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RESEARCH ARTICLE

Technology diplomacy in early Communist China: the visit to the Jingjiang Flood Diversion Project in 1952

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Abstract

This article focuses on the 1952 visit to the Jingjiang Flood Diversion Project, the first large-scale water infrastructure built on the Yangzi river after the founding of the People's Republic of China, by a foreign delegation from the Asia-Pacific Peace Conference. Serving as a form of technology diplomacy, this trip advanced two main purposes for the newly established country – to build up closer ties with 'foreign friends' who advocated international peace in the context of the Korean War, and to demonstrate China's own technical capabilities and achievements as part of the national campaign of 'peaceful construction' of the early 1950s. I argue that vernacular technologies, which were grounded in indigenous knowledge and practices for water control in the mid-Yangzi region, were essential in shaping China's self-reliant modernization and China's public diplomacy, which targeted individuals without scientific or technical backgrounds.

On 16 June 1952, a small Japanese flag tied to a camera almost ignited a firestorm of controversy in the People's Republic of China (PRC). The incident started when a male worker on the Jingjiang Flood Diversion Project (Jingjiang Project) construction site in Hubei Province raised an alarm. The cause of his concern was a strange Asian woman taking pictures with her camera which had a Japanese flag attached to it. He exclaimed in horror that the 'Japanese have come to the village again!' In a moment, nearby workers had gathered and armed themselves with sickles, suspecting that she was a spy. Chinese accompanying staff quickly intervened, explaining that she was a Japanese delegate to the Asia-Pacific Peace Conference (APC) who worked for regional peace and economic exchange between the two countries.[1]

That woman was Kōra Tomi, a politician and peace activist, who was a member of Japan's upper house.[2] After the preparatory meeting of the APC in early June, the China Peace Council had planned for Kōra and twenty-five other delegates from around the world to visit the Jingjiang Project. In the early 1950s, the project was an essential part of China's campaign of 'peaceful construction' (*heping jianshe*) that focused on the rebuilding of the national economy through investment in infrastructure and industrial facilities after the Chinese Civil War (1945–9). This paper concentrates on this trip to explore how the

[1] Wang Junyan, 'Wo suo liaojie de yatai hehui (The Asia-Pacific Peace Conference that I know)', *Bainianchao* (Hundred Year Tide) (2012) 7, pp. 15–16.

[2] For more information on China–Japan relations in the Cold War see Amy King, *China–Japan Relations after World War Two: Empire, Industry and War, 1949–1971*, Cambridge: Cambridge University Press, 2016.

Chinese Communist Party (CCP) utilized vernacular technologies, which were employed in local communities for water control in the mid-Yangzi region, to project the new country's image of self-reliant modernization and to engage with international delegates, particularly those without scientific or technical backgrounds, during the early 1950s.

Historical studies of science diplomacy have become a vibrant research field in recent years. Rather than viewing science diplomacy solely as a strategic tool for 'soft power' wielded by the global North, historians have been exploring various modes of scientific engagement with diplomatic endeavours across diverse local contexts.[3] Asia, as this special issue illustrates, has emerged as a focal point, offering a unique comparative perspective that moves beyond the superpower-centric narrative of the Cold War era. In the case of the PRC, existing literature on science and China's foreign relations has primarily centred on scientists as interlocutors who established connections with the outside world through scientific networks.[4] However, limited attention has been devoted to the role of science and technology in outreach efforts aimed at politicians, activists and specialists who lack formal scientific backgrounds. The visit to the Jingjiang Project provides fresh insights into the early PRC's science diplomacy, particularly in its engagement with participants from the APC, who represented a diverse range of non-hydraulic professions, including the law, education, music, journalism and religion. This perspective highlights the multifaceted nature of science diplomacy beyond traditional scientific networks.

Furthermore, the visit to the Jingjiang Project placed significant emphasis on vernacular technologies. The understanding of 'technology' has evolved beyond a singular narrative centred on Western machinery, particularly since the critical re-evaluation of the 'Needham question'. It now encompasses multifaceted knowledge and skilled practices that have been shaped and reshaped by diverse people in various historical contexts.[5] Recent studies on science and technology in Mao-era China have challenged the dichotomies of Maoist approaches to science, highlighting the pluralistic nature of knowledge production. For instance, Sigrid Schmalzer's study on scientific farming during the Cultural Revolution illustrates the 'three-in-one' (involving local cadres, agricultural

[3] Matthew Adamson and Roberto Lalli, 'Global perspectives on science diplomacy: exploring the diplomacy–knowledge nexus in contemporary histories of science', *Centaurus* (2021) 63(1), pp. 1–16; Kenji Ito and Maria Rentetzi, 'The co-production of nuclear science and diplomacy: towards a transnational understanding of nuclear things', *History and Technology* (2021) 37(1), pp. 4–20; Lif Lund Jacobsen and Doubravka Olšáková, 'Diplomats in science diplomacy: promoting scientific and technological collaboration in international relations', *Berichte zur Wissenschaftsgeschichte* (2020) 43(4), pp. 465–72; Simone Turchetti, Matthew Adamson, Giulia Rispoli, Doubravka Olšáková and Sam Robinson, 'Just Needham to Nixon? On writing the history of "science diplomacy"', *Historical Studies in the Natural Sciences* (2020) 50(4), pp. 323–9.

[4] Some representative works include Zuoyue Wang, 'U.S.–China scientific exchange: a case study of state-sponsored scientific internationalism during the Cold War and beyond', *Historical Studies in the Physical and Biological Sciences* (Fall 1999) 30(1), pp. 249–85; Arunabh Ghosh, *Making It Count: Statistics and Statecraft in the Early People's Republic of China*, Princeton, NJ: Princeton University Press, 2020; Pete Millwood, 'An "exceedingly delicate undertaking": Sino-American science diplomacy, 1966–78', *Journal of Contemporary History* (2021) 56(1), pp. 166–90; Gordon Barrett, *China's Cold War Science Diplomacy*, Cambridge: Cambridge University Press, 2022.

[5] In 1954, Joseph Needham's monumental work *Science and Civilization in China* marked the beginning of Anglo-American academic interests in Chinese ancient technological and scientific achievements. This period also saw significant contributions from scholars associated with the Harvard school, including John K. Fairbank, Teng Ssu-yu, Edwin O. Reischauer and Albert M. Craig, who authored influential works like *China's Response to the West* and *A History of East Asian Civilization*. These scholars sought to understand China's historical response to Western imperialism and why a 'scientific revolution' similar to the one in the West did not occur in China, a question often referred to as the 'Needham question'. However, in the 1960s and 1970s, a group of historians began to challenge and question the 'Needham question'. These scholars engaged in detailed studies of specific technical topics within Chinese scientific traditions and critiqued the oversimplified assumptions that had framed earlier discussion. See Shigeru Nakayama and Nathan Sivin (ed.), *Chinese Science: Explorations of an Ancient Tradition*, Cambridge, MA: MIT Press, 1973.

technicians and peasants) formulation in directing rural scientific experiments. This approach transcends binaries such as native/foreign, revolutionary politics/technical expertise, and mass/professional.[6] Rui Kunze and Marc Andre Matten's work demonstrates that the Mao-era state adopted a pragmatic strategy in areas like agricultural mechanization, industrial innovation and veterinary medicine. Various forms of knowledge and practices, including Western, indigenous, professional and lay, coexisted, and were sometimes synthesized.[7] The Jingjiang Project, initiated in 1952, serves as an early example of the pluralism characterizing Mao-era science, involving collaboration and labour division among Soviet experts, Western-trained technicians, local cadres and workers. However, during the visit by international delegates, the spotlight was on vernacular technologies rooted in local communities for water control in the mid-Yangzi region. The term 'vernacular' is employed to underscore two key characteristics of these technologies. First, they had been transmitted across generations within local communities and were used for practical purposes. Second, these technologies embodied localized innovations that had emerged in response to evolving circumstances during the early 1950s. The CCP interpreted these vernacular technologies during the visit as a decisive factor that resolved construction-related challenges and ensured the project's completion ahead of schedule.

More importantly, these vernacular technologies played a significant role in showcasing China as a distinct model of modernization on the international stage. Several recent works have demonstrated that the Chinese state in the 1960s and 1970s promoted socialist cultures and politics of science abroad as part of its foreign policy. For instance, historians such as Mary Augusta Brazelton, Sigrid Schmalzer and Dongxin Zou have shown how China's later science and medical diplomacy was deployed in order to both gain international recognition and build up ties with both professional scientists and radical activists.[8] The visit to the Jingjiang Project in 1952 was a much earlier example of this kind of strategy: examining this initiative will provide valuable insights into the beginnings of China's diplomatic efforts in the realm of technology.

Finally, this paper provides a new perspective on the Jingjiang Project itself. Built on the middle reach of the Yangzi river in 1952, the Jingjiang Project aimed to create a flood-diversion area on the south bank to mitigate downstream flooding. Previous examinations of the project have primarily concentrated on the CCP's 'combative environmental policies' and their relationship with the devastating 1954 Yangzi flooding. Chris Courtney, for instance, argues that the government's strong commitment to harnessing the river and controlling the hydraulic network had negative consequences for local populations. During the 1954 floods, the project did not serve a protective role but instead exacerbated the disaster experienced in Hubei Province.[9] However, if the Jingjiang Project represented the state's combative approach to mastering nature and people within China itself, its international diplomatic significance during the 1952 visit was quite the opposite. It was portrayed as a prime example of China's 'peaceful construction', highlighting the

[6] Sigrid Schmalzer, *Red Revolution, Green Revolution: Scientific Farming in Socialist China*, Chicago and London: University of Chicago Press, 2016.

[7] Rui Kunze and Marc Andre Matten, *Knowledge Production in Mao-Era China: Learning from the Masses*, Lanham, MD: Lexington Books, 2021.

[8] Dongxin Zou, 'Socialist medicine and Maoist humanitarianism: Chinese medical missions to Algeria, 1963–1984', PhD dissertation, Columbia University, 2019; Mary Augusta Brazelton, 'Viral reflections: placing China in global health histories', *Journal of Asian Studies* (August 2020) 79(3), pp. 579–88; Sigrid Schmalzer, 'Speaking about China, learning from China: amateur China experts in 1970s America', *Journal of American–East Asian Relations* (Winter 2009) 16(4), pp. 313–52.

[9] Chris Courtney, 'War with water: the Maoist state and the 1954 Yangzi floods', *Modern Asian Studies* (2018) 52 (6), pp. 1815–17.

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country's anti-war stance and technological achievement, particularly against the backdrop of the Korean War.

This paper begins with the APC and the delegation's visit to China's sites of 'peaceful construction'. The CCP strategically linked the global peace movement to its nation-building endeavours and used technology to distinguish China's position from that of the United States during the Korean War. The second section then discusses foreign visitors to the Jingjiang Project and highlights vernacular technologies as a central theme in China's international propaganda efforts. The CCP utilized vernacular technology to showcase China's self-reliant modernization and its commitment to peace and national development. The third section explores the role of Soviet and Western technical assistance in the Jingjiang Project, which the CCP downplayed during the visit. It demonstrates the CCP's intention to achieve both technical and diplomatic independence. Moreover, it emphasizes that the 1952 visit to the Jingjiang Project featured vernacular technology rather than solely foreign-trained elite specialists in hydraulic technology, distinguishing it from previously studied examples of Mao-era science diplomacy.

The APC and the tour of China's 'peaceful construction'

The decision to hold the Asia-Pacific Peace Conference in Beijing by the People's Republic of China was influenced by the ongoing Korean War and the subsequent intervention of American forces. In early February 1952, the Chinese government accused American forces of employing bacteriological weapons against Chinese troops and civilians in North Korea.[10] Following the appeal of the Chinese People's Committee for World Peace – an organization set up in Beijing with the purpose of uniting Asian and Pacific people to denounce American imperialism, the World Peace Council (WPC), a Communist front organization supported by the Soviet Union, established the International Scientific Commission for the Investigation of the Facts Concerning Bacterial Warfare in Korea and China (ISC). Under the leadership of Cambridge biochemist Joseph Needham, a group of six foreign scientists carried out a series of investigations in north-east China and North Korea between late June and early August. Their mission was to gather evidence related to the alleged use of bacteriological weapons.[11] Meanwhile, Guo Moruo, the president of the Chinese People's Committee for World Peace, initiated a plan to convene the APC as a means of also attracting the attention of international non-scientific specialists to the situation. On 21 March, Guo and eleven prominent figures in China issued a proposal for the conference, inviting individuals from around the world, regardless of their background, to participate in discussions about pressing issues such as peace and development in Asia.[12] On 3 June, twenty days before the ISC investigation began, the preparatory meeting of the APC took place at the Beijing Hotel. During this

[10] 'Chaoxian waiwuxiang Pu Xianyong fabiao shengming kangyi meiguo qinluezhe sanbu xijun, haozhao shijie renmin zhizhi meiguo qiangdao zhezhong taotian zuixing' (The foreign minister of North Korea Pu Xianyong protested the spread of bacteria by the Americans and called for people's support to stop the crime), *People's Daily*, 24 February 1952. For more information on the complexity of China's claim and germ warfare see Tom Buchanan, 'The courage of Galileo: Joseph Needham and the "germ warfare" allegations in the Korean War', *History* (October 2001) 86(284), pp. 503–22; Ruth Rogaski, 'Nature, annihilation, and modernity: China's Korean War germ-warfare experience reconsidered', *Journal of Asian Studies* (May 2002) 61(2), pp. 381–415; Shiwei Chen, 'History of three mobilizations: a reexamination of the Chinese biological warfare allegations against the United States in the Korean War', *Journal of American–East Asian Relations* (Fall 2009) 16(3), pp. 213–47.

[11] See Buchanan, op. cit. (10), pp. 504, 511–12.

[12] Zhou Enlai, 'Fahui renmin minzhu tongyi zhanxian jiji zuoyong de jige wenti' (Several issues about using a people's democratic united front), in Zhonggong zhongyang wenxian yanjiushi (Document Research Office of the CPC Central Committee) (ed.), *Jianguo yilai zhongyao wenxian xuanbian* (Selected Documents since the Foundation of the State), Beijing: Zhongyang wenxian chubanshe, 1992, pp. 178–89.

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meeting, forty-seven peace activists from twenty countries were present, and they elected a special committee to manage the preparatory work and set the agenda for the upcoming APC.[13]

For the CCP, the APC represented a public platform from which to counter American aggression against China. It offered an opportunity to present China's stance on regional peace and exert influence on a global scale. An urgent issue for the CCP during the conference was to reshape China's international image in a more peaceful light. This need arose due to the ongoing mutual accusations of aggression that were being traded back and forth between the United States and China. Chinese peace activists accused the United States of hostile action in Asia, while imperialist powers depicted China as a warmonger. The propaganda war intensified with the presence of the US Seventh Fleet in the Taiwan Strait and China's involvement in the Korean War. The US defended its actions by asserting that its primary intention was to limit the scope of the conflict and prevent it from escalating further.[14] To counter these portrayals, the CCP used the APC as a means of illustrating both that China had been forced into the war in Korea, and that the Chinese people had no interest in pursuing aggressive hostilities. Instead, they sought a stable international environment to focus on 'peaceful construction' within China.[15] This association between support from the worldwide peace movement and China's nation-building campaign was central to the CCP's objectives.

The APC delegation consisted of leaders and active members of prominent peace organizations from various countries, spanning a range of professional backgrounds. During the early 1950s, these delegates frequently travelled between the Soviet Union, the PRC and Eastern Europe. Some were members of communist parties, such as Chilean delegate Jose Venturelli, while others were sympathetic to communist ideals or enthusiastic about socialist states. These non-official diplomatic activities, facilitated by organizations like the WPC and the APC, allowed for 'subaltern' mobilities during the early Cold War, as described by Rachel Leow.[16] For China, which was diplomatically isolated at the time, these interactions with non-official delegates helped establish ties with 'foreign friends' and expand the 'peace camp' of individuals advocating for a peaceful international environment. The pro-China attitudes of APC delegates further supported the Party's international propaganda campaign.

To convey a peaceful image of China and its people, the China Peace Council organized tours for the APC delegates to travel across China, showcasing various aspects of the country's achievements. Between June and October 1952, delegates travelled in various cohorts on a route that took them to the coal-mining area in Fushun to factories in Shanghai, an

[13] Zhongguo renmin baowei shijie heping weiyuanhui (The Committee of Chinese People Safeguard World Peace) (ed.), *Yazhou ji taipingyang quyu heping huiyi choubei huiyi* (The Preparatory Meeting of the Asia-Pacific Peace Conference), Beijing: Shijie zhishi chubanshe, 1952, pp. 16–27.

[14] 'Wu Xiuquan zai lianheguo anquan lishihui shang kongsu meiguo wuzhuang qinlue zhongguo lingtu taiwan de fayan' (Wu Xiuquan made a complaint against the American invasion of Taiwan in the United Nations Security Council), in Zhonggong zhongyang wenxian yanjiushi, op. cit. (12), vol. 1, pp. 479–506.

[15] Zhonggong zhongyang xuanchubu bandongting and Zhongyang danganguan bianyanbu (Office of the Publicity Department of the CCP Central Committee and Editorial Research Department of the Central Archives) (ed.), *Zhongguo gongchandang xuanchuan gongzuo wenxian xuanbian, 1949–1956* (Selected Documents of Chinese Communist Party's Propaganda Work, 1949–1956), Beijing: Xuexi chubanshe, 1996, pp. 408–9; Zhonggong zhongyang wenxian yanjiushi (Document Research Office of the CCP Central Committee) (ed.), *Zhou Enlai nianpu, 1898–1949* (Chronicle of Zhou Enlai's Life, 1898–1949), Beijing: Zhongyang wenxian chubanshe, 1998, p. 220.

[16] Rachel Leow named APC delegates as subaltern internationalists, who were not diplomats but worked on the peace front in the early Cold War. See Rachel Leow, 'Asian lessons in the Cold War classroom: trade union networks and the multidirectional pedagogies of the Cold War in Asia', *Journal of Social History* (2019) 53(2), pp. 429–53.

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astronomical exhibition in Beijing, the Jingjiang Project on the Yangzi river in the south, and the hydraulic infrastructure on the Huai river in the north. During these tours, the delegates witnessed China's industrial, technological and scientific achievements. These achievements were presented as the foundation of China's 'peaceful construction', in contrast to what the CCP characterized as the United States' focus on war preparation and the use of technology for expansionist military purposes. To promote this narrative, the Chinese People's Committee for World Peace in 1952 published a volume titled *The Preparatory Meeting of the Asia-Pacific Peace Conference* (*Yazhou ji taipingyang quyu heping huiyi choubei huiyi*) and the magazine *World Knowledge* (*Shijie zhishi*). These publications featured foreign delegates' praise for China's peaceful use of technology for economic development and the well-being of its people, while criticizing US policies related to war and military bases.[17] By utilizing this oppositional narrative, the CCP associated Chinese science and technology with the APC's peace theme, leveraging the delegation's sympathies in doing so.

More importantly, the CCP highlighted the significance of vernacular technologies during these tours. Vernacular technologies, rooted in local labour-intensive skills and experiences, were portrayed as essential to China's 'self-reliant' modernization efforts within the framework of 'peaceful construction'. As will be seen, during the visit to the Jingjiang Project, contributions made by Soviet technical professionals and foreign-trained Chinese engineers were downplayed by the Party in its international propaganda.

The Jingjiang Project and the construction of 'vernacular technologies'

On 9 June 1952, a group of twenty-six delegates from the APC arrived in Wuhan after boarding a plane in Beijing. That night, they reached the construction site of the Jingjiang Project, where they received a warm welcome from Hubei provincial officials and members of non-governmental organizations.[18] The project itself was a massive piece of water engineering, located in Gong'an County and covering an area of approximately 921 square kilometres. It held historical significance as the first large-scale water project built on the Yangzi river in the PRC. The key components of the project included a fortified levee system, a northern sluice serving as a water inlet, a southern sluice serving as a water outlet and several barrages. Its primary purpose was to protect the middle and lower reaches of the river, a crucial agricultural region for the country. Over centuries, this area had experienced considerable environmental change, driven by factors such as deforestation, population growth and excessive dike construction. Consequently, flooding had become a recurring event in the local ecological system.[19]

In their efforts to ensure agricultural production and present themselves as the 'people's protector', the newly established Communist regime had embarked on river management projects as soon as they came to power.[20] In 1950, the Yangzi River Conservancy

[17] See, for example, Zhongguo renmin baowei shijie heping weiyuanhui, op. cit. (13), pp. 53–7, 85–93, 100, 113–15, 133–9, 140–2; Kong Dongping, 'Yinni daibiao Suyuenigeluo fangwen ji' (Interview with Indonesian delegate Suyuenigeluo), *Shijie zhishi* (World Knowledge) (1952) 23, pp. 15–16; Wang Chunhua, '"Aodaliya renmin guanxin heping, ye guanxin xin zhongguo": Zhanmusi xiansheng fangwenji' ('Australian people care about peace and new China: interview with Mr. James'), *Shijie zhishi* (World Knowledge) (1952) 41, pp. 11–12.

[18] 'Chuxi heping huiyi choubei huiyi geguo daibiao yibu, canguan Jingjiang fenhong gongcheng gongdi' (The delegation who joined the APC preparatory meeting visited the construction site of the Jingjiang Project), *People's Daily*, 10 June 1952.

[19] Zhou Kuiyi, *Zhongguo kexue jishushi: shuili juan* (History of Chinese Science and Technology: Hydraulic Engineering), Beijing: Kexue chubanshe, 2002, pp. 154–69.

[20] To some extent, the CCP shared a logic with imperial states as it tried to play an active role in hydraulic construction to consolidate its political legitimacy. However, there is some danger in making simple comparisons without taking the specific historical context into consideration. The building of the Jingjiang Project did not

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Commission (later the Yangzi River Planning Office) formulated plans to create a flood detention basin in Gong'an County, and a working committee was established in March 1952. However, as noted by Chris Courtney, the government's determination to gain control over the river resulted in the forced relocation of over sixty thousand villagers to safer areas prior to the commencement of the Jingjiang Project.[21] During the 1952 tour, any adverse effects of the project on the local population were omitted. Instead, the project was presented as a significant exemplar of the country's campaign of 'peaceful construction'.

The delegates arrived at the construction site of the Jingjiang Project four days before its formal completion on 20 June 1952. The general director of the project, Tang Tianji, was the main point of contact for the delegates on this visit. Tang was born in 1904 and had an extensive history as a member of the CCP, including participation in the Long March and military experience in the first half of the twentieth century. In 1952, he was appointed the commander of the Hunan military region and the political commissar of the Jingjiang hydraulic engineering unit. During Tang's presentation of the project to the delegation, he focused on engineering plans, construction schedules and the progress of the project. In particular, he addressed the delegates' curiosity about how such a large project could be completed so quickly and how technical challenges were overcome. Tang attributed the success of the project to several factors, including exceptional government decision making, technical assistance from water specialists and, most importantly, the support of the 'broad masses'.[22] Tang made a distinction between technical professionals and the 'broad masses', which included soldiers, local cadres, peasants and construction workers involved in the project. In his interactions with the delegation, Tang praised the hard-working and down-to-earth nature of the 'broad masses' and emphasized their role as practitioners and innovators of vernacular technologies. When unexpected issues arose, they were the ones who devised solutions, even modifying construction tools when the calculated figures in the project plan did not align with the actual conditions.[23] This spotlight on vernacular technology and its non-elite operators became a central theme of the 1952 diplomatic visit.

Francesca Bray defines 'technology' as social–material networks or systems that encompass not only equipment and material goods but also knowledge (re)production and social relationships.[24] The highlighting of vernacular technologies during the Jingjiang visit was constructed within the sociopolitical context of early 1950s China, setting the stage for Maoist science and technology in subsequent years. First, the creators and users of vernacular technologies belonged to the 'mass' (*qunzhong*) category, which had significant class implications. In the case of the Jingjiang Project, the majority were peasants and local Party activists. According to CCP ideology, these groups were considered politically reliable, as they were seen as supporters of the Chinese revolution in the twentieth century and as the political base of the new Communist regime established in 1949. Sigrid Schmalzer notes that the celebration of the wisdom of the masses can be traced back to the 1940s, associated with priorities like self-reliance, mass mobilization

synchronize with economic development. See Peter C. Perdue, *Exhausting the Earth: State and Peasant in Hunan, 1500–1850*, Cambridge, MA: Harvard University Press, Council on East Asian Studies, 1987.

[21] Courtney, op. cit. (9), pp. 1815–17.

[22] Tang Tianji, 'Jingjiang fenhong gongcheng tizao wancheng de guanjian' (The key to finishing the Jingjiang Project ahead of schedule), in Jingjiang fenhong zong zhihuibu (Headquarters of the Jingjiang Project) (ed.), *Jingjiang fenhong gongcheng zhiyao* (Jingjiang Project Records), Hubei: Jingjiang fenhong zong zhihuibu, 1952, pp. 65–6.

[23] Tang, op. cit. (22), pp. 101–9.

[24] Francesca Bray, 'Science, technique, technology: passages between matter and knowledge in imperial Chinese agriculture', *BJHS* (2008) 41(3), pp. 319–44.

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and practical application.[25] While there were debates within the party state leadership regarding technocratic versus mass revolutionary approaches, the praise of mass science or people's science had gained rapid momentum in the late 1950s.[26]

In May 1952, the working committee of the Jingjiang Project initiated the 'Red May' labour competition, which was a mass mobilization movement designed to boost people's enthusiasm for finding more efficient ways to carry out various tasks, such as transporting sand, breaking stones, weaving baskets and improving machine efficiency. During this competition, 'model workers' were celebrated in state propaganda, and their hands-on experiences were shared with all construction brigades.[27] However, there are no records indicating the existence of systematic training programmes to turn these peasants and working-class individuals into junior and intermediate technicians at the time. Most builders relied on their past work experience and the knowledge passed down from their parents or grandparents. It was not until the 1960s and 1970s that the concepts of 'peasant scientists', 'worker engineers' and 'barefoot doctors' emerged as products of mass technical education.[28]

Furthermore, while vernacular technologies largely evolved from generations of non-energy-intensive practices in water control, they cannot be easily characterized as 'traditional'. In fact, they often represented adaptations and improvements over earlier forms, contributing to the vision of technological modernization under CCP leadership which was presented to foreign visitors at the Jingjiang Project. Two examples illustrate this adaptation. Ding Yongshan, a township head in Songzi County, led twenty-six workers to create a new weaving method for making cages to obstruct the flow of water. In the local context, villagers had traditionally used willow twigs to weave pillow-shaped cages, filled them with stones and sands, and then placed them in rivers to block the water's path.[29] In 1952, Ding and his team changed the shape of the cage to resemble the Chinese character 八 (*ba*), hoping to increase its stability underwater. This innovation proved effective in constructing the barrage on the Hudu river, a tributary of the Yangzi.[30] Another example was Xin Zhiying, a nineteen-year-old woman from a small town called Mijitai who reformed the old method of stone breaking. Her new method involved three steps: inserting the sharp corner of the stone into the ground, using straw bags to stabilize it, and then striking the flat surface. By organizing female workers in an assembly line, productivity increased significantly, earning Xin the title 'special-class model worker'.[31]

The two examples provided illustrate how peasants adapted and reimagined vernacular methods used to address water-related challenges in contrast to advanced mechanical equipment. From a technical standpoint, these innovations were not particularly complex, but they were elevated in state propaganda for two main reasons. On the one hand, Xin's case played a role in challenging and overturning sexist notions about women's technical

[25] Schmalzer, op. cit. (6), pp. 34–8.

[26] Zuoyue Wang, 'The Chinese developmental state during the Cold War: the making of the 1956 twelve-year science and technology plan', *History and Technology* (2015) 31(3), pp. 180–205.

[27] Jingjiang fenhong gongcheng zhi bianzuan weiyuanhui (Editorial Committee of the Jingjiang Project Chorography) (ed.), *Jingjiang fenhong gongcheng zhi* (Jingjiang Project Chorography), Beijing: Zhongguo shuili shuidian chubanshe, 2000, pp. 97–9.

[28] Schmalzer, op. cit. (6), pp. 34–8.

[29] For more information on the development of such techniques and technologies from the Western Han dynasty (202 BCE–8 CE) onward see Zhou, op. cit. (19), pp. 331–6.

[30] Jingzhou shi shuiliju (The Water Conservancy Bureau of Jingzhou City) (ed.), *Rao Mintai shiliao zhuanji* (The Historical Album of Rao Mintai), Jingzhou: Jingzhou shi lingyun yinshuachang, 2008, pp. 177, 181–4, 273–7.

[31] Chen Mu and Gao Changren, 'Tedeng mingong mofan Xin Zhiying he tade suishi xiaozu' (The special model worker Xin Zhiying and her rock group), in Zhongnan renmin chubanshe (South Central People's Press), ed., *Jingjiang fenhong gongcheng zhong de yingxiong mofan* (Model Workers in the Jingjiang Project), Wuhan: Zhongnan renmin chubanshe, 1952, pp. 20–4.

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creativity and work capabilities. Her story served as a demonstration of gender equality in line with the Party's slogan that 'whatever men can do, women can do too'. Unlike the depiction of model women who were often portrayed as more masculinized, assertive and resolute, Xin was praised in the official narrative for her ability to think critically, solve problems and coordinate effectively.[32] On the other hand, both Ding and Xin belonged to the younger generation of technicians who were part of the masses. They were distinct from the 'old peasants' who were engaged in scientific farming during the Cultural Revolution. These 'old peasants' had extensive experience in traditional farming practices and were required to undergo a transformation into 'new peasants' by learning and applying modern agricultural techniques.[33] Therefore the stories of Ding and Xin contributed to a broader narrative of how grass-roots innovation and vernacular technologies played a role in local development and modernization efforts in Mao-era China, challenging traditional gender norms and showcasing the capacity for innovation among young individuals within local communities.

During the 1952 visit, Tang's emphasis on the significant technological contributions made by the 'broad masses' conveyed two key messages. The first message was that China had its own unique methods for addressing technological challenges and completing large-scale water projects in a remarkably short period. This served as an early assertion of the value of 'vernacular technologies', emphasizing the idea of national sovereignty and self-reliance. As a newly established country, China was striving to establish its position in the complex geopolitics of the Cold War era. Hosting the APC was a strategic move to expand its influence globally and gain recognition on the international stage. The second aim was to present the project as a symbol of socialist modernity, achieved through the utilization of vernacular technologies and the efforts of young workers. The tour aimed to offer the delegation a glimpse into China's vision of future modernization. In essence, the 1952 visit showcased the state's intention to create a model of technological modernity that emerged from local practices rather than being solely influenced by Western knowledge dissemination.[34] In the context of foreign relations, this highlighted vernacular technologies that served as an ideal platform to demonstrate China's self-reliant development path, its focus on domestic construction and its commitment to regional peace. This approach helped position China as a unique player in the global landscape of the Cold War era.

The 'omissible' technologies: Soviet and Western technical assistance

When Tang emphasized the technical support of the 'broad masses' in the Jingjiang Project, he simultaneously downplayed the contributions of Soviet technical professionals and Western-trained Chinese engineers who designed the major components of the project in favour of the 'broad masses', who were mainly responsible for the earthwork. Recent historians such as Fa-ti Fan and Xiaoping Fang have argued that Maoist science and technology often involved a combination of indigenous and international knowledge.[35] The Jingjiang Project was not an exception. Even though the new Communist regime had shown great enthusiasm for the development of science and technology to

[32] See, for example, Daisy Yan Du, 'Socialist modernity in the wasteland: changing representations of the female tractor driver in China, 1949–1964', *Modern Chinese Literature and Culture* (2017) 29(1), pp. 55–94.

[33] Schmalzer, op. cit. (6), pp. 34–8.

[34] On multiple models of technological modernity see, for example, Benjamin Elman and Jing Tsu (eds.), *Science and Technology in Modern China: 1880s–1940s*, Leiden: Brill, 2014; David Arnold, *Everyday Technology: Machines and the Making of India's Modernity,* Chicago and London: University of Chicago Press, 2013.

[35] See Fa-ti Fan, '"Collective monitoring, collective defense": science, earthquakes, and politics in Communist China', *Science in Context* (2012) 25(1), pp. 127–54; Xiaoping Fang, 'From union clinics to barefoot doctors: village

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serve in the construction of industry, agriculture and national defence, the rehabilitation of existing scientific institutions and the implementation of new scientific and technical research were slow in the early 1950s.[36] Under such circumstance, the Jingjiang Project relied substantially upon Soviet technicians and Chinese engineers with overseas educational backgrounds.

As early as 1948, Soviet experts were sent to north-east China to help build railways and spur local economic growth. After the establishment of the PRC in 1949, two agreements, both signed in 1950, formed the basis of Soviet technological assistance for Chinese industrialization programmes.[37] By 1952, there were approximately a thousand Soviet experts working in China, including scientists, engineers, technicians and other professionals. They were usually divided into two categories: 'experts' (*zhuanjia*) engaged in the research, planning and construction of enterprises on the basis of Soviet plans and supplied by Soviet equipment, and 'consultants' (*guwen*) who were responsible for training technical cadres and workers to formulate management systems for government administration, research institutions and other public organizations.[38] Among them, hydraulic experts were assigned to important positions within the Ministry of Water Resources and were responsible for managing projects on the Huai and Yangzi rivers.

With the start of the Jingjiang Project in April 1952, these experts came to Hubei periodically to help solve problems on the building site. For example, the linear towing method (*yilieshi tuodaifa*) replaced the old methods and increased the carrying capacity and transport speed of the fleets.[39] The 'Bukefu (Bukov) channel' was an innovative design used on the southern sluice's stilling pool. The stilling pool is usually built at the bottom of a sluice gate with the purpose of relieving water pressure. To improve safety and save money, Soviet experts suggested digging a channel about 5.6 metres deep at the bottom of the stilling pool and filling it with huge rocks. As water rushed through these rocks at a very fast speed, the depth of the stilling pool increased due to the weight of the rocks, which reduced the pressure on the sluice.[40] However, Chinese engineers were not passive recipients of Soviet advice; they actively engaged in problem solving and contributed their own ideas and solutions. Lin Yishan, the director of the Yangzi River Conservancy Commission, pointed out that the idea of the 'Bukefu channel' was originally brought forward by Chinese commission members, and that they had all engaged in the process of looking for solutions.[41] According to Lin's account, Chinese engineers' discontent came from the state's ignorance of their contributions and its over-reliance on Soviet advisers.

In fact, despite the importance of the Soviet advising programme, China never fully relied upon it. Recent scholarship on the Sino-Soviet alliance has revealed the complexity and contestation within the socialist bloc. For example, Austin Jersild and Zhihua Shen's work highlights the Soviet Union's attempt to dominate economic exchanges and

healers, medical pluralism and state medicine in a Chinese village', *Journal of Modern Chinese History* (2008) 2(2), pp. 221–37.

[36] Chu-yuan Cheng, *Scientific and Engineering Manpower in Communist China, 1949–1963*, Washington, DC: National Science Foundation, 1965, pp. 10–12.

[37] Cheng, op. cit. (36), pp. 187–8.

[38] Cheng, op. cit. (36), p. 190; Zhang Bochun, Yao Fang, Zhang Jiuchun and Jing Long (eds.), *Sulian jishu xiang zhongguo de zhuanyi* (The Transfer of Soviet Technology to China), Jinan: Shandong Jiaoyu chubanshe, 2004, pp. 317–48.

[39] Lin Yao, 'Sulian "yilieshi tuodaifa" ti changjiang hangyun kaipi le xin daolu' (The Soviet "linear towing method" opened a new way for the shipping industry on the Yangzi River), *People's Daily*, 24 November 1952; Lu Ting, 'Xijiang zaji' (Western Hunan notes), *Wuzhou Daily*, 5 January 2009.

[40] Song Guozhen, 'Zhengui de jiyi: Jingjiang fenhong gongcheng' (Precious memory: the Jingjiang Project), *Dangdai laonian* (Contemporary Elders) (2008) 1, p. 17–8.

[41] Lin Yishan, *Lin Yishan Zhishui Wenji* (Lin Yishan's Work on Water Control), Wuhan: Changjiang chubanshe, 2011, p. 520.

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advisory programmes within the socialist bloc. This intention, as Jersild argues, was largely irreconcilable with China's policy of 'self-reliance' and 'independence'.[42] As early as 1951, Foreign Minister Zhou Enlai expressed concern regarding the invitation of Soviet specialists to China. He emphasized the importance of apprising these specialists of China's specific technical limitations, characterized by a lack of advanced machinery and modern instruments, and urged them to formulate plans accordingly. He also advocated for the idea of self-reliance, encouraging the recruitment of Chinese specialists and the use of domestic machines and building materials.[43] Thus, while the state did acknowledge the comparatively advanced state of Soviet science and technology and its significant contribution to socialist construction in China, learning from the Soviets was hardly an absolute commitment.[44]

Party state wariness about Soviet experts and technology transfer echoed the complicated relations of the two countries in the early 1950s, which is also shown in China's initiative to host the APC in Beijing. According to Rachel Leow's study, only nine Soviet delegates attended the conference, a 'suspiciously' low number compared to the ninety-eight and eighty-nine delegates from South and South East Asia respectively. Moreover, the motivation of the Chinese APC organizers was by no means reducible to Soviet foreign policy. Leow considers the India–Pakistan rapprochement as a particular case that indicates China's ambition to stage itself as a crucial diplomatic mediator, if not arbitrator, of the region.[45] In this sense, China made use of the APC and the visit to the Jingjiang Project to demonstrate not only its self-reliance in technological terms but also its independent foreign policy. The CCP's promotion of the vernacular knowledge of water control in front of foreign delegates thus helped to set up China as an exemplar and, therefore, as a potential leader within the socialist world in general, and in Asia especially. From this, the emergence of the struggle for leadership between Beijing and Moscow, as discussed by Li Danhui and Xia Yafeng, had its roots in this early period. China's desire to assert its independence and leadership would later contribute to the Sino-Soviet split in the 1960s.[46]

On the other hand, expatriate engineers and returned students had contributed greatly to the introduction of Western hydraulic technology and river conservancy to Chinese society since the late nineteenth century.[47] Even though China had no official relations with many Western countries in the early 1950s, this did not stop the state from embracing and making use of foreign science and technology to support its nation-building programme, including in hydraulic engineering and river conservancy. In the case of the Jingjiang Project, the Yangzi River Conservancy Commission recruited engineers and technicians who graduated from universities in the US, Europe and Japan. Many of them, such

[42] See Austin Jersild, *The Sino-Soviet Alliance: An International History*, Chapel Hill: University of North Carolina Press, 2014, pp. 27–57. Shen Zhihua, *Sulian zhuanjia zai Zhongguo (1948–1960)* (Soviet Experts in China (1948–1960)), Beijing: Zhongguo guoji chubanshe, 2003.

[43] Zhou Enlai, 'Zhou Enlai guanyu pinqing sulian zhuanjia jinxing jianzhu sheji ying zhuyi de jige wenti de zhishi' (Zhou Enlai's instruction on the invitation of Soviet advisers for building design), in Zhonggong zhongyang wenxian yanjiushi, vol. 2, op. cit. (12), pp. 7–8.

[44] 'Zhonggong zhongyang guanyu jiuzheng "jishu yibiandao" kouhao tifa cuowu de zhishi' (The instruction of the Central Committee of the Chinese Communist Party on the rectification of the slogan 'Leaning to One Side in Technology'), in Zhonggong zhongyang wenxian yanjiushi, op. cit. (12), vol. 4, pp. 178–89.

[45] Rachel Leow, 'A missing peace: the Asia-Pacific Peace Conference in Beijing, 1952 and the emotional making of third world internationalism', *Journal of World History* (2019) 30(1–2), pp. 21–54.

[46] Danhui Li and Yafeng Xia, 'Jockeying for leadership: Mao and the Sino-Soviet split, October 1961–July 1964', *Journal of Cold War Studies* (Winter 2014) 16(1), pp. 24–60.

[47] Yi Wei, Long Denggao and Pierre van der Eng, 'The role of engineer-in-chief and the introduction of foreign hydraulic dredging technology and river conservancy into China, 1890s–1930s', *Front History China* (2020) 15(2), pp. 234–67.

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as He Zhitai, Cao Le'an and Yang Xianyi, had graduate degrees in engineering or other related fields and/or had overseas work experience.[48] They consulted foreign dam models and other relevant information and conducted repeated experiments during field investigations. They also worked with Soviet specialists to make construction plans and proposed new technical approaches to fit local geological conditions.[49]

Historians like Zuoyue Wang, Pete Millwood and Gordon Barrett have documented the important role played by internationalized Chinese scientists and experts in facilitating Sino-foreign scientific and diplomatic interactions during the Cold War. Zuoyue Wang argues that Chinese American scientists helped connect Chinese science and technology to American scientific knowledge and institutional networks.[50] Pete Millwood considers that the reacquaintance between American scientists and their Chinese colleagues between 1966 and 1978 contributed to the development of Sino-American diplomacy at times of flux in international relations.[51] Gordon Barrett frames Chinese scientists as key interlocutors who worked with foreign-affairs officials and created channels for cross-bloc engagement and contact.[52] However, these eminent Chinese hydraulic engineers were absent from the records of the APC delegation's visit in 1952. They may have been considered 'incompatible' with the nature of the diplomatic message that China was conveying with the 1952 Jingjiang Project visit.

The absence of foreign-trained Chinese engineers and technicians at the forefront of interactions with the APC delegation had two main reasons. First, the Communist regime at that time had reservations about individuals with internationalized backgrounds. In his study of the state technocratic system of hydroelectricity in the early 1950s, Xiangli Ding points out that the Party distrusted technicians associated with the Nationalists or foreign capitalist countries. Many of them were removed from leading positions and criticized as counterrevolutionaries.[53] In the Jingjiang Project, foreign-trained specialists were included in the design team, but they needed to have regular meetings with local cadres and experienced workers to discuss proper ways to deal suitably with emergencies. If they leaned too heavily on foreign theories or did not listen to suggestions, they would be accused of disrupting social unity.[54] The emphasis on unity and collaboration was a central tenet of Communist ideology. In addition, the visit by the APC delegation was not intended to be a technical exchange or a scientific meeting. Instead, its purpose was to showcase China's self-reliance, the role of the 'broad masses' and the ingenuity of local vernacular technologies. The audience for this visit was not composed of water specialists or technical experts but rather foreign delegates interested in witnessing China's achievements. Therefore professional hydraulic knowledge and technical expertise were not the primary focus of the event. This case underscores the point that elite scientists were not the sole interlocutors on which China's science diplomacy relied during the Cold War.

[48] See Sun Qinlu, 'Dayuan chunqiu: jinyi ciwen xiangei changjiang shuili weiyuanhui dayuan 60 huadan' (The stories in the compound: the 60th anniversary of the compound of the Yangzi Conservancy Committee), *Changjiang Shuili* (Yangzi Hydraulic Engineering), 18 January 2016.

[49] Cao Le'an, 'Shinian lai changjiang shuili jianshe shiye zhong sheji gongzuo de chengjiu' (The achievement of design work in the Yangzi river conservancy construction in the past ten years), *Renmin changjiang* (People's Yangzi River) (1959) 10, pp. 22–8.

[50] Zuoyue Wang, 'Transnational science during the Cold War: the case of Chinese/American scientists', *Isis* (2010) 101(2), pp. 367–77.

[51] Millwood, op. cit. (4).

[52] Barrett, op. cit. (4).

[53] Xiangli Ding, 'Transforming waters: hydroelectricity, state making, and social changes in twentieth-century China', PhD dissertation, the University at Buffalo, State University of New York, 2018, pp. 105–8.

[54] Wei Tingchen, 'Xin zhongguo quanmian zhili changjiang de xuqu: huiyi xingjian Jingjiang fenhong gongcheng' (The prelude to Yangzi river management in New China: the memory of Jiangjiang Projection construction), *Bai nian chao* (Tide of Century) (2011) 6, pp. 17–21.

Conclusion

The Asia-Pacific Peace Conference delegation's visit to the Jingjiang Flood Diversion Project in June 1952 was a significant demonstration of China's focus on vernacular technologies and indigenous knowledge in its international outreach. This approach was strategically aligned with the goals of the APC during the Korean War period. Both the Jingjiang Project visit and the APC were aimed at gaining the support of foreign peace activists, regardless of their occupations, social status, religious beliefs and political ideologies. They were designed to communicate China's dedication to peace and national development. Additionally, the visit highlighted China's approach to self-reliant development in hydraulic science and technology. By emphasizing vernacular technologies based on indigenous water control knowledge and collective efforts, the CCP provided a different vision of modernization to non-specialist visitors like the APC delegation, aligning with the CCP's ideology and policies like the mass-line approach. Correspondingly, Soviet technical assistance and the contributions of foreign-educated Chinese engineers and technicians were deliberately downplayed during the visit.

As an early example of the PRC's science diplomacy, the 1952 visit to the Jingjiang Project left an important legacy for China's foreign policy and its engagement in international scientific and technological exchanges in the following decades. China continued to promote 'people-to-people diplomacy' to achieve cross-bloc engagement and increase its influence especially in the Afro-Asian world. It actively participated in international conferences promoting peace and cooperation among Asian and African countries, such as the Bandung Conference in 1955. At the same time, China sought to further strengthen its scientific and technological engagement with other countries. These communications and exchanges gradually went well beyond water technology and took place across various domains, including statistics, agriculture, medical science, industrial production and transport technologies. In the process, China introduced to the world its unique features in science, technology and medicine, such as agricultural science and traditional Chinese medicine.

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