

The History, Importance of U.S.-China Scientific Exchanges

The following excerpts come from "US-China Scientific Exchange: A Case Study of State-Sponsored Scientific Internationalism during the Cold War and Beyond," written by **Zuoyue Wang** of the Department of History, California State Polytechnic University, Pomona, California. The paper was published in 1999 by the University of California Press in *Historical Studies in the Physical and Biological Sciences*. The excerpts are published here with the permission of the author.

Despite its considerable significance, scientific exchange has often been treated as a sideline in U.S.-China relations.

Chinese American scientists were crucial in the forging of this new international scientific network. They, along with Chinese scientists who were trained in the U.S. in the 1930s and 1940s, helped to stimulate and sustain the exchange program.

Both the U.S. and China saw scientific exchange as a neutral, non-ideological route to mutual understanding after so many years of isolation. The U.S. recognized the military implications of technological exchange, but decided to take a calculated risk in the hope that a modernized China would help in the balance against the Soviet Union.

In many ways, Zhou Enlai became the gatekeeper in scientific exchange with the U.S. in the early 1970s. He personally negotiated the first formal academic exchange agreement with the Committee on Scholarly Communication with the People's Republic of China (CSCPRC).

During a session with the CSCPRC delegation on May 27, 1973, in Beijing, Zhou Enlai gave his blessing to nine scientific areas of cooperation that ranged from earthquake prediction to acupuncture to anthropology. But he excluded three social science projects (China studies, urban studies, and science and technology in China's development).

The CSCPRC, operating within the National Academy of Sciences and with funds from the U.S. government and private

foundations, became the de facto liaison in the U.S. for academic exchanges with China.

The CSCPRC sponsored American delegations in almost all major scientific fields to visit China, usually for several weeks. Upon their return, these groups published detailed reports about the status of Chinese science, technology and education and made suggestions for future exchanges.

The committee also arranged for the visits of Chinese delegations to the U.S. These early, brief exchanges were sometimes criticized as "scientific tourism" by American scientists who wanted to expand the depth and length of contacts. But the exchanges proved to be enormously useful to Chinese scientists, who needed information about the state of the art in various fields of science.

During the Cultural Revolution, thousands of Chinese scientists, especially those senior scientists trained in the U.S. and Europe, were accused of being reactionary bourgeois academic authorities and American or Western agents and spies. Hundreds were killed or committed suicide and many more suffered persecution.

Chinese scientific and educational institutions stopped functioning from the beginning of the Cultural Revolution in 1966 to about 1970. Universities admitted no new students for those years; laboratories and libraries were abandoned; professors and students, like much of the rest of the society, were engaged in political campaigns, either as victims or victimizers. International exchange stopped completely.

The stunning revival of U.S.-China relations and images of Mao Zedong and Zhou Enlai shaking hands with Richard Nixon in the midst of the political turmoil brought political relief to many scientists. Before Mao's death and the arrest of the Gang of Four in 1976, however, Chinese



First row, middle: M.C. Chang, a Chinese-American biologist whose pioneer work in animal studies paved the way for the steroid oral contraceptive. First row, second from right, the pioneering Chinese obstetrician and gynecologist Dr. Lin Qiaozhi, who led the first medical delegation to visit the U.S. First row, right, translator Li-Chun Wu.

scientists ran political and personal risks by taking part in exchanges.

The significance of the U.S.-China scientific exchange should also be viewed in the context of a major politically and ideologically charged science policy debate over basic research. During the Cultural Revolution, scientists had defended basic research as the foundation of technological advances; the radicals denounced it as a reactionary bourgeois ideology of science.

Foreign scientists visiting Chinese universities in the early 1970s were impressed by the emphasis on practical applications, but many of them also questioned the lack of balance.

Among those who raised the issue of basic research with Zhou Enlai was Chen-Ning Yang. Yang, a Chinese American physicist then at the State University of New York, Stony Brook, was well known in China for sharing the Nobel prize in physics in 1957 with Tsung-Dao Lee, a Chinese American physicist at Columbia. When the U.S. lifted its ban on travel to China in early 1971, Yang was one of the first Chinese American scientists to take advantage of it.

The pivotal roles of Chen-Ning Yang in the debate over basic research and T.D. Lee in the development of the high energy physics program provide examples of the profound and at times conflicting

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History of Exchanges *(continued)*

influence of Chinese American scientists in Chinese science and politics.

Hundreds of Chinese American scientists and professionals visited China in the 1970s.

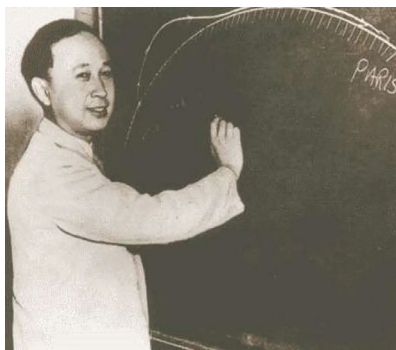
Many of these Chinese American scientists were first-generation immigrants, who received their undergraduate education in China and came to the U.S. in the 1930s and 1940s for graduate training, often with funding from the then Nationalist government of China.

For all their contributions to American science, Chinese scientists had a bitter-sweet history in the United States. Racial discrimination often marked their earliest social experiences in the United States during the era of Chinese Exclusion, which lasted from the turn of the century to World War II, when most Chinese were not allowed to become permanent residents or citizens. Even as late as 1954, developers in New Jersey refused to sell a house to Yang, then a member of the Institute of Advanced Studies at Princeton.

The Korean War, which broke out in the summer of 1950, soon closed the window of opportunity for Chinese students and scholars who wanted to return to their homeland. The U.S. government forbade Chinese nationals, especially those specializing in science and engineering, from returning to China.

The best known example of the disillusioned Chinese scientist in the U.S. was Qian Xuesen (Hsue-Sen Tsien), an aerodynamics scientist at the California Institute of Technology. Qian rose to the top of the profession in the 1940s, helped found the Jet Propulsion Laboratory, and contributed to U.S. weapons development during World War II.

He applied for U.S. citizenship in 1949. Trust turned into suspicion during the McCarthy era when he was charged with being a Communist Party member and a spy for Communist China. The U.S. government put him under house arrest for five years and prohibited him from leaving the country.



Qian Xuesen

Qian and hundreds of other Chinese scientists and engineers were eventually allowed to return to China as a result of the Geneva Conference in 1955.

To stay out of trouble, many in the Chinese American community, including scientists, adopted the strategy of striving for achievement in professional fields while shunning politics.

After the purge of intellectuals during the Anti-Rightist campaign in China in 1957, few Chinese scientists in the U.S. returned to their home country. Many, including Chen-Ning Yang, applied for and were granted U.S. citizenship.

They often drew inspiration from examples of community solidarity provided by other ethnic groups, especially the African American civil rights struggle and the Jewish people's fight to remember the Holocaust.

By all indications prominent members of the Chinese American scientific community were becoming politically active and were waiting for a suitable venue to express their political opinions at the time of the U.S.-China rapprochement in the early 1970s.

A comparison of the U.S.-China scientific exchange with that between the U.S. and the Soviet Union, which has been judged less successful, helps illuminate aspects of Cold War science. Geopolitics played an important role in defining the characteristics of the two exchanges. There was much unease in the U.S.-Soviet exchange on both sides, probably because the contacts were to serve the purpose of defusing the danger of war. In contrast, the U.S.-China exchange was designed more to build an

alliance. Also, the historical ties between senior members of the Chinese and U.S. scientific communities and the active role of Chinese American scientists—not to mention the traditional missionary spirit to change China toward an American model—gave the U.S.-China exchange an emotional appeal that was missing in the U.S.-Soviet case.

The U.S.-China scientific exchange benefited much from the intermixing effect of Chinese American scientists as an international ethnic and scientific community, which helped blur national boundaries in science, even at the height of the Cold War. 友

The complete article can be found at <https://www.cpp.edu/~zywang/us-china.html>

Documentary Features Philadelphia Orchestra's 1973 China Trip

PBS is airing the feature-length documentary *Beethoven in Beijing* this spring, about the Philadelphia Orchestra's groundbreaking trip to China in 1973 at a time when Western music was banned.

The film shows how the visit by American musicians helped thaw U.S.-China relations and revive classical

music in China. Today, the Chinese are great consumers and producers of classical music. Internationally famous Chinese musicians include pianist Lang Lang and Tan Dun, who won an Oscar for the Best Original Score for the movie *Crouching Tiger, Hidden Dragon*. Tan Dun was inspired by the music he heard broadcast on loudspeakers during the Philadelphia Orchestra's 1973 trip.

An article about the historic trip, written by Jana McBurney-Lin of USCPCFA's South Bay chapter, appeared in the Fall 2018 *USCR*.

The film also shows how some financially troubled American orchestras have been helped in recent years by support from the Chinese. Check local listings for dates and times of the documentary. 友

Beethoven
in Beijing
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