

THIRD FRONT RAILROADS AND INDUSTRIAL MODERNITY IN LATE MAOIST CHINA

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In the late 1960s, the Chinese Communist Party (CCP) became concerned that the United States or the Soviet Union might invade. To protect national sovereignty, the Party carried out a massive campaign to industrialize China's West called the Third Front. This article focuses on Third Front railway building. It shows that, although Third Front railroads initially had problems, they eventually integrated large parts of western China into nationwide industrial networks, which accelerated and standardized regional transportation. To build railroads, the CCP compensated for the country's shortage of industrial capital with massive inputs of labor. This industrialization strategy placed a heavy burden on rural men. To boost morale, the CCP organized thought campaigns that praised hard work as a revolutionary contribution to China's industrialization and defense. This collective narrative of national security and industrial progress never entirely silenced discontent, but it did provide workers with a way to think about hardship.

KEYWORDS: *China, Cold War, political economy, industrialization, railroads, labor, modernity*

In late 1964, the Chinese Communist Party (CCP) leadership became very concerned that the United States or the Soviet Union might attack China. No major attack ever occurred, but the CCP clearly had reasons to worry. In the preceding years, Beijing had seen the number of Soviet troops on China's northern border rise to one million. Meanwhile, in Vietnam, the United States had been increasing its military presence for over a decade, and in late 1964 it had leaped closer to China's southern border with its first air raids on North Vietnam. To safeguard the People's Republic of China (PRC), the CCP launched a massive campaign to industrialize China's West. It called this project the Third Front (or simply the Front).¹

Between 1964 and 1980, China devoted nearly 40 percent of its capital construction budget to building the Front. With these funds, the CCP built more than 1,000 industrial projects. As these numbers illustrate, the Front occupied a major place in China's industrialization for nearly half the time that Mao Zedong was in power. It

¹ Chen Donglin, *Sanxian jianshe: beizhan shiqi de xibudakaifa* (The Third Front: opening the West during the war preparation era) (Beijing: Zhonggong zhongyang dangxiao chubanshe, 2003).

was especially prominent during much of the late Maoist period (1959–1976).² In my view, it is thus necessary to consider the Front in order to fully comprehend the CCP's approach to industrial modernity in late Maoist China.

Over 20 years ago, Barry Naughton formulated the main question scholars ask about the Third Front: was it an economic success or failure? Naughton argued that it was an economic mistake.³ All subsequent scholars have agreed, except for Chris Bramall, who has shown that the Front improved living standards in Sichuan.⁴ This article will not discuss whether the entire Front was an economic success or failure.⁵ Instead, it analyzes how the CCP built Third Front railways in western China and how workers experienced railroad construction.

When the CCP began the Third Front in 1964, it ordered project administrators to “conceal” (隐蔽 *yin bi*) Third Front industries in inland areas “near mountains” (靠山 *kao shan*) and “inside caves” (进洞 *jin dong*).⁶ Third Front railroad building had to follow this policy as well. I suggest that the CCP made this strategic choice because it was preparing to fight an asymmetric war, and so it sought to establish strongholds in inaccessible locations that minimized China's military vulnerability.

In accordance with this defense strategy, the CCP favored building Third Front industries in the same kind of remote mountainous locations that from the 1920s to 1940s had held CCP base areas or served as stops on the Long March. In taking this geographic approach, the CCP appears to have followed the long tradition of military leaders planning for future wars as if they were fighting the last war.⁷

I demonstrate that the CCP also acted in ways similar to other industrializers by forming large-scale organizations to oversee railroad construction.⁸ To supply these units, the CCP implemented late Maoism's general strategy for quickly industrializing China. It made up for the country's scarce capital with a massive labor force that

² Mao Zedong was in power for 27 years. The Third Front lasted from 1964 to 1980, but Mao died in 1976, and so the Front occupied 12 years or 44 percent of the time that Mao was China's principal leader.

³ Barry Naughton, “The Third Front: Defence Industrialization in the Chinese Interior,” *China Quarterly* (1988): 351–86; Barry Naughton, “Industrial Policy during the Cultural Revolution: Military Preparations, Decentralization, and the Leap Forward,” in William A. Joseph, Christine Wong, and David Zweig, eds., *New Perspectives on the Cultural Revolution* (Cambridge, MA: Harvard University Press, 1991), 153–82.

⁴ Yang Dali, “Patterns of China's Regional Development Strategy,” *China Quarterly* (1990): 230–57; Judith Shapiro, *Mao's War against Nature: Politics and the Environment in Revolutionary China* (Cambridge: Cambridge University Press, 2001), 145–59; Chris Bramall, *In Praise of Maoist Economic Planning: Living Standards and Economic Development in Sichuan since 1931* (Oxford: Oxford University Press, 1993).

⁵ My book project argues that while the Front had much waste, it was not a waste. Despite its many problems, it still significantly advanced industrial infrastructure in West China. Covell Meyskens, “Mao's Backwater War Machine: The Cold War, Industrial Modernity, and Everyday Life in China's Third Front, 1964–1990,” PhD diss., University of Chicago, 2015.

⁶ Panzhihua shi dangshi yanjiushi, ed., *Panzhuhua kaifa jianshe shi wenxian ziliao xuanbian* (Selection of historical materials on the construction of Panzhuhua) (Panzhuhua: Panzhihu shi dangshi yanjiushi, 2000), 1–2, 6–7.

⁷ Jack L. Snyder, *The Ideology of the Offensive: Military Decision Making and the Disasters of 1914* (Ithaca, NY: Cornell University Press, 1984).

⁸ Alfred D. Chandler, Jr., *The Visible Hand: the Managerial Revolution in American Business* (Cambridge, MA: Belknap Press, 1977).

to a large extent was mobilized via militias.⁹ In total, China mobilized roughly 5.5 million people, of whom over 80 percent came from rural militias (4.45 million). To engage in more capital-intensive work, the CCP also sent in personnel from the People Liberation Army's Railway Corps (铁路局 *tielu ju*; 660,000) and regional railroad offices (铁路设计研究院 *tielu sheji yanjiu yuan*; 480,000).¹⁰

This labor-intensive method of industrialization placed a heavy burden on railroad workers, who had to engage in intense physical labor. Aware of labor dissatisfaction, the CCP endeavored to keep up participant morale. As it did elsewhere in Maoist China, the CCP acted like the Soviet Union under Stalin and told railroad personnel that their hard labor was for the sake of building a socialist country and defending it from its enemies.¹¹ Participants did not always see their austere working conditions in this ideological light. Yet, despite their discontents, workers still brought railways to western China, a fact of which many are still proud today.¹²

According to Barry Naughton, the CCP should not have built up transport infrastructure in the Chinese interior for the Third Front. It should have concentrated China's limited capital on rail in the country's eastern industrial core, since this investment strategy would have increased national GDP more than the Third Front.¹³ Naughton might be correct that if China had focused on developing coastal railways, the country's GDP would have grown larger. One way to test his hypothesis would be to perform a cost-benefit analysis of every Front railroad.¹⁴ Unfortunately, I do not have adequate information to carry out this cliometric endeavor. I nonetheless take issue with Naughton's assessment of Third Front rail.

First, the CCP did not construct the Front to maximize GDP. Like the Soviet Union before World War II, the CCP industrialized inland regions to ensure national defense at all costs.¹⁵ Second, I maintain that by the time the Front ended in 1980 the Third Front railways had contributed to three important changes in western China's transport infrastructure. To start, the Front expanded national rail's territorial reach westward, as it added ten interprovincial lines and

⁹ Alexander Eckstein, *China's Economic Revolution* (New York: Cambridge University Press, 1977), 31–36; Carl Riskin, *China's Political Economy: The Quest for Development since 1949* (Oxford: Oxford University Press, 1987); Elizabeth J. Perry, *Patrolling the Revolution: Worker Militias, Citizenship, and the Modern Chinese State* (Lanham, MD: Rowman & Littlefield, 2006), 185–90.

¹⁰ Liu Tongwei, ed., *Tiedao xiujian shiliao di er, san ji* (Historical materials on railroad construction, vol. 3) (Beijing: Zhongguo tiedao chubanshe, 1991), 22–34, 42–45, 60–77, 81–97, 101–5, 165–80; Wang Zhongxiao, *Tiedaobing jianshi* (A short history of the railroad corps) (Beijing: Tiedaobing shanhou gongzuo lingdao xiaozubian, 1986), 138–71, 197–98.

¹¹ Lewis H. Siegelbaum, *Stakhanovism and the Politics of Productivity in the USSR, 1935–1941* (Cambridge: Cambridge University Press, 1988); Martin K. Whyte, *Small Groups and Political Rituals in China* (Berkeley: University of California Press, 1974).

¹² Jamie Monson has found a similar phenomenon among Chinese working on the Tanzania-Zambia Railway. Jamie Monson, *Africa's Freedom Railway: How a Chinese Development Project Change Lives and Livelihoods in Tanzania* (Bloomington: Indiana University Press, 2011).

¹³ Naughton, "The Third Front: Defence Industrialization in the Chinese Interior"; Naughton, "Industrial Policy during the Cultural Revolution: Military Preparations, Decentralization, and the Leap Forward".

¹⁴ Robert Fogel, *Railroads and American Economic Growth: Essays in Economic History* (Baltimore: John Hopkins Press, 1964).

¹⁵ Lennart Samuelson, *Plans for Stalin's War Machine: Tukhachevskii and Military-Economic Planning, 1925–1941* (New York: St. Martin's Press, 2000).

several intraprovincial routes. Totalling over 8,000 kilometers in length, these new lines furnished China with major arteries for transporting natural resources in western parts of the country.

Third Front rail also integrated large portions of inland China into the national railroad system. This accomplishment contributed to the standardization of regional transport. New areas of western China became part of a nationwide transport system with standardized rules of operation and industrial hardware. Regional transport also became more regular, as it followed fixed routes with fixed timetables. Last, Front rail accelerated regional circulation, reducing travel times from days to hours.

This article employs a variety of sources. It uses documents from the Hubei and Sichuan Provincial Archives as well as the Chongqing and Beijing City Archives. It also draws on memoirs, railroad designs, and compilations of documents acquired from private collectors. For general background information, it relies on Chinese gazetteers and history books as well. In addition, I carried out 17 interviews with Third Front railroad workers in 2011 and 2012.

In the following sections, I first give an overview of where the CCP placed Third Front rail and why. Next, I discuss how the Third Front contributed to the integration of western China into national transport infrastructure. Then, I examine how the CCP mobilized labor and capital to create railroads. To conclude, I present some basic features of everyday life at a railroad construction site and assess CCP attempts to maintain participant morale.

THIRD FRONT RAILROADS: LOCATIONS AND LOGICS

LOCATIONS: WESTERN CHINA AND MOUNTAINS

From the founding of the PRC in 1949, the CCP emphasized the extension of railway networks in inland areas, since western China had only five percent of the country's more than 20,000 kilometers of tracks. After 15 years of rule, the CCP had increased rail nationwide by 15,000 kilometers. Of this total, about 6,000 kilometers, or 40 percent, was in western China.¹⁶ During the Front, the CCP further expanded railroads in China's West with an additional 8,000 kilometers of tracks, which accounted for 55 percent of rail built in China between 1965 and 1980 (Figure 1). In this same period, western China's percentage of national rail also jumped from 19 percent to 35 percent.¹⁷

For the Third Front, the government erected ten interprovincial railroads and numerous intraprovincial railways (Table 1). In a few instances, the CCP had started construction on a line during the Great Leap Forward (1958–1961), but nearly all construction teams made very little progress before the Leap turned into the Famine. Only in the case of the Sichuan-Guizhou Railroad did workers erect more than one-third of its total distance. Yet no matter what condition a railroad was in when the CCP started the Front in 1964, all Front railways took shape in

¹⁶ Li Jixiang, ed., *Dangdai zhongguo de tiedao shiye* (Contemporary China's railroad industry) (Beijing: Zhongguo shehui kexue chubanshe, 1990), 7–9.

¹⁷ Chen, *Sanxian jianshe*, 271.

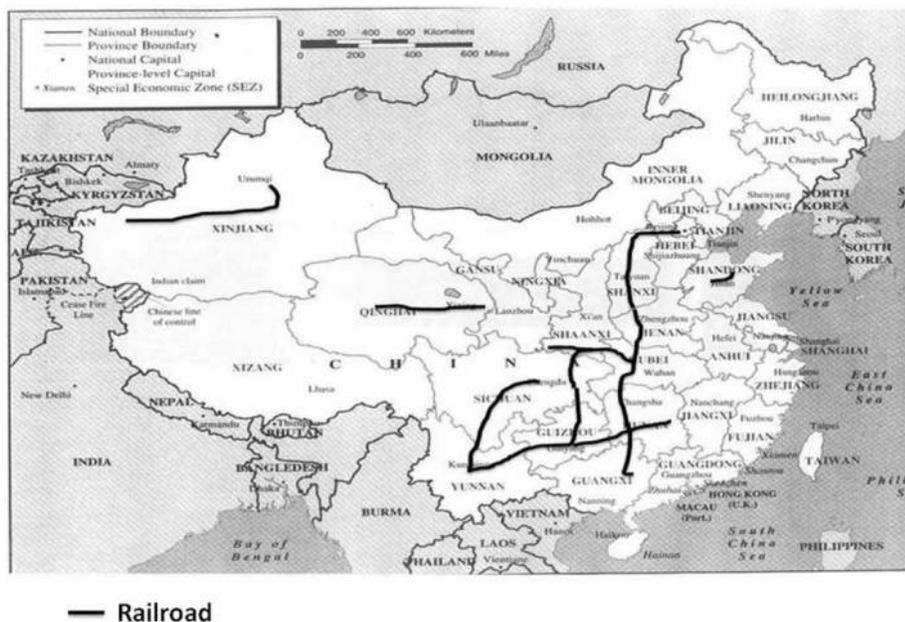


Figure 1. Map of major Third Front railways.

two massive bursts of construction activity between 1964 and 1966 and between 1969 and 1971.¹⁸

The resulting lines have a few common geographic features. Most routes were in mountainous areas in western China and sloped towards the western half of provinces. Interprovincial lines were especially prominent in southwestern and central China, while intraprovincial routes were more common in the Northwest, which already had interprovincial lines to all neighboring provinces except Hubei.

LOGICS: NATIONAL DEFENSE, INTEGRATION, AND INDUSTRIALIZATION

The CCP built Third Front rail primarily for national defense. The leadership knew that China was weak in comparison to its main Cold War rivals—the United States and Soviet Union. To compensate for this structural inferiority, the central government called for the construction of the Third Front in China's hinterlands under the protective cover of mountains and caves.¹⁹ One noticeable result is that the CCP placed Third Front industries in remote mountainous locations, which considerably resembled the former sites of CCP base areas and the routes of the Long March (Figure 2). This strategic preference for mountains resulted in construction teams creating thousands of bridges and tunnels so that Third Front rail could traverse mountain ranges (Table 2).

¹⁸ Chen, *Sanxian jianshe*, 270–79; Wei Li and Dennis Tao Yang, “The Great Leap Forward: Anatomy of a Central Planning Disaster,” *Journal of Political Economy* (2005): 840–77. The CCP began building the following railroads during the Great Leap Forward: the Chengdu-Kunming, Sichuan-Guizhou, Guiyang-Kunming, Hunan-Guizhou, and Xiangfan-Chongqing lines.

¹⁹ Panzhuhua shi dangshi yanjiushi, *Panzhuhua kaifa jianshe*, 6–7.

Table 1
Years of Construction and Length of Lines for Major Third Front Railways

Railroad line	Years	Length (km)
Chengdu-Kunming	1958–1970	1,100
Guiyang-Kunming	1958–1970	644
Sichuan-Guizhou	1956–1965	227
Beijing-Yuanping	1965–1972	417
Taiyuan-Jiaozuo	1970–1979	409
Jiaozuo-Zhicheng	1970–1971	753
Zhicheng-Liuzhou	1970–1978	886
Xiangfan-Chongqing	1968–1979	915
Hunan-Guizhou	1958–1974	902
Qinghai-Tibet (Xining-Nanshankou)*	1979–1984	845
Xinjiang Southern	1974–1984	475
Yangpingguan-Ankang	1969–1971	356
Qindian-Taishan	1970–1974	161

Source: Liu Tongwei, ed., *Tiedao xiujian shiliao di er, san ji* (Historical materials on railroad construction, vol. 3) (Beijing: Zhongguo tiedao chubanshe, 1991), 22–34, 42–45, 60–77, 81–97, 101–5, 165–80. *Only the Xining-Nanshankou section of the Qinghai-Tibet line was built in this period.

The regime did not use mountains for cover only in the Chinese interior. Documents I uncovered in the Beijing Municipal Archive show that the state inscribed this cloaking tactic at the heart of China's first subway in Beijing. Taking inspiration from the Moscow Metro, its designers ordered an underground passageway from government headquarters to the first subway line. Engineers also extended this subway into mountains west of Beijing to the start of the Front's major north-south passageway—the Beijing-Liuzhou Railroad—so that, in wartime, military and political elites could take this secret line of flight.²⁰

If war had forced the CCP to evacuate China's eastern industrial heartlands, the government would probably have had to abandon a large portion of its capital stock due to insufficient rails westward.²¹ To make matters worse, once inland, the CCP would still have had to deal with limited interprovincial and intraprovincial rail. This problem would have been particularly acute in the Southwest, which completely lacked interprovincial railways and did not have many links leading outside the region. During the Third Front, the CCP built three railways that linked all the provincial capitals of the Southwest.²²

²⁰ Guojia jiwei guanyu tongyi Beijing dixia tiedao quanmian kaishi shigong de han, *Dixie tiedao lingdao xiaozu de tongzhi huiyi jiyao, jianbao deng wenjian* [1965], 002-017-00198, Beijing Municipal Archive.

²¹ Zhang Guobao, "Sulian yuanjian, sanxian jianshe ji daguimo jishujinjin" (Soviet construction assistance, Third Front construction, and the large-scale introduction of foreign technology), *Zhongguo jingji zhoubao*, 2014. To slightly mitigate this problem, the CCP relocated 380 industrial work units, which was more than the Guomindang moved inland during World War II.

²² Chen, *Sanxian jianshe*, 272–75. The lines are the Sichuan-Guizhou, Guiyang-Kunming, and Chengdu-Kunming railroads.

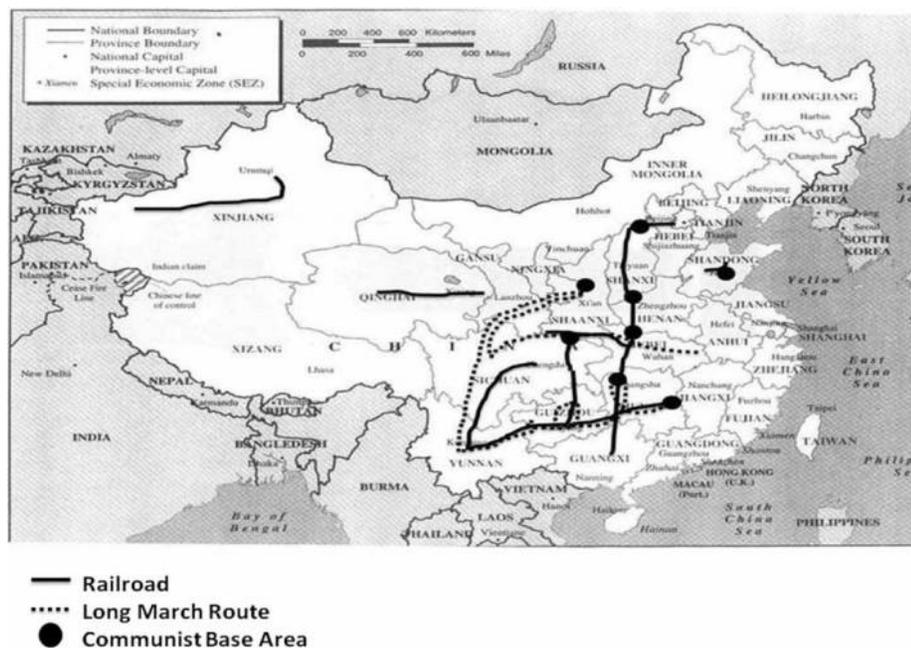


Figure 2. Map of Third Front railways, base areas, and Long March routes.

The CCP also laid two lines that finally connected every province in western China and doubled routes between central and western China from two to four.²³ Further bolstering connections between China's East and West, the regime established the Qinghai-Tibet Railway's eastern portion and gave a second track to the Beijing-Baotou Railroad and the country's main east-west axis—the Longhai Railroad. As for the country's north-south axis, the CCP built a second north-south line—the Beijing-Liuzhou Railroad—and double-tracked the southern portion of the Beijing-Guangzhou Line. The CCP also endowed inland China with the country's first electrified route—the Baoji-Chengdu Railroad—and constructed the southern Xinjiang railway.²⁴

With this additional railroad infrastructure, the CCP aimed to lessen transport bottlenecks between eastern and western China and facilitate interregional trade. As Vice Premier and Minister of Finance Li Xiannian (1909–1992) explained in his comments on the Hunan-Guizhou Railroad, the Southwest was rich in resources but its development required products from other regions. Due to a dearth of interregional transport, resources could not easily circulate, especially since mountains surrounded the Southwest and made up much of its terrain. The Hunan-Guizhou Railroad would aid in resolving this problem, since it would enable materials to flow to and from the rest of the country.²⁵

²³ The two additional lines are the Hunan-Guizhou and Xiangfan-Chongqing railroads.

²⁴ Liu Tongwei, *Tiedao xiujian shiliao*, 22–34, 42–45, 60–77, 81–97, 101–5, 114–26, 152–61, 174–81, 251–54.

²⁵ Zhang Xueliang, *Pieshan zaolu: xiangqiantielu shejishigong yu jianshetongche* (Leveling mountains to build a road: the Hunan-Guizhou railroad's design, construction, and completion) (Shenyang: Jilin chuban jituan youxian zeren gongsi, 2010), 11–12.

Analogous reasoning informed the construction of other Front routes. These steel arms of state penetration would make western China more transitable and its resources more movable en masse. No longer would it be accurate to say, as the poet Li Bai (701–762) did of Sichuan, that western China was harder to reach than heaven.²⁶

Seeking to expand China's industrial base, the CCP designed railways to service mines in the country's interior. To support manufacturing, the government routed railroads to serve Front factories as well. However, project managers often had major routes bypass enterprises at a distance. This decision was clearly inefficient, as it required building additional roads and rail lines to Front sites.²⁷ On the other hand, this strategic choice shows the importance the CCP placed on securing its hinterland war machine, no matter what the cost.

THIRD FRONT RAIL'S CONTRIBUTIONS: INTEGRATION, STANDARDIZATION, ACCELERATION

MILITARY VALUE?

The Soviet Union and the United States never invaded China, and so it is difficult to evaluate how Front rail would have fared if the CCP had actually used it in combat. If war had erupted at any time before the mid-1970s, Front routes would probably have been of limited use, since more than 50 percent of major lines were not even operational until after 1973. If China had been attacked before 1970, Front rail would probably have been of even less strategic value, since workers had only finished one major line before that date.

On the other hand, it is important to remember that a completely functional railroad might not have been the CCP's immediate goal. This was especially true in the late 1960s, when the Soviet Union appeared to be preparing to invade northern China. Faced with the threat of a major war against a technologically superior adversary, the CCP's more pressing concern was probably establishing some semblance of railroad infrastructure, and so it called for workers to quickly construct lines with whatever materials they could find. The resulting lines were of poor quality, and so it is questionable how useful they would have been in the event of war. But, the CCP did make effective use of similar low-quality rail during the Korean War.²⁸

²⁶ Chen, *Sanxian jianshe*, 272–75; Zhang Xueliang, *Xinan ganxian: Xiang yutielu sheji shigong yu jianshe tongche* (The Southwest's branch line: the Xiangfan-Chongqing railroad's design, construction, and completion) (Shenyang: Jilin chubanshe jitian youxian zeren gongsi, 2010), 1, 14.

²⁷ Panzhihua shi dangshi yanjiushi, *Panzhuhua kaifa jianshe*, 504–5; Chen, *Sanxian jianshe*, 255–57, 259–61, 265–69, 270–79, 292–94, 297–98, 300–2, 305–1, 308–11, 313–15, 323–26, 328–29. Hydrocarbon deposits are in Sichuan, Guizhou, Shaanxi, Henan, Shanxi, Gansu, and Hubei. The CCP built railroads that bypassed major Third Front projects such as Panzhuhua Steel, Shuicheng Steel, and Dongfeng Automotive.

²⁸ Wang Zhongshao, *Tiedaobing jianshi*, 49–104; Gu Xiu, *Licheng huiwang* (Looking back) (Shanghai: Shanghai wenyi chubanshe, 2006), 86–100; Tiedaobu dang'an shizhi zhongxin, *Kangmei yuanchao zhanzheng tielu qiangxiu qiangyun shi* (History of the rapid railroad construction and transportation during the Korean War) (Beijing: Zhongguo tiedao chubanshe, 1999).

Table 2

Major Third Front railways: Number of bridges, number of tunnels, and percentage of each line made up of bridges and tunnels

Railroad line	Number of bridges	Number of tunnels	Percentage of line
Chengdu-Kunming	991	427	40
Guiyang-Kunming	301	187	16
Sichuan-Guizhou	125	115	10
Beijing-Yuanping	216	120	25
Taiyuan-Jiaozuo	165	94	13
Jiaozuo-Zhicheng	2,389	24	7
Zhicheng-Liuzhou	476	396	25
Xiangfan-Chongqing	716	405	44
Hunan-Guizhou	309	297	19
Qinghai-Tibet (Xining-Nanshikou)	410	31	2
Xinjiang Southern	450	29	10
Yangpingguan-Ankang	311	14	25
Qindian-Taishan	285	12	51

Source: Liu Tongwei, *Tiedao xiujian shiliao*, 22-34, 42-45, 60-77, 81-97, 101-5, 165-80.

EXPANSION AND INTEGRATION

Since a significant portion of Front railways did not come completely on line until the mid- to late 1970s, it would be necessary to examine the 1980s to fully understand their effects. This study ends with the closing of the Front in 1980, and so it only partially assesses their impact. But, by 1980, the Third Front had already made clear contributions to transport infrastructure in inland China.

In total, the Front added over 8,000 kilometers of tracks between 1964 and 1980. In this same time period, regional railroads rose from roughly one-fifth of the national stock to over one-third, and trackage increased in all provinces, except Gansu (Table 3).²⁹ During the Front, western China's annual freightage also increased. By 1980, it had quadrupled and come to comprise one-third of the national total. As Table 3 shows, advances in freight and passenger traffic were not evenly distributed. Yet across the board, they both rose throughout China's interior.

In a few cases, state planners ordered lines to isolated enterprises, which remained forever under capacity. But, the Front also established interprovincial routes, which integrated inland provinces and their resources into the national railroad system. In the Southwest, the Front added three large lines between 1964 and 1971 that traversed huge coal beds and iron mines in Guizhou and Sichuan. By 1980, these mines' output not only made southwestern China self-sufficient in coal and iron products, they also sent carbon to users in Hunan, Guangxi, and Guangdong. Although these deliveries did not end southern dependence on

²⁹ Chen, *Sanxian jianshe*, 271.

Table 3

Change in total length of railways and increase in traffic, by province, from 1964 to 1980

Province	Change in railway length (km)	Increase in annual rail passengers (1,000s of persons)	Increase in annual rail freight (1,000s of tons)
Sichuan	1,932	30,100	28,260
Guizhou	731	10,520	13,730
Yunnan	719	10,320	14,170
Shaanxi	1,029	12,070	17,380
Gansu*	-106	600	12,760
Qinghai	300	4,000	3,800
Hubei	569	19,740	23,070
Xinjiang	115	8,550	6,380
Ningxia	23	1,080	10,690
Hunan	460	22,490	28,150
Henan	1,455	21,290	43,730
Shanxi	565	11,930	75,370
Guangxi	309	11,710	13,910

Source: Wen Huchao and Hong Shenglong, *Xin Zhongguo 50 nian tongji ziliao huibian* (Collection of statistical materials on new China's 50 years) (Beijing: Zhongguo tongji chubanshe, 1999), 231-32, 531-32, 556-57, 581-82, 631-32, 691-92, 714-15, 739-40, 783-84, 808-9, 833-34, 857-58, 882-83. *Rail construction occurred in Gansu during the Third Front, so I am unsure why total length decreased.

northern coal, they did lessen the hydrocarbon burden that southbound lines had to handle.³⁰

The CCP also doubled the capacity of China's main artery for transporting coal from northern to southern China—the Beijing-Guangzhou Line—and it laid a second north-south line—the Beijing-Liuzhou Railroad. This new route served large hydrocarbon fields established as part of the Third Front in Shanxi, Henan, and Hubei. Similarly, in Northwest China, the CCP created lines to hydrocarbon deposits in Shaanxi, driving the country's transport arm further into the province's coal-rich north. By 1980, production from Shaanxi mines rose to such an extent that their output came to supplement energy needs in China's East.³¹

STANDARDIZATION AND ACCELERATION

Third Front rail also standardized transport in areas of western China, as every new line became a part of the national railroad system. To manage new routes, the government expanded regional railroad offices and founded sub-bureaus and train stations. Each of these bureaucratic units managed labor, trains, and freight under

³⁰ Zhang Baoming, ed., *Zhongguo meitan gongye: er shi ba nian shigao, 1949-1976* (China's coal industry: sketch of the first 28 years) (Beijing: Meitan gongye shigao bianyanzu, 2001), 276-86, 305-25.

³¹ Zhang, *Pieshan zaolu*, 276-86, 305-25.

their jurisdiction according to standard rules of procedure.³² Third Front administrators also endowed lines with standardized industrial hardware.

Each railway received trains produced on Chinese assembly lines to travel on standard gauge tracks.³³ Specialized metallurgical factories supplied trusses and beams for bridges.³⁴ Select locations acquired electronic devices—such as telephones, telegrams, and signaling lights—designed to facilitate long distance communication according to certain technical specifications.³⁵

Regulating traffic further, railroad managers gave stations with high circulation the equipment for issuing paper tickets, while passengers boarding at less frequented stations purchased tickets from onboard attendants. As part of the national railroad system, all stations also established regular ticket prices, which did not give people the option of purchasing assigned seats until the early 1970s.³⁶

Once on board, passengers and freight moved at accelerated rates, but their movements also became standardized. They could only travel between fixed points as fast as China's locomotives, which in the 1960s and 1970s had maximum speeds ranging from 120 to 140 kilometers per hour.³⁷ Even to this day, trains on Front lines are often unable to reach such speeds due to their mountainous routes. Nevertheless, with the arrival of rail, regional transit times still dropped precipitously from days to hours, and the frequency of scheduled trips increased. In addition, passenger traffic came to adhere to nationally set timetables.³⁸

THE CONSTRUCTION PROCESS: LABOR, TECHNOLOGY, AND THE STATE

THE LABOR FORCE: MILITARIZED AND LABOR INTENSIVE

Even before the founding of the PRC in 1949, the CCP leadership was aware that the country's economy was industry poor and people rich. So, when the CCP launched large-scale industrialization efforts, it tended to supplement China's limited industrial equipment with massive inputs of labor. In the late Maoist period (1959–1976), this developmental strategy became especially widespread.³⁹ During the Front, the CCP applied this labor-intensive industrial policy to railroad building and called up a huge labor force. Its members came from three groups—the Railway Corps, rural militias, and regional railroad offices. All three groups were almost completely made up of men.⁴⁰

³² Liu Tongwei, *Tiedao xiujian shiliao*, 664–68, 709–10, 731–37, 740–63.

³³ Liu Tongwei, *Tiedao xiujian shiliao*, 22–34, 42–45, 60–77, 81–97, 101–5, 165–80, 355–57, 740–63, 773–79, 784–87, 803–4, 820–26, 836–39.

³⁴ Liu Tongwei, *Tiedao xiujian shiliao*, 859–60, 864–65, 873–78, 887–90, 893–96.

³⁵ Liu Tongwei, *Tiedao xiujian shiliao*, 585–96, 599–600, 604–15, 664–68, 709–10, 731–37, 740–63, 846–47, 852–55.

³⁶ Liu Tongwei, *Tiedao xiujian shiliao*, 709–10, 731–37; interviews with Third Front railroad workers by Covell Meyskens, Xian, China, March 2012; interviews with Third Front railroad workers by Covell Meyskens, Panzihua, China, October to December 2011.

³⁷ Liu Tongwei, *Tiedao xiujian shiliao*, 773–79, 784–87, 803–4, 820–26, 836–39.

³⁸ Zhongguo tiedaobu, *Quanguo tielu lieche shikebiao* (National railroad passenger train timetables) (Beijing: Zhongguo tiedao chubanshe, 1964 and 1981).

³⁹ Eckstein, *China's Economic Revolution*, 31–36.

⁴⁰ There were very few women. Liu Weiyao, ed., *Tiejian fengbei: Shaoyang wenshi teji* (Railroad construction: a special issue on Shaoyang history) (Beijing: Zhongguo wenshi chubanshe,

Two of these groups were military personnel—rural militias and the Corps.⁴¹ Workers at regional railroad offices were not military. However, once the government assigned them to a Front project, their work became a matter of national security.⁴² The Front was not the first time the CCP had mobilized all three groups together. The CCP had used this militarized labor force for large industrial projects ever since the late 1950s when Mao called for every county to form a militia regiment.⁴³

At about 4.5 million people, rural militias accounted for over 80 percent of the total labor force, which I put at about 5.5 million. By comparison, I estimate that roughly 600,000 members of the Railway Corps and 480,000 railroad office workers took part in the Third Front (Tables 4 and 5). While administrators occasionally employed labor from all three groups, they often paired militias with just one more capital-intensive partner. No matter which groups economic planners selected, Third Front railroad building was always very labor intensive.

To give a sense of just how labor intensive it was, the United States First Transcontinental Railroad (1863–1869) was 3,000 kilometers long. During its six years of construction, its labor force was at most 100,000, whereas the least labor-intensive Front line—the Qinghai-Tibet Railroad—was one-third the length (940 kilometers) but had 114,000 laborers. As Tables 4 and 5 illustrate, railroad building became particularly intense during the Front's second surge (1969–1971), when the CCP became concerned that border skirmishes with the Soviets might turn into a wider conflict.⁴⁴ In response, the CCP mobilized huge numbers of workers in militias.

Railroad building was also more labor intensive at certain points in the construction process. It was most intense during the preparation and building phases, when the CCP relied on militias to engage in huge manual labor projects, like hauling in loads of supplies or reshaping entire mountainsides with hand tools. After workers had constructed bridges and tunnels and laid down tracks, the CCP demobilized most militias and had the Corps or railroad offices handle any outstanding issues.⁴⁵

ADMINISTRATIVE STRUCTURES AND INDUSTRIAL CAPITAL

To carry out railroad construction, socialist China acted like railroad builders worldwide and utilized large-scale bureaucracies to supervise population and resource management.⁴⁶ At the top of the administrative hierarchy, the CCP established offices that oversaw multiprovince railway projects. Their leadership typically included high-ranking officials from the local regional military area and all

2007), 56–62, 401–5; Kang Dashu, ed., *Xiangyu tielu Dabuizhan: Nanchong minbingshi jishi* (The great Xiangfan-Chongqing railroad battle: records on Nanchong's militia divisions) (Nanchong: Zhengxie nanchongshi weiyuanhui xuexi xuanchuan wenshiziliao weiyuanhuibian, 2004), 173–78, 293–94.

⁴¹ Members of militias were military personnel, but they were not directed by the Ministry of National Defense.

⁴² Interviews with Third Front railroad workers, 2011; interviews with Third Front railroad workers, 2012.

⁴³ Perry, *Patrolling the Revolution*, 185–90.

⁴⁴ Chen, *Sanxian jianshe*, 199–221.

⁴⁵ Liu Tongwei, *Tiedao xiujian shiliao*, 22–34, 42–45, 60–77, 81–97, 101–5, 165–80.

⁴⁶ Chandler, *The Visible Hand*.

Table 4

Distribution of the labor force for major railroads built with Railway Corps labor during Third Front years

Railroad line	Third Front years	Length (km)	Railway Corps personnel	Militia personnel	Railroad administration personnel	Total personnel
Chengdu-Kunming	1964-1970	1,100	359,700	341,000	33,612	734,312
Guiyang-Kunming	1964-1966	639	110,460	189,540	NA	300,180
Beijing-Yuanping	1964-1966	417.65	110,460	70,000	NA	180,460
Xiangfan-Chongqing	1968-1979	915.6	326,124	975,000	NA	1,301,124
Qinghai-Tibet (Xining-Nanshikou)	1974-1984	946.9	57,000	NA	57,000	114,000
Xinjiang Southern	1974-1984	475.6	64,500	1,000	18,500	84,000

Sources: Liu Tongwei, *Tiedao xiujian shiliao*, 22-34, 42-45, 60-77, 81-97, 101-5, 165-80; Wang Zhongxiao, *Tiedaobing jianshi* (A short history of the Railroad Corps) (Beijing: Tiedaobing shanhou gongzuo lingdao xiaozubian, 1986), 138-71, 197-98. NA, data not available.

provinces, ministries, and railroad offices involved.⁴⁷ The CCP set up similar organizations in some provinces, cities, and counties that Front rail traversed. The CCP also divided each railroad into “construction areas” (工程处 *gongcheng chu*), each with its own similarly staffed subheadquarters.⁴⁸

To perform technical work, the government mobilized the Corps and regional railroad offices. From their ranks, the state selected one or two groups to direct technical activities for a whole line. In some cases, these leading groups had already surveyed the geological conditions surrounding a railway and sketched out construction plans. In other cases, they utilized existing blueprints. Either way, once assigned to a line, technical staff carried out geological surveys and determined how to make the local landscape hold a railroad.⁴⁹

To facilitate the construction process, Third Front administrators drew on several hardware suppliers. For industrial equipment, they relied in part on the Corps and regional railroad offices. Central and provincial officials also commanded ministries and manufacturers to provide additional resources. Supplying Third Front rail was a

⁴⁷ Cheng Zihua, *Cheng Zihua Huiyilu* (Memoirs of Cheng Zihua) (Beijing: Jiefangjun chubanshe, 1987), 407-51; Kong Qingde, *Yidai jiangxing* (A generation's star) (Beijing: Jiefangjun chubanshe, 2000), 472-511; Gu, *Licheng huiwang*, 107-38, 172-94.

⁴⁸ Liu Tongwei, *Tiedao xiujian shiliao*, 22-34, 42-45, 60-77, 81-97, 101-5, 165-80.

⁴⁹ Liu Tongwei, *Tiedao xiujian shiliao*, 22-34, 42-45, 60-77, 81-97, 101-5, 165-80; Zhongguo renmin jiefangjun tiedaobing diyi zhihui bu (hereafter JFJ), *Xiangyu tielu shigong zongjie* (Summary of the Xiangfan-Chongqing railroad's construction), 1981; Jiaotongbu di'er tielu gongchengju shigongchu (hereafter JTB), *Xiangqian tielu shigongjishu huibian* (Collected materials on the Hunan-Guizhou railroad's construction techniques), 1974; Tiedaobu di'er gongchengju geming weiyuanhui (hereafter TDB), *Chengkuntielu beiduan shigongjishu zongjie* (Summary of the construction techniques of the Chengdu-Kunming railroad's northern section), 1975; Tiedaobu di san gongchengju bian (hereafter TDB2), *Taijiao tielu shigong jishu zongjie huibian* (Summary of construction techniques of the Taiyuan-Jiaozuo railroad), 1977.

Table 5
Distribution of the labor force for major railroads built without Railway Corps labor

Railroad line	Years	Length (km)	Militia personnel	Railroad administration personnel	Total personnel
Sichuan-Guizhou	1964-1966	227	43,000	NA	43,000
Hunan-Guizhou	1969-1972	902	1,000,000	135,300	1,135,300
Taiyuan-Jiaozuo	1970-1974	409.76	90,000	NA	NA
Jiaozuo-Zhicheng	1970-1971	753.3	1,150,000	36,000	1,186,000
Zhicheng-Liuzhou	1970-1978	886.59	600,000	100,000	700,000

Sources: Liu Tongwei, *Tiedao xiujian shiliao*, 22-34, 42-45, 60-77, 81-97, 101-5, 165-80; Wang, *Tiedaobing jianshi*, 138-71, 197-98. NA, data not available.

national endeavor. From enterprises around the country, a vast array of industrial capital flowed into railroad construction sites.⁵⁰

Some transportation companies brought in hardware to tunnel through mountains. Other work units dispatched excavators, steamrollers, and explosives to reshape environments so that they would house bridges, tunnels, and tracks. For these same structures, manufacturers produced tons of cement and iron and steel products. Other industrial enterprises erected train stations, and select factories made trains and all of their parts. Still other factories furnished new lines with the equipment for energy, water, and communication systems.⁵¹ Through all these efforts, hundreds of places in western China came to be nodes in national railroad networks.

COPING WITH CAPITAL SCARCITY

The CCP, however, could not supply enough industrial capital to fulfill Third Front rail's resource needs. To cope with the resultant shortage of such basic items as trucks and cement, management personnel ordered construction teams to concentrate available capital on building a line's most complex structures, such as long tunnels and bridges. As for activities like moving hills blocking a railway's path, officials commanded the militias to accomplish these more labor-intensive tasks. Since railroad administrators did not have enough technical staff to complete bridges and tunnels, they also ordered militias to take part in their construction.⁵²

During the Third Front's second major phase of construction (1969-1972), the CCP sought to fast-track industrialization even more, and so it advocated a program called the Three Simultaneities (三边 *san bian*). According to this policy, industrial projects were not supposed to follow regular construction procedures

⁵⁰ Liu Tongwei, *Tiedao xiujian shiliao*, 22-34, 42-45, 60-77, 81-97, 101-5, 165-80.

⁵¹ Liu Tongwei, *Tiedao xiujian shiliao*, 22-34, 42-45, 60-77, 81-97, 101-5, 165-80, 664-68, 709-10, 731-37, 740-63.

⁵² Liu Tongwei, *Tiedao xiujian shiliao*, 22-34, 42-45, 60-77, 81-97, 101-5, 165-80; JFJ, 23-27; JTB, 1-4; TDB, 1-5, 151-53, 277-81; TDB2, 122-66.

and first undertake geological surveys, then, based on this data, draw up building plans, and then and only then begin construction. Instead, the Three Simultaneities campaign instructed construction teams to do all three activities at once.⁵³

Historical records show that when the government told railways to implement this program, many technical personnel thought it was a mistake. In documents, local debates about this policy appear to have usually proceeded in the following way. The CCP would issue an order to build something in a certain amount of time. Technical workers would then say that they needed more time to finish the job. They typically justified their appeal for additional time by stating that currently available machinery and building materials were insufficient and so construction would have to wait until more arrived.⁵⁴

Railroad managers would then reject the technicians' assessment and often lambaste it as an example of "slavish comprador philosophy" (洋奴哲学 *yangnu zhexue*). What was the basis of this claim? Technicians had placed too much emphasis on machinery and forgotten the power of the masses. Project administrators, who were usually military representatives during the Third Front's second phase, of course had not, and so they told workers to finish their assigned task in an even shorter period of time than the government had originally specified. That way China could be ready for war even quicker.⁵⁵

To achieve this goal, workers built structures before geological surveys had even determined if the local topography could support them. They sometimes even started construction before designs even existed. This approach to railway building often produced lines that were only partially usable. To become fully operational, they often had to undergo years of repairs. For instance, the Xiangfan-Chongqing Line was first opened to traffic in 1973, but it was only really ready for use in 1979.⁵⁶

To deal with China's shortage of industrial capital, the CCP also promoted the substitution of locally available materials for scarce resources. In line with this policy, when a work unit was short of any item, it was not supposed to "ask for central government handouts" (对国伸手 *duiguo shenshou*).⁵⁷ It was supposed to find a way to replace it with local materials. For instance, short on automobiles,

⁵³ Chen, *Sanxian jianshe*, 222–34.

⁵⁴ *Jiaozhi tieluhuizhan hubei sheng zhuihu qingkuang jianbao, di yi qi zhi di 53 qi* (Briefings no. 1–53 of the Hubei Provincial Headquarters of the Jiaozuo-Zhiliu railroad battle), 1969, SZ139-4-32, Hubei Provincial Archive (hereafter HBPA); *Jiaozhi tieluhuizhan hubei sheng zhuihu qingkuang jianbao, di 54 qi zhi di 120 qi* (Briefings no. 54–120 of the Hubei Provincial Headquarters of the Jiaozuo-Zhiliu railroad battle), 1970, SZ139-4-33, HBPA; Hubei sheng zhiliu yaguan tielu huizhan zhuihuibu zhengongzu huibian (hereafter ZLTL), *Zhengong jianbao* 1–31, 1971.

⁵⁵ Kong, *Yidai jiangxing*, 472–511; HBPA SZ139-4-32; HBPA SZ139-4-33; ZLTL.

⁵⁶ Two other interprovincial railroads had this problem—the Beijing-Liuzhou and Hunan-Guizhou Lines. Liu Tongwei, *Tiedao xiujian shiliao*, 22–34, 60–72, 81–88; TDB2; JFJ; JTB.

⁵⁷ HBPA SZ139-4-32; HBPA SZ139-4-33; ZLTL; *Diqu zhiyuan bangongshi, jiangjin mibingshi guan yu xiujian xiangyu tielu de tongzhi, baogao, zongjie* (Area support the front office—Jiangjin militia divisions: summaries, reports, and notices on the construction of the Xiangfan-Chongqing Railroad), 1972, 1216-28-0016, Chongqing Municipal Archive (hereafter CQMA).

management personnel called on workers to move supplies by hand, often including heavy machinery and literally tons of building materials.⁵⁸

This sort of labor-intensive work was not unique to the transport sector. Since power drills were in short supply, people reworked mountainsides with hand tools and sometimes just with their bare hands. Since mechanical flatteners were unavailable, groups pushed big stone cylinders across the ground to make roads level. Since cranes were not always present, work teams hoisted materials manually. Due to a shortage of track-layers, workers sometimes even laid tracks by hand. At especially secluded locations, laborers even had to carry food and water over mountains to their campsites.⁵⁹

The CCP did not just advocate replacing machinery with people. It also commended work teams that substituted local resources for regular building materials, calling them self-reliant and technically innovative. In accordance with this policy, some construction teams used dirt and straw in place of cement. Others replaced iron and steel with lumber. To aid in the localization of supply chains, project administrators also instructed nearby counties and communes to establish “Support the Front offices” (支援前线办公室 *zhiyuan qianxian bangongshi*), which told local groups to donate such items as wood, daily necessities, and food.⁶⁰

EVERYDAY HARDSHIP AND MANAGED DISCONTENT

This final section gives a broad overview of how people experienced participation in Third Front railroad building. My discussion focuses on militias, in part because I have more information about them. By concentrating on one group, I am also able to present a more comprehensive description of participants’ experiences. This focus obviously neglects to take into account the Railway Corps and regional railroad offices. But, given that over 80 percent of all railroad workers were part of militias, my analysis still addresses a considerable portion of the total labor force.

GOING TO THE THIRD FRONT

When Third Front administrators began a railway, they mobilized nearby rural populations into militia divisions. According to available sources, many militia recruits started out with a fair amount of enthusiasm. Initial excitement often quickly faded when new recruits had to walk for days to arrive at construction sites hundreds of kilometers away. En route, more than a few collapsed from exhaustion. Some recruits even wondered why the CCP did not send in trucks to transport labor, if it cared so much about the Third Front. Aware of militia discontent, officials

⁵⁸ HBPA SZ139-4-32; HBPA SZ139-4-33; ZLTL; CQMA 1216-28-0003, *Zhiyuan bangongshi guanyu dianbao, qingshi baogao, weiwen xiangyu tielu minbing de baogao, weiwenxin* (Support the Front office: telegrams, inquiries and reports, consolation letters, and reports on consolation visit to Xiangfan-Chongqing Railroad), 1970.

⁵⁹ Kang, *Xiangyu tielu Dahuizhan*; Liu Weiyao, *Tiejian fengbei*; interviews with Third Front railroad workers, 2011; interviews with Third Front railroad workers, 2012.

⁶⁰ Liu Tongwei, *Tiedao xiujian shiliao*, 22-34, 42-45, 60-77, 81-97, 101-5, 165-80; CQMA 1216-28-0003.

employed one of the CCP's most common problem-solving methods: they organized study sessions.⁶¹

At meetings, group leaders frequently had people talk about the difficulties that they or their family had faced in the past and how, thanks to the CCP, their lives had improved. According to archival documents, after recruits heard such stories, they became more committed to building railroads to defend and develop socialist China. Study sessions were in reality never such an effective panacea, and so management personnel continually held meetings to improve morale. In each of these sessions, leaders again called on people to recount past troubles, and workers again stated that they would build railroads, no matter what hardship they had to endure.⁶²

FOOD AND HOUSING

When recruits arrived at their assigned workplace, what they generally saw was a desolate mountain landscape. If local areas had inhabitants, militia staff negotiated with household heads to allow people to live in their homes, which might mean a stable or storage space.⁶³ In other instances, militias set up temporary housing, which often started out as a mat on the ground or a felt-roofed canvas tent. If a group stayed longer at a site, they eventually constructed rammed-earth residences.⁶⁴

Meals usually consisted of some coarse grain or rice porridge, accompanied by pickled vegetables or seaweed. Very rarely did militias also serve meat. Following CCP orders, workers grew vegetables near their campsites, but their output was insufficient to make fresh vegetables a regular part of laborers' diets. Hydration was also a problem. Sometimes, work teams laid supply lines from a spring, but laborers often had to fetch water in buckets from nearby natural bodies of water.⁶⁵

To oversee food preparation, militia leaders selected kitchen staff for impromptu mess halls. Food personnel also delivered meals to construction sites to reduce the time people spent away from work. To cover the cost of food, the militias deducted a portion of workers' monthly wages. Even though people paid for food, the CCP did not always provide enough. Interviewees offered as proof the fact that when they returned home they often weighed less than when they set out.⁶⁶ Gazetteers from Shaanxi also note widespread food shortages in rural areas when Third Front railroad construction reached its peak in the early 1970s.⁶⁷ Just as during

⁶¹ HBPA, SZ139-4-32; Yang Zongmao, *Qingchun jiyi: yi ge sanxian xuebing de riji* (Memories of youth: diary of a Third Front youth soldier) (Beijing: Zhongguo wenlian chubanshe, 2010); Kang, *Xiangyu tielu Dahuihan*, 25-30; Liu Weiyao, *Tiejian fengbei*; ZLTL; Whyte, *Small Groups and Political Rituals in China*.

⁶² HBPA SZ139-4-32; HBPA SZ139-4-33; Yang Zongmao, *Qingchun jiyi*; Kang, *Xiangyu tielu Dahuihan*; Liu Weiyao, *Tiejian fengbei*.

⁶³ My sources do not discuss the negotiation process. They just note the result.

⁶⁴ Interviews with Third Front railroad workers, 2011; interviews with Third Front railroad workers, 2012.

⁶⁵ Interviews with Third Front railroad workers, 2011.

⁶⁶ CQMA 1216-28-0016; HBPA SZ139-4-32; HBPA SZ139-4-33; ZLTL; interviews with Third Front railroad workers, 2012.

⁶⁷ Shaanxi sheng difangzhi bianzuan weiyuanhui bangongshi, *Shaanxi diqing ku* (Shaanxi information base), accessed January 7, 2014, <http://sd.infobase.gov.cn/ftr/ftr.htm?seachword=%u4E09%u7EBF&K=0&run=11&list=1&page=20>.

the Great Leap, rural food shortages were likely partially due to the large-scale transfer of agricultural labor to industry. But during the 1970s, unlike the Great Leap, the CCP appears to have avoided inducing a famine.⁶⁸

WORKING

At construction sites, militia members were supposed to work at least eight hours, and nearly everybody's time on the clock involved physically demanding manual labor.⁶⁹ For their labor, workers received a monthly wage of about 36 RMB. But, they were only paid about one-fifth in cash. They obtained roughly one-half in work points, while their work teams used the remainder to pay for their daily necessities.⁷⁰

Militia squads typically woke up around dawn, performed group exercises, and ate breakfast. Afterward, their units sometimes held informational meetings. At these gatherings, leadership personnel might read editorials from the *People's Daily*. If a militia unit had a radio, the group might tune in to national news broadcasts.

At morning assemblies, leaders often reported what construction work the group had already accomplished and what tasks still lay ahead. The leadership highlighted particular people who had done especially outstanding work, and they occasionally awarded them special certificates. If a work accident had recently occurred, leaders might organize a session on proper safety procedures. If a group was going to begin a new part of the railroad, experienced workers might also train members how to do new types of labor.⁷¹

After a morning meeting, militia teams walked together to their designated workplaces. Except for a brief lunch break, the laborers typically worked until dinner-time. If a deadline was approaching or project managers had decided to speed up construction, people might also do what was called "voluntary labor" (义务劳动 *yiwu laodong*) at night. This label was a bit euphemistic, since once one work team had worked after hours, any squad that did not do so risked appearing to be uncommitted to the Third Front cause.⁷²

Each section of a railroad had a complex division of labor. For example, for a tunnel, one set of people laid electrical lines. Another group handled carving out ventilation ducts. Still another unit extended the tunnel with air-pressure guns and picks.

Behind them, a work team loaded debris onto carts, while another squad pushed the carts outside. Farther down the line, other people rounded out the tunnel and gave it proper reinforcement. If somebody by accident struck an underground

⁶⁸ Li and Yang, "The Great Leap Forward."

⁶⁹ Truck drivers, who spent much of their time travelling between locations, appear to be one exception. Wang Yaping, *Caiyun zhibu* (A colorful cloudy road) (Changsha: Hunan renmin chubanshe, 2010).

⁷⁰ CQMA 1216-28-0016; HBPA SZ139-4-32; HBPA SZ139-4-33; ZLTL; Kang, *Xiangyu tielu Dahuizhan*, 6.

⁷¹ Interviews with Third Front railroad workers, 2012; ZLTL.

⁷² HBPA SZ139-4-32; HBPA SZ139-4-33; interviews with Third Front railroad workers, 2012.

stream, several different groups would remove excess water and figure out how to stop the flow of water.⁷³

PHYSICAL INJURIES AND DEATHS

Working inside a tunnel was very dangerous. It took only one misplaced rock for a cave-in to bury laborers. Since ventilation was poor, it was also often difficult to breathe properly. In this inhospitable environment, workers had to engage in strenuous activities, like repeatedly picking up boulders or forcing an air-pressure gun with significant recoil into a stone wall for hours.

Laboring outside had its perils and pains as well. The militias were responsible for moving tons of materials around construction sites. While the workers performed their duties, a rock might plummet from a mountain, or a bag of cement might fall from a hoist. Because many worksites lacked a clean water source, many workers also suffered from chronic dysentery. Those who were sick or injured could receive treatment, apparently free of charge, from the unit's medical staff.⁷⁴

More than a few workers never left the Third Front. Very limited casualty statistics are available for militias. Existing numbers for the Railroad Corps demonstrate that Third Front railroad building resulted in a number of deaths and injuries (Table 6). The most frequent causes appear to have been mismanaged explosions, tunnels collapsing, falling rocks, road accidents, and falling off cliffs.⁷⁵

The Chengdu-Kunming line was particularly deadly, with roughly two people dying for every kilometer constructed. To this day, most of its tunnels and bridges have markers honoring those who passed away at the Front. Railroad Corps also built martyr cemeteries near railroads. It is unclear why almost no militia members were buried in these locations. Perhaps it was because managers sent militia dead back to nearby relatives, accompanied by a letter of praise and an indemnity.⁷⁶ Given that militias supplied most railroad labor, total casualties were likely much higher than those indicated in Table 6.

MANAGING MORALE

Construction site reports make clear that project administrators knew that members of militias did not always want to engage in hard work, but they still tried to make them do so. To stimulate enthusiasm, management personnel employed several tactics. In at least one instance, they had militia members send letters to their families stating that they were fine and that their families should continue working and not visit them.

⁷³ HBPA SZ139-4-32; HBPA SZ139-4-33.

⁷⁴ HBPA SZ139-4-32; HBPA SZ139-4-33; Kang, *Xiangyu tielu Dahuizhan*, 8, 284-98; Liu Tongwei, *Tiedao xiujian shiliao*, 552-56.

⁷⁵ Liu Tongwei, *Tiedao xiujian shiliao*, 22-34, 42-45, 60-77, 81-97, 101-5, 165-80.

⁷⁶ The amount of an indemnity varied according to family size. It appears that permanent laborers received more than temporary workers, but the specifics are unclear. Interviews with Third Front Railroad workers, 2012; *Sichuan sheng, Chongqing shi minzheng ju*, 8711 *budui guanyu fafang xiujian xianyu tielu xi duanminbng yin gong can, wang fuxufei de tongzhi, hua mingce* [1973], 1075-03-0254, CQMA; "Xiangyu tielu xi duan, jiangjin minbing tuan ping fuxu cailiao" [1972], 1075-03-0226, CQMA.

Table 6

Deaths and injuries among Railroad Corps personnel during construction of Third Front rail lines

Railroad line	Deaths	Injuries
Chengdu-Kunming*	2,100	5,687
Guiyang-Kunming	591	-
Jiaozuo-Zhicheng	263	678
Zhicheng-Liuzhou	23	-
Beijing-Yuanping	195	-
Xiangfan-Chongqing [†]	1,320	448
Southern Xinjiang	268	-
Qinghai-Tibet	330	-
Dukou Branch Line	235	-
Yangpingguan-Ankang	384	1,512

The data presented here are derived from a multitude of sources; see the appendix for a full listing. Injury data are unavailable for many of the lines. *This number of injuries is only for one section of this line. [†]These data are only for student workers.

Families also wrote to their relatives and told them that the CCP was looking after their needs, and so they should work hard and not return home before completing their job, not even for Spring Festival. This campaign would seem to imply that a noticeable number of workers appeared ready to abandon their posts and that more than a few people had at least talked about coming to check on their kin.⁷⁷

At construction sites, management personnel also continued to organize study sessions to cultivate popular support.⁷⁸ Near the end of each session, participants typically pronounced state-backed slogans like the ever popular phrase stating that communist workers “don’t fear hardship or death” (一不怕苦二不怕死 *yi bu pa ku er bu pa si*), which showed how devoted they were to building Front rail. From one point of view, these frequent declarations might demonstrate the depth of worker dedication, and they probably did for some people.

But, from another perspective, regular meetings indicate just how concerned the CCP was about worker commitment to railroad building. Since study sessions often aimed to redress some issue, repeated gatherings suggest that many problems existed. Moreover, every time somebody reaffirmed enthusiasm, it was also an admission of a past deficit of determination.⁷⁹

To keep up people’s spirits, the CCP had a portion of each militia’s personnel engage in cultural production as well. Their output, like that of the cultural staff of other workplaces in Mao’s China, partially focused on local happenings. To obtain raw materials, cultural workers gathered stories of “good people and good deeds” (好人好事 *haoren haoshi*) from construction sites. Occasionally, they published selections in magazines, newspapers, and leaflets that they wrote just for

⁷⁷ CQMA 1216-28-0003.

⁷⁸ Whyte, *Small Groups and Political Rituals in China*.

⁷⁹ HBPA SZ139-4-32; HBPA SZ139-4-33; ZLTL; CQMA 1216-28-0003.

local laborers. At other times, they reported the stories with megaphones at residential areas and worksites.⁸⁰

Cultural troupes also performed plays and sang songs that celebrated local militias' contributions to Third Front rail. It is difficult to determine the effect that these performances had on militia workers at the time. People likely enjoyed breaks from the daily toil, at the very least. In retrospect, participants who published memoirs painted much clearer pictures. In their memoirs, almost all railroad workers took pride in the railroads that they had made through their own hard work.⁸¹ In recent years, some construction teams have even reconnected through the Internet and now gather in groups to sing songs and perform plays that commemorate the time they spent at the Third Front.⁸²

CONCLUSION

According to Barry Naughton, China should not have taken the Third Front's inland-oriented industrial path. It should have concentrated its scarce resources on reinforcing transport infrastructure in the country's eastern industrial core. Naughton may have been right that a coastal-centered industrial strategy would have contributed more to increasing China's GDP. But, it is important to remember that the CCP did not build the Third Front to boost GDP.

The CCP established the Third Front deep in western China to ensure the security of the country's industrial assets at all costs. Seeking to shield industry even further, the central leadership ordered economic planners to hide Third Front industry near mountains and in caves. In accordance with this policy, railroad administrators created lines in locations that noticeably resembled the CCP's former wartime hiding places.

This strategic decision clearly had costs. Much of the cost fell on rural men. For, short on industrial capital, the CCP implemented the late Maoist period's dominant approach to bringing industrial modernity swiftly to China. It made use of the one resource that China had in abundance—people.

Unable to provide workers with adequate machinery, the government told them to use their own physical strength. Lacking enough building materials, the state ordered labor to find local alternatives as well. But, the CCP did not only try to substitute more readily accessible materials for industrial capital. I would suggest that the CCP also substituted thought campaigns for proper food, water, and shelter.

From frontline reports, the CCP knew that railroad workers were often not satisfied with the austere conditions of their everyday lives. To boost morale, government representatives organized study sessions and cultural performances for railroad workers that praised their hard labor and determination as revolutionary contributions to China's industrialization and defense.

⁸⁰ ZLTL; Liu Tongwei, *Tiedao xiujian shiliao*, 51–55, 626–29; Kang, *Xiangyu tielu Dahuizhan*, 203–13, 226–48; interviews with Third Front railroad workers, 2012.

⁸¹ Kang, *Xiangyu tielu Dahuizhan*; Liu Weiyaoyao, *Tiejian fengbei*; Wang Yaping, *Caiyun zhilu*; Yang Zongmao, *Qingchun jiyi*.

⁸² “Sanxian xuebing lian” (Third Front student soldier companies), accessed February 22, 2015, <http://www.sxxbl.com/>.

These thought campaigns never completely silenced discontent. But, the CCP's story of national security and industrial progress gave workers a meaningful way to think about the hardship they had to undergo on a daily basis. To this day, many railroad workers still find meaning in this collective narrative of suffering and salvation.

Participants are able to take this positive view of late Maoist China in part because of the contributions that Third Front railways made to national transport infrastructure. Built quickly with insufficient capital, Third Front rail was undoubtedly not without problems. However, by 1980, when the Third Front ended, hundreds of new locations in inland regions had become integrated into the national railroad system.

With this new technological base, regional transportation sped up, and the temporal distance between China's East and West shrank. Regional mineral production jumped, and its output came to fuel industry in western China. The regional circulation of passengers and freight also became more regular, as all Third Front railways employed standardized industrial equipment and were subject to standard rules of procedure. The route that the CCP took to achieve these results was not straight. But, in the end, Third Front rail still drove into many places in western China a fundamental technology of modern industrial society.

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APPENDIX I: SOURCES OF THE DATA PROVIDED IN TABLE 6.

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