it shut down for more than a month (it resumed publication just before Ren and Yang left for the United States in late 1912).<sup>28</sup> The experiences of working with Sun and at the *Minyi Bao* had a profound impact on the political outlooks of both men. They emerged from these

<sup>25</sup> Ren Hongjun, "Zhongguo kexueshe sheshi jieshu" (A brief history of the Science Society of China), *Zhongguo keji shiliao* (China historical materials of science and technology) (hereafter cited as ZGKJSL) 4(1) (1983): 2–13. Zhao Yuanren recorded in his diary of 10 June 1914 that he "in the evening went to an enthusiastic and serious meeting in H. Z. Zen's [Ren Hongjun] room to organize a Science Society for publishing a monthly." Zhao, *Yuen Ren Chao's Autobiography* (cit. n. 4), 79.

<sup>26</sup> Names of the nine founding members and the initial charter of the Science Society were recorded in Hu Shi's diary, which he reprinted in "Huiyi Mingfu," *Kexue* 13 (1928): 827–34, on pp. 829–30.

<sup>27</sup> See Zhao, *Yuen Ren Chao's Autobiography* (cit. n. 4), 79.

<sup>28</sup> Ren Hongjun, "Qianchen suoji (xia)" (Notes on my early life [pt. 2]), *Zhuanji wenxue* (Biographical literature) 26(3) (March 1975): 89–95. See also Tao Yinghui, "Ren Hongjun yu Zhongguo kexueshe" (Ren Hongjun and the Science Society of China), *Zhuanji wenxue* 42 (June 1974): 11–6; Xu Weimin, "Yang Xingfo: Zhongguo xiandai jiechu de kexue shiye zuzhizhe he shehui huodongjia" (Yang Xingfo: An outstanding organizer and social activist for the scientific enterprise in modern China), *Ziran bianzhengfa tongxun* (Journal of the dialectics of nature) (hereafter cited as ZRBZFTX) 12(5) (1990): 71–80.

experiences not only committed to a radical transformation of China but also convinced of the power of the media as a critical institution of the public sphere for effecting this process in the long term. Yet the fragility of Sun's political revolution and the corruption of Yuan's government also led them to believe that, at least for the immediate future, science, not politics, was the way to save China.<sup>29</sup> Ren and Yang decided to join Hu at Cornell, where Ren majored in chemistry and Yang in mechanical engineering. Although they were not required, like the Boxer fellows, to major in science and technology, they both did so with the knowledge that Sun, their leader, shared with them the dream of industrial nationalism based partly on the use and development of railroads. Given their revolutionary background, it is not surprising that Ren and Yang were leading instigators for the Science Society: the initial meeting on the matter was held in Ren's room, and Yang drafted the charter for the organization and *Kexue*.<sup>30</sup>

The goal of both the society and the journal was to advocate for science and promote the development of industry in China. When these students circulated their proposal for the establishment of the Science Society to Chinese students in other parts of the United States, in Europe, and at home in China, they received an enthusiastic response: more than seventy people joined the society during the first year of its existence. To meet the cost of running and printing the journal, the society was organized as a joint-stock company, with each member subscribing for one or more shares of stocks. Having a financial stake in the enterprise, the organizers thought, would give members of the society the extra incentive needed to ensure success. The first issue of *Kexue*, with articles written by Science Society members in the United States, appeared in Shanghai in January 1915.<sup>31</sup>

Nationalism and professionalism were incorporated in *Kexue*'s earliest public pronouncements about the new science society. Founders of the journal envisioned a dual purpose for it: as a means of scientific communication among members of the Science Society and as a way to popularize science among the Chinese literary public, with the ultimate goal of making China strong and respected in the international community. Thus in the journal's inaugural editorial in January 1915, most likely written by editor-in-chief Yang Xingfo, *Kexue* explained:

All civilized countries have established scientific societies to promote learning. These societies in turn have sponsored periodicals to publish advances in scholarly research and inventions of new theories. Thus the academic periodicals in these countries are truly records of the rise of their scholarship and, in today's world, the means by which scholars communicate with each other. Because we are still at a stage of pursuing our

<sup>29</sup> Yang Cuihua, "Ren Hongjun yu Zhongguo jindai de kexue sixiang yu shiye" (Ren Hongjun and the scientific ideas and enterprise in modern China), *Zhongyang Yanjiuyuan jindaishi yanjiusuo jikan* (Contributions from the Modern History Institute of the Academia Sinica), no. 24, pt. 1 (June 1995): 297–324.

<sup>30</sup> On Ren Hongjun, see Fan Hongye, "Ren Hongjun: Zhongguo xiandai kexue siye de tuohuangzhe" (Ren Hongjun: A pioneer of the modern scientific enterprise in China), *ZRBZFTX* 15(3) (1993): 66–76. On Yang Xingfo, see Xu, "Yang Xingfo" (cit. n. 28). On the role of Sun Yat-sen's industrialization plan in Republican China, see William Kirby, "Engineering China: Birth of the Developmental State, 1928–1937," in *Becoming Chinese: Passages to Modernity and Beyond*, ed. Wen-Hsin Yeh (Berkeley and Los Angeles: Univ. of California Press, 2000), pp. 137–60.

<sup>31</sup> Ren Hongjun, "Waiguo kexueshe ji benshe zhi lishi" (A history of foreign scientific societies and our own society), *Kexue* 3 (1917): 2–18, on pp. 14–5.

studies, we have not been able to make many new discoveries or inventions, but we will try to convey what we have learned. . . . As our scholarship advances in the future, we hope to use this outlet to publish our new ideas and creative works.<sup>32</sup>

The editors went on to claim a prominent role for science in Chinese nationalism: “It is science, and only science, that will revive the forest of learning in China and provide the salvation of the masses!”<sup>33</sup> To accomplish this lofty goal, *Kexue* editors divided scholarship into “pursuing the truth” and “applications.” The new journal would promote both but would exclude what its editors called “metaphysics” (*xu-aixue*) and politics.<sup>34</sup> In this rhetoric on the place of science in general, and *Kexue* in particular, in China, the editors integrated scientific nationalism and professionalism by claiming that professional scientists, in conjunction with engineers and industrialists, uncorrupted by traditional Chinese learning or political powers, furnished the last hope of saving China from material and spiritual bankruptcy.

Scientific professionalism became a more explicit goal when the Science Society underwent a reorganization in 1915. Shortly after the appearance of the first issue of *Kexue* in Shanghai, a growing number of members recognized that, to realize their ambitious goals of promoting science and industry in China, merely publishing *Kexue* was not enough. Thus in October 1915, the Science Society, renamed the Science Society of China (adding *Zhongguo* or China before *kexueshe*), was formally reorganized as a comprehensive scientific society, the first in modern Chinese history. Newly elected president Ren Hongjun joined four others—Zhao Yuanren, Hu Mingfu, Bing Zhi, and Zhou Ren—to form the board of directors. (See Figure 2.) The funding mechanism changed from one based on stocks to one that relied on member dues as well as donations from individual and institutional members, universities, and government agencies. In addition to its board, the society, still headquartered in the United States, had several disciplinary divisions, an editorial department, a section devoted to translating scientific texts into Chinese, and another section planning for a Science Society library in China.<sup>35</sup> The society now sought, under a broader charter, to publicize science among the public, initiate a research tradition among scientists, write and translate scientific books, establish Chinese scientific terminology, hold scientific lectures to popularize scientific knowledge, and build libraries, museums, and research institutes in various disciplines in order to conduct scientific experiments and “to promote progress in scholarship, industry, and public-interest enterprises.”<sup>36</sup>

The reorganized society held its first annual meeting in September 1916 at Phillips Academy in Andover, Massachusetts. The schedule included the election of officers, revisions of the society’s charter, speeches and lectures, and a night of games involving mathematics and psychology, designed to promote friendship among members.<sup>37</sup> Out of a membership of 180, about 30 attended the two-day gathering. Chen Hengzhe, who studied European history at Vassar College, was the only female member

<sup>32</sup> “Liyan” (Rules), *Kexue* 1 (1915): 1.

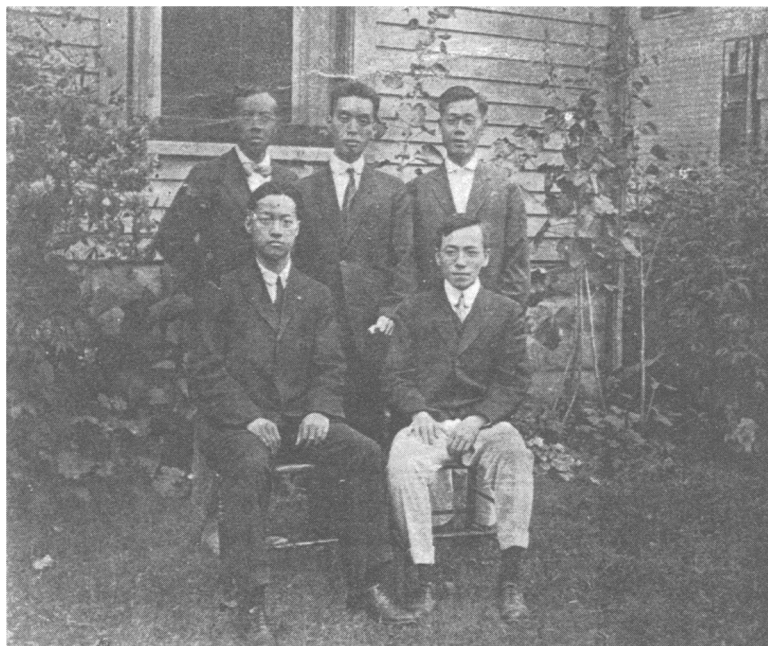
<sup>33</sup> “Fa kan ci” (Inaugural notes), *Kexue* 1 (1915): 3–7, on p. 7.

<sup>34</sup> “Liyan” (cit. n. 32).

<sup>35</sup> Ren, “Waiguo” (cit. n. 31), pp. 16–7.

<sup>36</sup> *Zhongguo kexueshe* (Science Society of China), *Kexue tonglun* (Overview of science) (Shanghai: Science Society of China, 1934), pp. 463–4, quoted in Tao, “Ren Hongjun” (cit. n. 28), pp. 12–3.

<sup>37</sup> “Changnianhui jishi” (Record of annual meeting), *Kexue* 3 (1917): 69–88.



**Figure 2.** The board of directors of the Science Society of China, October 1915, Ithaca, New York. Left to right: seated—Zhao Yuanren, Zhou Ren; standing—Bing Zhi, Ren Hongjun, and Hu Mingfu. (Reprinted from *Kexue [Science]* 13 [6] [June 1928].)

at the meeting, perhaps reflecting the general dearth of women among Chinese students studying science and technology in the United States.<sup>38</sup> Interestingly enough, a sizable number of members, like Chen Hengzhe, specialized in the humanities and social sciences but presumably had an interest in natural science. This would be the case throughout the history of the society, indicating that the society's broad conception of science was akin to the German term *Wissenschaft*. In fact, some members started out in the natural sciences but eventually switched to other fields. Perhaps the most famous examples of this phenomenon were two of the Boxer fellows at Cornell, Hu Shi and Zhao Yuanren. As mentioned in the introduction, Hu Shi initially majored in agriculture but later switched to philosophy, eventually earning a Ph.D. in philosophy at Columbia University under John Dewey. Zhao Yuanren excelled in both physics and mathematics at Cornell, but later at Harvard he took a Ph.D. in philosophy and gradually turned his interest to linguistics and music.<sup>39</sup> Yet the two (Zhao Yuanren even more so than Hu Shi) would remain active in the Science Society and pen numerous articles for *Kexue*. In 1929 Hu Shi would write the lyrics and Zhao Yuanren compose the music for the society's anthem, a song that

<sup>38</sup> Chen later received a master's degree from the University of Chicago and became the first female professor at Beijing University in 1920. The same year she married Ren Hongjun. Chen Hengzhe, "Chen Hengzhe zizhuan" (Autobiography of Chen Hengzhe), *Zhuanji wenxue* 26(4) (1975): 83–4.

<sup>39</sup> On Hu Shi's experiences as a student in the United States, see his *Hu Shi liuxue riji* (Hu Shi's diary as a student abroad) (Taipei: Commercial Press, 1959). On Zhao Yuanren at Cornell and Harvard, see Zhao, *Nianpu* (cit. n. 1), pp. 57–93.

emphasized both the practical uses of natural knowledge and the joy of pursuing science.<sup>40</sup>

Beginning with its first annual meeting, the society conducted its own organization in a meticulously democratic fashion, with an elaborate system of elections, which were published in *Kexue* and presented as an example for the rest of Chinese society. This and subsequent society meetings also witnessed the emergence of what has been called a new arena of “democratic sociability” among these budding Chinese scientists and intellectuals.<sup>41</sup> In choosing to conduct its affairs in an open way, the society, according to Ren Hongjun, consciously rejected the traditional form of “study societies” in China, which were usually built around “a single master, a man of virtue and talent, who because of his great learning and lofty reputation, attracted swarms of students.” The Science Society, Ren went on to claim proudly, followed the model of the “modern scholarly society,” which “is formed by the mutual assent of specialists, similar in learning and knowledge, who want to improve themselves through discussion.”<sup>42</sup>

Politically, although few members were revolutionaries like Ren Hongjun and Yang Xingfo, most were nationalists. They supported the revolution of 1911 and sought to use what they were learning to contribute to Chinese reconstruction. Typical of the Science Society members was Zhu Kezhen, who studied science and technology to make China strong and to reform its culture. The 1916 meeting marked the beginning of Zhu’s active participation in the society’s affairs. He found kindred spirits in both the Science Society members and the *Kexue* staff in particular. Although he was not among the society’s nine original founders, he quickly became one of its leaders. By 1915 Zhu had already switched from agriculture to meteorology, pursuing a Ph.D. in that field at Harvard. (See Figure 3.) Summer trips to the American south not only brought him face to face with the reality of racial discrimination but also made him aware of the differences between Chinese and American agricultural operations. Meteorology appealed to him as a scientific field with potential applications in agriculture.<sup>43</sup> In 1915 several of the founders of the Science Society—including Zhao Yuanren, Hu Mingfu, and Ren Hongjun—joined Zhu at Harvard to pursue graduate studies. With these moves, the center of activities for *Kexue* and the Science Society shifted gradually from Cornell to Harvard. Zhu now became intimately involved in the running of *Kexue* and the reorganization of the society.<sup>44</sup>

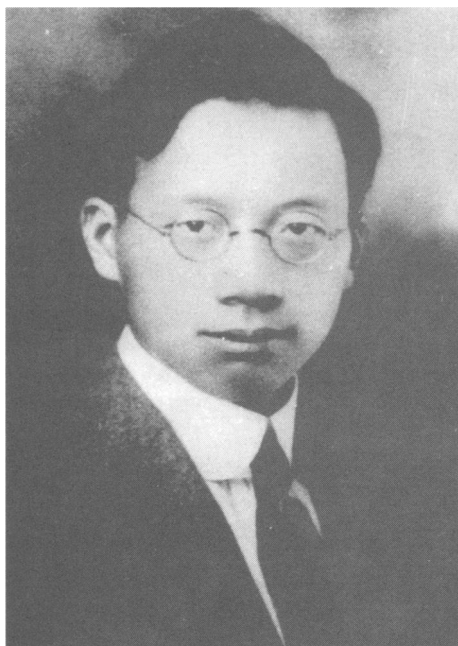
<sup>40</sup> Hu Shi to Hu Jianzhong, 4 Jan. 1960, and attached “Ni zhongguo kexueshe shege” (Draft of the anthem for the Science Society of China), reprinted in Hu Shi, *Hu Shi xueji: Shuxin* (Selected works of Hu Shi: Letters) (Taipei: Wenxing shudian, 1966), pp. 175–7.

<sup>41</sup> For a discussion of “democratic sociability” in the European and Chinese contexts, see Rowe, “Problem of ‘Civil Society,’” (cit. n. 17), p. 147 and sources identified in the article.

<sup>42</sup> Ren, “Waiguo” (cit. n. 31), as quoted and translated in James Reardon-Anderson, *The Study of Change: Chemistry in China, 1840–1949* (Cambridge: Cambridge Univ. Press, 1991), p. 98. See also Guo Zhengzhao, “Zhongguo kexueshe yu zhongguo jindai kexuehua yundong, 1914–1935” (Science Society of China and the movement of scientism in modern China, 1914–1935), *Zhongguo xiandai shi zhuan yanjiu baogao* (Special research reports on modern Chinese history) 1 (1971): 233–81.

<sup>43</sup> At Harvard Zhu worked under Robert Ward and in 1918 received a Ph.D. with a dissertation proposing a new classification of typhoons in Asia. He recognized the subtle and formative influence of the university on him, including its emphasis on empirical rigor as reflected in its motto “Veritas.” Bianjizhu, *Zhu Kezhen zhuan* (cit. n. 2), pp. 11–2.

<sup>44</sup> Zhu and Zhao Yuanren were also among the handful of students who took courses in the history of science with George Sarton, the pioneer of the discipline in the United States. Zhu would later become a leading historian of ancient Chinese science and help promote Joseph Needham’s well-known research in that field. On Zhu’s taking courses with Sarton, see Xie, *Zhu Kezhen* (cit. n. 1),



**Figure 3.** Zhu Kezhen, a long-time leader of the Science Society of China, in 1918, when he was finishing his Ph.D. in meteorology at Harvard. (Reprinted from Zhu Kezhen, *Zhu Kezhen riji* [Diaries of Zhu Kezhen] [Beijing: People's Press, 1984], vol. 1.

At the Andover meeting in 1916, Zhu was elected to the society's seven-person board of directors. That same year he started writing for *Kexue*, becoming one of its most prolific contributors. Between 1916 and 1950 he would write fifty-two articles for the journal, on topics ranging from his research on raindrop levels in Chinese history, the formation of the West Lake in Hangzhou, and new classifications of typhoons, to popular pieces on wind, climate, weather, and geography. Despite the rules in the inaugural issue of *Kexue* proscribing politics, many of his articles also treated political and social issues as related to science and scientists.<sup>45</sup> He would be a long-time editor of the journal and would serve as president of the society from 1927 to 1930.<sup>46</sup>

The society's members had a chance to put their rhetoric of scientific professionalism into practice in 1918, when the Science Society of China moved its headquarters to Shanghai. For the first time in history, a scientific community began to take shape on Chinese soil. By then, many society members had finished their studies in the United States and returned to China, taking up leading scientific and engineering positions at universities, industrial firms, and governmental agencies. Zhu Kezhen,

---

pp. 57–8. On Zhao, see his *Yuen Ren Chao's Autobiography* (cit. n. 4), p. 84. On Zhu and Needham, see Zhu Kezhen's diary entry for Oct. 1944 in Zhu Kezhen, *Zhu Kezhen riji* (Diaries of Zhu Kezhen) (1936–1949), 2 vols. (Beijing: People's Press, 1984), vol. 2, pp. 787–92.

<sup>45</sup> See “Zhu Kezhen zhuzuo mulu” (Bibliography of Zhu Kezhen's publications), in *Zhu Kezhen wenji* (A collection of Zhu Kezhen's writings) (Beijing: Science Press, 1979), pp. 514–25.

<sup>46</sup> See “Jishi: Zhongguo kexueshe di shishanchi nianhui jishi” (Records of the thirteenth annual meeting of the Science Society of China in 1928), *Kexue* 13 (1928): 685–97.



for example, took a teaching position in geography and meteorology at Wuhan University in 1918; over the next nine years he would teach at universities in Nanjing and Tianjin as well. In the process he would help found some of modern China's first departments of geography and meteorology and train the first generation of scientists in these fields.<sup>47</sup> Zhou Ren, the mechanical engineer and another of the founders of the society, had already returned to China three years before Zhu, in 1915, after receiving a master's degree from Cornell. Over the years he would teach in Nanjing and work in industrial firms.<sup>48</sup> Like Zhu, Ren Hongjun and Yang Xingfo, the two revolutionaries, returned to China in 1918, Ren with a master's degree in chemistry from Columbia and Yang with a master's of business administration from Harvard. Not being research scientists, Ren and Yang initially pursued industrial projects for China but eventually would become organizers of science and education. In 1920 another society founding member, Bing Zhi, returned to China with a Ph.D. in biology from Cornell. In Nanjing, he founded one of China's first departments of biology at the Nanjing Advanced Normal College.<sup>49</sup>

Even as they engaged in disparate endeavors often under difficult conditions, these and other first-generation Chinese scientists and engineers found the Science Society of China their most valuable social support network and *Kexue* their most effective voice in articulating a place for science in the Chinese public sphere.<sup>50</sup> It was not a small matter to bring together a scientific community divided not only by disciplines and regions but also by different philosophies, a result of having attended different schools in the United States and Europe.<sup>51</sup> Through *Kexue* and other activities usually associated with the working of a Western scientific society, the Science Society helped, as James Reardon-Anderson points out, to both popularize and legitimize the study of science among Chinese at large and "to bind together and raise the spirits of the members themselves."<sup>52</sup>

Of course, the popularity of science, especially among young students, benefited greatly from the radical May Fourth Movement of 1919, which called for the introduction of "Mr. Science" and "Mr. Democracy" as the two pillars of modernization to reform and strengthen China. In turn, Science Society members and *Kexue* contributed to the New Culture Movement, which was a major part of the May Fourth agenda. *Kexue* promoted *New Youth*, the leading journal of the May Fourth New Culture Movement (edited by Chen Duxiu). Hu Shi, leader of the vernacularization of the Chinese language as part of a new culture, wrote for both journals.<sup>53</sup> *Kexue*

<sup>47</sup> Bianjizu, *Zhu Kezhen* (cit. n. 2), pp. 13–23.

<sup>48</sup> Zhou Peide and Dong Deming, "Zhou Ren," in ZGXDKXJZJ (cit. n. 3), vol. 5, pp. 783–91.

<sup>49</sup> Zai Qihui, "Bing Zhi," in ZGXDKXJZJ (cit. n. 3), vol. 1, pp. 458–68.

<sup>50</sup> On the difficulties faced by returned students in general and by Science Society members in particular, see Ren Hongjun's and Yang Xingfo's correspondence with Hu Shi in 1918 and 1919, published in *Hu Shi laiwang shuxin xuan* (Selected correspondence of Hu Shi), ed. Division on the History of the Republic of China, Institute on Modern History, Chinese Academy of Social Sciences, 3 vols. (Hong Kong: Zhonghua Shuju, 1983), vol. 1, especially Ren to Hu, 24 June 1918, pp. 15–6; Yang to Hu, 11 Dec. 1918, p. 22; 22 April 1919, pp. 39–40; and 31 July 1919, pp. 64–5.

<sup>51</sup> Norbert Wiener, MIT professor and founder of artificial intelligence who visited Qinghua University in Beijing in the 1930s, provided a vivid description of how many of the Chinese faculty carried the distinct styles of the country in which they were trained. Norbert Wiener, *I Am a Mathematician* (New York: Doubleday, 1956), p. 186.

<sup>52</sup> Reardon-Anderson, *The Study of Change* (cit. n. 42), p. 99.

<sup>53</sup> See Hu Shi, *Hu Shi koushu zizhuan* (Hu Shi's oral autobiography), trans. and ed. Tang Degang (Taipei: Zhuanji Wenxue Press, 1986). Hu credited the discussions with Ren Hongjun, Yang Xingfo,

was also the first journal in China to adopt horizontal typesetting and to use western-style punctuation, a move initially attacked by conservative Chinese critics. In their own defense, *Kexue* editors explained that the traditional, vertical typesetting would make it difficult to insert scientific formulas and the lack of punctuation would make difficult scientific reasoning even harder to follow. Scientific professionalism, in other words, mandated cultural changes.<sup>54</sup>

If criticism defined a central characteristic of the public sphere, Science Society leaders made ample use of *Kexue* and other media to attack traditional Chinese culture and beliefs as they established the authority of science and scientific method. Like the European philosophes in the eighteenth century, they sought to hold all ideas and practices to the test of free critical discussion.<sup>55</sup> If they appeared to advocate scientism by singling out science and the scientific method as the one best way of understanding the world, both natural and social, it was because they believed science—or what they called the “scientific spirit”—best exemplified free critical discussion. Thus in the inaugural notes, *Kexue* editors expressed their admiration for Galileo, who followed his natural curiosity to seek the truth and “fought bloody battles with religion for the freedom of thought.” Looking at the Chinese political and cultural scene, the scientists lamented the desertion of scholarship and spiritual and material bankruptcy. “Although [we] closed our borders and tried self-reliance, it’s still not enough [for China] to survive, especially in today’s world. It is clear that to be a modern scholar one cannot just bury oneself in the old papers [meaning classical Chinese learning].” The solution was science, and *Kexue* was a way to spread it: “We hope to write [about what we have] learned every day in this journal and use it to stimulate truth-seeking minds and lead to ways for [scientific] applications.”<sup>56</sup>

Science Society leaders’ advocacy of science often went hand in hand with their social and cultural criticism. In a 1922 speech on “biology and women’s education,” Bing Zhi, for example, called for special attention to biology in women’s education. For lack of biological knowledge, Bing argued, “people often misunderstood [natural] phenomena in their environment. Such misunderstanding led to superstitions and various associated harmful effects. If we reflect on the various bad habits of Chinese society today, such as the worship of dragon kings, tree gods, fox goddesses, and road ghosts . . . [we can see that] none of them was not caused by damned superstitions.” He hoped that women would take the lead in learning biology and use it to combat such superstitions.<sup>57</sup> Likewise, Zhu Kezhen criticized government officials for resorting to “praying for rain and [the] banning of animal slaughter” as the solution to the problem of severe drought, calling such action a policy of “fooling the people.” “We call our country a republic, thus everyone from the president at the top to the head of the county should be responsible to the people. [The best way to deal with] disastrous droughts or floods is to prepare for them before they come, by

---

psychologist Tang Yue, and literary scholar Mei Disheng, all fellow members of the Science Society, with launching him on the road of the literary revolution.

<sup>54</sup> See Liu Weimin, “*Kexue* zhazhi yu xin wenxue geming” (*Kexue* magazine and the new literary revolution), *Kexue* 49 (1997): 34–8.

<sup>55</sup> For a discussion of the role of criticism in the life of the public sphere during the Enlightenment, see Broman, “Habermasian Public Sphere” (cit. n. 19), pp. 129–31.

<sup>56</sup> “Fa kan ci” (cit. n. 33), on pp. 5–7.

<sup>57</sup> Bing Zhi, “Shengwuxue yu nüzi jiaoyu” (Biology and women’s education), *Kexue* 7 (1922): 1175–80.

reforestation, by water conservancy, and by the establishment of a large number of meteorological stations.”<sup>58</sup>

Of course, the Science Society and *Kexue* were not the only arenas for critical public discussions in Republican China, even for scientists. The emergence of an urban popular culture with its flourishing market for books, newspapers, and periodicals in late Qing and early Republican China, especially after the May Fourth Movement of 1919, provided ample opportunities for those scientists so inclined to engage in public debates over science, culture, and national politics. The Shanghai-based Commercial Press (Shangwu yinshuguan), which printed *Kexue* in its early years, also published other magazines and a large number of books related to science. Zhu’s article on praying for rain, for example, appeared in Commercial’s *Dongfang Zazhi* (Orient magazine), perhaps one of the most widely read periodicals at this time. During the 1920s, two key leaders of the Science Society, Ren Hongjun and Zhu Kezhen, actually worked in the Commercial Press, editing encyclopedia and science textbooks for the popular market.<sup>59</sup>

Regardless of the arenas they chose, leaders of the Science Society rarely missed an opportunity to advance the professional interest of science in the public sphere. During a famous debate over science and metaphysics in the early 1920s, for example, leading intellectuals of the May Fourth period, most of whom, on both sides, were members of the Science Society, exchanged polemics on whether science could govern a view of life (*renshengguan*). The argument started when the philosopher Zhang Junmai at Qinghua University in Beijing, returning from a tour in war-ravaged Europe, declared in a lecture in 1923 that science—objective and logical—could not govern a view of life that is subjective and intuitive. Ding Wenjiang, a British-trained geologist and later president of the Science Society, saw Zhang’s challenge as one not only against scientism but also against scientific progress and Chinese modernization. Calling Zhang’s beliefs “a metaphysical ghost,” Ding responded that all phenomena, whether material or psychological, if they were “real,” fell under science. If they could not be rationally analyzed, they were not “real.” Others soon joined in the fray, including, on Ding’s side, his close friends Ren Hongjun and Hu Shi.<sup>60</sup>

Although the debate was over philosophical and cognitive issues, the real stakes were professional and political. In his own contribution to the debate, Hu Shi argued that although World War I led some European intellectuals to question material progress and science, the situation in China was different:

China at the present has not enjoyed the benefit from science, much less [suffered] the ‘disasters’ brought by science. Let us try to open our eyes and look around: the widespread divination altars and temples, the widespread magic prescriptions and ghost pho-

<sup>58</sup> Zhu Kezhen, “Lun qiyu jintu yu hanzai” (On praying for rain, banning of slaughtering, and drought), *Dongfang zazhi* (Orient magazine) 23(13) (1926), reprinted in Zhu, *Wenji* (cit. n. 45), pp. 90–9.

<sup>59</sup> For Ren Hongjun at Commercial, 1922–1923, see Zhao Huizhi, “Ren Hongjun nianpu (xu)” (Chronological biography of Ren Hongjun [continued]), *ZGKJSL*, 9(4) (1988): 37–47, on pp. 39–40. Zhu worked at the Commercial Press in 1925. See Bianjizu, *Zhu Kezhen zhuan* (cit. n. 2), p. 23.

<sup>60</sup> On the debate see D. W. Y. Kwok, *Scientism in Chinese Thought, 1900–1950* (New Haven, Conn.: Yale Univ. Press, 1965), especially chap. 6 (“‘Science’ Versus ‘Metaphysics’ in the Debate of 1923”); and Charlotte Furth, *Ting Wen-chiang: Science and China’s New Culture* (Cambridge, Mass.: Harvard Univ. Press, 1970), chap. 5 (“Science and Metaphysics”). Ding, Ren, and Hu published their polemics in their own *Nongli* (Endeavor), a political weekly.

tography, such undeveloped transportation, and such undeveloped industry—how do we deserve to refuse science? . . . The Chinese view of life has never even encountered science face-to-face! At this time we are still troubled that science is not being promoted adequately, troubled that science education is not being developed, and troubled that the force of science is not enough to sweep away the evil spirit that spreads all over the country. Who could have expected famous scholars to come out to shout “European science has gone bankrupt,” to put the blame of the cultural bankruptcy of Europe on science, to belittle science, to enumerate the crimes of scientists’ view of life, and [to demand] that science not have any impact on view of life! How could people with faith in science not be worried about the current situation? How could [they] not come out and defend science in a loud and clear voice?<sup>61</sup>

This rhetorical defense of science in the public sphere was, however, only one part of the agenda of scientific professionalism. For Chinese science in general and the Science Society of China in particular to succeed, the rhetorical social capital had to be translated into real support in terms of financing and institutional building. This often involved negotiations with the government in the third realm.

#### SCIENTIFIC NATIONALISM, THE STATE, AND CIVIL SOCIETY

The creation of the Science Society and other disciplinary societies marked the introduction of what James Reardon-Anderson calls “the professional ideal” into the Chinese social order, an ideal that tended to have scientists aligned with society rather than the state, at least in rhetoric. As Reardon-Anderson explains:

The initiative [to organize scientific societies] came in all cases from outside the government, and in some from Chinese outside of China. The intention was to address the Chinese people directly, bypassing government. And the purpose was to foster an independent enterprise that would help remake China, irrespective of who ruled the country. Underlying these efforts was a conception, unstated and perhaps unconscious, of the scientific role: The scientist’s purpose was to pursue knowledge, apply it in useful ways, and communicate it freely to others. His commitment was to an autonomous activity, separate from politics, yet serving in a disinterested way the public good.<sup>62</sup>

Among writings of Science Society leaders we find numerous arguments for distancing professional science from the government. In comparing the Science Society to the Royal Society of London, Ren Hongjun and his supporters saw themselves as forming a Republic of Letters in China, just as Robert Boyle and his supporters had in England. Like the Royal Society, the Science Society was a voluntary association of scientists for “self-cultivation” and “mutual assistance.”<sup>63</sup> Zou Bingwen, another Boxer fellow and early leader of the Science Society, explicitly invoked the Royal Society in arguing, as early as 1914, that the Science Society should be independent of the government:

Although a science society [can]not avoid seeking assistance from the government for its operating funds, it should never let the government run it. This is because

<sup>61</sup> Hu Shi, “Kexue yu renshengguan xu” (Science and view of life preface), in *Kexue yu renshengguan* (Science and view of life), by Zhang Junmai et al. (1923; reprinted, Jinan: Shandong People’s Press, 1997), pp. 12–3.

<sup>62</sup> Reardon-Anderson, *The Study of Change* (cit. n. 42), pp. 101–2.

<sup>63</sup> Ren Hongjun’s phrases in *Kexue*, as quoted in Peter Buck, *American Science and Modern China, 1876–1936* (Cambridge: Cambridge Univ. Press, 1980), p. 120.

administrators rarely excel at the promotion of scholarship. The Ministry of Education once established an Academic Council. But two years have passed and I have not seen anything coming out of it. Therefore I say, to build and maintain the Science Society we have to rely on our fellow scholars. The Royal Society of Britain is perhaps the oldest scientific society. Its establishment depended on the support of Boyle and Newton of the British scholarly world [and not the government].<sup>64</sup>

The fact that members of the Science Society sought to keep their distance from the government also reflected a radical departure from the traditional Confucian view of scholarship in service to the government/state. “It was legitimate and proper,” as one student of the society noted, “for scholars to engage in scholarship and to see that scholarship as socially useful without feeling compelled to take part in government service.”<sup>65</sup>

In a 1921 *Kexue* article titled “The Responsibilities of Geoscientists in Our Country,” Zhu Kezhen echoed Zou’s point by urging Chinese scientists to build up a nationalist science by relying on nonstate resources. He enumerated instances in recent Chinese history when a lack of geographic knowledge led rulers to make concessions of supposedly “valueless” territories to foreign powers, such as the Qing’s transfer of Taiwan to Japan in the late 1890s. Not since the seventeenth century, he charged, had the government even tried to make a more accurate map of the country, leaving it to foreign powers, such as Germany and Japan, to survey and carve up the best coastal territories. He recorded the humiliating experience of finding out, on his trip back to China in 1918, that there were more books on Chinese geography by Japanese authors than by Chinese. To his dismay, he also discovered that the two meteorological stations on which the Chinese relied for the forecasting of destructive typhoons along the coast were founded and controlled by French missionaries in Shanghai and by the British government in Hong Kong. Zhu chided the Republican government for neglecting scientific developments:

Today’s government is concerned only with meeting the needs of the warlords. How can one expect it to spare resources and fund the development of meteorological stations and other institutions? To accomplish this, we have to rely on the whole society and the citizens. Every man shares the responsibility for the rise or fall of our country. After all, the government was not always the driving force behind geographic surveys in Europe, the United States, and Japan. [Even in our country] there are good examples of success where hard labors by individuals or cooperative efforts by scientific societies resulted in major books and projects [on Chinese geography].<sup>66</sup>

Though the scientists frequently shot such rhetorical arrows at the government, a close examination of their actual interactions with the state, especially during the

<sup>64</sup> Zou Bingwen, “Kexue yu kexueshe” (Science and science societies) (speech at the annual meeting of the Association of Chinese Students in the United States), *Liumei xuesheng jibao* (Chinese students in America quarterly) 2 (winter 1915): 4, as quoted in Qian Li, “Lun zhongguo kexueshe jianli de zongzi” (On the motivations for the establishment of the Science Society of China), Master’s thesis, Beijing Univ., 1986, pp. 24–6.

<sup>65</sup> David Reynolds, “The Advancement of Knowledge and the Enrichment of Life: The Science Society of China and the Understanding of Science in the Early Republic, 1914–1930,” Ph.D. diss., Univ. of Wisconsin–Madison, 1986, p. 49.

<sup>66</sup> Zhu Kezhen, “Wuoguo dixuejia zhi zeren” (The responsibility of geoscientists in our country), *Kexue* 6 (1921), reprinted in Fan Hongye and Duan Yibing, eds., *Zhu Kezhen wen lu* (Essays of Zhu Kezhen) (Hangzhou: Zhejiang Culture and Arts Press, 1999), p. 8.

Nanjing Decade (1927–1937) under the Nationalists, tells a different story. Major portions of the support for the Science Society came from both national and local government. Government educational and research institutions often employed members of the society. Indeed, rather than bypassing the government, leaders of the Science Society actively sought support and sponsorship from it for their various endeavors. Even Zou and Zhu's critical comments above acknowledge the need for governmental support and, especially in Zhu's case, for an active role of government in scientific research, if not in the organization of the scientists themselves.

Scientific professionalism may have pushed scientists to seek autonomy from the government, but the practical needs of science and the scientists' sense of nationalism nevertheless created a powerful climate for collaboration in Republican China. Conducting scientific research in China was a process fraught with obstacles, paramount among them the lack of access to scientific literature and experimental facilities. Thus as a priority, the society sought to encourage its members to stay in research by creating local chapters in Shanghai, Nanjing, and Guangzhou and equipping them with science libraries.

Perhaps the most important step in transforming the society into a real research institution was the 1922 founding in Nanjing of its Biological Institute, complete with resident researchers and laboratories. This was the first private scientific research institution in China established and staffed by Chinese scientists. The zoologist Bing Zhi was its founding director, and the botanist Hu Xiansu, trained at the University of California, was his deputy.<sup>67</sup> With Bing and Hu turning out papers and monographs on Chinese fauna and flora from the laboratory, the society succeeded in its transition from discoursing on science to discoveries in science.

Why did the society choose to venture into biological research before any other scientific field? Expedience. As Ren Hongjun later explained, "In biological research, it is relatively easy to capitalize on local materials and the expenses for such efforts are also low."<sup>68</sup> In addition, there were several biologist members of the society on the faculty at the Southwestern University in Nanjing whose participation at the institute helped make it into China's premier center of biological research, especially in the taxonomy of Chinese flora and fauna.<sup>69</sup>

Where did the Science Society get the funding for all its endeavors? Perhaps nothing better demonstrates the society's nature as a third realm institution in Republican China than the juxtaposition of government, semigovernment, semipublic, and private sources for funding. In the earliest days when the society was headquartered in the United States, its leaders simply subsidized the expenses of publishing *Kexue* with savings from their own meager Boxer fellowships.<sup>70</sup> At the same time, Ren Hongjun and other leaders cultivated prominent figures in Chinese intellectual and

<sup>67</sup> Science Society of China, *Science Society of China: Its History, Organization, and Activities* (Shanghai: Science Press, 1931), pp. 1–3. See also Reynolds, "Advancement of Knowledge" (cit. n. 65). On Hu Xiansu, who fought against Hu Shi's vernacularization movement, see Shi Hu, "Hu Xiansu," in ZGXDXXJZJ (cit. n. 3), vol. 4, pp. 423–33; and Shen Weiwei, *Huimu xueheng pai: Wenhua baoshou zhuyi de xiandai mingyun* (Reexamining the *xueheng* school: The modern fate of cultural conservatism) (Beijing: People's Literature Press, 1999), chap. 3.

<sup>68</sup> Ren Hongjun, "Zhongguo kexueshe zhi guoqiu ji weilai" (The past and future of the Science Society of China), *Kexue* 8 (1923): 8.

<sup>69</sup> Yang, "Ren Hongjun" (cit. n. 29), pp. 312–3.

<sup>70</sup> Several members, including Zhao Yuanren, suffered malnutrition and became ill when they lived on soup and apple pies. See Zhao, *Yuen Ren Chao's Autobiography* (cit. n. 4), 79.

political circles who acted as patrons and sponsors of the association. The Science Society registered with the Ministry of Education in March 1916 and thereby gained the status of a legal organization (*faren tuanti*).<sup>71</sup> *Kexue*'s January 1918 special issue on the society's first annual meeting, in 1916, featured congratulatory messages from the president of Republican China, Li Yuanhong; former minister of agriculture and business and famous entrepreneur Zhang Jian (Jizhi); Beijing University president Cai Yuanpei; and Minister of Education Fan Yuanlian.<sup>72</sup>

To attract patrons without sacrificing its professional criteria, the society established six categories of membership: ordinary member, life member, junior member, honored member, honorary member, and supporting member. Ordinary membership was for those who conducted scientific research and engaged in scientific enterprises; life members were those ordinary members who contributed a one-time 100-yuan membership fee; junior members were ordinary members with "secondary standing." The three other categories were honorary in nature, usually reserved for patrons of the society.<sup>73</sup> In 1917 the Science Society awarded its first honored membership to Cai Yuanpei, an honorary membership to Zhang Jian, and supporting memberships to Fan Yuanlian and three others.<sup>74</sup> In 1922 the society reorganized its leadership structure so that in addition to an executive council, which consisted of the leaders of the society, there was a board of directors consisting of prominent patrons of the society. It included, among others, Cai Yuanpei, Zhang Jian, and Liang Qichao, perhaps the best-known Chinese liberal intellectual and reformer in late Qing and the early Republic era.<sup>75</sup>

The efforts at cultivating public and private patronage first paid off in 1918, when Cai Yuanpei made it possible for Beijing University to provide a 200-yuan monthly subsidy to the Science Society in return for the nominal service of helping Beijing University in buying and translating science books. As president of Beijing University, the most prestigious state-funded university, Cai was an influential leader of the May Fourth-era intellectuals, whom Ren Hongjun had cultivated from the beginning of the Science Society. The monthly subsidy, though not a large amount, was enough to prevent *Kexue* from going into bankruptcy and help it resume publication after an eight-month stoppage.<sup>76</sup> Encouraged by this development, Ren Hongjun and other leaders of the society asked Cai Yuanpei and Fan Yuanlian to sponsor a fund-raising drive in 1918 and 1919 to raise 50,000 yuan as the principal for a fund to support the society. Cai Yuanpei wrote an eloquent appeal to the Chinese public in which he called on both "the government of our country and those with resources

<sup>71</sup> Science Society, *Science Society of China* (cit. n. 67), Chinese section, p. 1.

<sup>72</sup> *Kexue* 3 (1918).

<sup>73</sup> Science Society, *Science Society of China* (cit. n. 67), p. 5.

<sup>74</sup> See Zhang Jian (not the same as the Zhang Jian in the text), "Cai Yuanpei yu zhongguo kexueshe" (Cai Yuanpei and the Science Society of China), *Shilin* (Forest of history) no. 2 (2000): 56–71, on p. 60.

<sup>75</sup> Science Society, *Science Society of China* (cit. n. 67), p. 3. On Liang Qichao, see Hao Chang, *Liang Ch'i-ch'ao* [Liang Qichao] and *Intellectual Transition in China, 1890–1907* (Cambridge, Mass.: Harvard Univ. Press, 1971); and Philip C. C. Huang, *Liang Ch'i-ch'ao and Modern Chinese Liberalism* (Seattle: Univ. of Washington Press, 1972).

<sup>76</sup> See Zhang, "Cai Yuanpei" (cit. n. 74), p. 61. On Ren Hongjun's appeal to Cai Yuanpei for support of the Science Society, see Ren Hongjun to Cai Yuanpei, Li Shizeng, and Jiang Jing Wei, 15 May 1915, and Cai Yuanpei and Li Shizeng to Ren Hongjun, June 1915, reprinted in Gao Pingshu, ed., *Cai Yuanpei lun kexue yu jishu* (Cai Yuanpei on science and technology) (Shijiazhuang: Hebei Science and Technology Press, 1985), pp. 33–4.

in our society” (meaning Chinese society in general, not the Science Society) to join together to raise more money than the Science Society was asking for. Only in this way “could one clear the shame that we Chinese are indifferent to science.”<sup>77</sup>

This and other fund-raising drives, mainly from the private sector, met with mixed results. Even though Ren Hongjun devoted considerable time to the activity, by 1922 the society had reached less than half of its goal. A breakthrough came in 1922 when Zhang Jian, the entrepreneur who established a number of successful industrial operations in Nantong, donated 10,000 yuan to the society, which, along with other donations, allowed it to construct its long-planned Biological Institute in Nanjing.<sup>78</sup> That year the society met in Nantong, a coastal city north of Shanghai, for its seventh annual meeting, as a way both to thank Zhang Jian for his donation and to spotlight the success of Nantong as a model of local self-rule and of industrial development.<sup>79</sup> Further fund-raising efforts, however, proved difficult: there were plans for an institute on mathematics, physics, and chemistry in Shanghai that failed due to the lack of funding.

Although less publicized, government support proved crucial to the financial survival of the Science Society. In 1919 the Ministry of Finance approved the society’s request to use some government buildings in Nanjing as offices, for a term of six years. In 1921 the Guangdong provincial government granted the society properties in Guangzhou for its local chapter’s offices. In 1923 the society, with the help of its board of directors, gained a monthly subsidy of 2,000 yuan from the national funds (*guoku*) allocated through the Jiangsu provincial government. In 1927, after the establishment of the Nationalist government in Nanjing, the society applied for and received 400,000 yuan (a huge sum) from the Ministry of Finance, to be used as the principal for a foundation for the society. The new government also granted the Nanjing properties permanently to the society.<sup>80</sup>

In addition to the private, governmental, and semigovernmental (Beijing University) funding, there was one more source of funding, which we might term “semi-public.” This was the China Foundation for the Promotion of Education and Culture, established in September 1924 with funds from a second batch of Boxer indemnity funds returned from the United States, totaling about \$12.5 million. A joint China-U.S. board, appointed by the two governments but allowed to function on its own, was to distribute the funds to qualifying educational and cultural enterprises. In 1926 the China Foundation gave an annual grant of 15,000 yuan to the Science Society, plus a one-time gift of 5,000 yuan for the purchase of equipment by its Biological Institute. The annual grant continued at the same level until 1928; beginning in 1929, the foundation increased it to about 50,000 yuan, an arrangement that lasted until World War II.<sup>81</sup> Needless to say, the annual grant became the lifeline for the society, especially for its expanding Biological Institute, throughout those years.

<sup>77</sup> Cai Yuanpei, “Zhongguo kexueshe zhengji jijin qishi” (Announcement on fund-raising for the Science Society of China), 31 Dec. 1918, reprinted in Gao, *Cai Yuanpei* (cit. n. 76), p. 41.

<sup>78</sup> “Ben she shengwu yanjiusuo kaimu ji” (Report on the opening ceremony of the society’s Biological Institute), *Kexue* 7 (1922): 846–8.

<sup>79</sup> “Zhongguo kexueshe di qi ci nianhui jishi” (Report on the seventh annual meeting of the Science Society of China), *Kexue* 7 (1922): 974–1013.

<sup>80</sup> Science Society, *Science Society of China* (cit. n. 67), pp. 3–4.

<sup>81</sup> Cao Yu, “Zhonghua jiaoyu wenhua jijinhui yu zhongguo xiandai kexue de zaoqi fazhan” (China Foundation for the Promotion of Education and Culture and the early development of modern science in China), *ZRBZFTX* 13(3) (1991): 33–41, data from p. 36.



Why did the China Foundation give so much funding to the Science Society? The society became one of the biggest beneficiaries of the foundation's largesse partly because of active lobbying by society leaders and patrons. In 1924 when the U.S. Congress first discussed the possibility of returning additional Boxer funds, and other countries were expected to follow suit, the Science Society leaders began to mobilize their network of social connections and capitalize on the society's position in the public media. On May 25, 1924, for example, Ren Hongjun wrote Hu Shi, then the center of a network of influential figures with ties to the Science Society, to ask him to use his considerable influence with American diplomats in Beijing to ensure that at least part of the returned Boxer funds would be used for scientific research:

It is definite at the present that the rest of the American indemnity fund will be returned to China. Now that it is determined that the fund will be used for educational and cultural enterprises, our colleagues in the Science Society believe that we will be justified if we take advantage of the opportunity and propose to have part of the fund designated for supporting scientific enterprises (referring to scientific research enterprise in general, not just the Science Society). But we know very well that currently there are many who are working on getting this fund. If our Science Society joins in the competition, how should we go about doing it to be effective? Recently our colleagues in Nanjing and Shanghai have met countless times to talk about this matter. . . . Today, in Nanjing, the executive council of the Science Society met again to discuss this subject. We all agreed that we should not put off actions any longer and a resolution was passed that asked me to go to Beijing to talk it over with you.<sup>82</sup>

While Ren Hongjun tried to make the matter not one of purely institutional self-interest, Yang Xingfo was more direct in his letter to Hu Shi the next day. The Science Society was “rather eager to share the soup” of the returned funds and was even willing to pay for a trip by Hu Shi to the United States to lobby on its behalf.<sup>83</sup>

In this “Boxer funds for science” campaign, the Science Society not only utilized its informal social networks, but also cashed in its considerable social capital in the public sphere. In July 1924, the society widely publicized its “Science Society of China's Declaration on the Use of the Returned Boxer Indemnity” by publishing it in Chinese and English in *Kexue* and other media. Drafted by Ren Hongjun based on discussions with leaders of the society, it explained that the purpose of the declaration was to summarize public opinion from many quarters and to provide guidance for the government. It advocated the use of the returned Boxer funds from Britain and the United States for three specific causes: pure research (funding new and existing research institutes, subsidies for research at universities, and sending students abroad), research infrastructure and popularization of knowledge (libraries and museums), and international cultural exchange (endowed chairs on Chinese culture in British and U.S. universities, exchanges of professors, and the sending of British and American students for study in China). As to the management of the funds, the declaration insisted that first, the Chinese and the foreign government in question

<sup>82</sup> Ren Hongjun to Hu Shi, 25 May 1924, reprinted in *Laiwang shuxin xuan* (cit. n. 50), vol. 1, pp. 253–4.

<sup>83</sup> Ynag Xingfo to Hu Shi, 26 May 1924, reprinted in *Laiwang shuxin xuan* (cit. n. 50), vol. 1, p. 254.

should agree to set the principles for the uses of the fund based on the suggestions of prominent scholarly and educational organizations. Then they should jointly appoint to the governing board those “pure scholars and leaders of education and industry” who were “completely detached from any political or diplomatic relations.” The board then should be given “complete freedom in execution within the bounds of the general agreement.”<sup>84</sup>

By advocating a relatively autonomous board for the China Foundation, Ren Hongjun and other Science Society members walked a fine line between the desire to satisfy their professional interests and a strong sense of nationalism. Ideally, if China had a unified, democratically supported government, the funds should be turned over unconditionally to it for use in the best national interest. But China was under the rule of warlords. “In the current circumstance of anarchy and chaos, we should not hope that they [the United States] would ‘unconditionally throw away’ a fund of tens of millions,” wrote Hu Shi. “Whom should they throw it away to? [If they] throw it to the government, we certainly would not be satisfied[.] [If they] throw it to the National Educational Association, or throw it to the Chinese Association for the Improvement of Education, would there be no disputes?”<sup>85</sup>

Nationalism nevertheless made an oblique but unmistakable appearance in the Science Society’s declaration, which reminded the public that the funds were the “blood and sweat money of our people.” The money should not be allowed to fall into the hands of manipulating politicians who claimed that they would pave roads and support education with the resultant revenues. “During this time of unstable political situation, when the citizens have long lost our power to monitor [the government] . . . how can we make sure that the incomes would go into supporting schools and not be misused for other purposes? Even a fool knows that it is hopeless.”<sup>86</sup> In an editorial for *Kexue*, Zhu Kezhen amplified the point of the declaration. He reviewed the origins of the Boxer indemnity funds as the result of “foreign countries using their victor’s brutal menace to force our people to pay this huge indemnity after the Boxer War.” He implored the various intellectual organizations to unite and present a unified voice in demanding an active role in deciding the uses of the returned funds: “Since they are called returned funds, since they are supposed to be for Chinese educational and cultural enterprises, they should be Chinese funds used on Chinese enterprises, and we Chinese should be the owner of these funds and decide their uses.”<sup>87</sup>

Ren Hongjun and his colleagues breathed a collective sigh of relief when the new China Foundation board adopted most of their proposals. The Chinese government even agreed to add Ding Wenjiang to the board, which was dominated by government and educational leaders, apparently as a response to Ren Hongjun’s push to have “a real scholar” on it.<sup>88</sup> Ding Wenjiang also made it onto the board governing

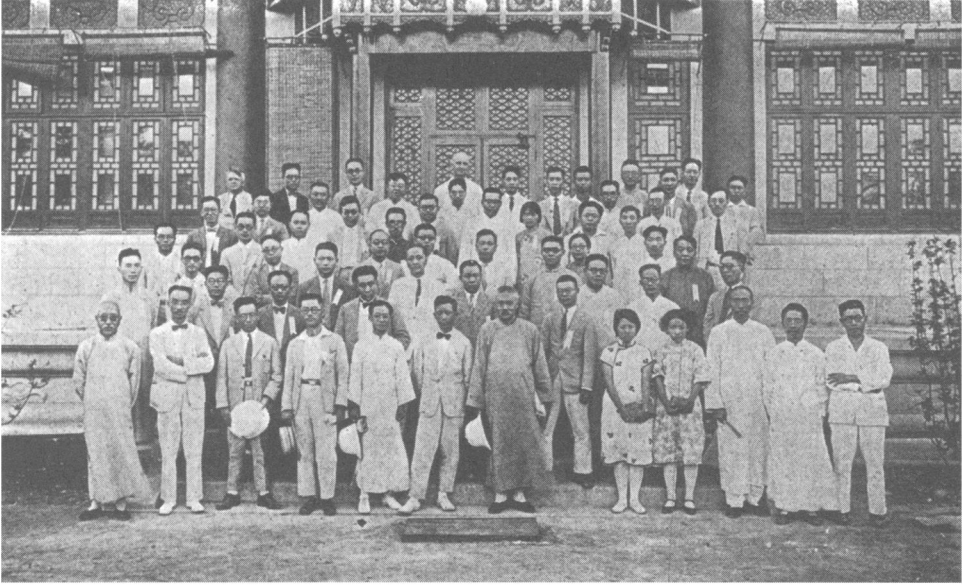
<sup>84</sup> “Zhongguo kexueshe dui gengkuan yongtu zhi xueyan” (The Science Society of China’s declaration on the use of the returned Boxer indemnity), *Kexue* 9 (1924): 868–71, on pp. 870–1.

<sup>85</sup> Hu Shi to Tao Xingzhi and Ling Bing, 25 April 1926, reprinted in *Laiwang shuxin xuan* (cit. n. 50), vol. 1, pp. 371–4, on p. 372.

<sup>86</sup> “Dui gengkuan yongtu zhi xueyan” (cit. n. 84), pp. 868–9.

<sup>87</sup> Zhu Kezhen, “Shelun: Gengzi peikuan yu jiaoyu wenhua shiyan” (Editorial: the Boxer Funds and educational and cultural enterprises), *Kexue* 9 (1924): 1015–9.

<sup>88</sup> Ren Hongjun to Hu Shi, 5 Sept. 1924, reprinted in *Laiwang shuxin xuan* (cit. n. 50), vol. 1, pp. 259–60. See other letters that Ren wrote to Hu, one undated in Sept. 1924, pp. 266–7; 6 Oct. 1924, pp. 267–8.



**Figure 4.** Fourteenth annual meeting of the Science Society of China, August 1929, Beijing. (Reprinted from *Kexue*, 14[3][March 1929]).

the funds returned from Britain, as did Hu Shi.<sup>89</sup> Even better for the Science Society, Ren Hongjun himself joined the staff of the China Foundation in September 1925. Gradually moving up the ladder within the foundation, by January 1929 Ren Hongjun had become both a board member and a staff director, essentially running day-to-day operations.<sup>90</sup> With funding from the government and the China Foundation, the Science Society experienced steady growth in the 1920s. Membership grew from 35 in 1914 to 77 in 1915, from 180 in 1916 to 363 in 1918 when the society moved to China, expanding to 850 in 1927 when the Nationalist government began, and 1,005 by 1930.<sup>91</sup> Even after the establishment of many disciplinary scientific societies, such as the Chinese Physical Society, the Science Society remained the largest and most important general scientific society in China.

The highlight of the society's activities in any given year was usually the annual meeting. (See Figure 4.) Typically the society held these meetings in major cities (Hangzhou in 1919, Nanjing in 1920, Beijing in 1921, Nantong in 1922, Hangzhou in 1923, Nanjing in 1924, Beijing in 1925, Guangzhou in 1926, Shanghai in 1927, Suzhou in 1928, Beijing in 1929, and Qingdao in 1930). Typically, at the beginning of the meeting there would be welcoming speeches from local government officials and local organizations such as the chamber of commerce or a newspaper. Following the speeches the society's departments would report on the status of various programs and projects. There were sessions devoted to scientific and technological papers as well as popular lectures for the local audience. There would be numerous

<sup>89</sup> Ding explained to Hu Shi that he hoped to secure a grant from the British returned Boxer funds as the principal of a foundation for his Institute of Geological Survey in Beijing. Ding Wenjiang to Hu Shi, ca. May 1925, reprinted in *Laiwang shuxin xuan* (cit. n. 50), vol. 1, pp. 332–4.

<sup>90</sup> Zhao, "Ren Hongjun" (cit. n. 59), pp. 42–5.

<sup>91</sup> Science Society, *Science Society of China* (cit. n. 67), pp. 3–5.

banquets given by various local hosting organizations and by the society. Members had more opportunities for socializing on outings to local institutions or scenic spots. Perhaps most important, such excursions also brought Science Society members into contact with other parts of the emergent civil society in China in this period.<sup>92</sup>

Society members also reached out to layperson and scientist alike through its diverse publications. In addition to *Kexue*, the society published *Kexue Huabao* (Science pictorials), containing easy-to-read, well-illustrated articles on natural phenomena, as a way to popularize science, as well as *The Transactions of the Science Society of China*, which carried technical papers for the international scientific community. Beginning in 1928 the society also administered an annual student science-paper prize in memory of Gao Junwei, a young nutritional chemist and one of the few female members of the society, who had died of cancer that year. There were also an annual archaeological prize and a scholarship named after Madam Fan, a donor to the society, to be awarded to a student in the Biological Institute.<sup>93</sup> To fulfill both its own original goal of popularizing science and an “order of the central government,” the society established the Bureau for Scientific Information in 1929 to answer science-related questions from the public. Questions and answers, by specialists among the members, were then printed in *Kexue*.<sup>94</sup> How effective such measures were in popularizing science is hard to determine, but there did seem to be a steady stream of questions from readers, some of whom used it as a way to give feedback to the editors.<sup>95</sup>

In addition to the Biological Institute in Nanjing, the society also operated a printing press, a scientific books and instruments company, and two science libraries, one in Nanjing, and one in Shanghai named after Hu Mingfu, who accidentally drowned in 1928. By 1927 the library in Nanjing had already amassed a sizable collection of materials, presumably related to science: 2,788 Chinese books, 10,572 books in western languages (mostly acquired through Sino-American exchanges), 3,087 issues of Chinese periodicals, and 20,493 issues of western ones.<sup>96</sup> The libraries were open to “students of science” (it is not clear whether nonmembers were permitted to check out books). As specialized journals for various scientific fields became available, *Kexue* shifted its editorial policy from publishing research papers to the popularization of science to satisfy an increasing public interest.<sup>97</sup> The Biological Institute expanded its research staff, scientific programs, and physical space devoted to laboratories, libraries, and exhibits. As the institute’s research reputation rose, a whole generation of Chinese biologists sought to work there, and it became the “cradle” of modern biology in China.<sup>98</sup>

In view of their sense of scientific nationalism, their widespread yearning for a strong central government supportive of science, it is not surprising that the leaders

<sup>92</sup> See, e.g., “Zhongguo kexueshe di shierci nianhui jishi” (Report on the twelfth annual meeting of the Science Society of China), *Kexue* 12 (1927): 1616–54.

<sup>93</sup> See “Sheyou Gao Junwei nushi shilue” (Biographical sketch of member Ms. Gao Junwei), *Kexue* 13 (1928): 462–3; Science Society, *Science Society of China* (cit. n. 67), p. 30.

<sup>94</sup> “Zhongguo kexueshe fushe kexue zixunchu tonggao” (Announcement of the establishment of a Bureau for Scientific Information of the Science Society of China), *Kexue* 14 (1929): 759.

<sup>95</sup> See, e.g., “Kexue zixun” (Scientific information), *Kexue* 14 (1929): 1075–6.

<sup>96</sup> Science Society, *Science Society of China* (cit. n. 67), pp. 13–5.

<sup>97</sup> “Kexue jinhou zhi dongxiang” (The future orientation of *Science*), *Kexue* 19 (1935): 1–8.

<sup>98</sup> See Cao Yu, “Zhonghua jiaoyu” (cit. n. 81); Jia Sheng, “The Origins of the Science Society of China, 1914–1937,” Ph.D. diss., Cornell Univ., 1995, chap. 5.

of the Science Society warmly embraced the establishment of the Academia Sinica in 1928, even if they harbored suspicions of the new Nationalist party state. Cai Yuanpei, one of the most persistent patrons of the society and an influential leader of the Nationalist party, used his leverage in the latter to press Chiang Kai-shek's new government to establish the Academia Sinica as a way to promote national science in China.<sup>99</sup> Cai modeled the Academia Sinica after the French and Soviet systems, establishing the academy as a centralized national scientific research institution with various research institutes, located mainly in Nanjing and Shanghai, where full-time staff researchers conducted research in different scientific fields.

Yang Xingfo, founding editor of *Kexue* and a key leader of the Science Society, became executive director of the Academia Sinica. After an unsuccessful career as an industrial accountant, Yang had returned to his revolutionary path in 1924 when he joined Sun Yat-sen's renewed revolutionary movement in Guangzhou. There Sun briefly led a rival national government against the Beijing regime controlled by the warlords. When the Nationalists succeeded in unifying the country in 1927, Yang answered Cai Yuanpei's call to assist in establishing the Academia Sinica.<sup>100</sup> Many members of the Science Society supported the new academy not only as a way to organize national scientific research, but also as a venue for representing China at international scientific conferences. The exclusion of China from the International Research Council, due to its lack of an official national scientific organization, had been a humiliation to many Chinese scientists, as had the discrimination against Chinese scientists at the 1926 Pan-Pacific Science Congress in Tokyo for the same reason.<sup>101</sup>

Given Cai Yuanpei's special relationship with the Science Society and its prestige, it is not surprising that many society leaders became heads of the new academy's research institutes: Zhu Kezhen became director of the Institute of Meteorology in Nanjing, Zhou Ren headed the Institute of Engineering in Shanghai, and Wang Jin, president of the Science Society 1930–1933, directed the Institute of Chemistry, also in Shanghai.<sup>102</sup> In 1933, when political enemies within the Nationalist party assassinated Yang Xingfo, Ding Wenjiang succeeded him as executive director of the Academia Sinica. After Ding left in the late 1930s, Ren Hongjun took over the post.<sup>103</sup>

Despite all these intimate connections with the government, the Science Society remained an independent organization. It seemed content to exist in the third realm, aligned with neither the state nor society. Certainly there were numerous problems, including the continuing conflict between the Nationalists and the Communists; the threat of foreign invasions; and the Nationalists' attempt to control science and edu-

<sup>99</sup> See Shiwei Chen, "Legitimizing the State: Politics and the Founding of Academia Sinica in 1927," *Papers on Chinese History* 6 (spring 1997): 23–41.

<sup>100</sup> Xu, "Yang Xingfo" (cit. n. 28), p. 79.

<sup>101</sup> See Zhang Yun, "Guoji xueshu yanjiu huiyi he Zhongguo kexue de fazhan" (The International Research Council and the development of science in China), and the attached note by Ren Hongjun, *Kexue* 11 (1926): 1391–1402; and Ren Hongjun, "Fan taipingyang xueshu huiyi de huigu" (Retrospective on the Pan-Pacific Science Congress), *Kexue* 12 (1927): 12. See also Xu Minghua, "Zhongyuan yanjiuyuan yu Zhongguo kexue yanjiu de zhiduhua" (the Academia Sinica and the institutionalization of Chinese scientific research), *Zhongyang Yanjiuyuan jindaishi yanjiusuo jikan* (Contributions from the Modern History Institute of the Academia Sinica) no. 22, pt. 2 (June 1993): 233–9.

<sup>102</sup> See Zhang, "Cai Yuanpei" (cit. n. 74).

<sup>103</sup> *Ibid.*; and Fan, "Ren Hongjun" (cit. n. 30).

cation and bend them toward military-industrial purposes as well as conservative cultural values. Yet by the 1930s scientists by and large felt that a happy medium between scientific professionalism and nationalism had been reached. Not only had the government embraced the goals—the development of modern science and technology—advocated by the scientists, but they themselves had opportunities to shape the course.<sup>104</sup> During the Nanjing Decade, Chinese science, under the leadership of these Science Society members and with the steady support of a relatively stable central government, made remarkable progress in all fields.<sup>105</sup>

The situation changed for the worse with the Japanese invasion of 1937. The Science Society of China survived the difficult years of the War of Resistance against Japan (1937–1945) but faced an uncertain fate when the Communists took over the mainland after a bloody civil war with the Nationalists that raged from 1945 to 1949. The corruption and political repression of the Nationalists had disillusioned many scientists, including members of the Science Society. Zhu Kezhen, who considered himself a liberal not unaware of the abuse of science in the Soviet Union under Stalin, was nevertheless hopeful that the Chinese Communists' focus, like his own, would be on rebuilding China. Thus in May 1949, when Nationalist leader Chiang Kai-shek sent for Zhu to retreat with him to Taiwan as the Communist forces advanced toward Shanghai, Zhu, then president of Zhejiang University, declined.

To avoid possible assassination by Nationalist agents, Zhu went into hiding at the Science Society of China in Shanghai. His first contact with the Communists occurred when he encountered the People's Liberation Army soldiers on the street of Shanghai the day after their takeover of the city. Their discipline, a stark contrast to the unruly and bullying behavior of the Nationalist soldiers he had known before, immediately impressed him. When Wu Youxun, a physicist and leader of the Science Society, came to discuss how the society should position itself in the new regime, Zhu responded with hope:

I told [Wu] that in 1927, when the Nationalists launched the Northern Expedition [to defeat the warlords], the people rejoiced as much as they do today. But the Nationalists did not capitalize on the opportunity; they instead covered up embezzlements, failed to adhere to clear rules of rewards and punishments, and ended up being overthrown today. The people have welcomed the Liberation Army as they did clouds amid a severe draught. [I] hope that [the Communists] can work hard to the end and do not turn out to be as corrupt as the Nationalists. Science is extremely important to construction, and [I] hope the Communists will pay close attention to it.<sup>106</sup>

Perhaps it was the same hope for national reconstruction based on science that sent Ren Hongjun from Hong Kong to Shanghai to welcome the Communists. Like Zhu, he had refused to retreat with the Nationalists, perhaps because he believed that he could continue to lead his beloved Science Society into the new era.<sup>107</sup>

A rude awakening came to the scientists soon enough. On June 9, 1949, as Zhu Kezhen presided over the celebration of the twenty-first anniversary of the Academia Sinica in Shanghai, he heard two official speeches that would presage the dilemma

<sup>104</sup> For example, the geologist Wen Wenhao, a leader of the Science Society, was in charge of the powerful National Resource Commission in the 1930s. See Kirby, "Engineering China" (cit. n. 30).

<sup>105</sup> Reardon-Anderson, *Study of Change* (cit. n. 42), pp. 174–6.

<sup>106</sup> Zhu Kezhen diary entries for 25 and 26 May 1949, in Zhu, *Riji* (cit. n. 44), vol. 2, pp. 1255–6.

<sup>107</sup> Fan, "Ren Hongjun" (cit. n. 30), p. 75.

of science in the new regime. In his diary he noted that after he had given a talk on the history of the Academia Sinica, the mayor of Shanghai spoke:

Mayor Chen Yi spoke for one hour, explaining the importance of theory to the [Chinese Communist] revolution. . . . He said that the Communists were humble and willing to hear [advice], that criticism should be penetrating . . . and that the essence of democracy was both that the minority followed the decision by the majority and that the majority should respect the opinions of the minority. What he said was very reasonable. Next Feng Ding from the [Communist party's] Department of Propaganda spoke of Marxism and Leninism as the highest principles of all the theories in the world[. He] said that the subjective opinions of the proletariat were more objective than the objective opinions of the bourgeois. What he said was really hard to understand.<sup>108</sup>

This was the first, but certainly not the last, time of thought reform, or ideological indoctrination, that Zhu and other scientists had to endure in the Mao era, despite Zhu's being appointed vice president of the new Chinese Academy of Sciences, in late 1949, by the Communists.

As for Ren and Zhu's Science Society, it fared no better than any of the other institutions of civil society that had grown up in the Republican period. Under pressure to nationalize and collectivize all enterprises and activities, Ren reluctantly turned over the assets of the Science Society piece by piece to the government. In 1949 the Science Society was pressured to dissolve when the new, official All-China Confederation of Special Societies in Natural Sciences was established.<sup>109</sup> Within the Communist party, the Science Society was viewed as politically untrustworthy, particularly because of its leaders' extensive former connections with the Nationalist government.<sup>110</sup> Zhu Kezhen, now actively involved in central scientific organization and planning as vice president of the Chinese Academy of Sciences, recognized the futility of sustaining the Science Society. Thus Zhu recorded in his diary on January 22, 1952:

This morning I wrote to Ren Shuyong [scholarly name for Ren Hongjun] because the Science Society of China sent me a letter last November asking for member registration. . . . But when the All-China Confederation of Special Societies in Natural Sciences was established in September two years ago at the Conference of the Deputies of Scientific Associations, it did not include comprehensive scientific groups [as its members]. The implied hope was that, to avoid rivalry, there should not be another comprehensive scientific organization. This time the call for reregistration by the Science Society will unavoidably be viewed as making a statement of dissent. . . . The proposed new charter of the society listed an item on enterprises, including the running of institutes, publication of scientific journals—such extravagant self-promotion . . . is indeed wrongheaded because the government is just beginning to consolidate scientific journals.<sup>111</sup>

<sup>108</sup> Zhu Kezhen diary entry for 9 June 1949, in Zhu, *Riji* (cit. n. 44), vol. 2, pp. 1260–1.

<sup>109</sup> Fan, "Ren Hongjun" (cit. n. 30), p. 75.

<sup>110</sup> Fan Hongye et al., "Huang Zongzhen fangtan lu" (An interview with Huang Zongzhen), ZGKJSL 21(4) (Dec. 2000): 316–23, especially p. 321.

<sup>111</sup> See also Zhu Kezhen's diary entries on affairs of the Science Society in Zhu Kezhen, *Zhu Kezhen riji* (Diaries of Zhu Kezhen), vols. 3–5, 1950–1974 (Beijing: Science Press, 1989–1990): 5 Aug. 1950, pp. 82–3; 15 Aug. 1950, p. 85; 21 Aug. 1950, pp. 87–8; 25 and 26 Aug. 1950, p. 89; 12 Oct. 1950, p. 110; 19 Dec. 1950, p. 128; 23 Dec. 1950, p. 133; 27 Dec. 1950, pp. 134–5.

Gradually and reluctantly, Ren gave up. In 1951 *Kexue* was combined with, or rather absorbed by, the confederation's *Ziran Kexue* (Natural sciences).<sup>112</sup> In 1953 Ren Hongjun presided over the relinquishing of the *Kexue Huabao* to the official Shanghai Association for the Popularization of Science. The next year he saw to it that all the materials and staff of the Science Society's Biological Institute were transferred to the Chinese Academy of Sciences. In 1956 he turned over the society's library, printing press, and instrumentation company in Shanghai to the government.<sup>113</sup> During the brief liberalization period in 1957, Ren Hongjun revived *Kexue*, but it did not last for long. By 1959 he finally had turned over every asset of the Science Society to the government, and *Kexue* had stopped publication. Ren Hongjun died in 1961 not long after he wrote a short history of the Science Society.<sup>114</sup>

### CONCLUSIONS

Peter Buck, in his provocative *American Science and Modern China* (1980), sees the Science Society of China as a voluntary association modeled partly after the burgeoning chambers of commerce in southeastern China, where most Science Society members originated, and partly after western scientific associations. But rather than viewing it as a seed for civil society in China, Buck casts architects of the Science Society of China as an elite, like the gentry leaders of the chambers of commerce, and as superficial and imperfect conveyors of American science detached from the Chinese reality. American science was exported to China via the Science Society and the Rockefeller-funded institutions as a way to transform Chinese society and politics. But it failed because science cannot be separated from its social context. "In China, where American science achieved a considerable measure of autonomy from Chinese society and politics, its freedom only ensured its irrelevance," according to Buck.<sup>115</sup> Thus Buck, like the Communist science policy makers in the 1950s, views the Science Society as irrelevant to Chinese society.

But it may be premature to call the Science Society a failure, especially in light of the fact that the society and its ideals inspired many of the second generation of Chinese scientists. Tang Youqi, a leading biochemist at Beijing University who received his Ph.D. from the California Institute of Technology and worked with Linus Pauling in the 1940s, vividly remembers reading Ren Hongjun's speeches in *Kexue* as a youth and being inspired to pursue a career in science.<sup>116</sup> The late Hua Luogeng saw his first scientific publication appear in *Kexue* in 1929 when he was only a school teacher without a university education. The paper led to his "discovery" by several prominent Chinese mathematicians at Qinghua University and eventually to his becoming a world-renowned mathematician.<sup>117</sup>

Tang and Hua were not the only young scientists who benefited from the Science Society. Through it, the first generation of modern Chinese scientists, such as Ren

<sup>112</sup> On the cessation of *Kexue* in 1951 and its brief reappearance in 1957–1960, see Xu Weimin, "Kexue zazhi de liangdu tingkan yu fukan" (The two-time cessations and resumptions of *Science* magazine), *ZRBZFTX* 14(3) (June 1992): 24–9.

<sup>113</sup> Fan, "Ren Hongjun" (cit. n. 30), p. 75.

<sup>114</sup> *Ibid.*, p. 76.

<sup>115</sup> Buck, *American Science* (cit. n. 63), pp. 120–1, on p. 236.

<sup>116</sup> Tang Youqi, interview by author, Claremont, Calif., Nov. 2000.

<sup>117</sup> Wang Yuan, *Hua Luogeng* (Beijing: Kaiming Press, 1994), pp. 29–31. See also Stephen Salaff, "A Biography of Hua Lo-keng [Luogeng]," *Isis* 63 (1972): 143–83.



Hongjun and Zhu Kezhen, recruited thousands of scientists and engineers to continue their quest of saving China through science. Most of the leaders in twentieth-century Chinese biology went through Bing Zhi's and Hu Xiansu's Biological Institute. As there can be no question about the importance of the Science Society for Chinese science, to question the relevance of the society is to question the relevance of science and related technology in modern China. Of course, depending on one's perspective, there may well be disagreement about the relevance and importance of science and technology to modern Chinese society. But even without singling out the crucial role of the Chinese atomic bomb in the 1960s in raising the nation's international stature and healing wounded national pride, one can point to the formation of a scientific and educational infrastructure in the era of the Science Society as proof that the efforts of Ren, Zhu, and their fellow Boxer students helped to strengthen, if not save, China at critical junctures in its turbulent recent history.

Its remarkable achievements in promoting science and technology in China aside, was the Science Society a failure as a model of civil society? After all, most institutions of civil society disappeared during the Mao era, especially during the Cultural Revolution (1966–1976). Yet, as one examines the patterns of science-state interaction during the Mao years, one may find that there was more continuity than first appears. The personal networks formed in the Republic era did not suddenly vanish under the Communist rule, and scientific leaders such as Zhu Kezhen capitalized on these networks to continue to promote scientific research and industrial development. Zhu even continued his critique of party-state policy during the dangerous Cultural Revolution years, not in the pages of *Kexue*, of course, but in his private diaries. In a way, when the public sphere was squeezed out in an authoritarian regime, civil society found expression in private space. Zhu used his diaries not only to express his skepticism and criticism of Maoist excesses, but also to help former associates and students clear themselves of the Red Guards' charges.<sup>118</sup>

In the post-Mao decades of the 1980s and 1990s, there was such a remarkable revival of civil society institutions and a liberal public sphere that scholars such as Merle Goldman speak of a “restarting” of Chinese history.<sup>119</sup> As the market-oriented economic reform radically reshaped the science-state relationship, there began to emerge various private scientific organizations, especially ones related to environmental protection. But limits to critical public discussions remain. Though *Kexue* resumed publication in 1985, the Science Society has not been revived, and *Kexue* is no longer an independent journal sponsored by a private scientific organization. It is now published by the government-run Shanghai Science and Technology Press. In 1995 Jiang Zemin, the general secretary of the Communist Party, pronounced “Spread Science and Uplift National Strength” as the journal's new mandate.<sup>120</sup> Although the new *Kexue* still echoes the scientific nationalism of the old Science Society of China, it is a far cry from the critical voice it used to be more than half a century ago when Zhu and other Boxer Fellows sought to save China through engaging science in the third realm between the state and civil society.

<sup>118</sup> See Zhu, *Riji* (cit. n. 111), vol. 5 (covering the Cultural Revolution years of 1966–1974).

<sup>119</sup> Merle Goldman, “Restarting Chinese History,” *Amer. Hist. Rev.* 105(1) (2000): 153–64.

<sup>120</sup> See the journal's official Web site: [www.kexuemag.com](http://www.kexuemag.com).