Recharging China in War and Revolution, 1882–1955

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Chapter 6

Waging Electrical Warfare

In August 1946, CIA officer Carleton B. Swift wandered into an industrial wasteland in Northeast China. In a report submitted to President Harry Truman by the US representative to the Allied Reparations Committee Edwin Pauley, Swift estimated that the Soviets removed 56 percent of 1.786 million kW of installed capacity, leading to a reduction in peak energy load of 71 percent. The Pauley mission had surveyed eight out of the fourteen largest electric power plants but was unable to access the remaining ones either because they were too far away or were located in areas under Communist control. The Soviets dismantled steam boilers and generators from power plants across the northeast, leaving power stations littered with rubble (figure 6.1). High-voltage power cables disconnected from transformers dangled from the transmission towers. The industrial base in Northeast China, which had grown rapidly on the back of massive Japanese investments in the electrical power sector, came crashing down with the Japanese defeat. Founded in Changchun in 1934 with start-up capital of 90 million yen, the Manchuria Electric Company grew from strength to strength with industrial expansion. By the time it was amalgamated with the Bureau of Hydropower Construction in 1940, its paid-up capital had grown to 640 million yen. World War II’s victorious powers would jostle with each other to pillage these assets.

Swift and his colleagues at the Pauley Commission were witnessing the first stage of a war to control China’s electrical industries, which played a pivotal role in tilting the power balance from the Nationalists under Chiang Kai-shek toward the Communists under Mao Zedong. The takeover of the electrical infrastructure enabled the Communists to seize control of the economic, social, and intellectual capital in urban areas and paved the way for the state-building enterprise of the Communist regime. An account of the Chinese Civil War (1946–1949) that places electricity at its center challenges the conventional narrative that the Communists defeated the Nationalists simply by encircling the cities from the rural areas. Power not only emerged from the barrel of the
There were three distinct phases in electrical warfare during the Chinese Civil War. Phase one began with the scramble for reparations after the Japanese surrender in August 1945. The Soviets claimed large amounts of power-generating and power-using equipment before the Nationalist forces arrived on the scene. The Communists capitalized on the power vacuum resulting from the collapse of the industrial economy to establish a foothold in Northeast China. The Nationalist government meanwhile faced mounting losses in their takeover of the Beiping-Tianjin-Tangshan network in North China left behind by the Japanese, while they handed the asset-rich Shanghai Power Company to its American owners. It only succeeded in taking over Japanese power assets in Taiwan.

Phase two played out on the battlefield. Both the Nationalist and Communist military forces devised strategies through trial and error to cripple their adversaries’ electrical infrastructure. After taking over the cities, the belligerents...
saw the restoration of electricity as a crucial step in reinstating civil and economic order. The third and final phase arose from the demand for technical expertise in the maintenance of power networks. The Communists secured the defection of the engineer-bureaucrats and electrical workers who had been serving the Nationalist regime. Caught in the crossfire of the Chinese Civil War, the engineer-bureaucrats threw their lot in with the Communists, upon seeing that an alliance with workers and soldiers offered the best chances of fulfilling their long-time vision of nationalizing the electrical sector. Besides working with the Communists to impose a power blockade, they also protected vital assets of the Guomindang regime’s state-owned industries and allowed the Communists to inherit the power infrastructure largely intact amid a bloody civil war.

Chen Yun’s slogan “Wherever the People’s Liberation Army goes, the lights will come on,” sums up how the Communists came to understand the centrality of electricity to urban governance and subsequently national unification.³ After making this statement in August 1948 at the Sixth All-China Labor Congress held in Harbin, Chen Yun and the People’s Liberation Army (PLA) went about fulfilling this promise, as they captured one city after another from the Nationalists. Stung by the defection of many of its most experienced engineers, the Nationalists in Taiwan guarded against Communist subversion of the electrical industries. Liu Jinyu, who had built the power stations in Kunming during the War of Anti-Japanese Resistance and then coordinated the rehabilitation of Taiwan’s power grid from 1945 to 1950, became a casualty in the war for control over China’s electrical industries. Accused of conspiring with the Communists based on highly circumstantial evidence, one of the Guomindang regime’s most experienced system builders was sentenced to death by firing squad in July 1950.⁴

**Scrambling for Reparations**

The scramble to claim Japanese industrial assets ended in a stalemate between the Nationalists, the Communists, and the foreign powers. The Soviets had seized the power equipment of the Manchuria Electric Company before the Nationalists arrived on the scene, and the North China power grid left behind by the Japanese turned out to be a liability that bogged down the Nationalist regime. In the Lower Yangtze, the Nationalists facilitated the restitution of the electrical industries and handed the assets seized from the occupation forces back to their rightful owners.⁵ Private operators in the largest electrical markets struggled to stay afloat and faced severe losses much like their state-run counterparts. The
struggles of the Guomindang regime to restore order to China’s electrical industries foretold its collapse in 1949.

The career of Sun Yun-suan, the TVA-trained engineer who later became the premier of Taiwan, tracked closely with the failures of the Guomindang regime in mainland China and its success in Taiwan. Sun was appointed to the Ministry of Economic Affairs committee for the takeover of industrial assets in Northeast China in October 1945 after completing his training at the Bonneville Power Authority in Portland, Oregon. Having studied under Russian instructors at the Harbin Institute of Technology, Sun was conversant in Russian and could possibly communicate with the Soviets based in Northeast China. Sun could not accomplish his objectives. After entering Manchuria on August 9, 1945, Soviet occupation forces started hollowing out the industries in Northeast China to claim their share of Japanese reparations. American intelligence sources were only able to assess the impact of the Soviet occupation by August 1946. They found out that the Soviets not only targeted the power equipment and hydraulic turbines owned by the Manchuria Electric Company but also crippled industrial production by seizing generators from coal mines, cement plants, and steel factories.6

Sun, however, never left for Northeast China, as he remained behind in Chongqing to assist an American engineering team. Sun would not have been able to apply the lessons learned at the TVA. The Japanese legacy system in Manchukuo was also a far cry from the highly integrated networks administered by the TVA. It was a patchwork of disjointed hubs and spokes with three to four medium-voltage transmission lines stretching out from each power station. The Japanese in Northeast China faced the same problems as the Guomindang regime in Southwest China. During dry seasons, there was too little water to generate hydropower, so the Japanese depended on coal-fired power stations to make up for the shortfall. Sun observed, “Despite advocating ‘hydropower first, thermal power second,’ they ended up building more coal-fired power stations.”7

Sun was later transferred to Taiwan, where he made important contributions to the Nationalist takeover of the Japanese-owned Taiwan Power Company. The NRC had sent a skeletal crew of twenty-three engineers to take over a massive power conglomerate with a total staff strength of 6,400. As Lin Lanfang noted, with about 3,000 of its staff slated for repatriation (Jp: hiki-age), the power sector in Taiwan faced a massive shortfall in manpower. The Nanjing government responded by transferring an additional twenty-six engineers from state-owned power stations in Chongqing and Kunming to Taiwan.8 Liu Jinyu, who had spearheaded wartime Kunming’s electrical infrastructure development, had arrived in Taiwan in October 1945 to take the lead. Sun left for Taiwan in
December 1945 as part of the second team of engineers to support the takeover. Sun took up the posting to Taiwan for both professional and family reasons. Sun was also an ideal candidate to coordinate the NRC’s rehabilitation efforts in Taiwan, having spent most of his time in the power planning divisions at the TVA, Pacific Power and Light, and Bonneville Power Authority. The power grid in Taiwan, which was centered on the hydroelectric dam at Sun-Moon Lake (Ch.: Riyuetan) in Nantou County, resembled the TVA’s Main River projects. Sun’s mother also fled to Taiwan after the Communists occupied their hometown in Penglai, Shandong Province.

Liu also saw Taiwan as the perfect place to replicate the TVA’s model of building integrative hydroelectric project management through federal authority. Writing to the NRC’s director of the Electrical Bureau Chen Zhongxi, Liu expressed his wish “to transform Taiwan into an area with surplus electricity, establish an organization like the TVA’s Promotion Department to encourage the use of electricity and provide electrical power at the lowest cost.” Despite its compact size, Taiwan had 3.5 million kW of potential hydroelectric power and its hydropower output per unit of land area was comparable to Switzerland’s. Furthermore, the Japanese left behind a well-integrated transmission system. The thirty-four power stations in Taiwan were connected either to the western or eastern power transmission network. A high-voltage transmission line running 231 miles from Songshan in the north to Kaohsiung in the south was connected to the largest hydroelectric facility, Sun-Moon Lake Power Station, at the center. Its transmission frequency at sixty cycles was the same as that of the United States.

On May 1, 1946, Taiwan Power Company (hereafter abbreviated as Taipower) was formally incorporated. The nationalization of electrical power in Taiwan occurred by chance. As no private businesses in Taiwan had enough capital to buy the shares previously held by Japanese banks and corporations, all the assets and liabilities of the Taiwan Power Company were “automatically transferred to the Chinese Government at the disposal of National Resources Commission and the Taiwan Provincial Government.”

The rehabilitation proved to be straightforward. In a report addressed to Taipower, the American consultants J.G. White & Company noted, “The power installation was not subjected to indiscriminate bombing but was instead hit at key positions,” and as a result, “generating stations were comparatively unharmed but the transformer and switching stations were completely wiped out.” They thus recommended that Taipower deploy undamaged transformers and circuit breakers from other substations on the island to Sun Moon Lake. This redeployment
increased power output from 40,000 kW to 100,000 kW. Chiang Kai-shek was pleased with the rapid rehabilitation of the Sun-Moon Lake hydropower station. When he visited Sun-Moon Lake on October 23, 1946, he personally thanked a Taiwanese engineer, Zheng Kaichuan, and a Japanese engineer named Suzuki and offered a token of appreciation of 100,000 Taiwan dollars. Within eighteen months of the American consultants’ reports, Taipower repaired the damage caused by the typhoon of 1944 and two rounds of bombing in 1944 and 1945. Riots in the aftermath of the February 28 incident in 1947 barely disrupted the rehabilitation efforts. Rioters surrounded the company headquarters, while aboriginal tribes in the highlands threatened to kidnap the directors of key hydropower installations. Taipower staff continued working through the social unrest. Speaking on a radio broadcast in the official Chinese language and Taiwanese dialect on July 15, 1947, Taipower’s second-in-command, Huang Hui, assured the public that there had been no power outages since the outbreak of violence on February 28, 1947. The daily average electric supply of 1.65 million kWh remained at 83 to 90 percent of the preconflict level.

The smooth takeover of Taiwan stood in stark contrast to the chaotic situation in Northeast China, the Lower Yangtze, and North China. Based on site visits in Northeast China between May and July 1946, the Pauley Reparation Mission report states that “of a total electric generating capacity of 1,786,253 kW, the Soviets removed 1,008,300 kW, plus an additional 385,000 kW of equipment most of which was in the process of being installed, amounting to 200 to 300 million US dollars.” The Soviets also targeted the incomplete Sungari hydropower project. They removed four generating units as well as construction equipment from the site. Though 89 percent complete, much concrete remained to be placed in the haphazardly constructed dam to prevent it from breaching and flooding an area with millions of inhabitants.

The Chinese Communists condoned Soviet pillaging despite public criticism. Suzanne Pepper pointed out that the press blamed both the Nationalists and Communists for not standing up against the Soviet Union. A March 16, 1946, letter by Fan Yuanzhen, the wife of future deputy minister of Water Resources, Li Rui, revealed the strategic purpose of the ensuing chaos. Writing to her husband, who was then serving as Chen Yun’s secretary in Northeast China, Fan described Soviet plunder as a necessary evil: “It is important to prevent American economic forces from making inroads into the Northeast. . . . This ensures that the Americans would not use the reconstruction of the Japanese industries to transform the Northeast into an anti-Soviet base.” By keeping the Americans at bay, the Chinese Communists made inroads into key cities in Northeast
China. In April 1946, the PLA occupied the city of Harbin in present-day Heilongjiang Province, which would remain the largest city under Communist control until the middle of 1948.

Besides ceding parts of Northeast China to the Communists, the Nationalist regime handed China’s largest power market in Shanghai to foreign capitalists. Between 1946 and 1948, Dagongbao journalist Xu Ying traveled around China to interview many of the nation’s leading industrialists for a biographical compilation. Summing up his interviews with leading electrical engineers, Xu Ying criticized the NRC for wasting its time and energy on the restitution of foreign-owned power assets. Shanghai Power Company, which was handed back to its American owners, generated about 99 percent of Shanghai’s electricity. The Japanese had hollowed out Chinese-owned power companies after the fall of Shanghai in November 1937, leaving them to resell electricity acquired from Shanghai’s main power station on Yangshupu Road. The NRC also returned the power stations in Suzhou, Hangzhou, Jiaxing, and Zhenjiang to their owners and held a minority stake in the power industries in the capital Nanjing. The NRC reaped no financial or political gain for all its work.

The power assets in North China left behind by the Japanese turned out to be a liability. The general managers of the state-owned North Hebei Power Company, Guo Keti, Zhang Jiazhi, and Bao Guobao, detailed the weaknesses of the Japanese legacy system in their interviews with Xu Ying. On paper, its predecessor Kahoku Dengyō employed 4,000 workers, operated about 2,000 miles of power lines, and provided maximum instantaneous power of 100,000 kW to customers in Beiping, Tianjin, and Tangshan. Operationally, its peak output was closer to 86,000 kW. NRC chairman Weng Wenhao admitted that the “demand is being kept within the margin by cutting down power and lighting users.” These TVA-trained engineers realized that the North China grid was a far cry from the integrated networks they saw in the United States. Xu wrote, “The Power Company only relies on a trunk line to transmit electrical power. It is an exaggeration to call the Beiping-Tianjin-Tangshan power grid a network. It should be called a power snake. If one electrical pole breaks down, or if a ceramic insulator is smashed, the entire line will go out of service.”

Guo Keti, who had joined the team of engineers building the power station in wartime Kunming after graduating from the electrical engineering department at Purdue University, faced the unenviable task of cleaning up the mess left behind by the Japanese. When Guo stepped into Shijingshan Power Station in the western suburbs of Beiping in November 1945, the installation work for the largest 25,000 kW turbine was only 77 percent complete. Manufactured jointly by
Mitsubishi and Hitachi, the turbine was not designed to combust higher-grade anthracite coal readily available in the nearby Mentougou coal mine. Instead, it used lower-grade pulverized bituminous coal that had to be transported from the Kailuan coal mines in Tangshan about one hundred miles away. This was a relic of the Japanese strategy of centralizing the distribution of coal by funneling coal supplies through Kailuan. In addition, as the Japanese turbines were imitations based on Swiss products, there were no readily available replacement parts. Beiping’s industries clamored for more electricity, leaving the Chinese engineer-bureaucrats with no choice but to pick up where the Japanese left off. It was too late to tear everything down and start from scratch.

Political instability in North China led to fraud and profiteering. In March 1946, the NRC uncovered a plot by a former Japanese collaborator Wang Bao-hua, who posed as a deputy manager of the electric company to collect fines from its customers after falsely accusing them of misusing electricity. Wang allegedly pocketed several hundreds of thousands in fines before the military police caught up with him. With coal pilfering rampant in the winter months, the North China power grid often ran out of fuel. During the cold months from October to February, the power company hired fifteen armed escorts to protect the rail convoy of coal from Tangshan to Tianjin and Beijing. Despite added security, the power company failed to obtain the 18,000 tons of coal required to maintain its operations. Company records showed coal mysteriously leaking out from the slits of the worn-out coal carriages. Coal raids also broke out at Fengtai Railway Station in the southern suburbs of Beijing and at the Shijingshan Power Station.

Within a few months of the Nationalist takeover, North Hebei Power Company faced staggering losses. Between March 1 and October 31, 1946, the company took in 10.891 million CNC dollars but incurred expenses of 3.919 billion CNC dollars (5.6 million US dollars in November 1945 exchange rates in Tianjin). It attempted to balance the books by raising tariffs and pushed many of its paying customers to the brink of collapse. As one of the largest customers in Beiping, the water works bore the brunt of the rate increase. In August 1946, Beiping mayor Xiong Bin implored the NRC to reduce electric tariffs for the city’s water works. He wrote:

The North Hebei Electric Company of your esteemed commission is continuously increasing electrical tariffs. Right now, the electric tariff owed to the Power Company is equivalent to one third of the water work’s revenue. With higher labor expenditure and rising cost, our revenues cannot cover our expenses. In the long run, this will affect the water supply to our city.
With spotty power supply, state-owned industries delayed their production and fell further behind on their payments. The NRC’s industries in the North China industrial hub of Tianjin owed 413 million CNC dollars in electrical tariffs. Full repayment of these debts would have increased its deficit by 13 percent.\textsuperscript{33}

The power company imposed rolling outages to stabilize the situation. After the number 1 generator’s rotor at the Tianjin power station broke, the Power Company divided Tianjin’s industrial users into six groups and cut off power for one day to each group starting on November 15, 1946.\textsuperscript{34} The power curtailment hampered the operations of state-owned industries. The general manager of the Central Machinery Works, Du Dianying, noted that his factory had rescheduled the workers’ off days by making them rest during scheduled outages. Unscheduled outages between December 5 and 11, 1946, ranging from thirty-five minutes to seven hours, caused further disruptions.\textsuperscript{35} The sudden halt resulting from the abrupt power cut damaged delicate components in the machines. The Nationalist regime incurred losses from the operations of the power company and state-owned industries. The power company recovered after conducting timely repairs on the generators. Tianjin’s power output in 1947 increased by 5.76 percent over the previous year.\textsuperscript{36} With industrial activity picking up, its debtors began paying their dues. The Central Machinery Works, for example, cleared 54 percent of its CNC 83.53 million dollars in arrears as early as February 1947.\textsuperscript{37}

Struggling with the economic uncertainty arising from hyperinflation, private power companies did not do as well as state-owned ones. The rapid devaluation of the Chinese national currency $\text{fabi}$ made it difficult for the Shanghai Power Company to determine a reasonable public utility rate. Imported oil accounted for four-fifths of its fuel cost. The Chinese government mitigated the impact of hyperinflation by granting a fixed exchange rate of one US dollar for 12,100 CNC dollars solely for oil purchases, while the open-market exchange rate was one US dollar for 50,100 CNC dollars. The subsidized rate ended in October 1947, forcing the power company to shift the price increase onto consumers. Between July and October 1947, the nominal operating expenses increased by 56,537 billion CNC dollars based on an exchange rate of one US dollar to 50,100 CNC dollars. By the time the report was completed, the open-market rate shot up to one US dollar for 56,000 CNC dollars. While the company’s costs tripled and quadrupled due to hyperinflation, Shanghai momentarily recorded the lowest electrical tariffs in the world at 6.82 US cents per kilowatt-hour, about two-thirds that of major American cities.\textsuperscript{38} Low prices did not translate into better affordability, however. A low-ranking government worker who took home
about 200,000 CNC dollars could barely afford his rent and food, let alone pay for electric lighting priced at 3,800 CNC dollars per kWh.39

The American owners of the Shanghai Power Company proposed to address the problems by merging all of Shanghai’s power companies into a single entity called the United Power Company. The new entity formalized the arrangement that had been in place since 1938, in which the Shanghai Power Company generated almost all of Shanghai’s power and distributed it to the smaller power companies for sale within their franchise areas. The Shanghai Municipal Assembly objected to the proposal, accusing the Americans of capitalizing on the crisis to monopolize Shanghai’s electrical power market.40

While the Guomindang regime and foreign capitalists were struggling to restore order to the electrical power sector in major cities, the Communists took their first shots at running small power stations in areas under their control. Between 1945 and 1946, the Communists administered the city of Zhangjiakou (Kalgan) as the “second red capital” after Yan’an and took over a Japanese-built power plant that had been part of the Mengjiang Electrical Corporation.41 They appointed Ren Yiyu, an engineering graduate from the National Beiping University, who had spent most of his time in the Communist bases as both a public health school instructor and a military mechanic. Anecdotal accounts list Ren Yiyu as part of a team that built a makeshift sulfuric acid manufacturing facility in Communist areas.42 As these engineering graduates lacked the necessary experience, electricians with only a year or two of vocational training took charge of most of the power plant’s daily operations. With the loss of Kalgan in September 1946, the largest power station under Communist control fell into the hands of Nationalist forces. Ren retreated with the defeated forces to small cities in the Shanxi-Chahar-Hebei base area, where he continued to administer small power stations.

Nationalist forces reported that the Communists inflicted minor damage on power generation and transmission without causing catastrophic destruction. In February 1947, Communist guerrillas entered Tongzhou County, approximately fifteen miles east of Tiananmen Square. They fired at transmission lines and transformers and burned the electric meters at the railway station, county government office, police station, and hospital, but did not attack the main power station, apparently because it was “too remote.”43 The Communists did not capture or control Tongzhou after the raid but did enough to cripple the local government’s daily operations.

Communist operatives faced major setbacks in their attempts to mobilize electrical workers. In October 1945, the underground Communist Party
members in the Shanghai Electric Company formed the Democratic Unions Planning Committee. These labor movements organized a number of strikes that forced foreign capitalists to accept some of the workers’ demands for better working conditions. Guomindang agents targeted these instigators of labor unrest. By April 1948, the Nationalists crushed the Communist network within Shanghai Power. The underground Communist Party leader of Shanghai Power, Wang Xiaohe, and fourteen of his colleagues were accused of throwing iron filings into the turbines to trigger massive power outages in Shanghai. The Nationalists arrested and executed Wang and many Communist Party members, dealing a heavy blow to the Communist grassroots organization in Shanghai’s power industries. After the purge, there were only forty-eight Communist Party members out of 4,000 employees at the Shanghai Power Company.

By April 1948, the Nationalists, foreign capitalists, and the Communists had failed to bring the electrical industries under control. Saddled with debt and hit with hyperinflation, the electrical industries in North China and the Lower Yangtze struggled to remain solvent. The Communists were in a weaker position. By mid-1948, the Communists controlled 586 cities, most of which were in Northeast China and none with a population higher than one million. They not only lacked experience in administering large-scale power systems of major cities but also had yet to build the mobilization structures within the electrical industries of key urban centers.

The Communists ultimately achieved decisive victories in urban warfare by exploiting the weaknesses of the electrical infrastructure that had emerged during the chaotic takeover. In his 1967 documentary China: The Roots of Madness, American journalist Theodore White recalled Mao saying, “It is true that the Japanese and Chiang Kai-shek had electricity, airplanes, tanks, and we have nothing.” In that same conversation, Mao imagined himself as a modern-day George Washington, who was about to pull off a victory against a formidable adversary and added, “But then . . . the British had all those things, and George Washington didn’t have electricity, and yet George Washington won.” Mao understated the importance of electricity in his interview with White. His generals were hatching a grand plan to take over the electrical industries even before marching into the cities.

Seizing the City’s Lifeblood

In October 1948, the Communists signaled a major tactical shift in the battle to control China’s electrical industries. Prior to this, the Communist and
Guomindang military forces focused their effort on preventing power assets from falling into enemy hands. Retreating forces blew up the power station and crippled the urban economy. Having seen how cities without electricity became death traps and having dealt with the aftermath of the destruction of the electrical infrastructure, the Communists realized that it was unwise to march into cities and seize the electrical infrastructure at gunpoint. They called on a small group of underground operatives to work stealthily within the electrical industries to secure the support of electrical workers and engineers. These agents persuaded engineer-bureaucrats serving the Guomindang regime to hand over the power assets to the Communists.

The North Hebei Power Company, which had developed into the largest state-owned electric utility under the Guomindang, became the key battlefield in the struggle to control the nation’s electrical industry. The PLA under the command of generals Peng Zhen, Nie Rongzhen, Lin Biao, and Luo Ronghuan executed the first successful power blockade in Beiping (Beijing) between December 1948 and January 1949, which trapped Nationalist Fu Zuoyi’s troops. Having gained the support of the engineering elite of the power station, the Communists secured the power station supplying most of Beiping’s city before encircling the old capital in December 1948. The “power blockade,” which had worked as a blunt tool prior to October 1948, was transformed into a precision strike weapon. The PLA was able to briefly restore power supply for a few hours to relieve the inconveniences of Beiping’s residents. Building on the alliance between military, workers, and engineering elite, the Communists were able to use the blockade to effect Beiping’s “peaceful liberation” in January 1949. They replicated the strategy elsewhere, allowing them to inherit the electrical infrastructure intact following a bloody civil war.

The Communists were the first to suffer the effects of a power blockade. After the Communists established the first people’s government in Harbin in May 1946, the Nationalists launched a counteroffensive in the fall by occupying the Little Fengman Hydroelectric Plant in neighboring Jilin Province and cutting off power to the city. The Communists mobilized rank-and-file workers to restore power to Harbin. The Xinhua News Agency and Renmin ribao (People’s Daily) reported that power plant workers salvaged a few old and disused generators and reactivated them. The Communist propaganda machine heaped praise on a veteran electrician named Xiao Chaogui and when asked why he was only an ordinary worker in the old days, Xiao wiped the coal ash off his face and reiterated the party’s slogan, “Who cares about the past? As you can see, the factories belong to the workers now!” The report followed a set script: The
self-taught worker of humble origins, energized by revolutionary spirit, achieved a technological breakthrough to save the people. This narrative of “worker’s innovation” would resurface during the mass mobilization campaigns in the 1950s and the Cultural Revolution.\(^5\)

The power outage in Harbin alerted the Communists to the importance of electricity in urban warfare. During military campaigns in Shandong and Shanxi, Communist forces reported that Nationalist forces blew up power stations before retreating. About a month after surviving the power blockade in Harbin, the PLA entered Shuo County in Shanxi Province only to learn that the former warlord Yan Xishan had ordered the destruction of the county seat’s power station. According to the Xinhua News Agency, it took twenty-seven days to repair the damage, and after which “the bright lights of 15,500 lamps celebrated the return of brightness.”\(^6\) The same thing happened after the Communist capture of Xinjiang County in southern Shanxi and Cang County in southern Hebei in July 1946. These power stations had a generating capacity of 80 kW, and the Communists were able to execute the repairs within a week.

The Communists publicized successful electrification projects to allay fears among those who doubted their competency as urban administrators. In November 1947, the Xinhua News Agency declared that the Mudanjiang-liberated region had tripled the length of its power distribution lines and fully electrified suburbs within the ten-kilometer radius of Harbin. They claimed to achieve a basic level of rural electrification, as the peasant cooperative in the Zhixin district in Yanji city had invested in a small power plant, which allowed the peasants to mill grain with electrical machinery.\(^7\) Despite these purported successes, the Communists were capable of managing small power systems, which constituted a few medium-voltage power lines connected to a single power station operating a low-capacity turbine.

The inability to manage complex electrical power networks hindered the PLA’s advancement into larger cities. One example was their struggle to restore electrical power at Linfen in Shanxi Province. In March 1948, Communist and Guomindang forces clashed at Linfen, a strategic transportation hub between the provincial capitals of Shanxi, Henan, and Shaanxi. The Linfen power plant straddled the northern and eastern city walls. Guomindang forces defended the city by barricading the power plant with three trenches, two lines of barbed wire, and one electric fence and garrisoned one brigade of soldiers in the power plant. Although the Communists managed to breach the defense after five days of intense bombardment and relentless assaults, the turbines and piping were completely destroyed.\(^8\) As dead bodies and shrapnel were cleared out of the power
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station, technicians painstakingly welded short pieces of wire recovered from the warehouses and salvaged old power-generating equipment left behind by the Japanese. Repairing this medium-sized power station with a generating capacity of about 800 kW, ten times the size of power systems in small county seats, took about five months. The PLA needed to avoid a repeat of the destruction that occurred in Linfen as it moved on to other major cities.

The Communists tried to gain the cooperation of the workers and engineers, which would allow them to secure the electrical infrastructure before marching into cities. The deputy commissar of the Liaodong Military Zone Chen Yun, who rebuilt the economies of major urban centers in the northeast, recognized the importance of electricity. Elected chair of the All-China Labor Congress in Harbin in June 1948, Chen called on the workers to join the revolutionary struggle by proclaiming, “Wherever the People’s Liberation Army goes, the lights will come on.”55 Chen’s understanding of the importance of electricity comes through most clearly in his essay about the takeover of Shenyang.

Summarizing five key lessons from the Communist takeover of Shenyang in November 1948, Chen Yun wrote:

First and foremost, we must restore electrical power. Without electricity, electric lights will not shine, telephones will be disconnected, tap water cut off, trains and trams stalled, the city would become a ghost town, and order cannot be restored. Shenyang depends on electricity from the outside. With Fushun liberated, we were able to send power here, and earned the praise of the people. There is one key condition to doing our work well. We need enough technicians. We brought hundreds of technical cadres from Harbin. They are all brave, loyal, and well-trained. . . . The local people were surprised and do not feel that “the Communists are country bumpkins with no technological knowledge.”56

Shenyang’s fate stood in stark contrast to another city in the northeast. Between May and October 1948, the Communists besieged Changchun, the capital of Jilin Province. The city held out for months but finally surrendered on October 17, 1948—a day after the Communists cut off electricity to the city.57

Chen Yun’s essay expressed a desire to avoid a repeat of the tragedy in Changchun, as the PLA advanced into heavily populated cities farther south. Having accumulated considerable experience from running Harbin’s power grid, the Communists handled the takeover of Shenyang’s electrical infrastructure with relative ease. Chen was also aware that it was not enough to rely on the support of rank-and-file electrical workers. The Communists needed to secure the
defection of the engineer-bureaucrats who had played an instrumental role in building the power infrastructure and nationalizing the power sector.

The Communists started by forging alliances with the workers. Even before the siege on Beiping, Peng Zhen, one of the PLA’s commanders in the Beiping-Tianjin campaign who later became party secretary and mayor of Beijing, spoke to workers in the Beiyue district in Beiping in July 1948. He urged workers to gather information about the political views of managerial staff in key industries and also called for the organization of party branches within the power station.58 These party branches were known as Factory Protection Committees or “safety committees.” Workers participated in these committees, as they sought to protect their livelihoods. Wen Tingkuan, a Communist underground activist in the Shijingshan Power Plant, persuaded workers to look out for saboteurs during secret patrols, reminding them that they would lose their jobs if the power-generating equipment was destroyed.59 The small size of these committees allowed them to evade surveillance. The safety committee of the Central Electrical Manufacturing Works at Shanghai, for example, had only fifteen active members. They met once every few weeks to coordinate patrols and emergency relief for the workers. Workers who participated in these patrols received a small stipend and an extra meal of gruel from the communal kitchen.60

Protection committee members served as liaisons between the military and engineers. While electrical workers did the manual work to keep the turbines running, it was the engineers who knew the power generation, transmission, and consumption patterns of the power grid. Reaching out to the Guomindang’s engineering elite was a risky venture. Many of these engineer-bureaucrats were Guomindang members, some of them were genuinely loyal to Chiang’s regime while others had been forced to take up membership in order to qualify for higher office.61

Oral histories offer some clues on the workings of Communist operatives. In an interview with the Chinese Society for Electrical Engineers in 2008, the children of the chief engineer of the Shijingshan Power Plant Cai Changnian recounted secret visits from underground Communist party members. According to Cai’s third daughter, Cai Xiangfen, her father became acquainted with underground Communist member Wu Zuguang a few months before December 1948 and was subsequently introduced to another underground activist Jiang Hongbin. These two “special guests” called on their heavily guarded residence. Engineer Cai sent his chauffer to pick up these two men, who sat in the rear passenger seats concealed by black curtains drawn over the windows and sneaked past the sentry. Cai then met the agents in his locked bedroom. He sent his
children out in the courtyard to keep lookout, while playing shuttlecocks. The children were told to sit on the living room couch and not move when other guests called on the Cai residence. His daughter realized many years later that her father concealed Communist printed material in a secret compartment of that couch. Once assured of engineer Cai’s support, the operatives asked him to introduce them to Bao Guobao—the general manager of the North Hebei Power Company.\textsuperscript{62} T. V. Soong was planning to appoint Bao Guobao as the director of the Guangzhou Power Bureau. The Communist activists, however, persuaded Bao to turn down the offer.\textsuperscript{63} During the siege on Beiping, Bao Guobao remained inside the city and liaised with his colleagues at the power station, which had fallen under Communist control.

Certain of the support from the engineers and a loyal core of electrical workers, the PLA ordered the capture of the Shijingshan Power Station. On December 11, 1948, the Central Military Commission of the Communist Party ordered troops to surround enemy forces in North China without attacking them.\textsuperscript{64} PLA forces captured the suburbs and the power lines running into the old capital. Two days later, the North China Bureau of the Communist Party relayed an order to its underground cells in Beiping and Tianjin to prepare for the takeover. The order specifically tasked the party committees of Beiping’s neighboring counties to protect the assets of the Shijingshan Power Station and Steel Factory, Mentougou coal mine, and Tongzhou Power Station.\textsuperscript{65}

On December 15, 1948, the PLA launched a surprise attack on the Shijingshan Power Station. According to battlefield dispatches dated December 23, 1948, and published in the \textit{Renmin ribao} on January 12, 1949, an eight-man machine gun team slipped into the Shijingshan Power Station when sentries from the Guomindang forces were changing shift. With assistance from the Communist underground, they occupied the coal tower—the power station’s highest point. Communist forces fired at an enemy battalion that tried to retake the power plant, while operatives ran up and down the coaling tower to replenish supplies of food, water, and rifle-cleaning cloth. Communist reinforcements arrived the next day, forcing the Nationalists to retreat.\textsuperscript{66} Recognizing the significance of this episode, party histories and official gazetteers retell the heroic feats of the battle for Shijingshan Power Station.\textsuperscript{67}

Beiping plunged into darkness for at least twelve days. Xu Ying, the \textit{Dagongbao} reporter who had been working on the collective biography of Chinese industrialists, chronicled the ensuing chaos in his diaries.\textsuperscript{68} Cut off from the main source of electrical power, the winter became exceptionally harsh for residents of the old capital. Streetcars ground to a halt. Two thousand tram drivers remained
idle. Electric pumps that supplied tap water to one third of Beiping’s residents stopped running. Residents ran around the city to collect water from wells. The price of food increased exponentially within days.\(^69\)

Bao Guobao, the general manager of the North Hebei Electric Company, remained elusive during the early days of the blockade. A few days into the power blockade, Xu Ying contacted Bao, who appeared to be trapped inside Beiping with Guomindang forces. According to Xu’s December 19, 1948, diary entry, Bao reportedly said that the company had activated back-up power by repairing an old 500 kW power generator tucked away in storage. He also authorized the transfer of electricity from Tongzhou County to keep some of the trams running. After telling Xu Ying that he could do nothing more, Bao then left his office to skate on the frozen ice at Beihai Park. In the days without power, Beiping residents hung red oil-lamp lanterns outside their doors for safety, but the cold winter wind always extinguished the flames before sunrise. A folk song circulating around Beiping went: “Every household that hangs a red lantern joyously welcomes Mao Zedong” (Ch. jiajia gua hongdeng, yingjie Mao Zedong).\(^70\)

The Communist takeover was imminent.

Beiping was no stranger to armed conflict, but the hardship imposed by the power blockade was unprecedented. On Christmas Day 1948, a light snow blanketed Beiping and covered 1,700 tons of garbage that could not be removed. Beiping was still without power. Reflecting on the events of the past two weeks, Xu Ying wrote:

> The red kerosene lamps that light up the streets of Beiping show that we have regressed to a living standard from thirty years ago. Within two weeks, Beiping underwent a drastic transformation in clothing, food, accommodation, and transportation. The siege of Beijing by the Japanese after the Marco Polo Bridge incident and the Boxer Rebellion cannot be compared to this.\(^71\)

Two hundred thousand troops were garrisoned in a city of 1.2 million people. Armed sentries guarded every tall building and intersection. With no light and power, Fu Zuoyi’s troops were cut off from the outside world.

Beiping’s residents began to express resentment about the inconvenience caused by the power blockade, prompting the Communists to adjust their strategy. The Communists ordered the partial restoration of electricity to Beiping. The engineers in Beiping had to reconnect the 33 kV transmission line between Shijingshan and Beiping. The secretary of the Beiping electric company used his personal connections to persuade Fu Zuoyi into accepting the Communists’
It so happened that the secretary’s father was not just Fu’s teacher at the Baoding Military Academy but was also the godfather of Fu’s chief of staff. With Fu’s tacit approval, the TVA-trained engineer Wang Pingyang and two of his colleagues ventured out of Beiping’s city walls with a shortwave radio set and established communications with their colleagues in Shijingshan. The military representative of the Shijingshan Power Station, Ren Yiyu, who had served as the general manager of the power station at Zhangjiakou, relayed Peng Zhen’s order that Shijingshan Power Station would supply electricity to the 1.2 million people in Beiping but not to the Guomindang military. To achieve this objective, the power station generated 20,000 kW of electricity, just enough to power the water pumps and electric lights, and some semblance of normalcy returned on December 27, 1948.\(^{72}\)

Xu’s account mapped onto that of a foreign missionary who was then teaching at Yenching University. Ralph Lapwood, who had worked closely with Rewi Alley at the Chinese Industries Cooperatives during the second Sino-Japanese war, also detailed the power blockade and expressed amazement at the Communists’ ability to bring back power so quickly. The blackout at Yenching University lasted from December 19 to 21. According to Lapwood, a political commissar of the PLA addressed the students at Yenching University. Besides sketching a rosy picture of the future, “emphasizing democracy, production, education, rising living standards” among other things, the political commissar promised the students and faculty that the Communists would resume electrical supply to the city within days. When the lights came on as promised, Lapwood remarked, “Having become inured to delay and prevarication under the Nationalist officials, we were astonished that the promise was promptly honored. As time went on, we found this unexpected efficiency a regular feature of the new regime.”\(^{73}\)

The Communists curtailed the power supply when they learned that Fu Zuoyi broke his promise of limiting electricity to civilian use. Writing to Marshal Ye Jianying on January 5, 1949, Peng Zhen noted:

There has not been a single interruption of power since we started sending electricity into Beiping in December last year. However, the enemy prevents the people from listening to the Xinhua Radio Broadcast Station and diverts power for military use. Besides the availability of tap water, the residents of Beiping have little to gain. We decided to change the way we supply electrical power to the city. From now on, we will supply electrical power for two hours in the morning and afternoon, so that the civilians can collect tap water and cut off power at night to weaken the enemy.\(^{74}\)
With the city’s lifeline under Communist control, it was only a matter of time before the Communists formally took over Beiping from Fu Zuoyi. Demoralized and incapacitated by the energy shortage, Fu Zuoyi’s forces agreed to a ceasefire on January 22, 1949. The orchestrated blackout and intermittent power restoration allowed the PLA to capture Beiping with minimum casualties, while sparing the electrical infrastructure from destruction. This strategy, inspired by Chen Yun’s slogan of the PLA bringing light and power to the people, enabled the Communists to capture major cities and maintain social order shortly after the takeover.

Misled by earlier conspiracies and counterintelligence, Nationalist forces in the south failed to notice that the Communists were preserving the electrical power assets in anticipation of power transition. On January 27, 1949, the Shanghai Public Works Department received a warning from the US Army International and Research Unit. American secret agents, who had infiltrated the Far East Intelligence Bureau of the Comintern, claimed that Communist Party members within the Shanghai Power Company were conspiring with a bomb squad to blow up Shanghai’s main power station. The report appeared consistent with earlier accounts of guerrilla operations, in which Communist-backed forces damaged power-generating and transmission facilities to stir unrest. The case of Wang Xiaohue, the Communist electric worker executed in April 1948 after he was accused of sabotage, was still fresh in the minds of members of the Shanghai Public Works Department. The Nationalists remained on the lookout for similar conspiracies.

Contact between underground Communist operatives and engineer-bureaucrats in state-run industries caught the Nationalists off-guard. The Nationalists thought that they had already crushed the underground cell at the Capital Power Station in Nanjing by arresting its mastermind Zhang Guobao in April 1948. Chen Shenyan replaced Zhang as the leading operative in Nanjing. Chen got in touch with the power station manager through the manager’s female cousin, who was already a Communist Party member. The manager agreed to establish secret patrols and preempt any attempts by the Guomindang regime to dismantle the power-generating equipment. The operations of the Capital Power Station remained undisrupted throughout the PLA’s siege on Nanjing on April 23, 1949. Workers locked the gates and prevented the military police from entering the premises. Similar accounts of “factory protection” unfolded across China.

Before marching into Shanghai, the PLA secured the defection of Yun Zhen—the NRC’s engineer in charge of electrical equipment manufacturing. After the Japanese surrendered in August 1945, Yun moved to Shanghai to
oversee the implementation of the Westinghouse technology transfer agreement. Communist activists capitalized on labor disputes and gained the support of rank-and-file workers. Ge Helin, who was factory manager of the state-owned wire manufacturing plant in Shanghai and the chair of the Communist “factory protection committee,” served as an intermediary between the PLA and the Guomindang’s engineering elite in Shanghai. Ge enjoyed a personal friendship with Yun Zhen. In the 1930s, the president of Shanghai Jiaotong University expelled Ge Helin for participating in leftist labor organizations. Yun Zhen employed Ge Helin as a personal assistant and arranged for Ge to complete his studies at the University of Nanking. In 1948, Yun Zhen appointed Ge as the manager of the state-owned wire production facility in Shanghai, as Ge was highly experienced in settling labor disputes.

Based on Yun Zhen’s recollections, Chen Yi, commander of the Third Field Army and future mayor of Shanghai, contacted him before the PLA’s capture of Shanghai. Chen Yi asked Yun Zhen for the addresses of all the electrical equipment warehouses and the phone numbers of the warehouse supervisors. Chen relayed this message to Yun Zhen through Ge Helin, who received it from another Communist underground activist. On May 26, 1949, the PLA dispatched troops to the electrical equipment plants by using the information provided by Yun Zhen. Two days later, military representatives marched into these factories and took over from the factory protection committees.

The battle for electrical resources revealed how the Communists secured their ultimate victory by paying close attention to practical economic concerns. The Communists mobilized allies across different social classes by aligning their interests with the party’s tactical objectives. The engineers who had worked tirelessly to nationalize the electrical power sector believed that the Communists would fulfill the dreams of strengthening the nation through state-driven industrialization. Huang Yuxian, the hydroelectric engineer who surveyed the Three Gorges Dam with American engineer John L. Savage, defected to the Communists. According to a self-introduction written at the Central Training Corps in 1944, Huang Yuxian graduated from Tsinghua University and Cornell University and worked in the United States for about six years. Upon hearing about the Japanese occupation of Manchuria in September 1931, Huang gave up his job that paid three hundred US dollars a month and returned to China to work for the National Defense Design Committee, pledging that “from now on, I will establish close ties with the [Nationalist] party in order to strengthen my work.” Huang became disillusioned with the Nationalists and came to see the Communists as a force of national reconstruction. Huang remained critical
of Chiang’s regime. In a May 1963 report by the *Dagongbao* newspaper in Hong Kong, Huang accused T. V. Soong of siphoning funds from the construction of hydropower dams. The rapid completion of the Lion Rapids Dam under the Communists stood in stark contrast to the perpetual shortage of funds and manpower during his one decade of service under the Nationalists.81

Plagued by war fatigue, the engineer-bureaucrats of the Nationalist regime were receptive to the Communists’ promises of stability and efficiency. Having been on the run since the outbreak of Sino-Japanese hostilities in 1937, the engineers were reluctant to take apart the electrical infrastructure they had painstakingly rebuilt and withdraw to Taiwan with the Nationalists. Back in 1938, Bao Guobao was ordered to blow up the Guangzhou Power Station just before the Japanese captured the city. One decade later, Bao Guobao, in his role as the highest decision maker of the North Hebei Electric Company, chose to facilitate a peaceful transition by working with the Communists. Yun Zhen also remained on the mainland instead of relocating power equipment to Taiwan. Chen Yi’s promise to distribute food and money to the electrical workers and stabilize Shanghai’s economy was enough to persuade Yun to work with the Communist forces.82

**Grappling with White Terror**

The battle for electrical power raged on even after the Guomindang retreated to Taiwan. In the early months of 1950, secret agents of the Nationalist regime claimed to uncover a conspiracy to subvert Taiwan’s electrical power system. Liu Jinyu, who had built the electrical power industries in wartime Kunming and had taken over as the general manager of Taipower in 1946, was accused of agreeing to turn over the Sun-Moon Lake hydropower plant—the heart of Taiwan’s electrical power system—to the Communists. Spooked by the loss of the power infrastructure in mainland China, the Nationalists executed their most experienced engineer after completing a hasty investigation and summary trial.83

Terrified by the defeat on the mainland, the State Secrets Bureau suppressed leftist social movements in Taiwan under a campaign of “White Terror.” Secret service agents, who had once served under spymaster Dai Li, began hunting down leftist sympathizers from all walks of life. Liu came under suspicion, not only because he was contacted by his former colleagues on the mainland but also because his sons had escaped to mainland China. The charges laid out by the military tribunal state that three of Liu’s five sons had fled Taiwan for Shanghai in the spring of 1949 after being implicated in leftist campus movements. His
eldest son, Dengfeng, “told his father to preserve Taiwan’s electrical industries and hand them to the Communists” in the event of a Communist invasion. Dengfeng also informed his father that a spy named Wang Yanqiu would get in touch with him. The State Secrets Bureau learned that Taipower purchasing department head Yan Huixian, who had arrived in Taiwan from Shanghai via Hong Kong in July 1949, carried a message from Chen Zhongxi, the former chief of the NRC’s Electrical Department Bureau who had defected to the Communists. Chen made the same request as Dengfeng. The meeting between Liu Jinyu and Wang Yanqiu allegedly took place in November 1949.84

The investigation against Liu was haphazard from the start. Gu Zhengwen, the main investigator, joined the secret service in 1935 when he was a student at Peking University. In oral interviews published in 1995, Gu claimed that the State Secrets Bureau had investigated the Defense Ministry’s deputy chief of staff Wu Shi and branded him a Communist collaborator. Drawing on Wu’s confessions, the secret agents detained Cai Xiaqian—the alleged leader of the Communist movement in Taiwan. During his interrogation, Cai mentioned that two of Liu Jinyu’s sons, who fled to mainland China, sent a letter to their father. The sons told their father that the Communists were preparing to attack Taiwan and asked Liu to persuade his colleagues at the NRC to support the Communists.85 Mao Renfeng, who had succeeded Dai Li as the spy chief, doubted Gu Zhengwen’s story and asked for concrete evidence. Gu replied that there was no evidence, but he would “find a way to make him confess.”86

Gu’s recollections contained inconsistencies. He claimed that he visited Liu Jinyu at the Taipower headquarters on Heping East Road in January 1950. Liu was said to have asked Gu to hand a pile of cash to a Mr. “Zheng Xianghui,” which happened to be the alias of the alleged Communist leader Cai Xiaqian. Gu maintained that the secret service detained Liu three days later.87 These events, even if true, could not have occurred before April 1950. Liu made his last public speech on March 19, 1950, when he visited Fengshan Training Camp to lend support to thirty-six Taipower employees who volunteered for political training.88 Subsequent issues of the Taipower bulletin from May 1950 onward scrubbed all mentions of Liu Jinyu, suggesting that the arrest took place in late April rather than in January.

Liu’s deputy Huang Hui was appointed acting general manager on May 3, 1950, while Liu’s detention was kept secret. The Taipower high brass were simply told that Liu was on extended leave.89 Gong Debo, a newspaper editor detained for criticizing Chiang Kai-shek, shared the same cell as Liu. Between 9 pm on May 2, 1950, and 4 am the next day, interrogators tied Liu to the “tiger bench,”
forcing him to sit upright with his knees pinned down and his ankles elevated on several bricks.\textsuperscript{90} Two days after torturing Liu, the NRC informed Taipower that Liu was being investigated and relieved of his duties without giving further details. On May 15, 1950, Sun Yun-suan, praised as “forward-looking, hardworking and law-abiding,” took over Huang’s former position of chief engineer.\textsuperscript{91} The Nationalists in Taiwan now carefully vetted every engineer placed in a leadership position within the power company.

Interrogators did not extract any clues from Liu about undercover Communist agents. Liu mentioned a section chief Chen from the Finance Ministry during his questioning. The Secret Service ended up arresting the wrong person. Gu Zhengwen even admitted that the investigation of Liu was too hasty. Nonetheless, the secret service extracted a written confession under duress from Liu. When the chairman of the provincial government of Taiwan Wu Guozhen (K. C. Wu) vouched for Liu Jinyu’s innocence, Chiang showed him Liu’s statement. Wu would later resign from office and spend the rest of his life in the United States.\textsuperscript{92}

The state-controlled media in Taiwan started a smear campaign against Liu once his arrest was publicized in mid-May. Liu defended himself against accusations of conspiracy to no avail. According to a Xinshengbao report published after his execution, Liu maintained that he was a scientist with no interest in politics. He tried to convince his interrogators that he was a staunch anti-Communist by pointing to his friendship with Yu Bin, the archbishop of Nanjing who was later elevated to cardinal in the Catholic Church under Pope Paul VI. Liu also argued that he was the leading coordinator of American aid and would not have spoken to the Americans if he was a Communist spy.\textsuperscript{93} News reports brushed aside his pleas of innocence. A commentator for the Niusi zhoukan under the pseudonym Zhuge Ming called Liu a cowardly and deranged ingrate, who “sold his soul to the Communist bandits and betrayed the trust of his country.” He criticized Liu’s lavish lifestyle. According to him, Liu was chauffeured everywhere in a posh Buick sedan and insisted on having his shoes polished before stepping out of his car.\textsuperscript{94} The Xinshengbao reporter chaffed at Liu’s statement that “a poor country should cherish talent like myself.” He retorted, “I do not see how our nation is regarded as a poor country, and why such a ‘talent’ is worth ‘cherishing’.”\textsuperscript{95} The heroic engineer who had built the power system for Kunming’s defense industries during the war was now branded a self-entitled traitor.

The military tribunal revised the charges to bolster its case against Liu. In the original charges on June 21, inquisitor Wang Youliang of the Taiwan Peace Preservation Corps proclaimed Liu and Yan guilty of spying for the Communists. Chief of Staff Zhou Zhirou noted in the amended charges that it was much
more appropriate to charge Liu with obeying seditious orders from the enemy and failing to abide by discipline, both of which were still punishable by death. Zhou pleaded for a reduced sentence for Yan, but Chiang Kai-shek refused to accede and ordered the execution of both accused men.

Zhuge Ming gave a blow-by-blow account of Liu’s final moments. On July 17, 1950, at 4 am, Liu and his alleged co-conspirator were hauled to a brightly lit military courthouse in Taipei. The judge ordered the military police to untie the accused so that they could write their last words. Liu protested, “I am innocent, why am I sentenced to death?” The judge retorted by saying that Liu committed an unforgivable crime. Liu lowered his head and sobbed as he wrote his farewell note. Liu raised his trembling hands and begged the courts to bring him a Catholic priest to say his final prayers. The judge turned down his request, saying that it was no longer possible to delay the execution. When he was done writing, Liu pulled out a comb from his coat pocket and asked it to be handed over to his family. The escorts tied up the two men on death row. They then forced a warm loaf of bread and low-grade red cordial liquor down Liu’s throat. Like all other political prisoners, Liu Jinyu and Yan Huixian were executed by firing squad at Machangding. Shortly after the execution, the Military News Agency put out a news release announcing the execution of a traitor for “attempting to make use of an important national asset to preserve his personal status and secure promotion and prosperity.”

Was Liu Jinyu guilty as charged? One thing is for sure: Liu’s sons had fled Taiwan for mainland China. One other fact is well established: Yan Huixian, who fled Shanghai for Taiwan via Hong Kong, carried a letter from Liu’s former supervisor Chen Zhongxi addressed to Liu. The inconsistencies in the case records point to a miscarriage of justice.

Gu Zhengwen barely mentioned Yan Huixian in his later accounts. The charges also made no mention of Liu’s alleged contacts with underground Communist activists such as Wu Shi and Zhu Feng, calling into question the credibility of Gu’s investigations. National security agents acted on the slightest suspicion that Liu had agreed to turn over the island’s electrical power industries to the Communists and most likely extracted a confession under duress. In the frenzied struggle for survival, the Guomindang regime in Taiwan did everything in its power to cling to the only electrical power network that it successfully took over during the scramble for reparations.

The struggle for control over China’s electrical industries played a significant role in shaping the outcome of the Chinese Civil War. The scramble
for reparations illustrates the perils of compressed economic development. The turmoil arising from the rapid collapse of Northeast China’s industries after the Japanese surrendered in 1945 led to a power vacuum that was filled by the Communists. The Nationalist government shouldered the immense cost of returning private power companies to their rightful owners and running a sprawling network with many inherent flaws left behind by the Japanese. Not only did assets easily become liabilities, but the rapid reversal of fortunes starting around July 1948 also suggests that positions of strength concealed weaknesses and vice versa. The Communists, who did not control many of China’s electrical resources in the beginning, were not bogged down by the heavy responsibilities that came with administering legacy systems that came into being over decades of haphazard development. Starting with small-scale rehabilitation projects and learning from tactical mistakes, the Communists adapted to conditions of material scarcity and devised strategies to subvert the electrical industries.

After grappling with a world of invisible threats in a catastrophic civil war, neither the Nationalists nor the Communists would ever relinquish control over the power grid. The power blockades executed by the PLA exemplified how the loss of electrical power could result in the loss of political power. The Nationalists never fully understood why their American-trained and party-indoctrinated engineering elite went over to the Communists. The climate of fear was no less intense on the mainland. The centralized power networks, jointly managed by the engineering elite, military, and party cadres, would transform China’s workforce into a militarized industrial army. The civil war had never ended and looming fears of catastrophic power loss continue to shape the outlook on energy security on both sides of the Taiwan Strait.