

“Marvelling at a World so Changed:”

The Three Gorges Project in Mao’s China

By Covell F. Meyskens

Swimming across the Yangtze River near China’s Three Gorges in 1956, Mao Zedong mused about “the great plans...afoot” in the People’s Republic of China (PRC).¹ One grand idea that occupied his mind was building the Three Gorges Dam’s (TGD) “walls of stones.” By containing the Yangtze’s waters, the dam’s gargantuan edifice would usher in a sea change in Chinese history. Catastrophic floodwaters would no longer devastate Central China, and Yangtze rapids would be flattened into a “smooth lake.” These alterations to China’s largest waterway would be so monumental that it would inspire “the mountain goddess,” which custom held inhabited the Gorges, to “marvel at a world so changed.”

Mao was not the first leader to gaze in awe at the epoch-making contributions that the TGD could make for China’s development - that milestone goes to Sun Yat-sen in 1919. Sun’s party – the Kuomintang (KMT) – subsequently conducted geological surveys in the 1930s and partnered in the 1940s with the United States and its top hydraulic engineer John Savage to draw up plans for a dam that would be at modern engineering’s forefront.² When the Chinese Communist Party (CCP) came to power in 1949, it heavily criticized the KMT. The CCP, however, shared its precursor’s view that a central mission of modern Chinese statecraft was “building (*jianguo*),” and that what the Chinese state had most urgently to construct was the infrastructural sinews of the Chinese nation. For China to metamorphosize from a weak agrarian country, whose government

¹ Quotes in this paragraph are from Mao Zedong, “Swimming,” *Marxists Internet Archive*, June 1956, <https://www.marxists.org/reference/archive/mao/selected-works/poems/poems23.htm>.

² Covell Meyskens, “Dreaming of a Three Gorges Dam amid the Troubles of Republican China.” *Journal of Modern Chinese History* 15 (2022): 176-194.

could not provide for its people and defend them from geopolitical threats, into an industrial powerhouse, whose government could not only protect its citizenry but create better living conditions and command international respect and prestige, Chinese leaders had to oversee the construction of the nation's critical infrastructure, from roads, railroads, and powerlines to mines, factories, and dams.³ As part of this process of building the infrastructural foundations of the Chinese nation, CCP leaders thought, like the KMT, that it was their political duty to catalogue the country's resources, make them serve economic growth, and domesticate resources that harmed the nation, like the Yangtze and its floods.⁴ As Shellen Wu has shown in her research, surveying China's mineral resources was one major prong of this developmentalist pursuit.⁵ In parallel, government agents worked to gather and instrumentalize hydrological knowledge about China's rivers to make them into engines of national development.

Mao's interest in the TGD set the CCP's party-state working on the project in the early 1950s. Like Chiang Kai-shek, Mao favoured the TGD's erection as part of Chinese government efforts to engineer a new energy regime that would make China's rivers into state-directed engines of national development. Rivers would no longer cause floods and complicate transportation but instead power industrialisation and the circulation of people and materials nationwide.⁶ With these promethean goals achieved, CCP leaders foresaw that China's global power and prestige would rise as the nation's riverine energies became state instruments of economic improvement. During Mao's time in power, the CCP undertook several projects to realise this titanic feat of

³ William Kirby, "Engineering China: The Origins of the Chinese Developmental State, in *Becoming Chinese: Passages to Modernity*, ed. Wen-hsin Yeh (Berkeley: University of California Press, 2000), 137–160.

⁴ Timothy Mitchell, "Fixing the Economy," *Cultural Studies* 12 (1998): 82-101.

⁵ Shellen Xiao Wu, *Empires of Coal: Fueling China's Entry into the Modern World Order, 1860-1920* (Stanford: Stanford University Press, 2015). Shellen Xiao Wu, *Birth of the Geopolitical Age: Global Frontiers and the Making of Modern China* (Stanford: Stanford University Press, 2015).

⁶ Meyskens, "Dreaming."

environmental engineering. Party efforts primarily focused on mobilizing huge regiments of manual labour to build roughly 90,000 small reservoirs and 2,000 medium and large reservoirs.⁷

The central pillar in the CCP's envisioned developmental disciplining of the Yangtze was the Three Gorges Dam. The CCP's hopes of realizing this dream, however, came up against the same conundrum that the KMT had encountered in the 1940s, namely China did not have technological, administrative, or fiscal means to undertake such a mammoth project. What the central government had adequate resources for was constructing small reservoirs for water storage and power generation, which it produced extensively. When the CCP did pursue large hydro-endeavours, it channelled resources mainly to projects on the Hai, Huai, and Yellow Rivers, such as the Sanmenxia Dam.⁸

While the CCP did not devote as much attention to the Three Gorges project as other hydro-ventures, it did not let the dam fall completely by the wayside and engaged in preparatory work. To make up for domestic resource constraints, the party employed the same developmental tactic the KMT used in the 1940s: it sought foreign support. Where the KMT called on the United States for assistance, the CCP by contrast appealed to Moscow in the 1950s. In both instances, it was a national crisis that stimulated an international partnership to construct this hydro-technical wonder.⁹ In the KMT's case, it was the Sino-American struggle against Japan during World War II that motivated locking-in substantial American backing for China's postwar development. In the CCP's case, it was the 1954 Yangtze floods that triggered soliciting Soviet patronage.¹⁰

⁷ Vaclav Smil, "China's Water Resources," *Current History* 77 (1979): 59.

⁸ Smil, "China's Water," 59.

⁹ Judd Kinzley, "Crisis and the Development of China's Southwestern Periphery: The Transformation of Panzhihua, 1936-1969," *Modern China* 38 (2012): 559-584.

¹⁰ Chris Courtney, "At War with Water: The Maoist state and the 1954 Yangtze floods," *Modern Asian Studies* 52 (2018): 1807-1836.

Like Chinese and American experts in the 1940s, PRC and Soviet specialists held in high regard American John Savage's plan for the TGD, and like Savage, they envisaged the dam as part of the comprehensive development of China's river basins.¹¹ Constructing the dam was particularly important because it promised to transform the Yangtze River Basin's socioeconomic and environmental landscape. To achieve this end, CCP leaders centralized technical personnel in the Yangtze River Water Conservancy Commission (YRC) and tasked its researchers with making legible the river's geological patterns. Based on this data, Chinese and Soviet experts could then design a dam that made the Yangtze into a predictable and productive instrument of national development, a techno-socialist dream which both Chinese and Soviet participants strove to materialize

Not everyone involved in the project supported its construction. Critics argued that small Southwest dams could achieve comparable benefits, while not tying up so much of China's limited resources in a scheme with a long completion date and whose electrical output far exceeded national demands.¹² Mao's backing overrode criticisms and kept the project on the CCP's developmental agenda. Yet it was also Mao and Zhou Enlai that maintained technocratic-minded officials' influence over the dam until the late-1960s when Mao initiated the Cultural Revolution's assault on bureaucratic and technical elites and subsequently greenlighted a proposal to build a dam in the Three Gorges region, that sidelined technocrats, during the 1969 Sino-Soviet border crisis.

¹¹ Christopher Sneddon, *Concrete Revolution: Large Dams, Cold War Geopolitics, and the US Bureau of Reclamation* (Chicago: University of Chicago Press, 2015), 28-51. David Pietz, *The Yellow River: The Problem of Water in Modern China* (Cambridge: Harvard University Press, 2015).

¹² Lin Yishan, "Guanyu Changjiang liuyu guihua ruogan wenti de shantao," May 1956, in *Zhongguo changjiang sanxia gongcheng lishi wenxian huibian (1949-1992)*, 33-53. Sun Ronggang, *Mengxiang yu xianshi: Sanxia gongcheng jishi* (Beijing: Zhongyang wenxian chubanshe, 2005), 31.

Advocated by Hubei officials, this hydro-political venture sought to simultaneously realize Mao's dream of a Three Gorges dam and accelerate expanding China's military-industrial defences. This developmental push sought, like earlier efforts, to ensure the project operated at global technoscience's frontiers. Party leaders, however, promoted a knowledge regime that imparted technological practice's cutting edge with decidedly national roots as the guiding principle behind construction became Mao's idea that mass mobilization, labour enthusiasm, and native techniques were more powerful contributors to industrialisation than technical aptitude and industrial equipment.¹³ In the end, the CCP's employment of the Maoist developmental way produced a bumbling attempt to establish a Three Gorges dam. To rectify the project, Zhou Enlai halted construction in 1972 and returned control to administrative and technical experts.

Making the Yangtze Legible and Controllable

As part of the CCP's drive to establish a new energy regime that transformed China's rivers into engines of national development, the CCP ordered the Water Conservancy Ministry in 1950 to gather all documentation on China's rivers and chart out their basic geological features. Attributes evaluated included annual height difference, waterflow volume, and electricity generation capacity. According to Ministry calculations, China's potential annual hydropower was estimated at 149,000 megawatts with roughly two-thirds from the Southwest, coming mainly from the Yangtze River Basin. In 1954-55, the Ministry conducted another assessment of 1,598 major rivers which revised upward China's hydropower to 544,000 megawatts. Despite this more than

¹³ Carl Riskin, *China's Political Economy* (Oxford: Oxford University Press, 1987), 201-222.

threefold increase, the Southwest and the Yangtze River Basin remained the key sources of national hydro-energy.¹⁴

To better comprehend and control the Yangtze's water resources, the CCP formed the Yangtze River Water Conservancy Commission in 1949. Appointed as its director was Lin Yishan. Possessing a college degree from Beijing Normal University, Lin was better educated than the average party member.¹⁵ His degree was in history, and he was made YRC director because of his leadership in the Shandong base area and contacts with high-ranking officials. It might thus appear that Lin's appointment is an indication that the CCP did not technocratically manage the Yangtze, but while Lin started out as a revolutionary, his party work made him into a technocrat.

Like many revolutionaries converted into bureaucrats, Lin attended science and technology classes in the 1950s to gain the basic skills and knowledge requisite for his position.¹⁶ Lin also emphasized the YRC's technical competence, collecting documents from KMT agencies with managerial, technical, and geological information about the Yangtze and hiring around 2,600 experts formerly working on KMT Yangtze projects. The Commission also set up short courses in administration and technical skills for cadres, and it recruited educated urban youth and professionals proficient in water conservancy, mechanics, and accounting. Through these efforts, the Commission's rolls increased about eighty percent to 4,700 employees by 1951.¹⁷

In the early 1950s, the YRC concentrated on flood control. Of particular concern was western Hubei near Jingzhou where the Yangtze had repeatedly inundated southern Hubei and

¹⁴ Guojia nengyuan ju, *Zhongguo shuidian 100 nian: 1910-2010* (Beijing: Zhongguo dianli chubanshe, 2010), 44.

For more on CCP efforts to control China's rivers in the 1950s and 1960s, Micah S. Muscolino, "The Contradictions of Conservation: Fighting Erosion in Mao-Era China, 1953-66," *Environmental History*, 25(2): 237-262.

¹⁵ Lin Yishan, *Lin Yishan huiyi lu* (Wuhan: Changjiang chubanshe, 2019), 13-14.

¹⁶ Lin, *Lin*, 118-120.

¹⁷ Zhonggong zhongyang dangshi yanjiu shi zhonggong hubei sheng Yichang shi weiyuanhui zhonggong hubei shengwei ganshi yanjiushi, *Zhongguo gongchan dang yu changjiang sanxia gongcheng* (Beijing: Zhonggong dangshi chubanshe, 2007), 6. Lin, *Lin*, 121-122.

northern Hunan. A big 1949 flood in the area pressed home to CCP leaders the urgency of restraining the Yangtze. In 1950, the YRC proposed the Yangtze River Flood Diversion Project. Mao and Zhou Enlai knew that the project would not Yangtze eliminate flooding. Yet they were also aware that China lacked the technical, financial, and material capability to achieve this objective. They thus endorsed the YRC's plan as an interim method of protecting Hubei and Hunan's "millions of people and property" by reinforcing local dikes and building a flood diversion area.¹⁸ Leading Soviet hydraulic expert Burkov (布可夫)¹⁹ questioned whether China could execute this task and was only persuaded when YRC experiments modelling the flood diversion area displayed their technical know-how.²⁰

The project's construction did not solely rely on China's advanced technological capabilities. It also depended on party power to quickly assemble a huge work force. In 1952, provincial leaders mobilized 300,000 people and placed them under a centralized command centre with members from the Ministries of Water Conservancy, Transportation, and Agriculture and Forestry as well as the Soviet Union.²¹ Hydraulic engineer Zheng Hui brimmed with satisfaction upon seeing the final product in 1952. When he had worked in America as an engineer during the Republican era, Americans had told him that the CCP could engage in war but not development. The CCP proved American doubters wrong, and the *New York Times* admitted as much, publishing a laudatory article, which caused Zheng to well up with tears of nationalist joy.²²

¹⁸ Sun, *Mengxiang*, 26.

¹⁹ In the source text, an original Russian name is not provided. Only a Chinese transliteration of a Russian name is given. I have not been able to locate the original Russian name, so I have transliterated the Chinese name into English.

²⁰ Lin, "Changjiang," 2.

²¹ Sun, *Mengxiang*, 26-27.

²² Lai Cenglin, "Qing man changjiang," in *Sanxian wenshi congheng di er ji*, ed. Zhongguo renmin zhengxie shanghui Yichang shi weiyuanhui wenshi ziliao wenyuanyhui (Yichang: Zhengxie yichang shi weiyuanhui wenshi ziliao hui, 2000), 20-21.

China's press also expressed gratification about China regaining sovereignty over its waterways when Mao toured the Yangtze in 1953.²³ During his visit, Mao met with Lin Yishan, questioned him about the Yangtze's weather patterns and floods, and he told Lin that, "Taming this big river requires careful study," and that realizing this goal was "a scientific matter." Tipping his hat to the importance of empirical evidence, Mao asked about collected data on Yangtze hydrology. Lin assured Mao that the YRC had lots from Republican-era studies and had conducted surveys to fill in gaps in existing records, an endeavour which Mao praised for its "scientific" approach.²⁴

After this opening discussion, Mao turned his attention to the flood diversion project and questioned whether it could terminate regional floods. When Lin replied no, Mao probed about what would.²⁵ Lin discussed how the Commission planned to handle this matter in three stages. First, it would bolster dikes to control the Yangtze and its tributaries. Then, polders would be built to check floods. Lastly, reservoirs would be constructed on the Yangtze's tributaries, which would completely remove the flood threat, provide hydroelectricity, improve transport, and expand irrigation. Mao had another idea, "Do you think that building all these reservoirs on tributaries...would be equivalent to a big Three Gorges reservoir?"²⁶ Lin replied that the YRC really hopes "to build the Three Gorges Dam, but we dare not think about it now" due the lack of fiscal, technical, and admin resources for such an enormous enterprise.²⁷ Mao pushed back, retorting, "But didn't you say that all these reservoirs...would not be equivalent to a Three Gorges reservoir?" Lin responded by going over American engineer John Savage's TGD plan, drafted for

²³ Wang Zhousheng, "1953 nian Mao Zedong: Fandui diguo zhuyi qinlue yao jianli qiangda haijun," *Fenghuang wang*, July 16, 2007, http://news.ifeng.com/history/zhongguoxiandaishi/detail_2011_07/16/7735122_0.shtml.

²⁴ Lin, *Lin*, 137-139. Quotes are on page 139.

²⁵ Zhonggong, *Zhongguo*, 8.

²⁶ Lin, *Lin*, 141.

²⁷ Zhonggong, *Zhongguo*, 7-8.

the KMT in the 1940s. Mao took particular interest in its high cost – \$1.3 billion – which would surely concern party elites. Mindful of the technical difficulties involved in such a complex project, Mao was pleased to hear that the YRC had 270 engineers and over a thousand technicians thanks to its persistent efforts to expand its technical staff. Despite the Commission’s significant concentration of technical personnel, Mao understood that it did not have a sufficient technical or empirical base to begin the Three Gorges project, and so he directed Lin to conduct a preliminary investigation.²⁸

The YRC’s Engineering Department then studied whether damming the Min, Wu, Jinsha, and Jialing Rivers in the Southwest would settle the flood problem better than the TGD.²⁹ As part of this research venture, surveyors investigated potential reservoir sites, various flood control plans, and the different factors behind Middle and Lower Yangtze floods. The Commission also reviewed Savage’s plan and uncovered that the location Savage chose for the TGD – Nanjing’guan – was riddled with caves, leaving Lin Yishan wondering whether Savage was as brilliant as most believed. To verify Savage’s plan, Lin inspected possible dam sites with former KMT hydraulic engineer Li Zhennan, concluding that the TGD best location was not Nanjing’guan but further upstream at Sandouping’s thick granite foundation. Survey participants understood that China lacked the technical, administrative, and fiscal capacity to build the Three Gorges Dam at this better location. But they took pride in showing that Chinese science could best American science in at least this instance.³⁰

Investigating and Comparing Proposals

²⁸ Lin, *Lin*, 142, 146.

²⁹ Zhonggong, *Zhongguo*, 7-8

³⁰ Lin, “Changjiang,” 2-3. Lin, *Lin*, 147.

Efforts to tame the Yangtze gained intensity when it flooded in 1954, killing 33,000 and damaging 4.37 million homes. This hydrological crisis demonstrated the Yangtze River Flood Diversion Project's insufficiency to safeguard the nation. After the flood, Mao toured southern China with Zhou Enlai, Liu Shaoqi, and Vice Premier Chen Yun. While in Hubei, Mao met with Lin Yishan and asked whether China could independently build the TGD. Lin replied that the country was not ready, but it could be done with "Soviet expert help."³¹ Otherwise, construction would have to wait until after China and the Soviets built the Danjiangkou Dam on the Han River.

From this experience, Chinese engineers could obtain world-class capabilities since Soviet experts were as good as American, and the U.S. had made designs for the TGD. With this technical base established, China could pursue the TGD on its own. Another problem that the party had to address was shortages of the survey equipment needed to devise an accurate geological picture of the Three Gorges. Despite this national lack, Lin Yishan reported that Chinese surveyors had already surpassed America in one respect. They had shown that Savage's plan to place the dam at Nanjing'guan was flawed, and that the dam should instead be built at Sandouping.³² Like many CCP leaders, Mao was interested in finding the optimal place for the TGD because of the great boost it would give to forming a new riverine energy regime that would "win the battle against" Yangtze floods.³³ Mao understood that Soviet assistance was necessary due to scarce domestic machinery and technical experts, and so he requested Soviet help with designs for the Yangtze River Basin and TGD. These activities were not part of the First Five Plan. Nevertheless, Moscow still agreed and promptly dispatched twelve hydraulic experts. Lin Yishan integrated them into a

³¹ Zhonggong, *Zhongguo*, 9.

³² Lin, *Lin*, 147.

³³ Zhonggong, *Zhongguo*, 9.

143-person group, which contained a who's-who of China's energy and hydrology sectors and surveyed the Yangtze River Basin for two months.³⁴

In the end, Soviet and Chinese surveyors came to different conclusions about the best way forward. The Soviets prioritized augmenting China's energy base and recommended building one dam near Chongqing and four more on the Min, Jinsha, Jialing, and Wu Rivers. Some Chinese participants agreed that the YRC should "prioritize the Yangtze's tributaries and then work on the Yangtze."³⁵ Lin Yishan disagreed and pointed out that the Soviet plan would not control the waters of the Wu and Jialing Rivers south of Chongqing which had caused one of Central China's largest floods in 1870. Lin argued that the TGD could fix this hydrological problem and doubted that Sichuanese officials would support the Soviet plan because of how much of Sichuan's farmland would be lost.³⁶ In December 1955, Lin and the Soviet group's leader presented their proposals to Zhou Enlai who endorsed the Chinese proposal for two reasons. The Soviet plan would submerge a huge chunk of arable land and not remedy flooding generated by the Wu and Jialing Rivers while the TGD could store so much water that Yangtze floods would become non-existent. The Soviets ultimately supported the Chinese proposal, but they were not willing to cast aside Savage's recommendation of Nanjing'guan as the TGD's location. Savage was a world-class engineer and further geological studies were necessary to disprove him. On the other hand, the Soviets were confident that China possessed enough engineering talent for the dam's construction.³⁷

When Mao heard that the Three Gorges project was progressing, he was so delighted that regular speech was inadequate. Only poetry could convey his vision of the TGD's epochal

³⁴ Wu Shaojing, *Zhou Enlai yu zhishui* (Beijing: Zhongyang wenxian chubanshe, 1991), 35-36. Zhonggong, *Zhongguo*, 9.

³⁵ Lin, "Changjiang," 3.

³⁶ Wu, *Zhou*, 36-37. Li Zhennan, "Huiyi sanxia gongcheng bazhi de zuanze," in *Sanxian wenshi congheng di yi ji*, 12.

³⁷ Lin, "Changjiang," 3.

significance. Mao encapsulated his techno-historic dream in the poem “Swimming.” Composed after wading across the Yangtze in 1956, Mao contemplated a not-too-distant future when “walls of stone will stand upstream...to hold back...the clouds and rain” of Southwest China and bring about “a smooth lake... in the narrow gorges,” a technological triumph which would inspire the legendary goddess of the Three Gorges “to marvel at a world so changed.”³⁸ Mao’s words here were not just empty poetic reverie as the lines of his poem would reverberate in the halls of power of the Chinese state, serving as both inspiration and justification in future efforts to construct the Three Gorges Dam.

Preparing and Debating

By March 1956, over 1,000 surveyors from water conservancy departments around China were gathering data for the TGD and other Yangtze River Basin projects. Research teams performed geological surveys, investigated possible dam locations, and studied socioeconomic conditions.³⁹ By October 1957, geological teams had assembled information from 17,448 hydrological stations about local rainfall, evaporation rates, and the sediment content, historic height, and waterflow volume of the Yangtze and its tributaries. Collected data included any available information from 1877 onwards.⁴⁰

In May 1956, Lin Yishan published an article that summarized the state of Three Gorges research and endorsed building the TGD. He, nevertheless, acknowledged that China lacked the requisite construction machinery and hydropower equipment, that researchers had not determined the dam’s location, and did not sufficiently understand silting trends and how to pour cement for

³⁸ Mao, “Swimming.”

³⁹ “Changjiang liuyu da guimo kance gongzuo quanmian zhankai,” *Renmin ribao*, March 25, 1956.

⁴⁰ Li Min, “Changjiang linian shuiwen ziliao zhengbian zhengli jieshu,” *Renmin changjiang bao*, October 19, 1957.

such a large dam. The YRC had also not figured out the dam's socioeconomic impact. How the YRC would have made this evaluation is not apparent. What is clear is that Lin Yishan thought that only after addressing these many issues, would the TGD be based on a solid empirical base, the most economical methods, and be as beneficial to China's development as scientifically possible. Yet even then it was still necessary to consider whether to allot sparse funds to the dam when a still mainly agrarian China could not consume so much electricity.⁴¹

Although Lin admitted that China was not yet equipped to construct the TGD, he thought that the party should work towards acquiring the necessary knowledge, capabilities, and material resources because the dam would mark a major break with China's past. The party's top priority had to be eliminating flooding given that the Yangtze wreaked havoc every five-to-six-years; the TGD would solve this diluvian problem. Modelling experiments had shown that it could handle every single Yangtze flood in China's annals, and the dam would also pacify the treacherous waters above the Three Gorges and make inland transport safer and more abundant. Irrigation networks emanating from the dam would additionally lift regional agriculture, and its power would massively stimulate industry. Lin emphasized that Soviet experts concurred with his views and affirmed that the dam could eventually be constructed with presently available technologies.⁴²

Some Chinese experts did not agree with Lin. The most famous critic was the Director of the Energy Ministry's Hydroelectric Bureau Li Rui, who formerly served as Mao's secretary.⁴³ Li asserted that China should strive with Soviet support to reach the technological frontier that would make possible constructing a dam of such magnitude. China, however, should not attempt to build the dam soon. Li considered Lin Yishan's proposal too vague. Lin asserted that the dam would

⁴¹ Lin, "Guanyu," 20-32.

⁴² Lin, "Guanyu," 20-32.

⁴³ Zhonggong, *Zhongguo*, 9. Li, "Huiyi," 12.

cease Yangtze floods and contribute to national development, but he had not conducted a detailed analysis of the dam's cost, socioeconomic consequences, and completion timeline. Comprehensive plans had to be drawn up that explained how the dam's water and energy would be funnelled into specific economic sectors. What is more, Lin had not adequately evaluated whether erecting the dam made sense.⁴⁴

Before China could undertake such a colossal project, technical personnel needed a more comprehensive geological understanding of the Yangtze River Basin, and the party needed the capacity to produce the requisite survey and construction equipment. Even if China accomplished these objectives, Li Rui still questioned whether it would be wise to have a single project absorb so much of China's scarce fiscal and technological resources and thereby impede other more easily realizable projects. While Li supported the CCP's goal of building a new energy regime that made China's rivers serve the state's developmental objectives, Li contended that instead of constructing the TGD, the CCP should establish several small dams on the Yangtze and its tributaries whose economic fruits were obtainable with less money, resources, and time. These more modest enterprises would also avoid one huge issue that Lin Yishan had ignored, namely the TGD required relocating about 2.15 million people. As other PRC dam projects had illustrated, people would likely be unwilling to move, and they should not be forced to do so. The party had to consult with them and arrive at a consensus on how to proceed.⁴⁵

Stressing the importance of scientific debate in the Three Gorges project, Mao summoned Lin Yishan and Li Rui to present their competing views at a central party meeting in Nanning in

⁴⁴ Li Rui, "Guanyu changjiang liuyu guihua de ji ge wenti," September 1956, in "Zhongguo changjiang sanxia gongcheng lishi wenxian huibian" bianweihui, *Zhongguo changjiang sanxia gongcheng lishi wenxian huibian (1949-1992)*, 33-53.

⁴⁵ Li, "Guanyu," 33-53.

Guangxi province in January 1958.⁴⁶ In his talk, Lin drew on flood data since the Han dynasty to argue that the Three Gorges was the right location to finally resolve the Yangtze floods that had long afflicted Central China. As Lin talked, Mao's thoughts turned to party discussions about the dam's cost, leading him to inquire about John Savage's plan, its predicted expenses of around 780 million yuan, and decade-long construction timeline Mao offered his annual expense account of 70-80 million to cover costs and questioned whether Savage's price estimate was achievable. Given that the CCP would have still covered Mao's expenses if he had followed through on this proposal, this idea might not seem to be very meaningful. However, by offering up his own personal expense account for the project, Mao was displaying his intense ardour for the dam.

Lin Yishan also took Mao's proposal seriously and replied that not only that Mao was correct, but the Commission had already lowered anticipated costs from the Soviet's projected price tag of 20 billion yuan to 740 million yuan.⁴⁷ At this point, Zhou Enlai opined that the dam's cost was further reducible if its hydroelectric output was decreased from 25 million kW to 5 million kW. Lin agreed but retorted, "For this sort of big high-dam, how can we just install 5 million kW of electric capacity?"⁴⁸ Lin proposed a different method of contracting costs – a temporary hydroelectric plant on the cofferdam built prior to the final dam. This stratagem would both lower costs and sooner stimulate economic growth.⁴⁹

Mao then called on Li Rui to give his views on the TGD. Li argued that the dam would not completely end Yangtze floods. It would only address floods caused by waters above the Three Gorges, which only accounted for half the Yangtze's waters. The dam would do nothing to lessen downstream floods, which would still threaten Central China. Li also challenged Lin's positive

⁴⁶ Sun, *Mengxiang*, 30-31

⁴⁷ Lin, *Lin*, 151-152.

⁴⁸ Zhonggong, *Zhongguo*, 10.

⁴⁹ Lin, *Lin*, 156-159.

portrayal of the dam's enormous electricity generation, questioning how an underdeveloped China could use so much power. Lin's proposed temporary hydroelectric plant found no favour with Li either, who condemned it as a huge waste of precious resources. The government also did not have enough geological data for the dam's construction. If the CCP were to move ahead, nonetheless, the project would be hamstrung by the fact that no engineer worldwide knew how to build the dam's hydroelectric powerplant or transport lock. It is not evident what information, if any, Li Rui was drawing on to justify this claim. Given that John Savage had concluded in the 1940s that building the dam's power station and lock were feasible, there is reason to believe that the validity of Li Rui's assertion is questionable. Li, however, undoubtedly was opposed to the dam's construction and sought to discredit its supporters. Li thus also argued that the CCP should hold off on building the TGD because its massive concrete edifice would be a prime target for China's enemies. Given all these difficulties, Li suggested that instead of the TGD, the party "should first develop tributaries, starting with the small and then...the big," and focus on dikes for flood control.⁵⁰

Mao praised Li Rui's comments in general terms and shared his concern about military safeguards. Nevertheless, he still sided with Lin Yishan, arguing that China should develop its hydroelectric sector and leave coal underground for future generations. What had to be done now was "actively prepare" a "completely reliable" regional development plan for the Yangtze centred on the TGD. As Mao was inclined to do, he made Zhou Enlai the supervisor of the Gorges project. Zhou initially genuflected, saying that "Such a big affair would be better for the Chairman to handle." Liu Shaoqi disagreed and asserted that "Comrade Enlai is able to grasp the Chairman's intention, and so it would be better for him to be in command."⁵¹ Zhou yielded, and Mao ordered

⁵⁰ Sun, *Mengxiang*, 31.

⁵¹ Wu, *Zhou Enlai*, 37.

him to check on the project four times a year. With this decision, Mao again gave his imprimatur to the Three Gorges Dam, ensuring that critics did not prevail, and that machinery of the Chinese state continued to work towards the dam's realization. By assigning his righthand man, Zhou Enlai, to oversee the project, Mao also not only illustrated how important the project was for him personally, but he guaranteed as well that the man at the project's helm had extensive power over the Chinese government apparatus.

Moving Towards a Great Leap

Zhou immediately started work, leading a team to survey the Three Gorges in March 1958. The group included State Planning Commission Director Li Fuchun, Finance Minister Li Xiannian, Lin Yishan, and over one hundred Chinese and Soviet technical experts and administrators. During their tour, they stopped at Nanjing'guan. Lin took Zhou there to show him local caves, disprove John Savage's suggestion to build the dam there, and thereby refute the widely held idea that China was scientifically behind America. Lin argued for constructing the dam instead at Sandouping, which they proceeded to next. While there, Zhou was moved to reflect on the Three Gorges' sublimity and recited Mao's paean to their beauty and power – "Swimming." By giving a recitation of Mao's poem, Zhou also reminded project participants that they were involved in no ordinary matter. They were part of a historic endeavour that Mao thought to be of the utmost political importance as it would forever change China's landscape by domesticating the Yangtze River and channelling its hydraulic power into industrializing the nation.

After listening to Lin Yishan's report about the geological and technical advantages of building the TGD at Sandouping, Zhou acceded but informed Lin that he must convince Chinese and Soviet experts with further data and scientific experiments as many still viewed Savage's plan

as the premier model.⁵² Zhou encouraged project administrators to engage in debates of this sort because the TGD was a huge endeavour that could not be approached unilaterally. The Commission had also to formulate a detailed budget and ensure that TGD planning was coordinated with developmental plans for the entire Yangtze. At the end of his tour, Zhou declared that China could build the dam within fifteen to twenty years with already available technologies. However, not wanting project leaders to be too forward-leaning, Zhou reiterated that Mao and himself must review and approve all plans and decisions.⁵³

Zhou then headed to the Chengdu Conference where central and provincial leaders were conducting early discussions about the Great Leap Forward. At the meeting, CCP elites discussed building the TGD as one way to rapidly advance China's long-term economic goals. Chinese and Soviet experts' recent determination that it was technologically possible to construct the dam bolstered party support. Yet before construction began, leaders insisted on conducting more preparatory work, but the Leap's heated atmosphere led the central party to move more towards initiating the dam's construction, setting out a timeline for completing preparations for the first time in PRC history that mandated the YRC to finish the initial Yangtze development plan by 1959 and a preliminary TGD plan between 1959 and 1963.⁵⁴ After the Chengdu Conference, Mao and Lin Yishan steamed down the Yangtze from Chongqing to the Three Gorges. While onboard, Mao named Lin the "King of the Yangtze" and asked him, "Can you help me find someone to be (CCP) Chairman? Then, I'll be your assistant and help you build the Three Gorges Dam. How about it?"⁵⁵ Although Mao was joking, his assertion demonstrated how vital he considered the project to be for reigning in China's floods and furthering national development. At journey's end, Mao swam

⁵² Du Xixiang, "Zhou gong sanxia qing," in *Sanxian wenshi congheng di er ji*, 44-45.

⁵³ Zhonggong, *Zhongguo*, 10. Wu, *Zhou*, 40-41.

⁵⁴ Zhonggong, *Zhongguo*, 37-40.

⁵⁵ Lin, *Lin*, 151.

again across the Yangtze. In the late 1960s, project administrators would honour Mao by making that date – March 30th – into the code name for the Yangtze’s first dam – Gezhouba – or Project 330. This event, however, was a decade away.

What was of the order of the day in March 1958 was the Great Leap, which sought to generate a Maoist way to speed up China’s transformation into a premier socialist industrial nation. According to Mao, the knowledge regime behind Soviet economic methods was flawed. It produced economic advancements too slowly, and it accorded too much authority to bureaucrats and technical experts. To overcome these deficiencies, Mao advocated a different knowledge regime which he proclaimed offered an alternate means of socialist industrialisation that was more suited to China’s concrete conditions. Like Mao did with his poem “Swimming,” he aestheticized his strategy for rapidly reengineering China’s economy, giving it the sobriquet of “walking on two legs.” In this way, Mao made a top-down developmental vision seem to be an earthy everyday way of promoting economic progress that was as simple as walking.

According to Mao’s two-leg developmental strategy, economic actors should modify how much labour and capital were employed in the industrialisation process depending on their availability. In China’s case, it should offset its capital-poor economy by directing its large population into building infrastructure and relying on handicrafts, muscle power, and native techniques instead of industrial machinery, technical expertise, and foreign practices. Mao’s developmental approach came from his military thought which had not depended on technical experts, advanced weaponry, and foreign assistance to defeat the CCP’s enemies in the 1930s and 40s, but on mobilizing all the people and resources at the party’s disposal.⁵⁶

⁵⁶ Riskin, *China’s*, 201-222.

Maoist developmental ideas are visible in Great Leap-era meetings about the TGD held in June and October 1958. During these meetings, attendees discussed possible dam locations and the best techniques to develop transport, produce electricity, control floods, and construct irrigation systems. Meeting participants, however, also echoed Leap talking points, stressing the national need to liberate the masses from oppressive foreign models that prized high technology and book knowledge and instead of the masses' power to accomplish monumental feats of physical strength and create internationally trailblazing technological inventions. In this vein, attendees exercised their technical imagination and dreamed up a massive crane that could move mountains, and they envisioned a national future in which China's workers forged the frontiers of global technoscience, not through formal education and laboratory research, but through building the TGD.⁵⁷

During the Leap, Maoist flights of scientific fantasy fuelled other hydraulic projects, most infamously, the Yellow River's Sanmenxia Dam where, in line with a Maoist developmental approach, the party compensated for shortages of industrial capital with the mass mobilization of labour. The result was a dam that both silted up and was unstable.⁵⁸ Less well known is the Danjiangkou Dam in Hubei, which Lin Yishan had recommended as the TGD's training ground. Danjiangkou was not the model of technical proficiency that Lin envisioned. It was an object lesson in the problems that the Maoist developmentalism can produce as it suffered from similar faults as Sanmenxia.⁵⁹

As for the TGD, the YRC sought to ready its construction by establishing a test dam on a Yangtze tributary – the Lushui River – in 1958. The Commission took this course of action because

⁵⁷ Guowuyuan sanxia gongcheng jianshe weiyuanhui, *Bainian daji: Sanxia gongcheng 1919-1992 nian xinwen xuanji* (Wuhan: Changjiang chubanshe, 2005), 49-58.

⁵⁸ Pietz, *Yellow*, 225-229.

⁵⁹ Hubeisheng weiyuanhui xuexi wenshi ziliao weiyuanhui, *Hubei sheng wenshi ziliao, di sishi er* (Wuhan: Hubei sheng chubanshe, 1993), 1-7.

it did not have experience constructing large dams. The test dam bore the Leap's imprint with technical personnel seeking techniques to accelerate the TGD's eventual construction. Methods examined leaned on both pillars of Mao's two-leg development strategy, employing capital-intensive approaches, such as increasing machine usage, as well as labour-intensive means such as stimulating labour enthusiasm and speeding up cement pouring and the building of the dam's different parts.⁶⁰ The party crossed another threshold in September 1959 when plans for the dam and Yangtze River Basin were finished, and the leading Soviet expert in China informed Zhou Enlai that construction preparations could commence. Another milestone was reached in April 1960 when the central party suggested investing 400 million RMB in the TGD and starting construction in 1961.⁶¹

That never happened for a few reasons. First, leaders held divergent outlooks about the project. Although prominent critic— Li Rui — was imprisoned for two decades for opposing the Leap, some top officials still supported his view that the party should first develop the upper Yangtze's tributaries before the Three Gorges Dam. Party Vice Chairman — Chen Yun — disagreed with starting the Three Gorges project for another reason. The hydro-sector's resources were already stretched thin on the Sanmenxia Dam and other big hydroelectric plants. Sanmenxia also raised other issues, most importantly its silting up provoked concerns about the TGD clogging up China's main aqueous lifeline — the Yangtze.⁶² Further stymieing support for the dam was Moscow's withdrawal of Soviet experts and the Leap's collapse into economic disorder and a massive famine.⁶³

⁶⁰ Lin, *Lin*, 228-236.

⁶¹ Zhonggong, *Zhongguo*, 11.

⁶² Lin, "Changjiang," ??.

⁶³ Riskin, *China's*, 130.

The YRC was not exempt from this catastrophic condition as most of its personnel shifted to farm work in 1961 to ward off starvation.⁶⁴ Some officials believed that the government should take more measures to address resource strains and disband the TGD project group. Mao and Zhou Enlai thought otherwise. They acknowledged that it was not time to construct the dam, as it would cost over 10 billion yuan, and China did not have the capacity to pursue such a vast venture, especially with Sino-Soviet relations deteriorating and Sino-American tensions intensifying.⁶⁵ The TGD project, however, could not completely shut down. Some personnel could be transferred to other ventures, but others had to continue to work towards fulfilling the techno-political dream of walls of stone rising in the Three Gorges and arousing the heaven's awe.⁶⁶

The Cultural Revolution and the Gezhouba Debacle

However, Zhou Enlai stipulated that before the dam's construction moved forward, the YRC must address a few problems. First, China's international situation had significantly worsened with the Sino-Soviet Split, and so engineers had to find a way to defend the dam from air-raids.⁶⁷ The YRC also had to ensure that the TGD could last a long time as Mao had called during the Leap for a dam that "could operate for at least 200 to 300 years."⁶⁸ Lin Yishan and other Commission experts knew this was technologically impossible. Yet they also understood how important it was to ensure the TGD's longevity. The key puzzle was the Yangtze's heavy silt content. In 1964, the YRC stood up a special group to study silting patterns on all China's dams

⁶⁴ Zhonggong, *Zhongguo*, 11.

⁶⁵ Lorenz M. Lüthi, *The Sino-Soviet Split: Cold War in the Communist World* (Trenton: Princeton University Press, 2008), 246-201. Warren I. Cohen, *America's Response to China: A History of Sino-American Relations* (New York: Columbia University Press, 2010), 206-214.

⁶⁶ Lin, "Changjiang," 6. Wu, *Zhou*, 43-44.

⁶⁷ Wu, *Zhou*, 44.

⁶⁸ Lin, *Lin*, 160-161.

and techniques for managing them. The technical experts involved also gathered information about dams worldwide and checked that China's silt management methods accorded with international practices. In 1966, the group completed their study and submitted a report to Zhou Enlai, explaining the techniques they had uncovered for controlling silt accumulation and extending a dam's life span.

By the time the YRC submitted this report, it had over 10,000 employees, making it one of the PRC's larger technical institutes.⁶⁹ While this strength helped with TGD preparations, it became a liability when Mao launched the Cultural Revolution in 1966 and institute a new knowledge regime which targeted leading administrators and technicians for supposedly being "capitalist-roaders" who were more concerned about their own bureaucratic and technical privileges than about socialist China's revolutionary progress.⁷⁰ Like at many other government offices, the Commission's administrators and technicians were attacked in late 1966. When the Cultural Revolution began, Lin Yishan initially thought that Mao was right to have the masses rectify cadre errors. He maintained this stance even when big character posters denounced him. His views changed when rebel groups started in 1967 to physically struggle against him and his YRC colleagues roughly three times a week for about two years. At one point, he was imprisoned underground for a month, starved, and had bones broken. Eventually, he was allowed to return to work. However, tarred as a capitalist roader, he was forbidden to perform admin or technical work and was instead engaged as a cafeteria worker.

Throughout this ordeal, Lin's desire to augment China's industrial infrastructure did not subside. To escape the shattered dreams of his present, Lin occasionally examined Chinese geological maps hidden in his personal belongings and elaborated his thoughts about different

⁶⁹ Lin, *Lin*, 162-163.

⁷⁰ Riskin, *China's*, 180-181.

hydroelectric projects.⁷¹ During the Cultural Revolution, rebel groups also castigated Lin's colleague Zheng Hui as an "American special agent" for studying there in the Republican era. Zheng coped with these nativist assaults similarly to Lin Yishan and other technically minded party workaholics, finding solace in secretly working on plans for various developmental ventures.⁷²

When Lin Yishan and other technocratically-predisposed officials were deposed throughout China's bureaucracy, CCP leaders did not lose interest in building a new energy regime that remade the nation's rivers into engines of national development. Oversight over the Three Gorges project, however, shifted from the YRC to the People's Liberation Army, which Mao deployed in 1968 to suppress Cultural Revolution factional conflicts and bring national order.⁷³ The key figures in this leadership transition in Hubei were provincial First Party Secretary – Zeng Siyu – and his second-in-command – Zhang Tixue. Their governmental push to revive the Three Gorges project was brought on by the CCP's initiation of the Third Front campaign to ramp up military industrialisation in Central China in the wake of Sino-Soviet border clashes in March 1969. The Third Front's security focus resulted in a very different industrial geography than previous schemes which were celebrated with public fanfare and directed energy to major cities. New plans were kept out of the public eye as they funnelled electricity to secret military industries hidden in China's mountains. Like the Great Leap, the party rooted the Third Front's drive to hasten industrialisation in the Maoist developmental strategy of mass mobilizing labour,

⁷¹ Lin, *Lin*, 245-248.

⁷² Lai, "Qing man changjiang," 34-37.

⁷³ Roderick MacFarquhar and Michael Schoenhals, *Mao's Last Revolution* (Cambridge: Harvard University Press, 2006), 239-272.

handicrafts, and native techniques to compensate for scant industrial equipment and technical expertise as well as non-existent foreign aid.⁷⁴

In the same month that Sino-Soviet skirmishes erupted, Zhang Tixue invited YRC members to investigate the Three Gorges. Afterwards, he recommended building the dam to the vice heads of the Ministry of Water Conservancy and Electric Power Qian Zhengying and Wang Yingxian who backed Zhang's proposal, much to his delight. In May, Mao met in Hubei with Zhang Tixue and Zeng Siyu, who took their meeting as an opportunity to "work towards" the Chairman's longstanding dream of building the TGD.⁷⁵ Mao, however, stated that with Sino-Soviet tensions mounting, "Right now is time to prepare for war. It is inadvisable to consider this...If a basin of water fell on your head, would you be scared?"⁷⁶ Unfazed, Zhang sought other options for a dam in the Three Gorges region. Qian Zhengying suggested constructing a dam at Gezhouba, which was a few kilometres downstream but could still generate copious energy. Also, as a low dam, if it were bombed, it would be less disastrous than the Three Gorges' high dam.⁷⁷

Wanting different viewpoints represented in TGD discussions, Zhou Enlai ordered Lin Yishan to be reappointed as a YRC administrator in March 1970.⁷⁸ Given Zhou's power and prestige, it is not surprising that military leaders then directing the YRC approved Lin's return and authorized his travel to Beijing where he learned to his great surprise that top Hubei officials – Zhang Tixue and Zeng Siyu – were pushing to build the TGD while Mao was still alive.⁷⁹ In October 1970, Zhang and Zeng reported their ideas to the State Council. During the meeting,

⁷⁴ Covell Meyskens, *Mao's Third Front* (Cambridge: Cambridge University Press, 2020), 10-12.

⁷⁵ Wu, *Zhou*, 50. MacFarquhar and Schoenhals, *Mao's Last Revolution*, 48.

⁷⁶ Zhonggong, *Zhongguo*, 12.

⁷⁷ Zhonggong, *ibid.*

⁷⁸ Lin, *Lin*, 245-248.

⁷⁹ Hubeisheng, *Hubei*, 32.

Zhang swore to Zhou Enlai and other party elites present that, “If there was a problem with the Gezhouba Dam, then take my head and hang it from Tiananmen.”⁸⁰

Despite Zhang’s apparent ardour for Gezhouba, he still preferred the TGD, and so he and Zeng Siyu went to see Mao in December. Mao began the meeting on the offensive, chastising Zhang for the Danjiangkou Dam’s many problems. Mao quickly tempered his criticism and extolled Zhang’s experience building dams and fighting battles. Yet Mao was still uncertain about whether Zhang and his colleagues were ready for the Yangtze’s first dam. Well-versed in the flattery prevalent in what Frederick Teiwes has called Mao’s court, Zhang replied with his own compliment, quoting Mao about the superiority of learning by doing.⁸¹ Mao responded in kind, praising him for having guts. Zhang then talked about the past decade of preparations, and how the dam would realize Mao’s poem “Swimming.” Unconvinced, Mao rejected his proposal, citing inadequate funds, scientific information, designs, and construction plans. Also, if an atomic bomb hit the TGD, it could trigger flooding all the way to Shanghai. At that point, Zhang switched tactics and recommended building Gezhouba, stating that experts had conducted research and were ready to begin construction. Mao assented and enjoined him to coordinate with Zhou Enlai and relevant ministries.⁸² Zhou then, possibly at Mao’s behest, told Lin Yishan to write a position paper on the Three Gorges and Gezhouba Dam. Seeking to make up for lost time, Lin had, since being reinstated, gone on a whirlwind tour of Yangtze hydraulic projects and was eager to offer his expert opinion on Gezhouba.⁸³

In November 1970, Zhou Enlai organized a State Council meeting to discuss the different options. Lin Yishan argued that the TGD should be built first because Gezhouba would raise water

⁸⁰ Zhonggong, *Zhongguo*, 12.

⁸¹ Frederick Teiwes, “Mao and His Lieutenants,” *Australian Journal of Chinese Affairs* 19/20 (1988): 18.

⁸² Hubeisheng, *Hubei*, 10-17.

⁸³ Lin, *Lin*, 250.

levels by twenty meters, making the TGD more complicated and expensive.⁸⁴ There were also not sufficient plans for Gezhouba. The CCP's intention had always been to build the Three Gorges Dam, and so engineers had made designs. Although the YRC had performed studies of Gezhouba since the 1950s, they were far from enough. Only since 1969 was there much work on Gezhouba, and these efforts had yet to yield formal designs. Despite Lin's criticisms, the State Council provisionally approved Gezhouba's construction.⁸⁵ Zhou, however, thought Lin's position paper was "a powerful opinion," and so he submitted it to Mao along with his own letter and a report spearheaded by Zhang Tixue and Zeng Siyu, which depicted Gezhouba as accomplishing Mao's poetic ideal of a "smooth lake rising in the narrow gorges." In addition, Gezhouba would conquer Yangtze floods and dramatically enhance China's energy and river transport. As a low dam, it posed less of a security challenge, and Gezhouba planning was based on a decade of geological research and dam modelling experiments, so the PRC's past dam-building mistakes could be averted. What Zhang and Zeng completely glossed over was that the scientific research that they trumpeted was for the TGD, not Gezhouba.⁸⁶ When Mao read the Gezhouba file on his seventy-seventh birthday December 26, 1970, he gave it his imprimatur with the caveat that revisions be made as appropriate.⁸⁷

When Mao made this decision, he surely knew that Zhang and Zeng were stretching the truth with their claim that Gezhouba was the subject of extensive research. From the 1950s, Mao repeatedly consulted with Lin Yishan and Zhou Enlai about a dam in the Three Gorges region, but they had never focused on Gezhouba. Mao also had to understand that a mammoth hydraulic

⁸⁴ Zhonggong, *Zhongguo*, 12.

⁸⁵ Hubeisheng, *Hubei*, 20, 33-34, 54.

⁸⁶ Hubeisheng, *Hubei*, 4.

⁸⁷ Mao Zedong, "Guanyu Xingjian Gezhouba shuili shuniu gongcheng de pishi," December 26, 1970, in *Zhongguo gongchan dang yu changjiang sanxia gongcheng*, 59.

enterprise like Gezhouba would require managerial and technical experts to direct project planning and execution, and that although Lin Yishan and other technocratically-inclined personnel were involved in the project, their voices were not the most influential because in the late 1960s and early 70s the CCP was loudly advocating nationwide the Maoist developmental way of quickening industrialisation by substituting a mass-mobilized activist labour force for industrial machinery and technical expertise.

A Maoist developmental path is exactly what Hubei leaders followed when they started Gezhouba's construction in late 1970, promptly assembling 100,000 militia members and implementing a Great Leap-era policy known as the three simultaneities in which geological surveys, project designs, and construction work were carried out concurrently. As the dam took shape, technicians alerted Gezhouba's military leadership about a range of issues, from the lack of anti-silting plans and qualified construction workers to labourers pouring concrete without stopping its expansion with ice. Critics also spoke out against project leaders not building a lock on Gezhouba and sacrificing Yangtze transport in order to increase the dam's electricity. Military leaders excoriated these errant views for betraying the Maoist developmental way.⁸⁸

After a few months, Gezhouba rose above the Yangtze, but it was teetering on disaster's edge. One significant issue was Hubei leaders' decision that the YRC's big endowment of technical experts was not properly Maoist. Their proposed solution was to reduce its technical staff from over 8,000 people to only 450. Zhou Enlai vehemently rejected this idea, stating that "the YRC cannot be changed."⁸⁹ Gezhouba also had perilous structural problems. Its innards were like a honeycomb due to the constant application of cement without pauses for it to set in place, and the lack of a lock meant that upstream Yangtze traffic would soon stop to the dam's west. In late

⁸⁸ Hubeisheng, *Hubei*, 34, 75-79

⁸⁹ Wu, *Zhou*, 69.

1972, Zhou Enlai learned about these calamitous complications and called the project's leadership to Beijing where he lambasted them, yelling that, "If the Yangtze River has a problem, it's not one person's problem, it's the entire country's problem."⁹⁰ To prevent Gezhouba's collapse, Zhou demanded construction stop immediately and not resume until technical personnel under Lin Yishan's direction had plans that guaranteed the dam's stability. In 1974, building started up again. However, by that time, CCP leaders had begun moving China towards a more technocratic approach to manifesting Mao's poetic prophecy of a Three Gorges dam technologically taming the Yangtze and making it into a hydraulic engine of national development.⁹¹

Conclusion

Although Chinese Communist Party leaders made significant changes to China's approach to building the Three Gorges Dam after Deng Xiaoping came to power in the late 1970s, there were also notable areas of overlap with the developmental techniques the party pursued in Mao's China. Under both Mao and Deng, China's supreme leaders' interest in the project kept it on the party's agenda. Mao and Deng both endorsed the dam as part of a nationwide drive to engineer a new energy regime that transformed China's rivers into flood-free, bustling thoroughfares whose tamed waters served as engines of industrialisation. China's pursuit of this developmental dream under Mao and Deng ran into the same conundrum. China did not have the technical, administrative, or fiscal means for such a gigantic undertaking. This material condition prompted the CCP to solicit Soviet aid in the 1950s and American, European, and Japanese assistance in the 1980s.

⁹⁰ Zhonggong, *Zhongguo*, 12-13.

⁹¹ Zhonggong, *ibid*.

In all instances, Beijing's partners sought to make China into a strong industrial nation with the notable difference that Moscow aimed for the PRC to help replace an American-led capitalist world order with a new socialist world economy, while Washington strived to weaken the Soviets and bolster U.S. power in Asia through engaging with China. Despite this geopolitical divergence, both Chinese and foreign specialists endorsed entrusting centralized experts in the YRC with making the Yangtze's geological patterns legible and turning the river into a motor of national industrial progress.

The Gorges project also had critics who repeatedly argued that small dams could achieve benefits quicker, for less. Mao overrode criticisms yet also accorded significant influence to technically minded officials until the 1969 Sino-Soviet border crisis when Mao, amid Cultural Revolution attacks on bureaucrats and technical experts, backed Hubei leaders' proposal to realize his dream of a dam in the Three Gorges region by building Gezhouba, however this time without mass media attention since its power was to be directed to a covert military-industrial complex.

Despite this difference, project managers still endeavoured, like in earlier efforts, to keep the project at the global technological frontier, though they imparted science's cutting edge with nativist roots, stressing Mao's developmental idea that mass mobilization was a more powerful economic force than industrial aptitude and machinery, a decision which produced a botched dam. To remedy the project, Zhou Enlai authorized YRC experts to oversee its completion, and yet factional disputes still plagued the project until after Mao died, and as people said in China at the time, went to meet Marx.

After Mao, CCP leaders still prescribed accelerated development for the Chinese nation, but under a new knowledge regime where the Maoist developmental way was no longer conceived of as global science's forefront, but as a major cause of underdevelopment. The Chinese masses

were also no longer viewed as a reservoir of native talent and productive power, but as technically backward compared to the world's leading nations, and whose manual labour was no longer glorified, but rather shunted back into the hidden abode of production, as CCP leaders exalted engineers and encouraged the Chinese people to be spectators to their technical marvels.

To overcome national backwardness, the CCP again looked abroad for partners to help with China's economic rise. The YRC took advantage of this new geopolitical situation and collaborated with foreign experts on building Gezhouba. Projects leaders, however, no longer prioritized huge labour regiments and using indigenous methods to construct a clandestine military-industrial base, but rather empowered bureaucrats and engineers to command a multitude of machines and draw on global knowledge networks to fulfil the Chinese state's dream of harnessing the Yangtze's power and making it work for the rapid development of the nation's cities and coastline for all the world to see.