THE UNIVERSITY OF CHICAGO

WHEELS AND SWEAT:
MUSCLE-POWERED TRANSPORTATION IN THE EVERYDAY LIFE OF MAOIST CHINA, 1949-1979

A DISSERTATION SUBMITTED TO

THE FACULTY OF THE DIVISION OF THE SOCIAL SCIENCES

IN CANDIDACY FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

DEPARTMENT OF HISTORY

BY

YUJIE LI

CHICAGO, ILLINOIS

AUGUST 2023

To my parents.

献给我的父母: 李晨光 王汝玳

Table of Contents

Acknowledgements

This dissertation owes its existence to the invaluable intellectual contributions of numerous individuals. These inputs were garnered from seminars, workshops, office hours, as well as dinner conversations. While it is impossible to acknowledge every person who has influenced me with their advice and inspiration, there are several individuals to whom I owe my deepest gratitude. Foremost among them is my advisor, Jacob Eyferth, who has guided this dissertation from its inception, and supported its every step of growth with assiduous comments and unwavering faith. His boundless knowledge and devoted mentorship taught me what it means to be a scholar and to be a teacher. I am also privileged to have Kenneth Pomeranz on my committee. His attentive reading compelled me to expand my inquiries, even as his charitable comments bolstered my confidence. His erudition, kindness, and generosity helped to foster the vibrant community of East Asian Studies at the University of Chicago where I became a historian. The idea of writing about muscle-powered transportation was first tried out in a seminar led by Johanna Ransmeier. Her openness and enthusiasm encouraged my further exploration. I extend my gratitude for her invaluable support and the wisdom she has shared during our career advice discussions. I am also deeply grateful to Arunabh Ghosh for his meticulous reading and insightful suggestions. His guidance on engaging a broader audience with this project has been immensely valuable.

I may not be able to mention every excellent teacher I learned from at the University of Chicago. But Susan Burns, Leora Auslander, Dain Borges and John McCallum must be thanked for their firm support at different stages. Throughout the years, I have drawn much strength from friends and peers at Chicago. I would like to extend my gratitude to Dan Knorr, Alex (Chao)

Wang, Spencer Stuart, Carl Kubler, Weichu Wang, Stephanie Painter, Yuan Tian, Yasser Nasser, Niuniu Teo, Xiaoyu Gao, Xiangning Li, and Susan Su.

My interest in history was first rekindled in Columbia University, thanks to exceptional scholars Dorothy Ko, Eugenia Lean, and Laurel Kendall. Had I not been so captivated by their work and their courses, I would have returned to China and continued my life in the fleeting world of fashion media. Many scholars in and outside of China field have provided inspiring comments to some parts of this dissertation or adjacent projects. I want to thank Wen-Hsin Yeh, Puck Engman, Judd Kinsley, Xiangli Ding, Sigrid Schmalzer, Elizabeth Perry, Shellen Wu, Yiqing Wu, Yidi Wu, Joshua Howard, Ruth Oldenziel, Shigehisa Kuriyama, and Hyungsub Choi for their invaluable time and thoughts.

The research and writing of this dissertation have been made possible by the generous support from the National Science Foundation Doctoral Dissertation Research Improvement Grant, Esherick-Ye Family Foundation Fellowship, Henry Luce Foundation/ACLS Program in China Studies, D Kim Foundation for History of Science and Technology in East Asia, Northwestern University-SSRC Dissertation Proposal Development Program, Association of Asian Studies-China and Inner Asia Committee (AAS-CIAC) Research Grant, University of Chicago Lloyd and Suzanne Rudolph Field Research Award by Center for International Social Science Research and Pre-Dissertation Research Grant by Center for East Asian Studies.

The research of this dissertation took place during the challenging period of the COVID-19 pandemic when archival accesses were sporadic and often unavailable. This project would not be possible without friends and families in China who helped me to get my foot in the door. Professor Ma Weiqiang and Deng Hongqin at Shanxi University generously shared their archival collection and accompanied me to conduct oral history interviews in Pingyao. The

assistance of Liu Shuhong, the brother of my sister-in-law, in gaining access in Xiaoyi County was invaluable. My other sister-in-law's uncle, a native of Xiyang, took me to visit Dazhai. Without friends and families in Shanxi, I would not have been able to navigate the delicate archival situation there. Professor Wang Guo at Sichuan University has been a steady source of both logistical help and historiographical knowledge. My friends Li Xiaonan at Renmin University and Gao Mengmeng at the National Library helped me securing introduction letters and accessing important publications not available to public. Professor Jiang Chengyang at East China Normal University shared with me his work on a family history, which enriched my understanding of individuals involved in muscle-powered transportation during the early years of PRC. My college friends Xuan Xinfen and Wu Xiaoqing let me stay at their home when doing research in Henan.

In this part of the world, my in-laws, Andrea, Roger, Judy, Helen, Zack and Alli, have been a constant source of love and support throughout the years. My husband and best friend, Matthew Lowenstein, has been the first reader of all chapters. An exceptionally discerning critic and the most supportive partner in one, to him half of the merits of this work should belong.

At last, this dissertation is dedicated to my parents. They lived through the years this dissertation covers, each with their own stories of pushing impossibly heavy carts during their youth. When my father toiled at a reservoir after being expelled from high school for his unredeemable political background and defiant attitude, my mother hauled coal to a freezing home where her "landlord" mother lying in her deathbed. My father, a diligent historian himself, never stops questioning the causes of their suffering, while my mother had remained quiet. This dissertation is, therefore, a laborious attempt by a daughter to address both her father's unending inquiries and her mother's now eternal silence.

List of Figures:

List of Tables

Abbreviations:

ABIC Administration Bureau of Industry and Commerce

BBTTA Beijing Bureau of Transportation and Traffic Administration

BPC Beijing Porters Company

BTC Beijing Transportation Company

CCP Chinese Communist Party

FEC Finance and Economic Committee

FFYP First Five-Year Plan

GLF Great Leap Forward

HTB Hebei Transportation Bureau

MPT muscle-powered transportation

PRC People's Republic of China

ZHT Zhu Huaishun Team

Abstract

The early People's Republic of China sought rapid industrialization as its top priority. But its ambitious developmental goals were hamstrung by poor natural resource endowments and limited access to advanced industrial technologies. The Maoist state thus pursued a labor-intensive path of accumulation. Throughout the Mao era, muscle-powered transportation (MPT) technologies such as wheelbarrows and animal-drawn carts were central to all facets of economic life. Without human and animal powered wheels and carts, socialist China would never have been able to construct its reservoirs, urban cityscapes, and railroads. The peasants relied on wheelbarrows to move dirt, carry fertilizer, and transport produce. In marketing, despite rolling out unprecedented miles of track, animal-drawn carts hauled the last 10 to 50 miles of goods and supplies to their users. In short, these everyday transport technologies carried the heavy bottom of the Socialist economy, served as the material lifeblood of the country, and suffused its very culture. But how did the Chinese Communist Party reconfigure the socio-technological system to support its modernizing and revolutionary agenda, with largely un-mechanized technologies using organic energy? What were the outcomes of these endeavors when it clashed with the material reality, economic structure, and ideological commitment?

This study brings extensive archival research and oral histories conducted in North China to bear on these questions. The north, marked by a dearth of waterbound shipping routes had a great portion of rural labor devoted to muscle-powered transportation. I find that the state launched a bevy of incessant programs and political campaigns to enhance the MPT efficiency. It promoted Taylorist body management, in which cadres overseeing peasant laborers on state infrastructure projects mobilized the peasants to rationalize their own body practice. It rolled out nationwide semi-mechanization campaigns since the Great Leap Forward in which workers and

peasants were asked to handcraft parts, such as ball bearings, to improve labor efficiency. These programs emphasized incremental improvements and encouraged grassroots innovations, but also insisted on the political selection of technology and mass-scale implementation that ignored local conditions. As the Maoist state shifted away from 1950s Soviet-style rationalization, it entrenched the rural-urban divide and organized the peasants into self-sufficient, collective economy. Where and how to use muscle-powered transportation power—which accounted for a major part of labor allocated in non-agricultural production—became a thorny political question of what counted as correct application of Mao Zedong thoughts. Importantly, even in today's hypercapitalist and appreciably wealthier China, the legacy of its MPT-dependent path remains palpable. The choices that the Maoist state made about how to harness muscle power continue to echo in the post-socialist era.

"Wheels and Sweat" contributes to the history of modern China as well as to global Science Technology and Society (STS) studies. Despite muscle-powered technologies' persistent importance in the modern history, they have been treated as residual, alternative, and marginal. This dissertation foregrounds muscle powered technologies, not only as a major productive factor that kept evolving, but also as a crucial social component that profoundly shaped the knowledge production in the everyday. It provides new perspectives on how the common peasants experienced the modernization and revolution, and enriches our theoretical framework by expanding the boundaries of what technology means.

Introduction

In 1948, William Hinton, a former tractor technician of the United Nations Relief and Rehabilitation Administration, signed up for a new job teaching English at the Chinese Communist Party's Northern University in South Shanxi. Living in a CCP base-area village in the following years, Hinton witnessed firsthand the Communist Land Reform. Thoroughly impressed and inspired by the revolutionary power Land Reform released, Hinton authored *Fanshen: A Documentary of Revolution in A Chinese Village*, which became a widely read classic on the history of Chinese Land Reform. In its short but compelling Prologue, Hinton paints a sweeping picture of the hardship that Chinese peasants endured under the despotism of hostile environment. A skillful writer, Hinton swiftly brings the readers from the cruel "solar fire" baking the entire Asian Steppe to a close-up shot of a struggling mule cart on the muddy road in North-China monsoon season.

> "Carts bogged to the axles. Mules, their sweating flanks stained red from the earth thrown up by their churning hooves, strained in the harness, lurched forward and fell back panting. Along a million once solid tracks connecting village to village, field to field, in a network that covered the countryside like a filigree of lace, the battle between the carters and the husbandmen spread with ever-increasing intensity. At each mudhole the carters tried to detour onto the more solid, crop-firmed soil of the fields themselves. But the peasants, determined to defend their developing harvests, countered with deep pits dug beside the road to keep the carts in line. As the season wore on these pits grew into a system of interconnected moats and trenches until the countryside took on the appearance of a plain prepared for war."[1]

This struggle between man and man and between man and nature persisted "as long as the rain continues to fall."

It is intriguing that Hinton chose a cart stuck in quagmire to begin his illustration of the pre-Land Reform peasant life. One might interpret this choice in a few ways. The quagmire

[1] William Hinton, *Fanshen: A Documentary of Revolution in a Chinese Village* (University of California Press, 1997), 4.

could be a metaphor of what Hinton believed to be a "stagnant" peasant society, in which he saw the "feudal" system led to oppressive and exploitative social relations and forestalled economic and technological development. A much narrower understanding would be, as a former tractor specialist, Hinton's attention to agricultural vehicles made him an exceptional observer of transportation conditions and this paragraph simply betrays his professional concern. The third interpretation lies somewhere in between: Hinton captured in one scene many problems that he believed pre-revolution peasant society featured—vulnerable infrastructure, outdated technology, inefficient production dependent on human and animal muscle, fragmented landholding that set people against each other and prevented collective betterment. The cart struggled at the dawn of Land Reform. In Hinton's eye, all these social and technological hurdles were waiting to be broken by the socialist revolution.

In the next three decades, much of the details in this picture of a stranded mule cart would be altered—in fact, the underlining narrative would be drastically overturned. Starting with the wheels: the wooden wheels with fixed wooden axle and a layer of rubber around its rim would be replaced by pneumatic rubber tires with ball bearing axle. The mules and the cart were no longer some rich household's private possession, but common property of this or next village—now called "brigade"—to which the carter was now a member. The ad hoc trenches dug to stop passing carts from trampling the crop were replaced by permanent irrigation channels, which demarcated the field into larger, tidier plots now cultivated collectively by production teams. As for the road, its surface might even had been hardened, or at least more regularly paved to accommodate the frequent passing of wheelbarrows shipping grain, fertilizer, bricks, and other essentials between the village and the nearby suppliers or state-owned purchase stations. The double-wheel barrow was often pushed by a man, although sometimes could also be pulled by a

donkey. It was central to the village's daily transportation. Since under the socialist commercial system, all material exchanges to and from the village were destined to designated agencies within short distance, the wheelbarrows appeared to be a more economical choice than animal-drawn carts for most occasions. They were also an important addition to the more traditional and cheaper carrying poles and baskets, as the transportation tasks became, literally, heavier—what they needed to move around was predominantly production materials such as soil, manure, or bricks, and rarely the lighter consumer goods. The dependence on wheelbarrows was such that the brigade's animal-drawn carts were only occasionally used locally. In other times they were hired out to haul construction materials, coal, and iron in factories far from home, earning important sideline cash for the collective. When they did appear on the village's road, it was likely during the busiest agricultural season or the peak of local infrastructural construction. They would not trample others' crops like Hinton witnessed in the old time. Besides the change of road condition, the consequence of such violation would be much severe. Cash settlement was rarely an option. The carter would be potentially labeled as a "bad element" and being struggled against for the damage to the collective's grain production.

This dissertation is about these wheelbarrows, mule carts, carrying poles and baskets, and the humans and animals who labored with such tools and vehicles during China's socialist era (1949-1979). These humblest, most widely used muscle-powered transportation technologies were indeed central to all facets of economic life. They emerged as the technological solution to a paradox at the center of PRC's development. The early People's Republic of China (PRC) sought rapid industrialization as its top priority. But these ambitious developmental goals were hamstrung by poor natural resource endowments and limited access to advanced industrial technologies. The Maoist state thus pursued a labor-intensive path of accumulation. Without

human and animal powered wheels and carts, socialist China would never have been able to construct its reservoirs, urban cityscapes, and railroads. Taking just construction earthwork, the sheer tonnage of earth moved by Chinese peasants using these vehicles amounted to 40 to 100 Panama Canals every single year in the 1970s.[2] Despite the PRC's rolling out of unprecedented miles of track, wheelbarrows and animal-drawn carts continued to haul the last 10 to 50 miles of cargo throughout the entire socialist era. In short, they carried the heavy bottom of the socialist economy and served as the material lifeblood of Socialist China. It is through them that the Maoist state pursued a labor-intensive path of accumulation. But how did the Chinese Communist Party reconfigure the socio-technological system to support its modernizing and revolutionary agenda, with largely un-mechanized technologies using organic energy? What were the outcomes of these endeavors when they clashed with material reality, the nation's economic structure, or the party's ideological commitments? These are the questions this dissertation sets out to answer.

At a deeper level, this dissertation delves into Maoist China's knowledge production and subject formation.[3] It examines processes of rationalization defined by the dual forces of the Party's revolutionary ideology and Chinese society's technological endowment. These processes of rationalization set Maoist China apart from modernizing countries around the world that developed a form of state power inseparable from "rule of experts"—technocratic dominance in knowledge production. In Maoist China, the need to reorganize reality, to mobilize the muscle

[2] James Nickum, "Labor accumulation in rural China and its role since the Cultural Revolution," *Cambridge Journal of Economics* 2, no.3 (Sep 1978): 280.
[3] More on Maoist China's knowledge production, see Sigrid Schmalzer, *The People's Peking Man: Popular Science and Human Identity in Twentieth-Century China* (Chicago: The University of Chicago Press, 2008); Marc André Matten and Rui Kunze, *Knowledge Production in Mao-Era China: Learning from the Masses* (Lanham, Maryland: Lexington Books, an imprint of The Rowman & Littlefield Publishing Group, Inc, 2021).

power of its population and their non-mechanized technologies towards the ultra-modern socialist goal, led to an approach officially termed "combining politics and technology," which relied on what I call "personnel intensive governance." The muscle-powered transportation technologies can be seen as a case study, like wooden farming tools and homespun looms, that reveals the mechanism of knowledge production in the environment of low-tech modernization. But more specifically, a study of these technologies raises questions about mobility and spatial politics, the allocation of the prime rural labor, and how knowledge (and ignorance) on the use of these technologies impacted the socialist political economy.

Figure 1. Wheelbarrows used in the construction of Miyun Reservoir, Beijing.
Source:
news.ncr.cn/native/gd/20171120/t20171120_524032393.shtml

Despite of their economic significance and visceral existence in collective memory, these muscle-powered technologies were invisible in the written history of socialist China in the People's Republic of China or elsewhere. The first act of obscuring was through Maoist China's own cultural production. These "backward" vehicles were not favored subjects for artists of socialist realism. They are difficult to find in propaganda posters where socialist development is represented by trains, steamships, and fleet of trucks.[4] They are, however, displayed in

[4] On the future-oriented cultural production in socialist China, see Paola Iovene, *Tales of Future's Past: Anticipation and the Ends of Literature in Contemporary China*. Stanford,

abundance in photographs, mostly as records of high-profile infrastructural projects. But the publicity of these (even staged) documentary photographs was limited to platforms like newspapers, published albums, or exhibitions, with short-term exposure to select audience under vigilant political scrutiny (Chap 4).[5] As everyday objects, they lacked "meanings" attached to bicycles and sewing machines—things that were difficult to acquire and therefore more coveted in the economy of scarcity.[6] In short, despite their ubiquitous presence, wheelbarrows and mule carts were very much marginalized in socialist China's cultural products in either visual or narrative forms.

The perception that muscle-powered technologies were relics of a backward past had implications beyond Maoist cultural production. It replicates itself, most significantly, in economic planning. The belief that these wooden carts would soon be replaced by more advanced technologies led to first the technical difficulty and later the willful exclusion of MPT production from the plan (Chapter 3). Recognizing the incapacity to plan such low-tech production and the unbearable burden of incorporating them into the state sector, the government institutionalized a technological divide between the state sector and the non-state sector, which I call "muscle-powered sphere." This effectively created a space for shadow economy where rural labor and their wheelbarrows and carts shuttled across urban-rural divide, earning cash income

---

California: Stanford University Press, 2014. Also see Cai Xiang, *Revolution and Its Narratives: China's Socialist Literary and Cultural Imaginaries, 1949-1966*. Trans. by Rebecca E. Karl and Xueping Zhong (Durham, NC: Duke University Press, 2016).

[5] On socialist China's exhibition practice, see Denise Ho, *Curating Revolution: Politics on Display in Mao's China* (Cambridge: Cambridge University Press, 2017). On the convention of documentary photograph in China, see Li Jie *Utopian Ruins: A Memorial Museum of the Mao Era* (Durham, NC: Duke University Press, 2020): 100-149.

[6] Jennifer Altehenger and Denise Y. Ho, *Material Contradictions in Mao's China* (Seattle: University of Washington Press, 2022). Also see Karl Gerth, *Unending Capitalism: How Consumerism Negated China's Communist Revolution* (New York, NY: Cambridge University Press, 2020)

by meeting the needs of state industries—an important component of socialist economy that is often believed to have emerged much later.

Furthermore, the neglect of MPT extends into the historiography of Maoist China. Source bias, such as the scarcity of related cultural products, only accounts partially for scholars' lack of attention to the labor and technology of muscle-powered transportation. Ultimately, the tremendous work that peasants did with these carts and barrows in infrastructural building and in short-distance transportation lies outside the domain of conventional inquiries of several fields, namely labor history, peasant studies, and the history of technology of socialist China.

The labor history of modern China takes the urban proletariat described by classic Marxism as its primary subject. This has led to more fruitful studies in pre-socialist and post-socialist eras. The existence of labor market and the centrality of capital-labor relation in these periods allow scholars to focus on questions universal to global labor history, such as resistance, unionization, and class formation.[7] The labor history of socialist China faces a challenge imposed by the discrepancy between the reality of work and the legal categorization of the "worker." Philip Huang pointed out that as urban industrial workers became a "relatively privileged group under the protection of formal labor laws and regulations," this narrow legal

[7] On pre-1949 labor history of China, see Gail Hershatter, *The Workers of Tianjin, 1900-1949* (Stanford, Calif.: Stanford University Press, 1986); Emily Honig, *Sisters and Strangers: Women in the Shanghai Cotton Mills, 1919-1949* (Stanford, Calif.: Stanford University Press, 1986); David Strand, *Rickshaw Beijing: City People and Politics in the 1920s* (Berkeley: University of California Press, 1989); Joshua Howard, *Workers at War: Labor in China's Arsenals, 1937–1953*. (Stanford, CA: Stanford University Press, 2004); Elizabeth J. Perry, *Shanghai on Strike: The Politics of Chinese Labor* (Stanford, CA: Stanford University Press, 1993); S. A. Smith, *Like Cattle and Horses: Nationalism and Labor in Shanghai, 1895–1927* (Durham, NC: Duke University Press, 2002); Michael Tsin, *Nation, Governance, and Modernity: Canton, 1900–1927* (Stanford, CA: Stanford University Press, 1999). For a concise synthesis, see Lynda Shaffer, "Modern Chinese Labor History, 1895–1949," *International Labor and Working-Class History* 20.20 (September 1981): 31–37.

definition of "labor" hindered scholars' inquiries into the conditions of the majority of Chinese labor.[8] The significance of this exclusion, I argue, is in fact larger than what Huang intended to illuminate. Huang and scholars of working-class studies after him endeavored to put the peasant workers informally employed in industrial work back to labor history analysis.[9] Other forms of peasant labor during the Mao era, in infrastructure, transportation, and agriculture, were still left outside of labor history proper, despite that Chinese peasants under collectivization were de facto wage laborers. The bias towards factory work may cost our recognition and understanding of the even more important non-agricultural labor that peasants performed. For one, rural population's "informal employment" in infrastructural construction began much earlier and continued much longer at a much larger scale than that in industrial enterprises. It's contribution to the "abnormal pattern" of Maoist China's development characterized by a combination of impressive capital accumulation and a predominantly agricultural population was more prominent.[10]

This study does not intend to pursue the history of labor and technology of muscle-powered transportation towards a story of class formation or its failure. Studies on both workers

[8] Philip C. C. Huang, "Misleading Chinese Legal and Statistical Categories: Labor, Individual Entities, and Private Enterprises," *Modern China* 39, no.4: 348. Studies on socialist China's industrial labor tends to focus on the analysis of *danwei*, see for example Xiaobo Lu and Elizabeth J. Perry, *Danwei: The Changing Chinese Workplace in Historical and Comparative Perspective* (Armonk, N.Y.: M. E. Sharpe, 1997), and Mark Frazier, *The Making of the Chinese Industrial Workplace: State, Revolution and Labor Management* (NY: Cambridge University Press, 2002). Labor studies of Reform and Open era is a rich and ever-growing field, the more influential work includes Ching-Kwan Lee, *Against the Law, Labor Protests in China's Rustbelt and Sunbelt* (Berkeley: University of California Press, 2007); and Ngai Pun, *Made in China: Women Factory Workers in a Global Workplace* (Durham: Hong Kong: Hong Kong University Press: Duke University Press, 2005).

[9] For example, Beatriz Carrillo and David Goodman eds, *China's Peasants and Workers: Changing Class Identities* (Northampton, MA: Edward Elgar Publishing, 2012)

[10] Alexander Eckerstein. *China's Economic Revolution* (NY: Cambridge University Press, 1977): 228-232. See also Carl Riskin, *China's Political Economy: The Quest for Development Since 1949* (Oxford: Oxford University Press, 1987).

and peasants have shown that "class" is an ill-fitted analytical category for socialist China.[11] In urban industries, the party-state created from scratch a "new tradition of labor relation" marked by worker dependence and managerial paternalism.[12] In the countryside, status groups were formed on the basis of political standing largely derived from problematic class labeling during Land Reform.[13] The leading cadre's dominance over common peasants led some scholars to conclude that there was a persistence of feudalism in social relations of Chinese villages.[14] However, the emphasis on political status in peasant studies of socialist China largely overlooked the centrality of work in peasants' lived experience and implicated a stagnant status society that was in reality filled with tensions generated from shifting production conditions and changing political economy.

The project is instead to examine the process of socialist subject making through the lens of the labor and technology of muscle-powered transportation. In the socialist economy, the state possessed all production means and it abolished the labor market, every person was laboring for the state. What the laboring experience shaped was the laborers subjectivity instead

---

[11] Jeffrey A. Javed, *Righteous Revolutionaries: Morality, Mobilization, and Violence in the Making of the Chinese State* (University of Michigan Press, 2022); Also see Eddy U, "What Was the Petty Bourgeoisie? Cultural Positioning and Reification of Marxist Classes in Early PRC Discourse," *Modern China* 41, no. 6 (2015): 575–602. Puck Engman, "Shanghai's Dispossessed: The Capitalist Problem in Socialist Transition, 1956–1981," PhD diss., (Albert-Ludwigs-Universität Freiburg im Breisgau, 2020). Also relevant is Jake Werner's discussion on the emergence of mass society in 1950s China. See Jake Werner, "The Making of Mass Society in Shanghai: The Socialist Transformation of Everyday Life, 1949-1958" (Ph.D., United States – Illinois, The University of Chicago), accessed May 24, 2023.

[12] Andrew Walder, *Communist Neo-traditionalism: Work and Authority in Chinese Industry* (Berkeley: University of California Press, 1986).

[13] Jonathan Unger, "Status Groups and Classes in a Chinese Village: From the Mao Era through Post-Mao Industrialization," in *China's Peasants and Workers: Changing Class Identities* (Edward Elgar Publishing, 2012), 15–39.

[14] Edward Friedman, Paul Pickowicz, and Mark Selden, *Chinese Village, Socialist State* (New Haven: Yale University Press, 1991)

of class consciousness. This study joins a group of literature that takes labor/work as the central domain where the relation between the socialist state and Chinese peasantry was formulated.[15] In *The Gender of Memory*, Gail Hershatter shows how rural women endured the double burden of agricultural work and household labor even as they explored new forms of sociability and work opportunity, and how the state appealed to women's needs to an extent that female activism and female labor could be effectively mobilized for socialist production. Hershatter describes the "feminization" of farm work throughout much of the collectivization era, as men were drawn to relatively more rewarding tasks. This study mirrors Hershatter's story and focuses precisely on men's labor outside of the farmland. Jacob Eyferth tells a history of "state simplification" that, by lumping rural artisans into peasants, the socialist state cut the papermakers' tie to national market, turned handicrafts production into local, self-reliant "sidelines," and in effect halted the technological development of the industry. In a parallel manner, the history of muscle-powered transportation performed by peasants outside of farmland illuminates important ways of labor diversion emerged within the institutional framework of rural-urban divide and agricultural collectivization beneath the same "simplification of governmentality."[16]

As described at the beginning of this introduction, the technology of muscle-powered transportation did evolve during the decades of the socialist economy. The shift was profound, not in terms of leaps in mechanical sophistication, but in the broadness of incremental changes

---

[15] Gail Hershatter, *The Gender of Memory: Rural Women and China's Collective Past* (Berkeley: University of California Press, 2011); Jacob Eyferth, *Eating Rice from Bamboo Roots: The Social History of a Community of Handicraft Papermakers in Rural Sichuan, 1920-2000* (Cambridge, Mass.: Harvard University Asia Center: Distributed by Harvard University Press, 2009).

[16] Michel Foucault, "The Subject and Power," *Critical Inquiry* 8, no. 4 (Chicago: The University of Chicago Press, 1982): 777-795. James Scott further developed this concept through studies on "state projects of legibility and simplification." James Scott, *Seeing Like a State, How Certain Schemes to Improve the Human Condition Have Failed*, (Yale University Press, 1998).

that reflected political and social reconfiguration, which redefined who should move what to where and how it should be done. Roughly speaking, the approaches to rationalize muscle-powered transportation could be marked into three overlapping stages, with the priority shifting from the body (1950-1957) to tools (1956-1961) and then to labor management (1962-1979). This is not to say that labor intensification (body) was not important in later stage or labor management was lightly handled in early years. Rather, the shift was manifested in the articulated goals of policies and campaigns, in which the Party invested much of its organizational power, that brought about actual economic and technological changes.

The first stage lasted from 1950 to the end of the First Five Year Plan in 1957, during which the Chinese Communist Party attempted to implement soviet-style rationalization into their own economic planning and labor mobilization practices. Envisioning rapid industrialization, the Party began labor preparation soon after its takeover. Large state construction projects were used as an important platform to engage peasant workers in radical new ways. Borrowing techniques from Soviet Stakhanovism and Taylorism, the Party tried to shape the massive peasant workforce into self-disciplined modern workers capable of planning and rationalizing their own work.[17] Through the "work methods" campaign, the authority led peasant workers to improve their bodily techniques, streamline labor process, and save labor power from non-productive purposes. Labor competition and labor model promotion during this time began to set the terms between the state and individuals and define socialist subjectivity

[17] On Soviet influence on the early PRC in general, see Thomas P. Bernstein and Hua-Yu Li, *China Learns from the Soviet Union, 1949-present* (Lanham: Lexington Books, 2010); Shen Zhihua, *Sulian Zhuanjia zai Zhongguo, 1948-1960 [Soviet Experts in China, 1948-1960]* (Beijing: Zhongguo Guoji Guanbo Chubanshe, 2003)

through work.[18] At the same time, the state succeeded in training a massive troop of cadres who learned how to mobilize peasants through the 1950s campaigns.[19] Large construction projects served as cadre-training bootcamps where knowledge on how to increase labor productivity through tireless political work was taught and practiced by millions of cadres. For a short period of time, the new regime's need to quickly build its bureaucratic apparatus and industrial workforce provided social mobility to cadres and peasants alike, and the ability to respond to the mode of knowledge production that the Party had chosen was crucial for the realization of such opportunities.

The technological change in MPT tools during the first stage partially resembled what would happen in a market economy of early industrialization. Animal-drawn carts proliferated to meet the growing transportation needs. The nascent modern transportation sectors only enlarged the demand for MPT to feed their expanding shipping capacity.[20] A small portion of rural population was enriched by the high demand of their animal-drawn carts, including the beneficiaries of Land Reform who invested their gains in mules and horses. Much less was done on human-powered transportation technologies before the spread of High-level Agricultural Cooperatives in 1956. The small improvement in farming tools in early collectivization was

[18] Gail E. Henderson and Barbara Entwisle eds, *Re-drawing Boundaries: Work, Households, and Gender in China*. (Berkeley: University of California Press, 2000). Also see Gail Hershatter, *The Gender of Memory*.

[19] Gordon A. Bennett, *Yundong: Mass Campaigns in Chinese Communist Leadership* (Berkeley: Center for Chinese Studies, University of California, 1976); Julia Strauss, "Morality, Coercion and State Building by Campaign in the Early PRC: Regime Consolidation and After, 1949–1956" *The China Quarterly* 188 (Dec, 2006): 891-912. For the Party's continuing reliance on campaigns, see Elizabeth Perry, "From Mass Campaigns to Managed Campaigns: 'Constructing a New Socialist Countryside'," in *Mao's Invisible Hand* (Leiden, The Netherlands: Harvard University Asia Center, 2011).

[20] David Edgerton, *The Shock of the Old: Technology and Global History Since 1900* (Oxford: Oxford University Press, 2007).

largely discouraged by the implementation of the Unified Purchase of Grain policy, which hurt the peasants' income and diminished their interest in tool upgrades. In rural China, new socioeconomic divergence appeared along the line of means of production, as farming became the least profitable work.

Both the boom of MPT technologies in transportation and the lack of it in agriculture troubled the authority. The adherence to a Soviet-style planned economy that concentrated on industrial growth made it difficult for the Party to address either of these issues. Most strikingly, the gap between economic reality and the plan—a common feature of "rule of experts" around the world—was particularly pronounced in the work of grassroots planning apparatus in the early PRC. In the transportation sector, these grassroots planners were at the same time also regulators and monopolizing enterprises. Their need to establish territorial control of the market took priority over their duty to allocate resources according to different demands. Furthermore, believing that "the Soviet Union's present is our tomorrow"—however idealized the "soviet present" was—the planners willfully planned for a drastic decrease in MPT technologies in the urban sector, replacing them with motorized vehicles and effectively removing MPT from transportation plans. The planning apparatus failed to centralize the knowledge about muscle-powered technologies even within a relatively modern municipality (Chapter 2), demonstrating the incompatibility between the mechanism of knowledge production based on soviet-style central planning and China's material and technical reality.

The state-led effort to massively upgrade muscle-powered technologies—transportation and agricultural included—began after the socialist transformation. This turn was driven by the Party Central's realization that the Soviet approach to development had to be revised to suit the Chinese reality. At the same time, the enlargement of ownership units in the countryside now

made collective upgrades of tools plausible. Starting with the nation-wide promotion of the double-wheeled, double-bladed plow in 1956, the effort to build more labor-saving, intermediate technologies continued and peaked during the Great Leap Forward.[21] Thousands of backyard furnaces were set up across the country, blowing smoke and spitting out iron—the essential raw material intended for local technological upgrades. What percentage of the iron produced this way could be used to manufacture durable mechanical parts was impossible to assess.[22] Regardless, a raving "Mass-producing Ball Bearing Movement 大造滚珠轴承运动" followed, and any labor not already used in reservoir building or deep plowing—particularly senior women—were put into grinding metal, ceramic, even bamboo and wood pieces into round small balls.[23] Counties and communes everywhere made "new models" of muscle-powered

[21] "Intermediate technologies" is used here in a descriptive manner, referring to technological innovations aiming to improve productivity that still rely on organic energy. The term became prominent in the West in the 1970s through works such as Schumacher Ernst Friedrich, *Small Is Beautiful; Economics as If People Mattered,* (New York:Harper & Row, 1973). For a discussion on China during the peak of "intermediate technology"—or "appropriate technology"—scholarship, see Carl Riskin, "Intermediate Technologies in China's Rural Industries," in *Appropriate Technologies for Third World Development: Proceedings of a Conference held by the International Economic Association at Teheran, Iran*, Austin Robinson eds, (New York, St. Martin's Press, 1979): 52-74.

[22] On Great Leap Forward and backyard-furnace iron production, see Ralph A. Thaxton, Jr. *Catastrophe and Contention in Rural China: Mao's Great Leap Forward Famine and the Origins of Righteous Resistance in Da Fo Village* (Cambridge Studies in Contentious Politics. Cambridge: Cambridge University Press. 2008). Dali Yang, *Calamity and Reform in China: State, Rural Society, and Institutional Change Since the Great Leap Famine* (Stanford University Press, 1996); Joseph Anderson Shih, "Science and Technology in China" *Asian Survey* 12, no. 8 (1972): 666.

[23] On the Mass-producing Ball Bearing Movement, see Marc A. Matten, "Agricultural Tools," *The Mao Era In Objects Project*, https://maoeraobjects.ac.uk/object-biographies/agricultural-tools/. More on the upgrades of agricultural tools, see Robert C Hsu, "Agricultural Mechanization in China: Policies, Problems, and Prospects," *Asian Survey* vol. 19, no. 5 (1979): 436-449. Leslie Tse-chiu Kuo, *The Technical Transformation of Agriculture in Communist China* (New York: Praeger, 1972); Benedict Stavis, *The Politics of Agricultural Mechanization in China* (Ithaca: Cornell University Press, 1978); Richard P. Suttmeier, *Science, Technology and China's Drive for Modernization* (Stanford, CA.: Hoover Institution Press, 1980).

transportation vehicles to raise the labor productivity in local infrastructural projects. "Advanced practices" of tools reform in large state projects were introduced to other localities by central leaders to encourage more innovations (Chapter 3). Eventually, only a select of tools "invented" and promoted during the Great Leap Forward passed the "social selection" process[24] and became crucial for rural production—the double-wheeled barrow was one of them and perhaps the most successful one in North China.

The mass labor mobilization during the Great Leap Forward had a destructive effect on the model of "combination of politics and technology" as established in the early 1950s. As the state rushed to transfer the rural labor into developmental capital through warfare-style infrastructural building, it put great pressure on local cadres and in turn relied heavily on them to lead the production assaults. The elaborate political persuasion through targeted incentive programs that the Party used in the earlier stage was replaced by more coercive means. The emphasis on discipline and planning in forming the new socialist labor largely disappeared. In its place, adventurism and miraculous labor performance became the new ideals. In this process, the previously established channel of information verification—however imperfect it was—broke down under the dominance of wishful thinking.[25]

The post-GLF turn to "Grain First" policy marked the beginning of the third stage. Cooling down from the all-out modernizing push, the government decided to stabilize the boundary between the state sector and the collective economy, by downsizing the urban

[24] Wiebe E. Bijker, Thomas Parke Hughes, and T. J. Pinch, *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology* (Cambridge, Mass.: MIT Press, 1987).
[25] Arunabh Ghosh, *Making It Count: Statistics and Statecraft in the Early People's Republic of China* (Princeton: Princeton University Press, 2020).

industries and further restricting the peasants' mobility.[26] Significantly, the solidification of the rural-urban divide created a technological divergence between the urban industrial sector and the pre-industrial countryside. From the early 1960s to the late 1970s, the rural collective economy gradually developed, with their agricultural growth supported by a short-radius technological system that typically included locally operated irrigation and small factories of fertilizers, machine tools, and basic construction materials. Muscle-powered transportation sustained these short-distance supply chains, but local transportation took only a small portion of their use. The mule carts and wheelbarrows were crucial to the collective economy in two other ways: first, they were needed in creating and maintaining the local technological system, especially in the constant construction and expansion of hydraulic projects; Second, they were an indispensable source of cash income, mainly achieved through selling their service to urban state-owned enterprises. The paradox here is obvious—the rural collective economy and their agricultural production depended on both the MPT labor at home and their money-making away from home. This is, of course, a paradox inherent in the shadow economy of the late Maoist era; the self-reliant countryside could only remain self-reliant insofar as some level of market exchange that undermined their autarky was permitted.

This paradox was not merely a theoretical one, it brought painful living experience to millions. The launch of the Cultural Revolution was largely pushed by the ideological urge to suppress shadow economy and eliminate the income inequality generated by it. "Learning from Dazhai" movement demonstrated how the top leadership of the Party explored ways to build

[26] More on urban-rural divide, see Jeremy Brown, *City versus Countryside in Mao's China: Negotiating the Divide* (New York: Cambridge University Press, 2012). And Jeremy Brown and Matthew D. Johnson, eds., *Maoism at the Grassroots: Everyday Life in China's Era of High Socialism* (Cambridge, Massachusetts: Harvard University Press, 2015).

ideal rural collectives through intensive political struggles instead of formal policy making—thus kept the paradox in place. The result then, was on the one hand the persistence—even if at times in diminished form—of employment of rural human and animal MPT labor in the state sector, and on the other hand severe punishment on the peasants and rural cadres who organized and participated in such arrangement.

Cultural Revolution and Learning from Dazhai campaign also shaped a radical Maoist subjectivity, represented most prominently by people like Chen Yonggui, the chief of Dazhai Brigade who later rose to national leadership. Despite its rhetoric of "combined" knowledge-making by cadres, old peasants, and technicians/educated youth, the Dazhai model was indeed built to address the most crucial bottleneck of collective farming—labor management, a field of knowledge that local cadres specialized in.[27] Collective farming required an instant change of labor tasks in response to numerous variables: season, whether, labor, tools, completeness of early-step tasks, and so on. Agricultural tasks, be it digging irrigation channel, collecting manure, watering the saplings, or harvesting, involved intensive muscle-powered transportation. The success of any task at the moment depended on the cadres' ability to effectively mobilize and allocate labor of appropriate quantity and quality to the specific tasks. There could be, in theory, at least two approaches to manage collective labor: a more technocratic approach that uses hierarchical incentive schemes or a more personnel-intensive approach that utilizes normative pressure. The radical Maoist cadres disdained the first and optioned for the latter, which has been misread by scholars as a revival or continuity of the feudal, patriarchal power in local politics.[28]

---

[27] Sigrid Schmalzer, *Red Revolution, Green Revolution: Scientific Farming in Socialist China* (Chicago: University of Chicago Press, 2016); Joshua Eisenman, *Red China's green revolution: technological innovation, institutional change, and economic development under the commune* (NY: Columbia University Press, 2018).

[28] For example, see Friedman, Seldon, and Pickowicz, *Chinese Village, Socialist State*.

The Dazhai model represented a technology of governance that relied much less on biopolitics than on intensive inter-personal persuasion and coercion. Even decades later, when China had become the second-biggest economy in the world, we can still identify this mechanism of governance developed in the age of muscle-powered production as the Party pushes for new, dramatic social change.

Scope and Structure

This study brings extensive archival research and oral histories conducted in North China to bear on these questions. The north, where the Loess Plateau gives way to the Gobi Desert, is marked by a dearth of waterbound shipping routes. Thus, a great portion of rural labor was devoted to muscle-powered transportation. Weaving a narrative from the perspectives of high-level officials and peasant laborers alike, this dissertation draws on on-the-ground research in China, mainly in Beijing, Shanxi, Henan, and Jiangsu Provinces. In addition, by deploying methods from Science Technology and Society studies, this study utilizes a wealth of texts and visual diagrams that served as technical instructions both to trained cadres and barely literate peasants. Triangulating official documents, oral histories, and technical materials, the dissertation uncovers how technological development was pursued in the pre-modern, non-state sector, and how peasant labor carried the Maoist development with their muscle power.

Chapter 1 focuses on the development of Taylorist work-methods in the 1950s Huai River Control project and contrasts the technological styles of the PRC and the previous Republican regime. The Huai River Control was the CCP's first massive hydraulic project. The new regime's monumental endeavor dwarfed previous attempts by Chiang Kai-shek's nationalist government to control the river. A close comparison of the two Huai River Control projects in 1932 and the 1950s renders fruitful insights into important differences in the hydraulic planning

and engineering styles of the two regimes and complicates the thesis of historical continuity across the 1949 transition. Through the Suppression of the Counterrevolutionaries Campaign and Land Reform, the Communist Party eliminated local power holders and replaced the difficult balance between ROC's technocrats and political elites with the absolute authority of the Party. More importantly, the two projects relied on sharply different strategies to increase productive efficiency. ROC leaders tried to solve the earthwork bottlenecks through engineering means such as redesigning work procedure and rezoning work sites. The leaders of the PRC Huai Control promoted Taylorist body management, in which political officers overseeing peasant laborers mobilized the peasants to rationalize their own body practices. Muscle power was treated as the major variable in the success of the project—the laborer's body and mind thus became the key location of efficiency improvement.

Chapter 2 explores the way in which various state institutions extended their control over MPT in the early 1950s. Transportation authorities in the nation's capital, the Beijing Bureau of Transportation and Traffic Administration and the state-owned Beijing Transportation Company, tried to control the use of the region's dispersed porters and carters both in and out of the city in order to establish a state monopoly, fix transportation costs, and make the transportation sector "legible" and therefore subject to central planning. Despite considerable and repeated efforts, they failed to incorporate MPT into the plan. This chapter shows that this failure could only be partially explained by the dispersed nature of muscle-powered technologies. More important was the planner's conflation of the plan and reality. The planners followed a normative linear development of technology that demanded a "planned" decrease of muscle-powered transportation—an impossibility given China's material conditions. At the same time, an idealized Soviet-style "transportation rationalization" that assumed relatively high degrees of

centralization created new inefficiencies. It not only demanded local sacrifices for the "national good," but also endowed the transport authority with plenipotentiary powers over routes and means of shipping. The logistical bottlenecks that ensued threatened the legitimacy of central planning.

Chapter 3 examines the Great-Leap-Forward's (1958-1961) push for technological advancement through a history of reservoir building in the Beijing suburbs. It focuses on the construction of two reservoirs, Shisanling and Miyun. Shisanling is the icon of the GLF while Miyuan serves as the actual principal water supply for Beijing and Tianjin. This chapter argues that the GLF ideal of achieving self-sufficiency through collective creativity was unattainable under its militarized system of mass labor organization. Early GLF projects such as Shisanling set the example of speedy construction through "technological revolution," which did not upgrade the machinery but rather streamlined and intensified the labor process, while exploiting existing plant and machinery to their very limit. As the GLF proceeded, its "technological revolution" turned into a nationwide semi-mechanization campaign in which workers and peasants were asked to handcraft tools and parts such as rubber-tired pushcarts and ball bearings in order to improve labor efficiency. The Miyun story shows that these programs, although emphasizing incremental improvements and encouraging grassroots innovations, insisted on mass-scale implementation that ignored local conditions. Instead of saving labor and enhancing efficiency, the "innovations" became arbitrary, extraneous, and coercive tasks that added to the laborers burden. The enduring legacy of GLF "technological revolution" was not the labor-saving devices hoped for, but an exhausted populace and economy, and serious deterioration in cadre-peasant relations.

Chapter 4 traces the experience of both animal and human labor in collectivization from the late 1950s to the early 1970s. The GLF left behind environmental destruction, economic depression, and a starved population. Though previous studies have understandably focused on the human toll of starvation, this chapter finds that the animals of the PRC experienced still greater famine. With the nation's draft animals dead or undernourished, the GLF depleted much of the countryside's MPT capacity. As the government struggled to rescue the state sector and revive agricultural production, it "sent down" a significant portion of urban MPTs to the countryside and took painstaking steps to replace them with modern vehicles. But rural MPT shortages persisted. The division of transportation obligations between the state and the peasantry put a heavy toll on the rural MPTs. In addition to their duty to ship state-procured grain, cotton and other items to designated spots, the peasants also had to meet their own transporting needs for essentials such as fertilizer and coal. Meanwhile, rural MPTs, freed from the centralized transportation administration after the GLF, hired themselves out to state-owned factories and construction projects—often hundreds of kilometers away from home. Such work became a major source of cash income for rural collectives, but it also exacerbated labor shortage and income inequality, threatening both food security and political stability. The muscle-power sphere was thus a product of the CCP's developmental decisions, but one that became particularly conducive to extra-plan, entrepreneurial activity. MPTs thus emerged as a vector for rural local interests counterposed to the central government and a disintegrative force in the Maoist political economy.

Chapter 5 provides a history of labor management in Dazhai, Mao's model production brigade in Xiyang County, Shanxi. Dazhai was exalted as a national model for its reported success in overcoming poor natural endowments and achieving high agricultural output under

strong party leadership. The "Dazhai model" centered on intensive labor input in agricultural infrastructure and an egalitarian distribution system. Based on previously unused county archives in Xiyang spanning from the 1950s to the early 1980s, this chapter examines the challenge that MPTs posed to Dazhai's model making, both economically and politically. It shows that the Maoist state's insistence on grain autarky for individual rural communities suppressed local development reliant on non-agricultural income. In Xiyang, the cost of promoting Dazhai as the unchallengeable model was the willful neglect—and at times even the bloody political persecution—of other "models" that pushed animal husbandry or MPT sidelines as ancillary services to the state. Where and how communities used their MPT power became a litmus test of their correct application of Mao Zedong thought. By focusing on the struggle over muscle power allocation, this chapter re-examines the economic and social system of rural collectives. It argues that, despite the Maoist valorization of indigenous knowledge, work in the countryside remained fundamentally distinct from the traditional rural production in that peasants could no longer decide when, where, and how to use their own labor. The collective system imposed absolute cadre authority and forged a task-based subjectivity among Chinese peasants.

Chapter One

Fixing the Huai River

Introduction

The Control of the Huai River System ("Huai Control" hereafter, *zhi huai* in Chinese) was the first massive hydraulic project of the People's Republic of China. From 1951 to 1957, it reshaped the waterscape spanning 270,000 km^2 and encompassing nine large-scale reservoirs, five lake conservancy projects, and thousands of miles of dikes and irrigation channels across Henan, Anhui, Shandong and Jiangsu Provinces.[1] This chapter studies the earthwork of the Huai River Control. It examines the technologies that enabled the digging and moving of an astronomical amount of soil by the millions of peasant workers in a few years. "Technologies" are broadly defined. I draw on Alfred Gell's taxonomy, who distinguished between three kinds of technological system: production, reproduction and enchantment. I see the technologies involved in the earthwork on Huai River as constituted by the measures that reconfigured environmental conditions—as a physical "production" process; reformed social relation—therefore altered the "reproduction;" and revolutionized ideologies—that is, enchanted the subjects and exerted control over their thoughts and actions.[2]

---

[1] The Editorial Committee, *Gazetteer of Huai River Water Conservation (Gazetteer of Huai from here on), vol.6 On Management 淮河水利志第六卷 管理卷*. There were three phases of centralized Huai Control in PRC. The first Huai Control Commission served from 1950 to 1958. In 1969, the State Council established Huai Control Planning Group which temporarily resumed central planning of Huai Control until late 1971. The current Huai Control Commission was established in May 1977. 62-63.

[2] Alfred Gell, "Technology and Magic", *Anthropology Today* 4, no. 2 (1988): 6–9.

The first purpose of this chapter is to provide a detailed account of the level of technicality of the Huai River earthwork. It is often said that the early PRC was poor and backward, but exactly how poor and how backward it was could not be shown simply by statistics. The vision, strategy and reality of socialist construction cannot be understood without reference to technical conditions in the early PRC. To complete this massive project with mainly shovels, baskets and rakes required a vigorous and comprehensive rework of the socio-technological system. The Communist Party's systematic endeavor boils down to what it called "the combination of politics and technology."[3] That is, the party believed that production could only be enhanced through the reshaping of both the body and mind of the people.[4] The "pure technological point of view"—the narrow focus on the change of material interface of people and the world based on natural science—was harshly criticized as not only politically wrong but also unproductive. The goal of the CCP leadership was not simply to control the Huai River, but also to build a new socialist labor force: the remolding is of both river and people. (Politics may be understood as the amplifier of energy. This role is usually assumed by modern technologies. See Paul Edwards's discussion on "Force, Time and social organization" of infrastructure.)

---

[3] Zhang Tianyi 张天一, "The combination of politics and technology was the key to the success of the Banqiao Reservoir 政治与技术的结合是板桥水库成功的关键," *Zhi Huai治淮,*(1952) no.3, 7-8.

[4] Aminda M. Smith, *Thought Reform and China's Dangerous Classes: Reeducation, Resistance, and the People* (Lanham, Md.: Rowman & Littlefield, 2013). Robert Jay Lifton, *Thought Reform and the Psychology of Totalism: A Study of Brainwashing in China* (Harmondsworth: Penguin, 1967). Attention to "body reform" tends to focus on the history of medicine and reproduction. Mary Augusta Brazelton, *Mass Vaccination, Citizens' Bodies and State Power in Modern China* (Cornell University Press, 2019). Sarah Mellors, "Less Reproduction, More Production: Birth Control in the Early People's Republic of China, 1949–1958", *East Asian Science, Technology and Society* 1 September 2019; 13 (3): 367–389.

This goal makes the "work methods" all important for the labors' formation of new work habits and identification with the productive agenda. The work methods promoted on Huai Control were codifications of labor practices—particularly skills involving individual and collective body movements under un-mechanized conditions—through Taylorist time-motion study conducted by cadres.[5] The work methods aimed to enhance labor efficiency through standardization of earthwork, thus bypassing the limitation of physical exertion. Clearly inspired by the Soviet Stakhanovism, their emphasized workers' self-rationalization generated by enhanced productive enthusiasm.[6] But the great variation in physical environment and the absence of machines meant these work methods had to diverge substantially from what could be drawn out of a typical Taylorist or Stakhanovist setting. On the Huai River, the laboring subject urged to study, control and improve their own body practice was not an industrial worker, but a regular peasant. More importantly, the promotion of work methods showed the CCP's insistence

[5] On a historical account of the rise of Taylorism, see David Nye, *Consuming Power, A Social History of American Energies* (Cambridge, Mass.: MIT Press, 1998). On application of Taylorism in Europe and its comparison with European "science of work", see Anson Rabinbach, *The Human Motor: Energy, Fatigue, and the Origins of Modernity* (New York: Basic Books, 1990).

[6] Siegelbaum emphasizes that although Stakhanovism was also present in agriculture and service sector, it "was generated and always had its greatest resonance within industry." See Lewis H Siegelbaum. *Stakhanovism and the Politics of Productivity In the USSR, 1935-1941* (Cambridge University Press, 1988), 11. Their social functions also differed. Stakhanovism was used to discipline the managers and technocrats, while creating a class of labor aristocrats. The differences between the Work Methods promotion and the Stakhanovism should be understood in relation to the different "stages" of state socialism that 1950s China and Stalinist Russia was at respectively. See Thomas Bernstein and Hua-Yu Li, eds, *China Learns From the Soviet Union, 1949-present* (Lanham: Lexington Books, 2010).

to rationalize the labor process along the Maoist mass line—a labor politic principally distinct from the Stakhanovism.[7]

In order to translate exhortations toward self-improvement into large-scale productivity gains, the Party leaned on its most trusted tool of social mobilization: the mass campaign. Mass campaigns had been developed by the Communist Party in the 1930s, to mobilize society in support of its war efforts.[8] But this was the first time they were used to reshape the social relations of the whole country. Reexamining mass campaigns from the perspective of technology offers us a unique opportunity to understand how certain leading principles of the campaign translated into practices and what their real technological and social effects were. This chapter will show that the use of "mass campaigns" to promote party-prescribed work methods served to insert the cadres into the labor process and establish their authority over technical questions, and to entrench cadres' leadership over both scientific personnel and the laboring masses. In the end, The Maoist mass line ("from the mass and to the mass 从群众中来到群众中去") did not mean to establish political equality between the cadres and the mass. But it created a "field" in which the party employed new methods to motivate mass participation in both politics and production.[9]

---

[7] Austin Jersild describes the frustration the Soviet experts had with the Chinese industrial management. Seeing the Chinese way as a "relic from the premodern past," they complained about their "failure to distinguish between qualified and manual labor," and frustrated with "pointless Chinese meetings informed by the so-called 'democratic path' of discussion." Austin Jersild, *The Sino-Soviet Alliance: An International History* (University of North Carolina Press, 2014), 49, 213.

[8] Mark Seldon, *The Yenan way in Revolutionary China*, (Harvard University Press, 1971). Pauline Keating, *Two Revolutions: Village Reconstruction and the Cooperative Movement in Northern Shaanxi, 1934-1945* (Stanford University Press, 1997).

[9] Pierre Bourdieu, *The Field of Cultural Production: Essays On Art and Literature*, translated by Randal Johnson (Columbia University Press, 1993).

Another purpose of this chapter is to compare the pre- and post-1949 hydraulic control endeavors, particularly the social relations and labor process that characterized these projects. In the history of early-modern and modern China, the Huai River problem—mainly the frequency and scale of its catastrophic floods but also other flood-induced disasters and draughts—had huge economic and political consequences. In the twentieth century, both Nationalist and Communist governments tried to improve the Huai River control, deemed critical to the political stability of this "belly area" of China, to the national economy and to the regime's legitimacy.[10] But the differences between the 1930s and 1950s Huai Control are revealing. First, the Socialist central government had eliminated the traditional local power holders in Huai region who obstructed the 1932 project in various ways through the Campaign to Suppress the Counter-revolutionaries and Land Reform. Second, the absolute leadership of the Communist Party had replaced the difficult balance between ROC's technocrats and political elites. Finally, the two projects relied on sharply different strategies to increase productive efficiency. ROC leaders tried

[10] For pre-1949 history of the Huai River control, particularly a detailed account of the Nationalist government's Huai Control plan, see David A. Pietz, *Engineering the State: The Huai River and Reconstruction in Nationalist China, 1927-1937* (New York: Routledge, 2002). On the environmental impact of large state projects such as Huai Control, see Judith Shapiro. *Mao's War against Nature: Politics and the Environment in Revolutionary China* (Cambridge University Press, 2001). On the pre-1949 economic, social and political conditions of Huai region, see Elizabeth Perry, *Rebels and Revolutionaries in North China, 1845-1945* (Stanford University Press, 1980). On the deterioration of river maintenance in late imperial time and its larger historical effect, see Kenneth Pomeranz, *The Making of a Hinterland: State, Society, and Economy in Inland North China, 1853-1937* (University of California Press, 1993). For river maintenance and governance in Chinese history more broadly, see Ruth Mostern, *The Yellow River: A Natural and Unnatural History* (New Haven; London: Yale University Press, 2021); Micah S. Muscolino, *The Ecology of War in China: Henan Province, the Yellow River, and beyond, 1938-1950* (New York, NY, USA: Cambridge University Press, 2015); Lillian M. Li, *Fighting Famine in North China: State, Market, and Environmental Decline, 1690s-1990s* (Stanford: Stanford University Press, 2007).

to solve the earthwork bottlenecks through engineering means such as redesigning work procedure and rezoning work sites, instead of attempting Taylorist body regulations. The leaders of the PRC Huai Control treated muscle power as the major variable in the success of the project—the laborer's body and mind thus became the key location of efficiency improvement.

Furthermore, the differences between the CCP's and the Nationalist's approaches to large-scale infrastructure building exemplified in their control of Huai River are not limited to social and labor practices. Also prominent were their difference in the strategic design and work style. The substantial proportion of KMT technocrats remained in the mainland is one of the major factor on which insightful historians like William Kirby have argued for the continuity from the Republic to the People's Republic. David Pietz further pointed out that the Communist inherited a wealth of surveys and plans on Huai River from its Republican predecessors. Many of the Nationalist Government's hydraulic experts joined the 1950s Huai Control project.[11] However, as this chapter will show, the PRC project differed significantly from the earlier plans. The Nationalist Huai River Control Commission elicited planning advice from various international and domestic expertise. Their unfulfilled plan favored economic development of the southern Huai.[12] In contrast, The CCP was steadfastly committed to the Soviet experts' advice. Not only the Nationalist plan was abandoned, but raising opinions different from the Soviet's became politically risky. As a result, the project's priority and focus swung from the South to the upper stream. The construction of large reservoirs at the upper stream of Huai consequently altered the entire control scheme.

[11] Pietz, *Engineering the State*, 122.
[12] Pietz, *Engineering the State*, 49-50.

This brings out another set of questions this chapter explores. Namely: to what extent was the early PRC's technological style influenced by the Soviet Union? How much did the Soviet experts contribute to the technological development of the socialist China?[13] This chapter shows that before 1954, although the Soviet experts enjoyed undisputable authority, the quantity and quality of their aid was insufficient to provide substantial technological support to large infrastructural projects such as Huai Control. Moreover, the opinions of the Soviet advisors were not necessarily backed up by thorough research or robust technical training. That is, they were "scientist" rather than "scientific," and could be quite capricious. Nevertheless, the Soviet opinions often dominated the Party' decision making, even in cases when the Chinese on the ground had greater levels of expertise. In the case of the Huai region, this led to disastrous results.

The CCP's sweeping and hasty 1950s Huai Control—the work often began before the design was finalized—thus contrasted sharply with the Nationalist' conducting of its various plans. David Pietz put it concisely: "the Nationalist could organize and plan, but it struggled to build."[14] The CCP, on the other hand, get things built larger and faster, but at the cost of careful

[13] On the Soviet aid to China, see Shen Zhihua 沈志华, *Soviet Experts in China, 1948-1960 苏联专家在中国, 1948-1960*, (China International Radio Press 中国国际广播出版社, 2008). Shen found that the Soviet Union sent 5092 experts to China between 1950-56. They were distributed across governments, military, all ministries, and large enterprises and universities. Shen raises that the aid from Soviet experts became much more substantial after 1953 when Khrushchev became the leader of the Soviet Union. The honey-moon years lasted until Sino-Soviet relation deteriorated drastically in 1958. Soviet experts played important role in China's infrastructural and industrial development in this period. David Pietz shows that the Soviet involvement in the Yellow River Control during that time was much more substantial than in Huai Control, that "Technical expertise was provided by the 5,000 Soviet technicians involved in the [Yellow River] project." See David Pietz, *The Yellow River: The Problem of Water in Modern China*, (Harvard University Press, 2015), 212.

[14] Pietz, *Engineering the State*, 121.

plan. What is also important is that this characteristic "simultaneous" work style—often referred to as *sanbianzhuyi* (三边主义 building while designing while revising) has long been taken as a feature of the Great Leap Forward. One of the entrenched theme of the historiography of the PRC was that the GLF radicalism overturned the pragmatism that the Party had been upholding in the early and mid 1950s. A close examination at the PRC's earliest infrastructural project shows instead this periodization based on the binary of radicalism and pragmatism needed to be revised.[15] The Great Leap was not a moment in time but a work style or tendency—a belief that time can be compressed and things be speeded up at no cost—which was first tested at the Huai.[16]

This chapter focuses mainly on the first three years of the Huai Control project from 1951 to 1953. This focus is determined by two factors. First, the policy of Huai Control changed significantly in the middle of 1953. Tying millions of peasants to river work negatively impacted agricultural production. This prompted the government to reduce the scale of recruitment, increase earthwork wages, and rely more heavily on prison labor. In addition, a major source base of this chapter is the *Zhi Huai* journal. Unfortunately, *Zhi Huai* ceased publication after this change of policy. Instead of giving a full account of how muscle powered transportation was

[15] For a famous example of the binary thesis, see Dorothy Solinger, *Chinese Business Under Socialism: The Politics of Domestic Commerce, 1949-1980*, (University of California Press, 1984). For a later example, see Ian Mark Seckington, *Policy-making in the PRC: A study of the variations in decision-making across three issue areas; 1969-1978.* PhD thesis, (SOAS University of London, 2001).

[16] Barry Naughton points out that the economic system of socialist China was "set up to maximize the potential to leap." But "every time it really began to accelerate, it ran into fundamental problems...the inability of agriculture to rapidly generate adequate food surpluses combined with the weak capacity of the system to generate productive employment for its abundant labor." See Barry Naughton, *The Chinese Economy: Transitions and Growth* (Cambridge, Mass: MIT Press, 2007). 79.

used on the 1950s Huai River Control project, this time frame highlights the labor experience under the political and technological priority of the first years of the People's Republic.

1. Background: The Peril of Huai River

The rain started at the end of June, 1950. For people in Southern Henan, Northern Anhui, Northern Jiangsu and Southwestern Shandong—a vast region connected by the Huai River and its numerous tributaries—rain could mean anything between relief from draught, to a land-engulfing flood. In 1950, it quickly turned from the former into the latter. Dikes and levees began to collapse in early July. Entire villages floated away, with humans and animal corpses hanging from trees still standing amidst the surging water. The rain continued. In a 40-day period up to early August, 70% of a normal year's annual precipitation fell across the Huai-River region. The flood inundated over 40 million mu land (6.6 million acres), over 27 counties and devastated a population of 13 million.

Nor was such calamity infrequent in the Huai River region. Prior to the Middle Ages, the Hua River region—an area roughly the size of Romania—had been one of the best irrigated and most productive agrarian areas of China. But in 1194 the Yellow River breached its banks, changed course, and overflowed into the Huai, "kidnapping" the Huai River.[17] From then on, flooding was a perennial threat. Over the following three centuries, the soil carried down by the Yellow River gradually filled the riverbed of the Huai and blocked its mouth to the ocean. This caused the elevation of the river to gradually rise. In 1493, the elevated Huai River turned into a

[17] Christian Lamouroux, "From the Yellow River to the Huai, New Representations of A River Network and the Hydraulic Crisis of 1128", *Sediments of Time, Environment and Society in Chinese History*, Mark Elvin and Liu Ts'ui-Jung eds, (Cambridge University Press,1998).

monster of its own, inundated the whole region, and plunged an area of 2700 km^2 permanently underwater, thus creating the Hongze Lake. In 1855, Yellow River once again changed its course, leaving behind a Huai River that had lost its outlet to the ocean and was running above the earth in many parts of its course, with all its branches damaged and silted. Much of the water found its way to the Grand Canal, which itself had deteriorated for decades for the lack of maintenance.[18] The crisis brought by large precipitation in upper and middle stream were often exacerbated by decisions made downstream, where the localities controlling the Grand Canal's dams—in fear of the damage to their own land—fought hard to keep the sluice shut to prevent the water from flowing down.[19] This was an extremely complicated and fragile water network that had since then flooded once every two to three years throughout the late Qing and the Republic era. Indeed, massive floods had occurred 130 times over the course of the five centuries leading up to 1950. As late as 1931, a serious flood afflicted 20 million lives and was still a vivid memory in the early PRC.[20]

---

[18] Ma Junya and Tim Wright argue that the Ming and Qing court policy to protect the Grand Canal—crucial to the grain procurement for the central government—at the cost of Huaibei region worsened the Huai River condition. See Ma and Wright, "Sacrificing Local Interests: Water Control Policies of the Ming and Qing Governments and the Local Economy of Huaibei, 1495– 1949." *Modern Asian Studies* 47, no. 4 (2013): 1348–76. Pomeranz show that, on the other hand, the state's giving up on the Grand Canal further devastated the area where state used to invest flood control for the sake of Canal maintenance. Pomeranz, *The Making of Hinter Land.*

[19] For a comprehensive history of water disputes in Huai Region, see Zhang Chongwang 张崇旺, *The Ecological Changes and Water Disputes in the Huai Region 淮河流域水生态环境变迁与水事纠纷研究 1127-1949*, (Tianjin Classic Books Publishing House 天津古籍出版社, 2015).

[20] Works on the history of Huai River problem are numerous. For an official account by the Nationalist government, see The Huai River Control Committee of Republican of China 中华民国导淮委员会, *The Plan of the Huai River Control Project [The ROC Huai Control Plan hereafter]导淮工程计划*, (Shanghai, 1931). For a comprehensive PRC narrative on the history, see *Gazetteer of Huai,Vol.2 The Overview 第二卷综述志*. For an English account, see Pietz, *Engineering the State*, Chapter One.

But the1950 flooding was unique, not as a hydrological phenomenon, but owing to its historical context. When the calamity hit, the People's Republic of China was less than one year old. The economy was recovering from war-time inflation, with agricultural and industrial production yet to return to prewar levels. Land reform unfolded in the newly liberated area and turned the vast countryside into a stage for class struggle. The remaining Nationalist forces, militias, and bandits were still active, and skirmishes continued to take place across the country. The outbreak of the Korean War, as the PLA was still engaged in a "bandit-suppression" campaign in Southwest China, had already put severe pressure on the new regime. On top of this, a mere ten days after China joined the Korean war, the Huai River began to flood.

Domestic instability was particularly acute in the Huai area. A long tradition of organized violence outside of state control meant that anti-Communist resistance groups were especially active. The Nien Rebellion in the late nineteenth century lasted for fifteen years and brought much military and financial affliction to the Qing court. During the Republican era, the Red Spear and other secret societies continued to rely on violence in their interaction with different states' actors. The Northern Huai region had a long history of rebellion and armed resistance against state expropriation. The hostile environmental conditions and the states' long neglect of the hydraulic matters of the region—out of incapability and the change of state-building priority—led to the development of various forms of "aggressive survival strategies."[21]

On the eve of liberation, the Red Spears were the largest militia organization in Huaibei that had an uneasy relationship with the Communist Party. The Red Spears' fierce defense

[21] Perry, *Rebels and Revolutionaries*, 3.

against the Japanese and antagonism towards the Nationalist government had once made them potential allies of the Party. But their unwavering loyalty to local power holders and hostility toward outsiders made them Party enemies rather than friends. After being found out having murdered Communist Party members for the interest of other parties, the Red Spears rose to become prominent political enemies of the Communist Party. The very first thing the Communists did after achieving a stronger hold of the region was to go all-out to undermine the Red Spears by calling mass struggle meetings to attack their leadership.[22]

But in 1950 the Red Spears had not fully given in. The 1950 Mengcheng Incident, probably the last organized militant resistance in the history of the Red Spears, was enough to strike the nerve of the Party. In early July, when the rain was still pouring and flood spreading, the local cadres of Nanxiang District, Mengcheng County went out to collect the "public grain." Villagers refused to hand in the grain as it was becoming obvious there would be little harvest to expect. The cadres detained the resistors in the district granary. Hundreds of Red Spear members quickly gathered. They broke into the government office, killed the district chief, and burned the building to the ground. Many lower rank Communist militia soldiers—most of them were former Red Spear members—joined forces and this small army of two thousand and occupied the county government. They then reached out to the Red Spears in southern Shandong to push the action into a real rebellion. The government dispatched a security team from the neighboring county Fuyang to quash them, but the force was killed by a Red Spear ambush. The rebellion

[22] Perry, *Rebels and Revolutionaries,* 208-247.

lasted for a month before it was finally suppressed by the PLA. The leader of the movement Li Baoguo committed suicide by stabbing a red spear into his own chest.[23]

It is against this background that the Central Government decided to "fix the Huai River." The decision was announced five days before the People's Volunteer Army's crossing of the Ya-lu River.[24] Mao marked the occasion in calligraphy, writing, "We must fix the Huai River 一定要把淮河修好" with his brush. This slogan, rendered in Mao's idiosyncratic calligraphic style, later became the symbol of the Communist Party's determination to bend nature into the service of the new China. This was a moment when Mao's calligraphy began to become familiar to the broader Chinese readers. The penmanship of these eight characters was not universally deemed artistically superior, let alone wielding its own talismanic mobilizing power as it did later. However, the iron willpower behind the determination was evident even if the capability of executing such a project was widely doubted by the new government's critics. From day one, the Huai River project was set to showcase that Chairman Mao and the Chinese Communist Party were the leaders that the Chinese nation had long needed but never had. The glory of the Huai River project continued to be burnished in official history of PRC until today, leaving its negative and disastrous consequences brewing in the dark corner of rumors and dissent literatures. The Huai River Project was heroic.

---

[23] Zhang Zhaofeng 张兆峰, *Inside the Chinese Communist Party's Huai Control Project 中共治淮内幕*, (Hongkong: Liberty Press,1953), 5-7.

[24] "State Council's Decision on Controlling the Huai River 政务院关于治理淮河的决定"*People's Daily 人民日报*, Oct 14, 1950. The People's Volunteer Army began crossing the Ya-lu River in the night of Oct 19.

2, "Guiding the Huai:" Plans in the Republican era

In the century leading up to 1950, multiple attempts had been made to solve the Huai-River problem. The first state commission dedicated to the regulation of the Huai River was established by Zeng Guofan as early as 1867, in the aftermath of the Yellow River's change of course. Zeng founded the commission in Qingjiangpu (present-day Huai'an). Toward the end of the Qing, the New Policy state modernizer (and later private industrialist) Zhang Jian unveiled an even more aggressive proposal to undertake comprehensive flood control of the entire Huai water system. Zhang Jian's designs were the first to be based on modern hydrological surveys. In 1913, the new Beiyang government recognized Zhang's office of the Bureau of Huai River Regulation. In 1914, the government expanded Zhang's authority, renaming his office the National Hydraulic Bureau with a national remit to oversee river control.[25]

During Zhang's tenure, his top priority was to leverage enough political and financial support for a Huai region-wide hydraulic improvement project. Beginning from Zhang's initiative, hydrological surveys continued to be conducted in the first fifteen years of the Republican era, collecting data of the riverbed height and the volume and speed of water current along the Huai River. By the time of the Nanjing decade, the Huai River was the best surveyed water system in China, due to the contribution of a select of national, provincial, international and private surveyors.[26]

---

[25] *Gazetteer of Huai*, vol.6, 15. On Zhang Jian and his many roles, see Elisabeth Köll, *From Cotton Mill to Business Empire: The Emergence of Regional Enterprises in Modern China*, (Cambridge, Mass: Harvard University Asia Center, 2003).

[26] A comprehensive list of research on Huai up to this time can be found in *ROC Huai River Control Plan.* An important survey in English is American National Red Cross, *Report of Board*

In one important respect, Zhang Jian's motivations foreshadowed those of the Communist Party: that is, they were not simply hydrological, but political as well. In Zhang's *Recommendations on the National Hydraulic Work* 条议全国水利呈, he made clear the tremendous political stakes of controlling the Huai River. According to Zhang, the Huai area people were tough and militant. "If triggered by crisis, they rise up as bandits and looters. Like prairie fires, if you put it out here it breaks out somewhere else…Without the peace in the Huai region, there will be no peace in Southeast China. To pacify the Huai region people, the first thing is to pacify the Huai River. Therefore there is no greater solution to expel the peril than to regulate the Huai River."[27] In other words, river instability was a source of political instability. To maintain political control required first controlling the river.[28]

The central technological principle behind Zhang's proposal was to "*dao*" (导), or "guide," the river to the sea. To a large extent, this emphasis on letting out the water had always been the objective of hydraulic projects conducted on flood-prone regions in imperial China.[29] Since late Qing, surveyors and administrators interested in the Huai River matter had argued that to make an easier exit of Huai River water, it was best to lead the river along two courses.

---

of Engineers on the Huai River Conservancy Project in the Provinces of Kiangsu and Anhui China, (Washington: American Red Cross, 1914).

[27] Zhang, "A Proposal on the Nation's Water Conservancy 条议全国水利呈,"in *Complete Works of Zhang Jian (vol.2)*, edited by the Center of Zhang Jian Studies 张謇研究中心 and Nantong Municipal Library, (Jiangsu Classic Books Publishing House 江苏古籍出版社, 1994), 155-161.

[28] See also Hu Huifang. *Huai He Zhong Xia You Di Qu Huan Jing Bian Dong Yu She Hui Kong Zhi, 1912-1949* 淮河中下游地区环境变动与社会控制, 1912-1949, (Anhui ren min chu ban she, 2008).

[29] Zhang, "Essentials on the Huai River Control Plan 治淮规划之概要," *Complete Works of Zhang Jian (vol.2)*, 149-153.

Seventy percent of it should be given a direct outlet to the sea, with the remaining 30% flowing into Yangtze River. After conducting a two-year survey in the region, Zhang saw this proposal as "quite appropriate." "Based on the surveys conducted in last two years," he added, "the best location for an outlet to the Yangtze River is Sanjiangying, and the mouth to the ocean should be at Guanhekou."[30] With leading the Huai into the sea as the ultimate goal, Zhang believed that, if financial preparation came into place, the first thing to be done would be to dredge a few hundred miles of blocked parts in the middle to downstream of Huai River.[31] However, unable to secure even minimal financial resources during the international and national turbulence of the 1910s, Zhang's plan remained on paper only.

In 1928, the KMT established a new, stronger central government in Nanjing. The Nationalists, too, were keen to exert control over the Huai River. The Nationalist Huai River Plan kept the principles of "dao Huai" intact but significantly revised Zhang's design of the project. In 1929, the Nanjing government established the Commission of Huai River Control (dao huai wei yuan hui). The President of the Republic Chiang Kai-shek assumed the chief position of the Commission to lend political capital to its operation. The magistrates of 132 counties in the four provinces were given the title "assistant commissioner" to directly oversee all Huai River related work within their county. The Commission dispatched two survey teams

[30] Zhang, "Essentials on the Huai River Control Plan." Zhang states that "It has been argued that thirty percent of Huai water should go into the Yangtze and seventy percent into the sea. This argument is very convincing and appropriate…Based on our survey in the last two years, Sanjiangying should be the mouth to the Yangtze, Guanghekou should be the mouth the the sea. 论者有谓淮水宜三分入江, 七分入海, 其说颇当…以两年来测量所得之结果, 则入江由三江营为宜, 入海由灌河口为宜." 150.

[31] Zhang, "The Announcement of the Huai River Control Plan 导淮计划宣告书, 1913" *Complete Works by Zhang Jian vol.*2, 146-149.

accompanied by Chinese and foreign hydraulic engineers to review the earlier survey results of the water system of the Huai River, the Grand Canal and the Yellow River. In the next year, the Commission published the *Plan of Huai River Control*, laying out the design of a three-phased comprehensive project. "The purpose of Huai River control," the plan states, "is to prevent floods, facilitate river navigation, and benefit agriculture. While developing hydro-electric power can be an additional gain, flood prevention should be the primary goal. Eliminating the harm first, then we can talk about the profit."[32]

The priority of flood prevention and the financial constrains may both have shaped the Plan. The result is a plan that, from today's point of view, might be described as one of minimal intervention. The Plan focused on the mid- and downstream sections of the Huai River, and left the upstream section, which rarely suffered from flooding, intact. Downstream, the priority was

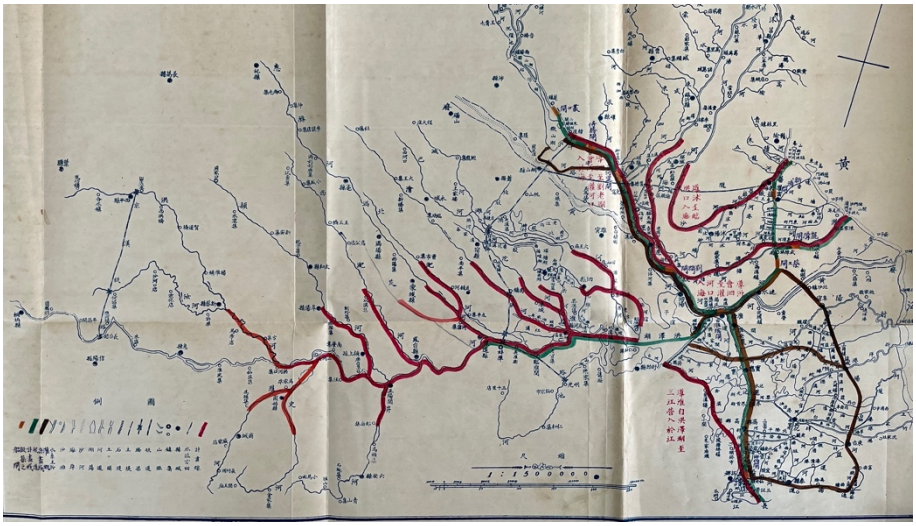

Figure 2. Plans for Huai River during Nanjing Decade. *Source: Daohuai gongcheng jihua*, Nanjing, 1930

[32] Otto Franzius from University of Hanover was the technical advisor to the engineering office. the ROC Huai River Control Plan credited him as a major contributor to the plan. *ROC Huai River Control Plan,* 1-3. For a more comprehensive record of contributors, see Pietz, *Engineering the State*.

to open the riverbed to facilitate the discharge of floodwaters. Instead of directing most of the Huai water into the sea, as Zhang Jian proposed, it was argued that letting it to Yangtze River was a better solution. “The volume injecting to the Yangtze can be easily adjusted by the various dams [along the Huai branches]. The additional water would be beneficial, not detrimental, to the Yangtze.” The prospect to open a course to the ocean was not abandoned, but its realization was postponed to the future “when financial resources become abundant.” There was no plan to build reservoirs from scratch. Instead, the lakes within the Huai system, especially the Hongze Lake that divided the downstream from the midstream, would be used as natural reservoirs by adding water control facilities to them. The major construction slated for the midstream region consisted of erecting levees and of correcting the river course. Much of the rest of the plan focused on improving the connectivity of the water system and the navigability of the Huai River and its main branches. Only two hydro-electric stations were proposed, with each on the largest lake of Huai River and the Grand Canal respectively.[33]

The difference between the Republican Plan and the early PRC’s Huai River Control project in the aspects of hydraulic designs will come to light in the rest of this chapter. Before entering such a comparison, it is imperative to examine the labor process of Huai River Control project of the Republican era first. I argue that the differences on labor mobilization and earthwork regulation between the early 1930s and the early 1950s projects was as at least as fundamental as the differences in their higher-level engineering. Although many of the 1950s earthwork technologies remained at a similar level to those used in the1930s, the technocratic

[33] *ROC Huai River Control Plan*, 3-7.

management of 1930s and the cadre-centered management of the 1950s throw the two phases into sharp contrast. The Nationalists approached organized labor with paternalism, and technology with professionalism.[34] Their centrally planned engineering endeavor was often frustrated by the autonomy of local interests.

3. Huai Control in 1932

One name that links the two phases is Wanghu Zhen 汪胡桢 (Wanghu is the surname). Wanghu was trained at Cornell University in civil engineering. He worked on a number of major hydraulic projects in twentieth-century China, including the very controversial Sanmenxia Reservoir. Wanghu published widely, and was highly influential in Republican-era civil engineering. His publications included A Handbook for Engineering in China.[35] In Wanghu's early career, he was enthusiastic about FDR's Tennessee Valley Authority, and dreamed of TVA-style development to China. (One sentence describe the characteristics of TVA and the reason Wanghu wanted to promote it. Quote from Wanghu's book.) Wanghu became the chief

[34] Kirby talks about the professionalization of Nationalist government, arguing it was a product of insulation from the politics. See William Kirby, "Engineering China: Birth of the Developmental State, 1928-1937," in Wen-hsin Yeh et al eds, *Becoming Chinese*, *Passages to Modernity and Beyond,* (University of California Press, 2000). In fact, the lack of coordination between the civil and military branches of the KMT could be seen as a "technological style" that impacted the reconstruction and war efforts of the KMT.

[35] Wanghu Zhen, *A Handbook for Chinese Engineers 中国工程师手册*, (The Commercial Press, 1944). Wanghu's other publication include*: The Plan for the Grand Canal Maintenance 整理运河工程计划,* 1934; Wanghu Zhen and Gu Shiji 顾世辑, *12 Types of Practicial Civil Engineers 实用土木工程学 12 种*, (Shanghai: China Science Company 上海中国科学公司, 1941); Wanghu also translated from English, Collins, William Frederick, *Zhongguo Kuang Ye Lun 中国矿业论*, 1918. Wanghu is a two-character surname. But he was often referred as Wang in official publications.

engineer of Department of Construction of the Nationalist's Committee of Huai River Control and led the 1932 Huai River project in northern Anhui. The part of 1932 project under his leadership was well documented and publicized, thanks to the publication of *A Record of the Huai River Control Work-Relief Project in Anhui [Record]*皖淮工赈纪实 in 1932.[36] *A Record* offers an opportunity for us to see the 1932 project from the perspective of its commander. After 1949, he became a member of the PRC's Huai River Control Committee. Toward the end of his career, Wanghu was one of the major consultants of the Three Gorges Dam, which was completed in the 1990s after his death. Wanghu was thus exceptionally adaptable to the shifting political atmosphere. Reading *A Record* in connection with Wanghu's work on the early PRC project can shed light not only on the different social and political circumstances with which top-tier engineers found themselves having to cope, but also on how the two social-technological systems in which engineers and peasant-workers worked differed from each other.

Large-scale river control projects need a tremendous amount of labor. Insufficient labor means low daily productivity, prolonged construction periods and possible failure to finish the job before the next flood's arrival. Yet over-abundance of labor is also a problem, as it presents challenges regarding supervision, reduced relief per capita, overcrowded worksites and worsened living conditions. Both the Republican and the PRC projects struggled to maintain the right amount of labor. In 1932 experience these challenges were insurmountable.[37]

---

[36] Wanghu Zhen, *A Record of the Huai River Control Work-Relief Project in Anhui 皖淮工赈纪实*, Department of Engineering of Anhui Committee of Huai River Control 皖淮工程局, 1932

[37] On the labor recruitment and management on river control projects in Republican era, see also Lisheng Huang, Hydraulic Projects in *Huai Region, 1912-1937: Case Studies on the Social Change through the Lens of Civil Engineering Projects 淮河流域的水利事業, 1912-1937：從公共工程看民初社會變遷之個案研究* (Taibei: Guoli Taiwan shi fan da xue li shi yan jiu suo,

The project recruited peasant labors from the area that was most devastated by the recent flood, including five counties in Northern Anhui—Fengtai, Huaiyuan, Fengyang, Lingbi, and Wuhe—and Xuyi County in Northern Jiangsu. This labor-in-exchange-for-relief method was common in river control work in both the imperial and the Republican eras, especially when there was famine following the flooding. As we will see later, it was also adopted by the early PRC. When Wanghu was appointed the chief engineer and the chief of the Work-Relief Bureau of the project in Anhui in November 1931, the flood of the previous months had killed forty thousand people. Wanghu and his small team of engineers and technicians relied on the county governments for labor recruitment, which, in turn, delegated the task to the district level. The district chiefs oversaw filling out the blank rosters—issued by the Bureau—each with a fixed number decided upon the volume of work assigned to the district. Immediately, the starving peasants were fighting for a slot, and the district chiefs were petitioning for longer rosters. When the work started, it became apparent that there were more people in the worksite than on the paper. "At dusk, after the supervising staff left, more people smuggled themselves into the worksite." Wanghu noted in the Record, "they chanted while working under the moonlight. It is hard to hold one's sorrow and sympathy [for them]."[38] The Bureau decided to break the work into three phases so that more peasants would have a chance to work on the river and receive relief grain. Still, the project was only able to provide relief to less than ten percent of the

1986); Jiang Yongjun, *A Study on the Work-Relief Programs under the Nationalist Government, 1927-1949 国民政府时期的工赈研究, 1927-1949*, (Changsha: Hunan shi fan da xue chu ban she, 2018).

[38] Wanghu, *A Record*, 32. "入夜以后, 监工人员既离工段, 各排私自增加之人数愈多…单衣枵腹之灾民, 在月光之下, 无不继续工作, 杭育之声, 遍布四野, 闻之令人悲悯万分."

population struck by the disaster. Thousands of Huaibei people roamed down the Jinpu railroad to look for a chance of survival in the lower Yangtze. This was a scene so familiar to the East China city dwellers until the early PRC, that the absence of Huaibei refugees in the 1951 Nanjing struck the city people as ominous, a sign of a situation direr and darker than two decades ago.[39]

Yet things changed fast for Wanghu. A few months later, "when the wheat was ripe and yellow," many of the peasants "grinned with joy" and they "put down their shovel and returned home."[40] The Bureau had no choice but granting the peasants twenty-five-day leave for harvest. However, after the harvest, the price of grain went down, reducing the value of the payment for the hard river work in the form of relief grain was reduced. No longer starving, only a fraction of the peasant-workers cared to return after the break. The Bureau was forced to raise the relief grain quota to attract the peasants to come back and finish the work.

Another factor that impeded the 1932 project was political. Local power holders persistently petitioned to the Bureau, or even directly obstructed the river work, when they realized that the project was damaging to their interests. Wanghu demonstrated great flexibility in dealing with the petitions on the premise of not changing the engineering design. Some of the petitions asked the Bureau to change their priorities. Particularly, they argued that the Bureau's original decision to build only the northern levee in 1932 did not account for the varied local situations. It is true that the north side of the river was generally flatter and lower and thus more flood-prone than the south. But in Fengyang, the south bank was no better than the north and

[39] Zhang, *Inside the CCP's Huai Control Project*, 8-9. According to Zhang, a Communist cadre told him that the army deployment followed the Soviet example during the great famine in Ukraine.
[40] Wanghu, *A Record*, 32. "欣然色喜, 弃锹返里."

needed some urgent repair. “Across Northern Anhui, Fengyang has the longest levees;” one petition explained, “in Fengyang, the southern bank is much longer.”[41] According to Wanghu, the petitions from Fengyang were convincing enough for the Bureau to add southern bank construction to that part of the river.

Other petitions asked for not only change of priorities but change of the design. These disputes sometimes led to failures to complete the work. The two primary operations of the 1932 project were building levees and dredging the riverbed, which, however, had to be done along adjusted river course drawn by the Commission of Huai River Control instead of the existing route. The new design straightened where the riverbed was overly-winding and widened where it was over-narrow. As a result, part of the construction would necessarily destroy some farmland. Many old levees, which local landlords had invested effort in maintaining over years for the protection of their land, were to be abandoned. In Fengtai County, a local gentry family owned a large batture land in the middle of the river insisted that the Bureau should consolidate the existent levee around the batture instead of building a new levee at the north bank of the river. After negotiation, Wanghu decided to appease the locals by agreeing to fund half of the consolidation of the batture levee so that the north bank levee could be built. However, the gentries decided that there would be no north-bank levee before their batture levee was rebuilt with the government budget. Unable to reach to an agreement, until the end of the project, no work was done on either the north bank or the batture.[42]

[41] Ibid, 126. “淮北堤坝以凤阳为最多, 凤阳堤工, 尤以南岸为最长.”
[42] Ibid, 132.

Disagreement of this nature could become violent when the Red Spears were involved. In April 1932, the Bureau set up a station at the town of Guzhen to prepare for levee work on the Hui River—a major branch of Huai. The district chief in charge of labor recruitment owned land close to the site of the new levee. Concerned that the construction would damage his crops, the district chief deterred the recruitment process. When this was not enough to stop the project, he summoned dozens of Red Spear members. The group ransacked the Bureau station, beat up a staff member, and paraded him around the town. Although the event ended with the county magistrate apologizing to the Bureau and promising to punish the thugs and compensate the Bureau's loss, Wanghu decided to suspend the project in Guzhen for the sake of personnel security. Even with the nominal authority of the central government, the Bureau was vulnerable to hostile local powers. Wanghu lamented how narrow-minded and how "savage" the locals were, but there was nothing he could do but leave the matter to the future.[43]

Wanghu believed that the success of the project hinged on the professionalization and conscientiousness of the supervising staff. The ratio of labor to supervisor was roughly one thousand to two. To ensure that a supervising staff of the size of 178 could effectively oversee the three-hundred-and-fifty-kilometer levee building and river dredging, it was important that they were well trained in earthwork and construction engineering. The supervising staff should be able to demarcate the worksite zones based on the specification of the task and the topographical conditions. They should know how to explain the procedure and standard of work to the workers, examine the work process, and calculate and verify the volume of the work. The

[43] Ibid, 132-133.

supervisors were thus selected either from construction engineering programs of colleges and mid-level technician schools or through special examinations conducted in Nanjing and Shanghai, with only a small portion coming through personal recommendations. "The abundance of talent [in our project]," Wanghu proudly claimed, "was second to nowhere of the time."[44]

The centrality of engineering and supervising work to the project was such that the *Record* could be read as manual book for future engineers and supervisors, besides being a report to higher authority. The description of work processes and problem-solving focuses on the engineers' technical designs instead of how the labors ought to physically operate to suit to the situation. For example, the section on "methods of levee building" reads:

> "On the first day, after a head count and assigning numbers to the workers, [the staff] explains to them the meaning of the position of the central pole and the boundary poles. Make sure the workers understand where they should dump the soil. Then [the staff] should decide the size of the pit [for each work team] and the distance of soil transportation, based on the volume the levee requires, the soil properties and the level of underground water. The appropriate size for a regular pit is twenty by twenty meters, which amounts to a week of work for a team of twenty five…The location of the pit should move from far to close in relation to the levee. This will help to keep the workers' spirits up because the work appears to become easier over time, and it also prevents littering earth into the pits [on the route of transportation]."[45]

Wanghu's focus is on how engineers should rationalize the work procedure instead of how workers should rationalize their bodily movement. The rest of the description of work methods demonstrates the same focus, as exemplified in the section of dredging.

[44] Ibid, 30. "人才之盛, 冠极一时."
[45] Ibid, 35.

Compared to levee building, dredging is more labor demanding and dangerous because the workers often have to work in mud deeper than their knees. The *Record* explains in detail the variations of work procedure that could avoid the extreme hardship and inefficiency caused by such conditions. The common way of dredging a river entails opening a new riverbed adjoining the old river, and removing the narrow ridge between the new and the old riverbed when it is done. However, the regular earthwork procedure that digs out soil layer after layer in a regulated pit does not work quite well in the area so close to river—the water soon surges up to fill the whole pit. Instead of digging layer by layer, the engineers redesigned the procedure to be section by section. As the illustration below demonstrates, by moving away from the old river after each

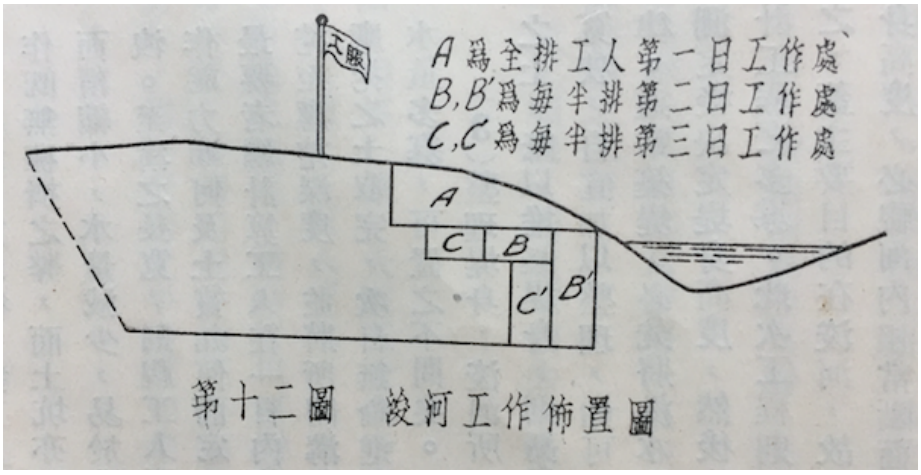

Figure 3. "Illustration 12, the work arrangement in river dredging."
Source: *A Record*, 43.

section's work, only half of the workers must work in the wet pit and an easy rotation could reduce the overall exertion. The wet pit, now having a narrow bottom, accumulates less water and is thus easier to drain. If the calculation is precise enough that the digging of one wet section can be done in one day, then there is no need to worry about how much water will spring up during the night. The work can simply move on to the next section the next day until the whole

new riverbed is prepared.[46] It is thus the engineers' reformulation of work procedure, instead of the labors' upgrading of their bodily control and physical force, that was considered the essential tool of problem solving.

In fact, the supervisors were advised to be cautious regarding the "ingenuity" of the peasant-workers. "There are certainly many honest and industrious people," the *Record* says, "alas, there are also sneaky and crooked ones."[47] The supervisors had to be particularly careful in the process of *shoufang* (收方)—measuring the pit and calculating the volume of the earthwork in units of cubic meters. The result number of *shoufang* determined how much relief grain the work team was entitled. There were many ways, according to the *Record*, that the peasant labors may trick the supervisor into wrong measurements. The most common trick was called "piping"—so named after the way tailors sew a strip of folded fabric to the edge of fabric—the workers could add a layer of earth around the border of the pit to make it appear deeper. "To the wide pit of earthwork," Wanghu reminds the readers, "a little increase in depth can make a big difference in the calculation of volume."[48] The *Record* recommended as many as five ways, including examination of the density of the soil and attention to the roots and leaves mixed in the earth, to inspect whether a pit had been "piped." A curved rather than flat pit wall or flooring was a telltale sign of fraud. Wanghu warned that in such instances, no measurements should be taken until the team rectifies their work.[49]

---

[46] Ibid, 43-44.
[47] Ibid, 48.
[48] Ibid, 48.
[49] Such "game play" among the workers, foremen and project managers is commonly seen in different social and historical context. James Toth shows that in Egypt, the migrant workers and their foremen undermined the state and enterprises' pursuit for efficiency through these tactics

From the engineers' point of view shown in the *Record*, little improvement of efficiency could be achieved through the intensification of muscle-powered transportation. It is true that building levees and dredging river were not much more than digging and moving all kinds of soil: hard clay, flowing sand, sticky mud, filthy silt, and the worst—the soil mixed with entangled roots and broken shells that caused many injuries. But without modern construction machines—as those operated by the workers of the TVA in the United States—the work pace was largely at the discretion of the work teams. Almost all tools were regular farming tools brought to the work by the peasant labors themselves. Although it was hoped that they could use more efficient ones, such as a dual basket carrying pole suited for one carrier instead of the large basket that took two, the Bureau could not dictate their choice of tools but "let it be."[50] The supervisors did conduct a time-motion study, but it was for the purpose of understanding the change of work conditions and readjusting distribution of labor accordingly. They set the distance of soil transportation at 200 meters and the team size at 25 people, and recorded the average time spent on digging, walking with the loaded basket, dumping, and walking back. The conclusion was at this distance, which is much longer than 50 meters—the project's average soil moving distance, there should be two more workers put in transporting and two fewer in digging.

---

and formed a resistance force against the state's developmental agenda. Toth's Egyptian ethnography serves as an interesting comparison to the Chinese case, especially that of the PRC. See Toth, "Manufacturing Consent and Resistance in Peripheral Production: The Labor Process among Egyptian Migrant Workers and Egyptian National Development, *Dialectical Anthropology*, Vol. 18, No. 3/4 (1993), pp. 291-335.

[50] Wanghu, *A Record,* 59.

There was no suggestion to enhance the pace of work through changing the workers' physical movement, nor any hint to request the workers to look for their own way to improve efficiency.[51]

In sum, the engineers considered the relief grain almost the sole incentive for the peasant labors. Not unlike the imperial officials, they thought appropriate conduct towards the poor peasants was an attitude of benevolence and vigilance. But the 1932 project was still a modern hydraulic project. Despite its dependence on premodern tools, it was part of a general redesign of a water system based on modern hydrological surveys and plans. As such, science and professionalism upholding national interest, declared the local interests selfish and unreasonable. The weakness of central power meant that this modern project could be easily compromised under the attack of adversary local powers. When CCP established a much stronger party state, many local political obstacles were removed. Both the engineers and the

[51] Ibid, 40-41. This is not to say that labor efficiency did not become a focal point for ROC modernizers. Janet Chen points out that labor in the service of the nation-state became "one of defining attributes of social membership" in the early decades of twentieth century that vagrants and beggars were sent to workhouses for redemption. See Janet Y. Chen, *Guilty of Indigence: The Urban Poor in China, 1900-1953*, (Princeton University Press, 2012), 3. However, the attempt to reform peasant labor was very limited in scale and focused mostly on education. See Kate Merkel-Hess, *The Rural Modern, Reconstructing the Self and State in Republican China*, (The University of Chicago Press, 2016). During the Second Sino-Japan War (1937-1945), the Nationalist and the Japanese-controlled governments did mobilize massive amount of peasant labor. Yet the extremely coercive wartime labor practice prevented whatever systematic, organizational basis needed for "scientific management" of peasant labor. See Kevin Paul Landdeck, "Under the Gun: Nationalist Military Service and Society in Wartime Sichuan, 1938-1945" (Ph.D., United States -- California, University of California, Berkeley), and Ju Zhifen, "Labor Conscription in North China, 1941-1945," in Stephen R. MacKinnon, Diana Lary, and Ezra F. Vogel eds, *China at War: Regions of China, 1937-1945*, (Stanford University Press, 2007). 207-226. In very special cases, Nationalist engineers in state-owned factories attempted Taylorist management, only finding themselves facing increasing labor alienation, indicating a failure in aligning the laborers' mind with the regime's agenda. See Joshua Howard, *Workers at War: Labor in China's Arsenals, 1937-1953*, (Stanford University Press, 2004).

peasant labors found themselves work on a familiar yet very novel terrain. The muscle power would be both valorized and bestowed with unprecedented strategic significance.

4, The Beginning of PRC Huai River Control

"In 1952, the project mobilized 2,272,958 peasant-workers 民工 and 22,690 technical workers. 195,731,000 cubic-meter of soil was manually excavated, and 600,000 cubic-meter river mud was dredged with motorized boats. 172 kilometers new waterway is constructed, and 963 kilometers old waterway was dredged. The project finished building 6 reservoirs, 5 lake retaining works and 22 floodgates. The soil excavated in both the Huai-River projects and the irrigation channels adds up to 400 million cubic-meters. If we (use this soil to) build a dam that is one meter in width and one meter in height, its length will be exactly the distance between the Earth and the Moon."

The Great Huai-River Control Project 伟大的治淮工程, 1952[52]

After the Central Government announced its "Decision to Fix the Huai River" in October 1950, it appointed a Huai River Control Committee led by some of the party's most hard-tested revolutionaries. Zeng Shan 曾山(1899-1972), the leader of the former Jiangxi Soviet in the 1920s, assumed the chairmanship. His associates Zeng Xisheng 曾希圣(1904-1968), Wu Zhipu 吴芝圃(1906-1967), Liu Chongguang 刘宠光(1902-1977), and Hui Yuyu 惠浴宇(1909-1989) were all military brass hailed from the four provinces of Huai River region and had become leaders of these provinces. The Secretary of the Committee Wu Jue吴觉(1912-1984), directly overseeing the daily operation of the project, was the commander of the CCP's guerilla force in northern Jiangsu. Among all members of the Committee's leadership, Wanghu Zhen was the only one with a background in engineering besides Qian Zhengying 钱正英(1923-2022)—

[52] Huai River Control Committee 治淮委员会, *The Great Huai River Control Project 伟大的治淮工程* (Shanghai: Hua dong ren min chu ban she, 1952), 1.

the rising star of Chinese hydrology who was then a 27-year old Communist Party member.[53] Wanghu was appointed the head of the Engineering Department, with Qian as his associate.[54] A committee so composed was to maximize the mobilizing power on the ground and to ensure that the Huai River project fulfilled the political agenda of the young People's Republic.

The project was launched before there was a comprehensive engineering design. From the outset, one thing was clear. The new Huai River Control project was not going to simply finish what the Nationalists had begun. The overall strategy was to be radically revised, following the advice of the Soviet hydraulic expert. The new plan had three components. Besides dredging the river course and building agricultural irrigation works in the mid and downstream, the new priority was to "store the flood"蓄洪 in the upper and midstream. "This will not only diminish the harm of the flood, but also provide resources for irrigation, navigation and electricity generation."[55] This radical change of strategy was a gift from the Soviet big brother. The committee members and cadres profusely expressed their gratitude, on behalf of the people of Huai Region and of China, to the Soviet expert Bukov (буков in Russian).[56] who proposed this new strategy. "Water," he said to his Chinese comrades, "is considered national wealth by the soviet people. We should never let any drop of water flow to the sea before making full use

---

[53] *Gazetteer of Huai, Vol.6 Management,* 19.
[54] Qian Zhengying, "Preface," *Essays in Memory of Wu Jue 吴觉纪念文集* (Southeast University Press, 1989) 1-2.
[55] Division of Political Propaganda in the Huai River Control Committee 治淮委员会政治部宣教处, "Deputy Director Zeng Xisheng's Work Report at the East China Military and Political Committee in November 1951 治淮委员会曾希圣副主任一九五一年十一月在华东军政委员会上的工作报告," *Photographs from the First Year of Huai River Control Project 治淮第一年工程图片集*, (Hua dong ren min chu ban she, 1952).
[56] The full name of Bukov is not provided in any documents available to this author so far.

of it."[57] To a new regime facing a severe shortage of resources, this struck as a more appropriate and desirable solution.[58]

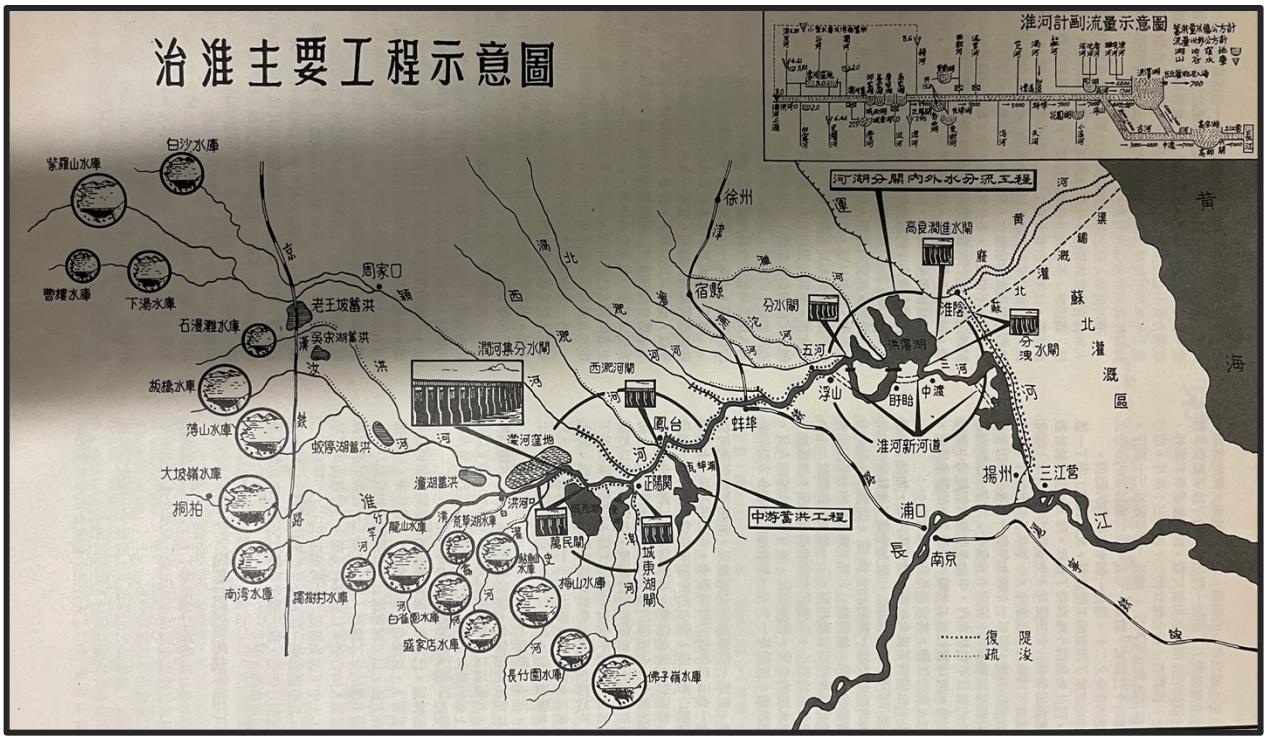

Figure 4. Plans for Huai River Control. ***Source: Zhihuai diyinian gongcheng tupian ji*****, 1950**

Giving Huai River its own mouth to the sea was thus removed from the new plan on Soviet advice. This became a focal point of disagreement between the Chinese hydraulic engineers and the Soviet expert. Bukov's opinion gained the ground with the CCP party officials. But the discontented Chinese engineers derided Bukov as "the Communist hydraulics salesman."[59] They also distrusted his proletariat background and his less-than-ideal credentials.

[57] Liu Xiushan 刘秀山, "Learning the Advance Experience from the Soviet Union, and Learning the Work Spirit of Comrade Bukov 学习苏联的先进经验，学习布科夫同志的工作精神," *Zhi Huai* (1952) no.7.
[58] The same urge is manifested in Yellow River Plan. See David Pietz, *The Yellow River*.
[59] Zhang, *Inside the CCP's Huai Control Project*, 49.

The suitability of Soviet experts to China's needs came to the attention of historians of Sino-Soviet relation only recently. Historian Shen Zhihua found that the Soviet Union put class background and political reliability as the primary criteria in selecting the experts they would send to China. But Shen believed that soviet experts truly did possess technical expertise that the PRC sorely needed, and contributed greatly to the PRC's early development of technology and industry.[60] Austin Jersild, in his excavation of archives from China, Russia, Czechoslovakia, and GDR, brought to light abundant—although at times anecdotal—evidence of the inadequacy of the competence, cultural sensitivity and understanding of the Chinese condition on the part of the Soviet and bloc experts. Thomas Bernstein insightfully points out that much of the Sino-Soviet problems arose from the fact that the two countries were at different stages of state socialism. The experts sent to China in the 1950s hailed from a system of "bureaucratic, middle-class Stalinism," which were profoundly in conflict with the Maoist effort to maintain and foster revolutionary values. The Huai River case proves the complexity of the problem addressed from different aspects by the above scholarship, it particularly highlights the evaluation of the effect of Soviet aids should not be limited to projects with comprehensive support—such as Changchun Automobile Factory—but also the numerous projects where Soviet authority looms much larger

[60] Shen Zhihua, *Soviet Experts in China*, 2003. Shen discusses how Chinese economy and industry benefited from the "Soviet teachers" in 1949-1953. See 116-133. Shen and other Chinese historians on Sino-Soviet relationship have largely focused their research on the high-level communications. For example, Kong Hanbing 孔寒冰, *Leaving the Soviet Union: Sino-Soviet Relations and Its Impact on China's Development 走出苏联:中苏关系及其对中国发展的影响*, (Xin Hua Press, 2011). Austin Jersild provided a different approach to this history by examining the "everyday life" of Soviet and East European experts in China. See Jersild, *The Sino-soviet alliance: An international history*. University of North Carolina Press, 2014.

than their capacity to aid the design and execution, and the heavy cost of this pattern of soviet aid and Sino-soviet collaboration.

The engineers might grumble, but a willingness to work within the Party's political line was essential for their continuation of professional practice. Wanghu Zhen demonstrated great understanding of the circumstance when he published an article in the Zhihuai journal: "Study the Soviet advanced experience, ensure the completion of Foziling Reservoir" in 1952. As the chief engineer of Foziling dam—one of the largest constructions in the midstream section—Wanghu adopted a multiple-arch structure previously only used in the United States. With the help from Liu Chongguang and Wu Jue, Wanghu managed to convince Bukov and the party secretary of the committee, even though many among the leadership had an uneasy feeling about the novel design.[61] However, no trace of disagreement can be found in Wanghu's article. Instead, he praised the generous support from Soviet Union, the rigorous research attitude of the Soviet expert, and the various advantages of Soviet-made machines. "If it could be said that the Volga-Don canal is the construction of communism, then our Foziling reservoir is the pioneer of socialist construction in a New Democratic society. To accomplish this task while ensuring safety and economy, there is no other way but humbly studying from the Soviet Union."[62]

William Kirby has argued that at the high-level of central planning, the PRC largely inherited the ROC's blueprint. The continuity of centralized state building from ROC to PRC was ensured by retaining personnel and the institutional knowledge taken over by the

[61] Anon, "A Brief Biography of Wu Jue 吴觉传略," *Essays in Memory of Wu Jue*, 3-10.
[62] Wanghu Zhen, "Study the Soviet advanced experience, ensure the completion of Foziling Reservoir 学习苏联先进经验保证佛子岭水库完成" *Zhi Huai* (1952) no.8, 13.

Communist Party at its victory.[63] Thinking with the continuity thesis, one may assume the change of Huai Control designs was a result of following the hydraulic engineering trend of the mid-century global. However, it is evident that the Soviet approach was not a mid-century development. The "not a drop of water" principle had become popular very early in the century and been widely adopted by state builders around the world.[64] In other words, the ROC Huai Control designers were not ignorant of the large dam engineering but considering it unfit to solving the Huai River problems. Moreover, we cannot overlook the radical reconfiguration of the socio-technological system and the significant change in technological style. The disparity in the social and political structure, the labor process, and even the success or failure of the engineering had crucial historical consequences. At the very practical level, there was no longer disruption of the central plan by the local private interests but, instead of enjoying more autonomy, the engineers were brought much closer under the Party's scrutiny. Wanghu was often excluded from the communication with the central leaders, while Qian Zhengying—nominally his associate—was listed in reports addressed to Mao and Zhou. It is unclear why Wanghu was directly in charge of only the Foziling reservoir, and the other three large reservoirs

[63] On PRC's inheritance of technical experts, institutions, and plans from previous regimes, see William C. Kirby, "Continuity and Change in Modern China: Economic Planning on the Mainland and on Taiwan, 1943-1958," *The Australian Journal of Chinese Affairs* 24 (July 1990): 121–41; Morris L. Bian, *The Making of the State Enterprise System in Modern China: The Dynamics of Institutional Change* (Cambridge, MA: Harvard University Press, 2005); Julia C. Strauss, *Strong Institutions in Weak Polities: State Building in Republican China, 1927-1940*, Studies on Contemporary China (Oxford: New York: Clarendon Press; Oxford University Press, 1998); Victor Seow, *Carbon Technocracy: Energy Regimes in Modern East Asia*, Studies of the Weatherhead East Asian Institute, Columbia University (Chicago; London: The University of Chicago Press, 2021).

[64] Erik Swyngedouw, *Liquid Power, Contested Hydro-Modernities in Twentieth-Century Spain*, (The MIT Press, 2015).

were left to the 27 year-old Qian. One might not be too wrong to believe it was a combination of Wanghu's self-preservation strategy and the leadership's reserve towards his background led to such arrangement. In fact, Wanghu may be seen as exceptional in his ability to adapt to new political situation. Not every engineer was able to accept the Party's terms. Zhang Zhaofeng, the author of *Inside the CCP's Huai Control Project* fled mainland after working at the Huai as an engineer. The book was published in Hongkong soon after he left the job. Besides expressing indignation towards the Communist cadres' lack of technical knowledge, excessive penchant for grandeur, and coercive treatment to the people, Zhang lamented that under the CCP the engineers could no longer "stay away from politics"[65]—an condition that engineers had been used to under the Nationalist government.[66] If the change in engineers' practicing environment challenges the continuity thesis, the disruption seems to be even more profound, when we turn our examination towards the building of a socialist labor regime.

5, Labor Mobilization

From late 1950 to early 1953, Huai Control occupied a central position in the policy making and resource allocating of East China. At the establishment of the Commission, cadres

[65] Zhang, *Inside the CCP's Huai Control Project*, 2.
[66] William C. Kirby, "Engineering China: The Origins of the Chinese Developmental State," in *Becoming Chinese*, ed. Wen-hsin Yeh (Berkeley: University of California Press, 2000), 137–60, For an explicit argument for the 1949 rupture from the perspective of personnel, see Deborah Davis, "Social Class Transformation in Urban China: Training, Hiring, and Promoting Urban Professionals and Managers after 1949," *Modern China* 26, no.3 (July 2000): 251-275. Davis argues that the urban professionals, although never fully independent of under the GMD, became fundamentally dependent on the party-state after 1949. "A potentially multifaceted, semi-independent urban middle class was reduced to a politically subordinate stratum of the civil service, systematically denied the irregular and unsupervised social spheres that had earlier served as the incubators of political and intellectual diversity and heterodoxy." 271-272.

were drawn from all around the country to the Huai. All new college graduates in East China were directly sent to the river and more senior students were assigned to intern on the various work sites. Two hydraulic work corps were dispatched from the Liberation Army. Construction teams, newly recruited by the Commission or belonged to large contractors, came to station in the area. Tens of thousands of prisoners were put into the river work. But the largest scale of mobilization came to the peasants.[67]

The mobilization of peasant labor in 1951 began without a targeted number. Since national stability had not been fully secured, the priority was to make sure that the crisis in the Huai River region would not spill out to other areas, especially to the lower Yangtze. The goal was to absorb as many able-bodied men as possible, and a good portion of young women, to the river control project. Armies were drawn from the East China and Middle-South Military Districts to surround the areas most damaged by the flood to prevent the flight of refugees.[68] At the beginning, as is usually the case, recruitment was not difficult. The prospect of getting relief grain and the absence of other survival options made more than two million starving peasants sign up for the work. However, being so massive and so poorly prepared, the project soon turned out to be another disaster for many of the peasant labors. The poor logistics of grain supply and the horrid living condition on the construction site took a huge toll of lives.[69]

---

[67] Yao Bangyi 姚榜义, "He could have made more contributions to water conservancy 他应为水利多贡献," *Essays in Memory of Wu Jue*, 167.
[68] Zhang, *Inside,* 8.
[69] Actual mortality rate is probably impossible to acquire. According to Zhang Zhaofeng one of every ten labors died on the work in the first year of Huai River Control. See Zhang, *Inside,* 71. This could be a great exaggeration. But judging from the tone in the discussion of preventing high mortality in 1952, the situation of 1951 must have been disastrous.

Little information about the first year of Huai River Control is accessible to researchers. The project's official archives are kept under the Huai River Control Committee—an organization still exists today—and the published materials are mostly propaganda in nature. However, we can still get a good picture of the early years of Huai Control through a careful reading of its internal journal, *Zhi Huai* 治淮, published by the Committee of Huai River Control. Started in early 1952, the journal continued for eleven issues before stopped in the middle of 1953, and it was not resumed until 1984. The articles in the journal include the committee leadership's meeting speeches, reports written by cadre-correspondents of various levels from construction sites and surrounding areas, and articles that are technical in nature. The high praise of the great achievement of Huai Control was the major tone of the articles, they were nonetheless mixed with cacophony of criticism of excessive failures and irremediable mistakes. The journal's readership was clearly the tens of thousands of cadres and members of Communist Party and Youth League working on the project. It mainly provides instructions to how to properly conduct their "political work," which encompasses much of the mobilization and management of the peasant labors, but it also offers technical advice, such as how to *shoufang*—measure and calculate the volume of earthwork in metric meters—when the pit was of an irregular shape. As such, the methodology adopted by this author to read the Zhi Huai journal articles often engages "reverse engineering"—to see the problems through the discussion of solutions. But at the same time, my analysis is less focused on revealing the dark secrets but to understanding what this massive project—disastrous in many ways—intended to achieve.

The recruitment of labor in late 1952 was much more challenging for the cadres. In 1951, northern Anhui had one of its best harvests in decades, thanks to the perfect weather and the fertilization of land by the 1950 flood. The peasants were no longer desperate for relief grain. Entering autumn 1952, consecutive heavy rains again swamped farmland in many areas. Peasants pleaded to stay home to fix the swamp instead of being dispatched to some construction sites far away. There was also a shortage of experienced rank-and-file cadres because many of those who had worked on the 1951 Huai Control efforts were now assigned to other parts of the country where their valued experience could be put into broader use.[70]

The main mobilizing tool was the establishment of mutual-aid teams. "The independent households are difficult to mobilize," it was said, "those in mutual-aid teams are much easier."[71] The MAT, as an elementary form of agricultural collectives, was promoted across the country at this moment. From then on until the mid-1960s, agricultural collectivism was used as an effective platform to draw rural labor to infrastructural constructions and urban industries with little or no cost of the state. Mobilization for Huai Control was a dress rehearsal for the much broader labor re-allocation later. While the ROC river control project had to rely on raising the quota of relief grain to retain the necessary labor, the new form of collective production drove the peasants to river work by promising them that their land would be attended by those left

[70] Liu Xiushan, "Summary of the political work in the second project year and the key points of political work in this winter and next spring 第二年度治淮政治工作总结及今冬明春政治工作要点," *Zhi Huai* (1952) no.6.

[71] The work group for experimenting on peasant workers mobilization and organization in the Political Division of Huai Control Committee 淮委政治部动员组织民工试验工作组, "Several thoughts on the work of mobilizing and organizing peasant workers from Qimiao Xiang of Lingbi County 灵璧七庙乡民工动员组织工作的几点体会," *Zhi Huai* (1952) no.6.

behind.[72] As it turned out, it was mostly women who had to carry on both the agricultural and the sideline production when the men were away on the river.[73]

The Commission urged that the mobilization must reach to the bottom layer of rural organization—not the village but the level of the executive team 行政组. Gone was the district chief in the Republic who controlled the roster and wielded it as a weapon against the central power. The target number of Huai Control recruitment in 1952 was set at ten percent of the entire population of each village or sixty percent of all able-bodied labor. Noticeably, this is not a number based on the need of the river control but on the upper limit of what the village could theoretically bear to continue agricultural production. The focus on the full-powered labor—men in age between eighteen to forty-five—and recruitment at such high percentage would absolutely hurt the agricultural production.[74] A recruitment policy as such could only be understood as based on a dual of priorities: the need for a rapid completion of Huai Control and the mass reform of the peasantry in the North Huai region.

The peasants were again asked to bring their own tools. But this time the government decided there must be some standards for tool preparations. “The cadres in villages need to know what types of tools are best for the [specific] project,” the Committee’s instruction on peasant

[72] In fact, many “MAT” did a poor job to take care the absent peasant workers’ crops. See xx. In 1953, the project had to raise the peasant workers’ wages from 0.4 to 0.6 per labor per day. To reduce the negative impact on agricultural production, it was decided that the recruitment was to be limited to 3-4% of agricultural population. See *Gazetteer of Huai*, vol.6, 48.
[73] This becomes a general pattern for the collective period. See Hershatter, *Gender of Memory*, on feminization of agriculture.
[74] The Division of Political Work in Huai Control Committee 治淮委员会政治部, “Instructions on the mobilization and organization of peasant workers in this winter and next spring, Oct 11, 1952,” *Zhi Huai* (1952) no.6.

mobilization reads, “and have a good understanding of what and how much the mass could bring.”[75] To prevent inadequacy and unsuitableness of tools, the county level River Control organization should work with the local cooperatives to prepare tools for the peasants. This would guarantee that more efficient tools would be used in the work. For example, the much preferred dual baskets for one carrier could replace, as many as possible, the wide basket for two carriers—a replacement that the 1932 engineers had no power to enforce. But the peasants should not “develop a mindset of dependency,” the cost of the tools would be deducted from their own payment.[76]

Despite all difficulties, nearly two and half million peasants were drawn to the River Control in 1952. They left their villages in unit of teams, seen away by their villagers in a cadre-arranged “warm farewell ceremony.” They carried with themselves food for the road. Many were wearing their only winter outfit—knee-long cotton-padded gown and rimless felted hat, which will also be their work garment for the next few months. They marched along the routes designated by cadres, stationed in the midway under the watchful eye of Liberation Army soldiers, and arrived at the river in the cold wind of November.

6, The Work Methods

Photographs of Huai Control project like to feature the expansive construction sites: on the horizon is the light shadow of the far, low hills. Moving closer to where things are more visible, a row of flying flags marked the edge of the construction site that stretches far beyond

[75] Ibid.
[76] Ibid.

the left and right sides of the picture. Within this wide area everything is the same color—the color of the soil. But the earthy surface is full of texture: The levees and the ditches are the wrinkles, the evenly spaced earth columns decorated the wrinkles like buttons decorated the fabric; Where the fabric is flatter, countless small objects gathered into groups—even a close look cannot fully distinguish which is a pack of workers and which is a pile of dirt: this is the earthwork pit where the diggers and what they dig all mixed together. The carriers are easier to discern: starting from the pits, hundreds of them closely follow each other in a few parallel lines towards a direction outside of the picture.[77]

However, such image of "sea of people" may have obscured inquiries about subjectivity in Maoist China, what went on along Huai River was primarily the making of new socialist subjects. This new subjectivity is produced through reformulation, re-codification and reconceptualization of the relations between human and tools and between human and human. The material aspect of this interface is largely old and traditional, but the physical aspect, in terms of the use of tools and human bodies, is transformed, intensified, and bestowed with new meaning. The end product is a new kind of labor. They are supposed to be able to diligently reflect on their own work while exerting their physical power to the tolerable limit. They are apt to most minute, intensive body-tool coordination and body to body collaboration. They should never fail to share and always be eager to learn. Most importantly, they must identify with the goal of socialist construction. Not only would the old "peasant consciousness" be shattered in the

[77] *Photographs from the First Year of Huai River Control Project*, 1953.

Huai Control construction site, but peasants would be nurtured into the more efficient agricultural producers needed by the country's development.[78]

The centerpiece of all the subject-making programs of the PRC's first large hydraulic project was the formulation and promotion of "work methods." Often credited to a peasant worker or a team, these work methods were meant to overcome difficulties and increase labor efficiency of a specific operation in earthwork. For example, there were "crisscross digging method," "tiger-tail soil cutting method," "basket relay method," "subgrouping sand-transporting method"— the list is in fact endless.[79] These methods, as I will show later, significantly intensified the labor of muscle-powered transportation and enforced a compulsory work rhythm mimicking the condition of mechanization. The relentless promotion of the work methods was a form of enchantment. As Alfred Gell describes, the technologies of enchantment are psychological strategies that "enchant the other person and cause him/her to perceive social reality in a way favorable to the social interests of the enchanter."[80] Work methods campaign encouraged labor's creativity, discipline, and devotion. The articulation of the work methods by the cadres and the peasant-workers' nominal ownership to the methods shaped a Maoist cadre-mass relationship that aimed to introduce the laborers as the representative of the national

[78] "A Review on the Question of Promoting the Study of Zhu Huaishun Team's Work Methods 关于推广学习祝怀顺小队工作法问题的研究" *Zhi Huai* (1952) no.4, 9.
[79] Various work methods are a common themes of *Zhi Huai* article. Examples include: Henan Huai Control Youth League Workers Committee 河南省青年团治淮工委会, "Reports on basic situation of the Youth League's work in the last winter and tasks in the construction work of this spring 关于去冬治淮工程中团的工作的基本状况和今春施工中青年团的任务的总结报告," (1952) no.1, 11; "Continue to advance after the victory 在胜利的基础上继续前进," (1952) no.3, 10. "Carry on the Patriotic Productivity Enhancement Competition Campaign to the nest step 进一步开展民工中的爱国增产竞赛运动," (1952) no.9, 16.
[80] Gell, "Technology and Magic," 7.

interest. The very process of promoting the work methods, I argue, was as essential for the cadre-making as for labor producing.

The promotion of work methods centered on a focused study of the Zhu Huaishun Team. It could be said that the Zhu Huaishun Team Work Method was the core of the entire campaign. Other methods were often described as enthusiastic responses to the Zhu-Huaishun-Team Work Method—evidence that the peasant laborers' creativity had been widely stimulated. In fact, the impressive variety of the work methods mostly only had their names mentioned in the propaganda. But ZHT Work Method was introduced to all construction sites along the Huai River in forms of published articles, printed pamphlets, oral introduction, and physical demonstration. It is in these materials and activities a methodization of muscle-powered transportation—and based on which an attempt to reform the mind and body of the labor—are clearly displayed.

In April 1952, the Committee of Huai River Control dispatched an officially titled "the Small Group for the Summarization of Zhu-Huaishun-Team Work Methods" to the work site of Zhu Huaishun Team. This small group consisted of representatives from the CHRC Engineering Department and Political Department, Youth League of Anhui Province Huai River Control Committee, Political Department, the First Brigade, and the Sixth Branch of Huaiyuan County Huai River Control Division. Liberation Daily also sent their journalist to participate in the summarization. After seven-day close observation and research, they presented an article "Summary of the Work Methods of Huai-River-Control Peasant-Worker Zhu-Huaishun Team,"

which was published in all media of the Huai Control project, including *Zhi Huai* journal.[81] The Summary, occupying four full pages, was the longest among all articles of *Zhi Huai* in 1952 and 1953 issues. The introduction of the article included the Committee's directive, which reads:

> "The Zhu-Huaishun-Team Work Methods are the correct methods. Huai River Control Authorities at all levels should promote them with full speed and strength. Promoting this Methods will allow us to achieve greater results in the Patriotic Increase Production and Practise Economy Campaign and Labor Competition Campaign. It will lead to the emergence of more model workers, model work units and progressive work methods. Our promotion of this work methods must engage deeply with the political education of the masses of cadres, workers, and peasant-workers. It is for overcoming the conservative ideas and complacency among some part of the mass."[82]

To begin with, Zhu Huaishun and his team members had the right class background. They were twenty men from Huaiyuan County. The team leader Zhu Huaishun was a Youth League member. Most of the team members were poor peasants and middle peasants. Their tools include three shovels, three spades, a rake, 18 carrying poles, 16 baskets, and 12 rope-nets. According to the Summary, since they started using the new work methods in the Increase Production and Practice Economy Campaign, the same men with same tools had doubled their average daily earthwork output from $0.94m^3$ to $1.82m^3$. All this was achieved as the work conditions became more challenging—to be specific, "the distance of transportation remains same (120m), the content being more difficult to load and transport (formerly it was yellow sand soil and white sand soil, later it was greasy mud, black soil and silt), and the degree of slope is higher." Throughout the Summary, quantification of labor efficiency is accompanied by detailed notes on worksite conditions—distance of transportation, soil properties, and degree of slope of

[81] "Summary of the Work Methods of Huai-River-Control Peasant-Worker Zhu-Huaishun Team 治淮民工祝怀顺小队工作法总结 (Summary)," *Zhi Huai* (1952) no.4, 1-4.
[82] Ibid, 1

the transporting routes. This allows the Summary to not only prove the methods' authenticity and adaptability to Huai River work conditions, but also turn the labors' bodily practices into a set of transferrable technologies.

The first characteristics of the ZHT Work Methods, the Summary says, is it "strives to rationalize the labor coordination and not let any labor power go waste." This is primarily manifested in their rearrangement of labor task:

> "Formerly, the work distribution within the team was as such: fourteen men paired up into seven soil-carrying duos; four men were charged of loading baskets for them; the rest two cooked for the whole team. Every five days, two workers were spared from earthwork to go fetch the grain for the team, one to buy living essentials at the nearby market. In sum, the labor used in cooking, grain fetching and shopping—the unproductive labor—took 13% of the labor of the entire team. Lately, they made some careful calculation and eliminated the extra labor used in the soil loading and cooking. They also reduced the frequency of shopping. After the redistribution of labor, the team now has eight soil-carrying duos, three soil loaders and one cook on the daily basis. Every five days one labor is used for fetching grain. Every twenty days half-day of a labor is used for shopping in the market. Thus, the miscellaneous labor is reduced from 13% to 6%. By just reducing one soil loading labor and one cook and adding one more soil carrying duo, the work efficiency is increased by 14%."[83]

Moreover, the Summary praised, the Work Methods are always adjusted to the changing work conditions. For example, different soil properties require different loading methods. Zhu and his team analyzed the characteristics of the soil of their work sites and separated them into seven different categories and developed different techniques accordingly. For example, when digging "moist sandy soil containing small amounts of mud," one should insert the shovel vertically first, then on the second move stick the shovel in obliquely from the side. With stable hands, move the soil into the basket, and avoid littering the dripping mud. For "silt-sand layered soil," the technique is to claw a big chunk off with the rake, then move it into the basket by hand.

[83] Ibid, 2.

The shovel is not suitable here because it can break the soil into small pieces and make it difficult to load. “[Here] using the rake is 30% more efficient than using the shovel.” The technique for digging hard yellow clay is totally different: two men use one shovel to combine their strength. While one person holds the handle, they both push down the shovel blades simultaneously with their feet. “One person solely is not enough to deal with this kind of soil. It will be too inefficient.”[84]

It is said that “there is no light load for a long road,” but Zhu’s team eased the exertion by streamlining the carrying and moving of the soil. First, they bind the baskets tightly and hang them from the middle point of the pole. the two carriers walk parallel to each other with the pole being diagonal to their walking direction. Their steps need to be coordinated and the pole should be allowed to bounce lightly in pace with their steps. They also created an extremely efficient way to relay the burden that is indeed a sequence of intricate and precise choreography: A duo with the emptied baskets meet a duo with loaded baskets in the middle of the transportation route. The former lifts the light pole above their shoulders and turn their bodies around so that the light pole and the loaded pole are met. They then move their shoulders beneath the loaded pole. At the same time, the other duo takes the light pole with their hands, so the baskets need not to touch the ground. “Observation shows that with this method it only takes two seconds to complete the relay—four seconds faster than using the previous method.”[85]

Besides adapting to specific situations, the Team made, and kept up with, their own work plans and rules. However, the examples given in the Summary seems strange on the first reading.

[84] Ibid, 3.
[85] Ibid, 3.

For example, when introducing their worksite arrangement, the Summary says: "The Team has encountered two kinds of worksites: 0.2m wide per person and 1m wide per person. For the narrow space of the former, to avoid overcrowding of both men and tools, the team should work in a stair-shape formation. The whole team is divided into several units that each has several carriers and diggers. For the latter, they will form a horizontal line and dig while moving backward."[86] What needs to be noticed here is the fact that the extremely narrow workspace—less than half of the width of an adult man's shoulder—was not allowed to be a reason to reduce the number of workers in the pit. A stair-shape formation may reduce the chance to hurt each other with the wavering spades, but such a narrow confinement is certainly detrimental to efficiency as Wanghu Zhen pointed out in his 1932 Report. What is demonstrated seemed to be their willingness to work with conditions and discipline requirements not in their own control, more than their ability to "making good plan and keeping with it."

The value of the ZHT Work Methods, the Summary points out, lies not only in that it helped to save labor power and increase labor efficiency, but more importantly, it fueled the labor mobilization endeavors with "solid content." Without content of such practicality, the labor competition campaigns tended to either produce more buzz than results or lead to simply over-taxing the laborers.[87] The ZHT Work Methods had, the Summary cheerfully announced, raised a wave of enthusiasm for innovation among the workers. Evidently, some teams finally gave up their insistence of using wide basket and adopted the more efficient duel small baskets. More importantly, the ZHT Work Methods provided the cadres a stronger foothold among the peasant

[86] Ibid, 3.
[87] Ibid, 4

workers. “They no longer feel that there are not much for them to do other than encouraging the peasant workers to ‘give it gas.’ Instead they are busy themselves with summarizing and promoting advanced practice and examining the results of the competitions.”[88] Cadres from organizations of all levels in the Huai River Control project are now “able to enter deeply into the base-level labor units, to understand the key points of the work, to promote and study advanced practices and work methods, and to improve and elevate the level of technology by giving timely work instructions.”[89] The ZHT Work Methods, although named after a peasant worker, was squarely in the hand of cadres. It provided cadres with knowledge that they otherwise did not have or had less of than the labors whom they supposed to lead.

That the work methods empowered cadres more than peasant workers was also undergirded by linguistic strategies—the mobilization of the representational power of numbers and mnemonic rhymes [*koujue*]. The excessive rhetorical obsession with numbers in everyday bureaucratic and propaganda work was a prominent feature of planned economy. At the macro level, it was part of the statistical practice that PRC insisted on; at the micro level, as manifested here, it elevated cadres’ authority by allowing them to substantiate their claims of facts.[90] The understanding of soil properties and the creation of soil transportation choreography certainly belonged to the peasant workers, but their value could only be verified through the observation and calculation done by the small group, who had the power to give the workers’ operations an

[88] Ibid, 4.
[89] Ibid, 4.
[90] On the fetishization of numbers in socialist China, see Arunabh Ghosh, *Making It Count: Statistics and Statecraft in the Early People’s Republic of China*, Histories of Economic Life (Princeton: Princeton University Press, 2020),

efficiency rating and turned them into measurable steps in the large project of socialist construction. One example was the categorization of seven techniques corresponding to seven types of soil. The body movements were originally the laborers' improvisation—based on embodied experience with soil. Yet through categorization and codification, the cadres translated them into planned motions suitable for pedagogical purposes. Similarly, the mnemonic rhymes were made terse and simple, ostensibly assuming an earthy speaking style. However, the mere quantity of the mnemonic rhymes and their resemblance to mobilizing slogans clearly show that cadres were the authors—and the main users—of these rhymes. The rhymes that describe physical movement—for example, "To dig the flowing sand, shovel it with light hand; push in straight forward, and lift up with sturdy hold"[91]—were pedagogical devices that allow cadres to assume the role of a teacher in their interaction with peasant workers to lead the labor competition campaigns.[92]

The broad promotion of ZHT Work Methods soon produced a boom of work methods. The celebratory articles in *Zhi Huai* journal demonstrate that the promotion had two agendas: improving standardization and boosting innovations. Given that earthwork is low skill yet requires great variance in techniques, these two are in fact complementary instead of paradoxical. The exalted examples of "learning the ZHT Work Methods" are from those who purportedly observed and replicated ZHT methods and went on to develop their own that suited their work conditions. In fact, ZHT Work Methods were not meant to serve as the template for

[91] "Summary," 3. "挖淌沙，下锹轻，向前推，端锹不猛"
[92] On traditional labor chant and rhymes, see Igor Iwo Chabrowski, *Singing on the River: Sichuan Boatmen and Their Work Songs, 1880s - 1930s*, China Studies (Leiden; Boston: Brill, 2015),

standardization, but a model of pursuing standardization. The peasant workers were encouraged to not only learn from ZHT, but also other teams, and even members in their own team. The goal of the campaign was to create an environment in which any regular worker could aspire to have a method named after him or her if it was worthy of being followed by others and becoming collectively practiced. The attitude of self-observation and reflexivity, of constant striving for improvement was more important than merely exerting their physical power. On the other hand, those who thought that ZHT Work Methods were nothing special or inferior to their own ways—in other words, working without participating the Campaign—were criticized for holding "conservative and passive" attitude, nor would their methods be named after them.[93] The effect of the learning and creating work methods on the enhancement of labor efficiency was extraordinary. According to the Commission, because of "the surge of patriotic enthusiasm among the peasant-workers, and particularly the promotion of advanced work methods," the volume of earthwork completed in the second year of Huai Control (late 1951 to early 1952) doubled that of the previous work year, with less than 20% increase in the number of peasant workers—a nearly 70% growth in labor efficiency.[94]

[93] Liu Xiushan, "Summary of the political work in the second project year and the key points of political work in this winter and next spring," *Zhi Huai* (1952) no.6, 4-8.

[94] Zeng Shan, Zeng Xisheng, Wu Jue, Qian Zhengying, "Reports on the second year of Huai River Control Project by the Huai River Control Committee 治淮委员会关于第二年度治淮工作的报告, Aug 13, 1952" *Essays in Memory of Wu Jue*, 101-105. Note that Qian instead of Wanghu was listed as an author despite that Qiang was officially Wanghu's associate. Wanghu was relied upon for his engineering expertise but excluded from communication with the central government. The report was addressed to the Ministry of Hydrology and forwarded to Mao Zedong, Zhou Enlai, Midsouth Military and Political Committee and East China Military and Political Committee.

But more fundamentally, the promotion of ZHT Work Methods was deemed an important tool to reform the "peasant mindset." Its purpose was far more than training better earthworkers but nurturing a new kind of peasanthood. The Committee emphasized that learning the ZHT Work Methods would not only "reform the peasants' small-producer conservative mind," but also "build a solid base for agricultural mutual aid and the spreading of advanced agricultural technologies in the future." This is evident when the Committee asserted that it was as important to promote ZHT Work Methods among workers who did not use carrying pole or even participate in earthwork.[95] The Baisha Reservoir project in Henan was equipped with better transportation tools—thanks mainly to state investment—including mining cars and wheelbarrows. "Since they learned the ZHT Work Methods," Wu Zhipu, the Governor of Henan Province, and a member Huai Control Committee, said in his speech, "the operators of mining cars created a 'load-push rotating method' which had increased labor efficiency by 80%."[96]

The conviction that the ZHT Work Methods were conducive to the preparation of a new kind of agricultural labor force may account for the contradictory attitudes towards its promotion among the technical workers. Among the carpenters, builders, machine operators and electricians, the majority were young peasants working under the guidance of experienced workers. Some of the leadership, trying to ride the momentum of the campaign, argued that those on technical jobs should also grasp the ZHT Work Methods. "Studying ZHT Methods is about studying its spirit of learning from others to improve yourself, of analyzing and researching, of

[95] "A Review on the Question of Promoting the Study of Zhu Huaishun Team's Work Methods," *Zhi Huai* (1952) no.4, 9.
[96] "Chairman Wu Zhipu's report on fourth Huai-Control conference of Henan Province, 吴芝圃主席在河南省第四次治淮工作会议上的报告," *Zhi Huai* (1952) no.6.

creating new and advanced practice." One article so claimed.[97] If doing so had improved efficiency in earthwork, it would also improve efficiency in technical work. As such, the fact that ZHT Methods were from the work of lowest level of technology in Huai Control is not its disadvantage, but a great advantage because it could be understood by almost anyone on any job. Those enjoying better technology had no reason to perform worse. However, an implicit criticism to this approach was raised by Wu Zhipu in his speech. Wu emphasized the class leadership of the workers. While reliance on peasants was correct and necessary in low-technology task such as earthwork, many tasks of reservoir building—concentrated in Henan—required higher technologies. "[So far] We do not have a clear idea on how to rely on our workers," Wu said somberly, "[this shows] we are not yet clear how to industrialize our country and how to build our infrastructures."[98] The consequence of the rush to build dams without finalized designs in 1951 had already became clear in 1952. All reservoirs were having serious "leftover" problems. Wu mentioned that the tunnel of Baisha reservoir collapsed several times since last year; the base of the Banqiao reservoir's dam was leaking with muds; as for the Shimantan Reservoir, the problems were so "numerous" Wu did not even want to get into the details. The graveness of the situation pressed the Henan Party Secretary to reflect on the inadequacy of the current approach.

Despite Wu's concern, the promotion of ZHT Work Methods expanded to all those working on Huai River. Whether the ZHT Work Methods offered practical help was only of

[97] "A Review on the Question of Promoting the Study of Zhu Huaishun Team's Work Methods" *Zhi Huai* (1952) no.4, 9.
[98] "Chairman Wu Zhipu's report on fourth Huai-Control conference of Henan Province," *Zhi Huai* (1952) no.6, 17-20.

partial consideration, of course its direct usefulness in other contexts is next to zero. The true aim of the tremendous mobilizing power invested in its promotion was to shatter "conservative thoughts" of all kinds, including those of the cadres. An article with an indignant title "Open his drawer!" tells just a story of this kind. According to the article, after learning the ZHT Work Methods, the workers in Foziling Reservoir redesigned the sand and gravel sifter. The new design had three layers of screens arranged from top to bottom, each with different mesh sizes. The workers tried various combinations, finalized the size and position of each screen, and drew a design pattern. They gave the pattern to the technical cadre, who simply put it into his drawer and never did anything with it. The frustrated workers went directly to the Office of Supply, where they won the support of the office leader and the carpenters. Their design, according to the article, was realized into a great success: the final product improved the labor efficiency by more than 100%.[99]

The fact that a set of basic earthwork methods, instead of methods of higher level of technicality, became the epitome of standardization and innovation in Huai Control, and consequently peasant workers instead of technical workers wore the glory of models, boils down to the reality that technical manpower was extremely thin. Most technical workers and cadres in charge of technical works had little knowledge of their jobs before coming to Huai River. They received their training on job and quickly turned to training others with what they just learned. Besides this model of mass-teach-mass 民教民, which will be discussed in more details, they also relied on textbook materials distributed from the center. Each issue of *Zhi Huai* journal

[99] "Open his drawer! 把他的抽屉打开!" *Zhi Huai* (1952) no.7

includes a few pages introducing ways to solve technical problems and make DIY devices that are accessible to those with minimal technical literacy. These articles shed lights on the everyday technical practices on Huai Control project.

Shoufang is a work both technical and managerial. Without accurate measuring and calculating, earthwork project would run into endless mess, including not meeting the project's engineering goal and mistaking the payment to the peasant workers. If the 1932 project was able to afford employing mainly the professionally trained for the *shoufang* task, the scale of Huai Control in the early 1950s made that a goal far too remote. In 1952 and 1953, five issues of Zhi Huai journal published articles related to *shoufang*. Most of these articles explain how to calculate the earth volume and work price when the most basic calculation formula does not apply. Two articles introduce how to make self-help devices—earthwork calculating ruler and wage calculating plate—to simplify the calculations and reduce chance of mistakes. Here I will take two articles to analyze the problems and solutions of *shoufang* in Huai Control.

In the article "Straightening-the-Corner *Shoufang* Graph Method," the author explains how to calculate the volume in river dredging and how to manage the earthwork accordingly. Many new to the job did not know that, when opening a new riverbed, it is essential to regulate the taking out of the soil in a manner that makes measurement and calculation feasible. Although the final shape of the cross-section of riverbed is like a wide "v," the two diagonal lines are only straightened at the final stage. Instead, as the illustration in the article shows, the work needs to be conducted layer by layer as if making stairs on both sides. Each layer is narrower than the above by a fixed width 2M and equal in-depth H. M and H are variables depending on the

designed slope degree of the riverbed. The multiplied product of M, H and the length of the work L gives A, which would be the volume of one level of the stair on one side. So, each level is 2A less in volume. A such, if the peasant workers were given the fixed number of M and H and the stairs were built straight in vertical and flat in horizontal, the calculation could be simplified to be the sum of different layers each is 2A less than the previous.[100]

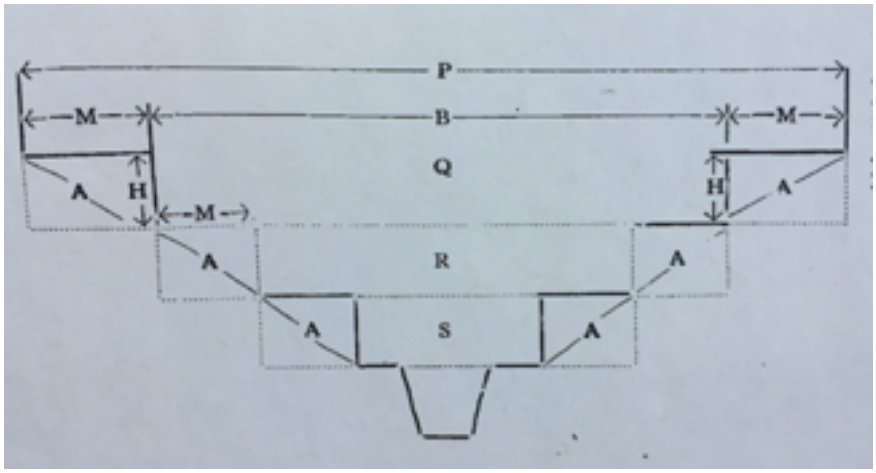

Figure 5. "Straightening-the-corner" graphic method for Shoufang.
Source: Zhi Huai (1952) no.5, 19

In "Introduction to Earthwork Wages Computing Plate," we see a device that can reduce the calculation for the cadres to bare minimum. It is a plate designed to replace multiplying with simple adding. According to the article, a cadre named Li Huairen from Fuyang invented this plate in 1951. It was adopted in other places and the feedback had been positive. "For the comrades tasked with computing the earthwork wages, especially those unfamiliar with abacus, this plate made their job much easier."[101] The plate in fact consists of four concentric

[100] Xu Yuge 徐玉阁, "Straightening-the-corner graphic method for *shoufang* 截弯取直收方图表法," *Zhi Huai* (1952) no.5, 19.
[101] "Introducing the Earthwork Wage Computing Plate 土方工资计算盘的介绍," *Zhi Huai* (1952) no.9, 17.

paper plates, each is 1.5cm smaller in radius, representing “thousands digit,” “hundreds digit,” “tens digit,” and “single digit” respectively. Each plate is divided into ten equal sections, marked from 0 to 9 representing the number of cubic meters. Starting from the ones-digit plate, write the wages corresponding to cubic-meter number into each cell. For example, if the price for one cubic meter is 4100 yuan, write 0000 in the first cell of 0, 4100 in the cell of 1…and 36900 in the cell of 9. Repeat the same process on the ten-digit plate, only adding a “0” at the end of each wage number. Draw the hundreds-digit and thousands-digit plates similarly. Use a pin to fix the center of the four plates. Now with a given number of earthwork volume, the cadre can simply turn the plates to align the numbers and adding them up. For example, to calculate the salary of 2456 cubic meters, all that is needed is to align 2 on the thousands-digit, 4 on the hundreds-digit, 5 on the ten-digit and 6 on the ones-digit plates and add the four numbers up get the salary of 10069600 yuan.

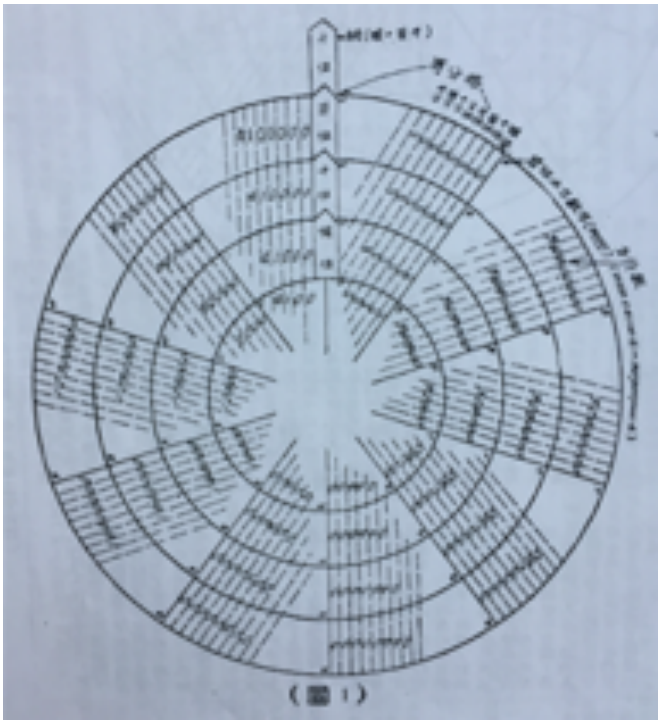

Figure 6. Earthwork Wage Computing Plate.
Source: Zhi Huai (1952) no.9,17.

If the articles about *shoufang* devices indicate the lack of professionally prepared staff, other articles show that basic instruments needed for such construction projects were in dire shortage too. Many articles provided detailed guidance on how to make these necessary

instruments by yourself. Furthermore, all the devices introduced use only the cheapest and most accessible materials and could be easily made by anyone with basic carpentry skills. To make the calculating plate mentioned above, one needs only cardboard, scissor, pin, ruler, and pen. In another instance, a cadre created a device that could perform the basic function of three essential devices—level, distance meter and inclinometer—using only a stick, a board, a few nails, a small piece of iron sheet, cotton thread and a string of hair! The weight attached to it—in a better time made of metal—could be substitute with "brick, dry cay, or a piece of sweet potato."[102]

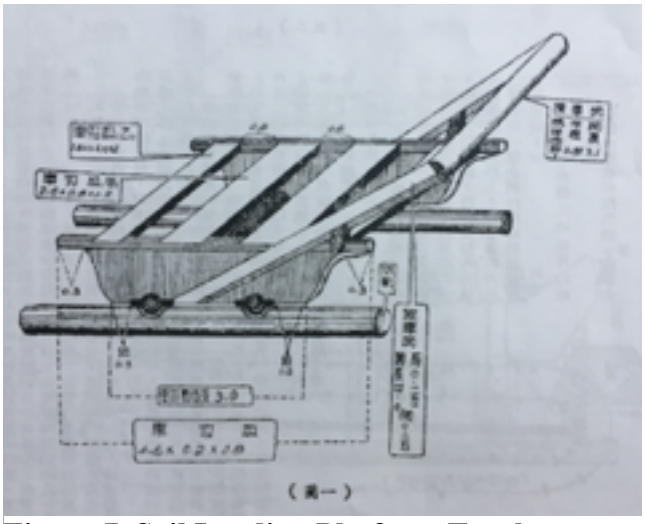

Figure 7. Soil Loading Platform Truck.
Source: Zhi Huai (1952) no.8, 16.

The same substituting impulse gave idea to three cadres in Tu County to invent a wooden railed platform truck. According to the inventors, this truck is based on "the same principle of mining cars," which were only used in a few large reservoir projects for soil transportation. The mining cars are made with metal cart and metal wheels and run on iron rails; this platform truck is made of wood and run on wooden tracks on two rollers. Except for the metal sleeves that fixed the rollers to the bottom of the truck, everything was made of wood. The designers envisioned an oval-shaped double wood tracks circling from the pits to the levee, on which the trucks can run in both directions. With this truck,

[102] Liao Huizong and Zhang Yiquan 廖汇宗 张以铨, "Introducing the Simple Three-Purpose Instrument 简便三用仪的介绍," *Zhi Huai* (1952) no.1, 16.

they reported, two men can push 350kg of soil at a speed of 50m per minute, three times more efficient than transportation by carrying.[103] However, it is doubtful that this design was ever put into wide use: it was not seen in any picture of the many work sites along Huai River, nor was it mentioned by any other articles, including those praised various kinds of innovations almost indiscriminately. Making and laying hundreds-of-meters long wooden track was probably enough to defy the purpose of saving cost and labor.

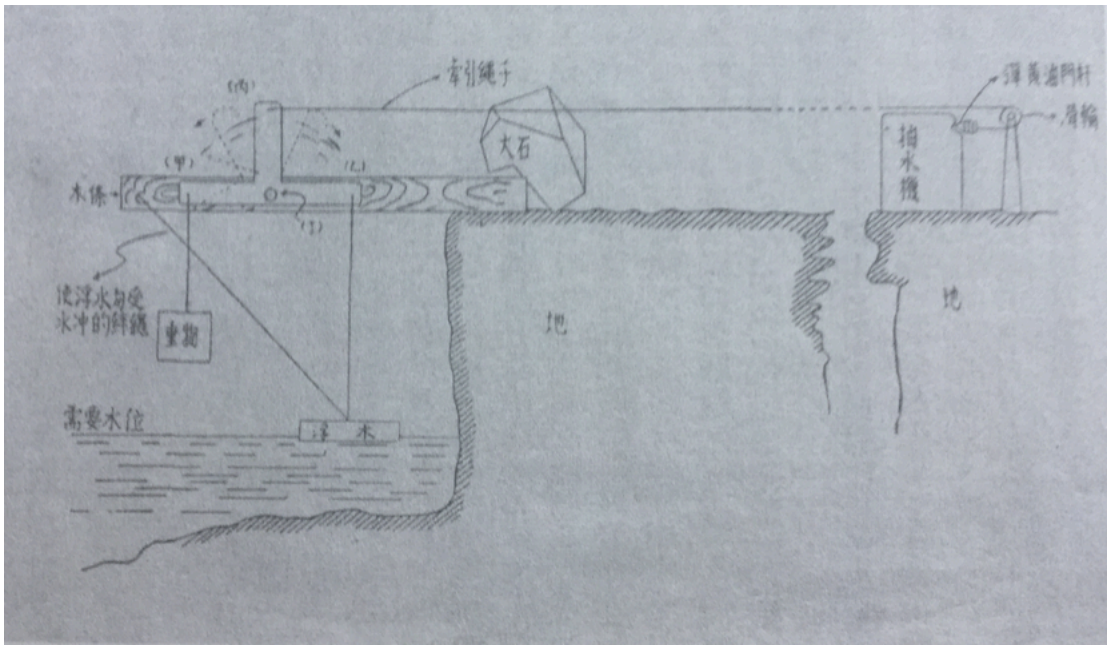

Figure 8. Automated Control of Water Pump. ***Source: Zhi Huai (1952) no.3, 22.***

Some of the creations are indeed ingenious and highly cost effective. A mechanical worker Ma Yuanchu at Dongfeizha made an automated control device for the water pump. The core of it is an upside-down T-shape metal structure that has its center fixed on a horizontal wood beam above the water, which itself is fixed on the ground by a big rock. The horizontal

[103] Sun Guangxing and Jin Kun 孙光星 金坤 "Introduction to a soil loading cart 装土车的介绍," (1952) no.8, 16-17.

branch of the "T" is balanced by a weight attached to its left end and a wood board floating on the water surface hanging from its right end. A string extended from the top of the vertical branch of "T" to the pump. Through a pulley, a lever at the end of the string touches the oil valve of the pump. Based on the principle of balance, when the water level drops, the floating board goes down and the weight goes up. The T structure tips over, and the string loosens. The lever releases the valve, and the pump reduces its speed or fully stops. This simple device not only prevents the pump from drawing up mud and air when the water is too low—thus protects the machine—but also saves monitoring labor.[104] However, it is unclear how widely this device was adopted—the assemblage of balance and pulley requires certain level of mechanical skills; the openness of the structure means it is unstable and maintenance-demanding. But a different scenario was also possible: in attempting to replicate it, inexperienced operators had opportunities to understand the mechanics on the first hand, even with significant material cost.

The *Zhi Huai* journal's technical articles are the textual remnants of an immense effort to re-configure a socio-technological system. The fact that they concern the very small and the very specific, such as the pacing of steps when transporting the soil or eliminating multiplication to reduce calculation loads, does not mean they are technologically inconsiderable. On the contrary, making two million of peasant workers change their body practice to significantly increase the efficiency of earthwork requires tremendous reconfiguring power. It is as much a seismic change of technological landscape as the reshaping of Huai River itself. The massive effort to improve

[104] Lei Hong and Lu Jun 雷洪 鲁俊, "Introduction to the automatic control using the pump buoy 抽水机浮标自动控制抽水法介绍," *Zhi Huai* (1952) no.3, 22.

the technological literacy at the grassroots level depended heavily on the model of mass political campaign, to which I will turn.

7, Labor Competition and Propaganda

In mimicking the parlance of communist campaigns, we may say that if the work methods were the blood, then the labor competition campaigns would be the heartbeat. The knowledge about standardization and the energy of innovation were to be pumped into the daily work of every labor through relentless competitions among the teams. This is especially true in 1952, after the mortality rate among peasant labors in 1951 struck warnings against excessive labor exertion and inspections showed that lack of standardization made many 1951 projects pure engineering debacles[105]. The leaders of the Committee now emphasized, again and again, that the focus of labor competitions was the improvement of labor methods. It is about "labor efficiency and project standards," Zeng Shan said in his speech at the beginning of the year, "it is a race of intelligence and creativity, not a race of strength."[106] The race of intelligence, still measured by labor efficiency, required elaborate orchestration and forceful mobilization from the leadership down to every level of cadres.

More than three quarters of all work units should be engaged in an overall competition. The leadership envisioned a "wavy" spread of the involvement: the team led by labor model Jin

[105] Sun Qinghuai, Peng Xiaolin, and He Chongsheng 孙清淮 彭晓林 贺崇升, "Report on the inspection of the upper stream reservoir projects 淮河上游水库工程检查报告," *Zhi Huai* (1952) no.4, 10-11.
[106] Zeng Shan, "Ways to implement the Patriotic Labor Competition in the 1952 Huai River Control Project in North Anhui 皖北区一九五二年春季治淮爱国劳动竞赛实施办法," *Zhi Huai* (1952) no.1.

Xiulan would play the role of the stone that stirs up the water— it was to initiate "challenge" to all teams in North Anhui; each division picks a work team to answer the challenge and at the same time raise challenges to all teams in their own division; cadres at brigade and branch level then mobilize as many teams as possible in their unit to respond both challenges. This "wavy" model tried to instigate both admiration to the "star" model and envy towards the neighboring team to stoke the fire of the work spirit. In its implementation, the wave created more rings as cadres at lower level were eager to promote their own model teams. Suddenly, flyers of "declaration of challenge" 挑战书 was everywhere in the pits and tents, as many teams distributed their own and received more from others.

The labor competitions culminated in the model evaluation and, following which, the spectacular celebration of the models. The conduct of such ritual was at core of the "political work." The top leaders in Henan and Anhui both explained in detail what they considered proper methods for model making. In general, they believed that for seasonal work, the model evaluation and celebration should be done by the end of the work season before the peasants returned home for the harvest—the new models could thus contribute to the labor mobilization during the harvest. For long-term project such as the large reservoirs, the evaluation and celebration should be held more frequently—in Banqiao Reservoir it was nine times in a year. "We have come to realize that model evaluation and celebration is the best way to mobilize the mass and train the backbone cadres." Zhang Tianyi, the Chair of Political Department of Banqiao

Reservoir said, “The evaluations in the middle of the project are the most effective. The work spirit reached to a new high after the evaluation in the second month.”[107]

The choice of models may have reflected more of the national and regional revolutionary agenda than the individuals’ labor contribution. The three criteria for model evaluation are “background, performance and influence.” In the context of early 1950s Huai region, these three words would mean a proper position regulated by class label, age, gender, lineage, attitude, and competence. Noticeably, the gender ratio of models is far removed from gender ratio of the peasant labors employed in the project. While only about one percent of the peasant labors were women, there were eight women among the twenty-one models chosen from North Anhui Huai River Control to attend a “cultural study” session in the Provincial Worker-Farmer School —a recognition of outstanding model status.[108] The single one special-level labor model of the entire Huai River Control was Jin Xiulan, a nineteen-year-old female Youth League member from Henan. Jin was featured in several articles in Zhi Huai, which focus not on her unique work method but the admirations that she received from fellow labors. An *Album of Jin Xiulan* was published along with a dozen of must-reads, such as *Speeches on Huai Control*, and distributed among cadres and Youth-League members. Promotion of Jin Xiulan is an example that the Huai River Control had always been a project about more than hydraulic construction—the training of

[107] Zhang Tianyi, “The combination of politics and technology was the key to the success of the Banqiao Reservoir,” *Zhi Huai* (1952) no.3, 7-8.
[108] “Jin Xiulan and other twenty labor models from North Anhui are selected for studying at the Worker-Peasant Institute 皖北劳模金秀兰等二十一人光荣地被选送工农学校学习,” *Zhi Huai*, (1952) no.5.

a new kind of labor force, the making of new socialist subjects, and fundamentally the inculcating of socialist values were not only integral but central to the Huai Control mission.

The same mobilizing process coproduced labors and cadres. Using Huai Control project as a cadre training bootcamp is explicit in that many of Huai-Control cadres of 1951 were immediately dispatched to other parts of the country. In 1952, forty-thousand cadres, mostly new blood, worked on the Huai River. Among all cadres, workers and peasant workers, there were forty-nine thousand party members and eighty-six thousand youth-league members, all of them received cadre-level trainings and to different extents functioned as cadres during their service on the Huai River. Especially, the youth-league members were extended the role of conduit between the party leadership and the mass. The mobilization of the Youth League was the priority of the "political work." For the Youth League members, the months working on Huai Control was also a semester of political study. It was indeed a semester, with opening ceremony and graduation and requirement of class attendance nearly every day. The Party leadership deliberated on how to create an exciting and festive atmosphere for the opening ceremony; what the focus of Youth League study sessions should be; and what is the best hour of the day to hold the study session. In other words, everything about the effectiveness of Youth League member training deserved careful consideration.[109] In order to prepare the Youth League members to motivate the broad mass, themselves needed to be sufficiently stimulated firstly.

[109] Youth League Linbi Huai-Control Wokers Committee 青年团灵璧治淮工委会, "Summary of the work in April 四月份工作总结," *Zhi Huai* (1952) no.4; Liu Xiushan "Summary of the political work in the second project year and key points of the political work in this winter and next spring." *Zhi Huai,* (1952) no.6.

The education of cadres, as well as the Youth League members, emphasized the "close combination of technology and politics" based on "a firm leadership of the politics." Essentially, this means to demolish the old power relations, as we saw in 1932 Huai River Control, and to establish a new cadre-centered work structure. Not only that the engineers and technical staff were no longer in charge, their "indifference to politics" was regarded as detrimental to the success of the project. Its counter-productive effect could only be compared with certain cadres' brutal treatment of the peasant labors. Neither "purely technical view" or brutality was politically conducive. What the cadres needed to learn was proactive, intensive persuasion using the proper, ideologically infused language. One article "Thoughts on how the Party branch should play the role of leadership" demonstrated to the reader what the right language is. For example, when asked the question "do you think our team has a chance to get the red flag (be chosen as model team)?" two cadres gave different answers. One says: "Getting red flag is not our purpose. We are here for our country! We are here to answer the call of Chairman Mao!" The other simply says: "As long as you work hard, you will get the red flag someday." "These two answers," the article remarks, "have very different impact on workers' thoughts." A good cadre always fulfilled to bring the high political discourse to the grassroots.[110]

The message that every swing of shovel and every step of soil transportation were done for the country, for the Party and for Chairman Mao was delivered through many more channels than just person-to-person preaching. More appealing programs—dances, operas, and songs—were widely used to arrest the workers' attention. The troop of propaganda is enormous—nearly

[110] "Several thoughs on how to play the Party Committee's leading role 对怎样发挥中队党支部的领导作用的几点体会," *Zhi Huai* (1952) no.8.

forty-thousand official propagandists 党的宣传员, over ten thousand countryside entertainers 民间艺人, eleven Cultural Troupes 文工团, and 378 amateur theatre groups toured the various construction sites along the Huai River throughout the year.[111] They ensured that, after the thunder of machines stopped at the evening, the construction sites would not fall to bland silence. The evenings must be filled with sound—if not the discussions from study sessions or loud reading from literacy class, then it should be the play of instruments and choirs' singings. Central Conservatory of Music sent 108 teachers and students to Huai River to lead the "singing work" of the peasant labors. "Many peasants learned the first song in their life," a member of the academy proudly wrote, "and many singers lifted their first basket of soil."[112]

Millions of peasants also had their first experience with films and radios. The attendance to film watching was three million—many enjoyed this novel excitement more than once. One can only imagine what a deep and lasting impression the animated stories would leave to this audience. But when it comes to flaring up the work pace, radio and loudspeakers played a more important role. The radios on the construction sites not only broadcasted national news through which the peasants learned that their work on Huai River was part of a larger, nation-wide construction, they also produced their own programs to directly bolster the labor competition campaigns. The broadcasts publicized the rank of teams every day. Revolutionary songs were played during the labor hour to "alleviate exhaustion." When the task was

[111] Liu Xiushan "Summary of the political work in the second project year and key points of the political work in this winter and next spring." *Zhi Huai,* (1952) no.6.
[112] The Third Team for Huai-Control work at the Central Music Academy 中央音乐学院治淮工作第三队, "Throw ourselves into the furnace of the great construction of the mother nation 投入祖国伟大建设事业的炉火里," *Zhi Huai* (1952) no.4.

particularly intense and dangerous—such as blocking the breached part of the levee where the current is ferocious—the broadcast continued day and night with the announcer shouting workman's chant and asked workers to chant with him.[113] In moments like this, the radios and loudspeakers created not only what the scholar Li Jie calls "a shared auditory landscape,"[114] but also a shared vocal space. In moments like this, the peasants seemed to have turned themselves into an element of the collectivity, and together, they forever changed the face of Huai River.

8. In the Shadow of Huai River Control

Then she remembered what she had seen one day on the street. She had been walking to the market when she noticed that all heads were turned in one direction, and people were whispering "Look, look! They are rounding up the vagrants!" Two policemen holding a man by the arms were hustling him along to a truck parked by the roadside. The policemen were both smiling broadly and tolerantly, as if they were dealing with a naughty little brother. With his feet off the ground and his skinny shoulders pushed up high, their ragged captive was also smiling, a bit sheepishly. She watched him curiously, knowing that he must know that he would be sent to one of the great work camps on the banks of the Huai River. There he would work on one of the new dams with great hordes of prisoners and conscripted laborers in water that reached up to the belly. She knew all about the Huai River; there were women living in her alley whose husbands were undergoing Reform through Labor.[115]

Zhang Ailing (Eileen Chang)张爱玲 *The Rice-Sprout Song* 秧歌

Written in 1953, *The Rice-Sprout Song* (Yang Ge*)* is a novella by one of the best writers of early 20th century China, Eileen Chang. In this work, Chang tried to capture the sense of

[113] "How to do broadcasting on the Huai-Control work sites? 在治淮工地上怎样开展广播工作," *Zhi Huai* (1952) no.8.
[114] Jie Li, "Revolutionary Echoes: Radios and Loudspeakers in the Mao Era," *Twentieth-Century China* 45, no.1 (2020):25-45. On the relation between radio and China's twentieth century political history, see John Norman Alekna, "Reunified through Radio: Media, Technology, and Politics in Modern China 1923–1958" (Ph.D., United States -- New Jersey, Princeton University), 2020.
[115] Eileen Chang, *The Rice-Sprout Song, A Novel of Modern China*, (Dragonfly Books, 1955), 44-45.

powerlessness of Chinese people—certainly the peasants but even the cadres—when a much more steely power began to dominate their lives. Chang's masterful depiction of the sudden changes in social relations and everyday language pierces into the confused common consciousness and the amounted fear and anger among the peasants. This small episode in the story illustrates the anxiety that "Zhi Huai" provoked in the heart of regular Shanghai city dwellers. The vague smile on the captive's face reminds us of an earlier generation of peasants and townspeople described by Lu Xun—the same passivity and dullness. However, the story of *Yang Ge* shows that, in Chang's eye, the windowless iron house in Lu Xun's metaphor may have been demolished by the Communist Party, but the new iron house was only sturdier and even more airless.

Presented in official histories as a glorious monumental project of early PRC, Huai Control cast a long and cold shadow. It is unclear how many lives were cost during the massive construction. As it usually does, undocumented tragedies took the form of folklores, myths, and rumors. Probably nothing manifested the danger and violence of the Huai Control work more deeply and vividly than the water monster rumor wildly spread in Huai River region in the early 1950s. According to the historian Li Ruojian, the rumor of the existence of a dangerous water monster originated during the civil war from part of northern Jiangsu, where the Nationalist and the Communist frequently fought for control. The monster, it was said, had red eyes and green nose and targeted children and fetuses. Once it seized them, it would dig out their anus and penises. The locals sent their men to guard the bridges and crossroads in the night and prepared to stab any suddenly appearing suspicious figure with their spears. Such a rumor still illustrates

primarily the fear of the outsiders much like the mid-Qing soulstealer crisis described by Philip Kuhn. But when it broke out in the 1950s, it took an astonishing twist, reflecting a phobia of political terror in general and the trauma from working on Huai River in particular.[116]

When the rumor erupted in 1953 with unprecedented force and scale, the water monster had become a supernatural agent of the government. In many accounts, they were trained by the Soviet Union, personifying as cadre in the day and returning to their hairy, monstrous form in the night. They became even more ferocious and obscene, clawing human hearts, eyes, children's and adult men's penises and women's nipples. And these body parts of innocent Chinese villagers would be sent to Soviet Union to make nuclear bombs! The rumor also described the monster as only hurting the common folks, never touching cadres or members of the Communist Party and the Youth League. Li's research shows that the geographical contour of the rumor in 1953 and 1954 was largely congruent with the Huai River region, and the ongoing Huai River Control project was the major source of the fear, paranoia, and imagination behind the rumor. Not only the "political criminals" under labor reform on the Huai River, who were primarily blamed by the government for the spreading of the rumor, but also regular peasant workers and even cadres joined in the making and spreading of rumors. For example, the peasant workers returned from the Sanhezha project to their hometown in Siyang, Jiangsu told the locals that five or six thousand river workers were frozen to death in Sanhezha in the last winter. Although

[116] Li Ruojian 李若建, *Between Fiction and Reality: The Analysis of Rumors in Mainland China during the 1950s 虚实之间: 20 世纪 50 年代中国大陆谣言研究*, (Beijing: Social Sciences Academic Press, 2011). Certain rumors in the late Qing and Republic described missionaries used Chinese children's body parts to make medicines, or make their trains run, of do other "magical" things.

almost certainly exaggerated, this tale succeeded in planting the fear in the locals and the water monster rumor soon flooded Siyang. As a measure to control its spread, the government had one of the peasant workers executed as rumormonger. But the rumor continued, and women began to refuse to let their husband go to the river. To the extent that the water monster rumor had become a "weapon of the weak," it did not, as the continuation of Huai River project testifies, yield any effective power against the state. In his work on the European "vampire" tales in early twentieth Africa, Luise White convincingly shows that what the rumors revealed was "a world of vulnerability and unreasonable relations." As historical accounts, these rumors told the truth of "the aggressive carelessness of colonial extractions" better than any other record.[117] In this sense, the water monster rumor is truer than not only propaganda and official documents but also memoirs and oral history in that it describes the great psychological shock brought by the river work experience, as well as the collective fear towards the presence of cadre and the political power they represented.

We could of course not see the passive smile of the beggar or hear the fanciful telling of the water monster in the official propaganda of Huai Control such as the *Zhi Huai* journal, which flew the flags of "politics" and "technology" and determined to enlighten the peasants' mind with socialist values and discipline their bodies with carefully choreographed work methods. However, even the *Zhi Huai* journal could offer a glimpse into the misery of the labor camps. One article published in early 1953 asking in its title "Why is the hygienic work done so poorly?

[117] Luise White has argued that rumors are "everyday descriptions of extraordinary occurrences." The tales of European "vampires" among the Africans "report the aggressive carelessness of colonial extractions and ascribe potent and intimate meanings to them." Luise White, *Speaking With Vampires: Rumor and History in Colonial Africa*, (University of California Press, 2000).

为什么卫生工作搞不好”described the appalling food and living situations of peasant workers from Funan County. From the beginning, the foodstuff for the road was collected too early and poorly stored. On their way to the river, the peasant workers were already eating rotten yams and moldy bean flour. After their arrival, the rice they received was also often moldy. The drinking water was drawn from little ponds they themselves dug near their tents. The proximity to pollution sources such as chimneys and toilets further poisoned the water. Due to the shortage, many shared same basins of water to wash their face, which led to rampant infection of eye diseases among the workers. The tents they lived in were damp, cold, and crowded. The “bed’ was simply hay on the mud. From November to early December, the articles say, ten thousand workers—fifteen percent of all from Funan—fell ill. During the twenty days before the New Year, 161 workers became too sick to work and four had died. Based on the situation described and the common practice of numbers tagging in the Communist propaganda, these numbers are almost certainly understated.[118]

Another reason for the wide sickness was that the local cadres disobeyed the “selection policy” and sent too many unqualified workers—seniors, chronic patients, and pregnant women—to the project. It is hard to determine which reason is more to blame for the high mortality without access to reliable archival sources, even though the Zhi Huai article insists that the primary cause was the cadres’ indiscriminate recruitment. Not only that the old, the sick and the pregnant were unfit for river work, the article lamented, they were easily injured and had to be taken care of. To prevent more death on the construction site and to save medical resources,

[118] “Why is the hygienic work done so poorly 为什么卫生工作搞不好,” *Zhu Huai,* (1953) no.2.

several more rounds of "labor selection" were conducted to eliminate the unqualified labor from work teams. However, the Funan cadres refused to let go those disqualified from the on-site selection. There are multiple reasons for the village leaders to operate against the selection policy. First, the cadres were concerned that, with reduced number of workers, they would not be able to finish the task in time. Too often they departed from their village without knowing how much work was facing them. Even if they were told, it could change in the middle of the project. Second, given the wide resistance to the dangerous and exhausting river work, village cadres first took those least able to resist—at this time the landlords and bad elements—to the river, quite regardless of their age and gender. Although the state had sent more than ten thousand "anti-revolutionaries" to labor on the Huai River, it did not mean to make the river work a penalty for rural class enemies. Instead, the ideal peasant workers for the Huai Control project should be young and strong—the fanshen-ed peasants whose loyalty was needed by the Party.[119] The prisoner labor, however, had the advantages of being cheaper and able to work year-round at the site and was thus practically a crucial component.[120]

Injuries did not account for the high mortality, although it was certainly too common. The peasant workers had only their own clothes and shoes. In many Huai Control photographs, they

[119] This kind of bifurcated social composition was not unusual. For instance, a lot of the young women sent to Xinjiang to marry soldier-farmers fit into one of two categories: Youth League members who were considered the best that their communities had to offer and daughters of "class enemies" who couldn't easily say no and had gloomy prospects if stayed behind.
[120] After 1953, as the recruitment of peasant labor was limited to 3-4% of rural population, the number of prisoner laborers increased and became a more important labor force on Huai River. "Because they could work throughout the year, per prisoner labor can finish more than 400 cubic meters of earthwork per year, which is 2-3 times of seasonal workers'. The cost of using prisoner labor was also lower. Therefore, Huai Control Committee decided to increase the number of prisoner laborers to ten thousand." *Gazetteer of Huai* 6, 49.

wore woven sandals or simply barefooted, digging rocks or standing in ice-floating river. The poor protection, the reckless work rhythm, the unfamiliarity with explosives and machines caused countless injuries. One "reader's letter" brought the problems of Sanhezha—the same place rumored as having thousands of men frozen to death—to the attention of the leadership. According to this letter, 18 workers were severely poisoned after laying asphalt without being provided with mask or glove. Mining-car pushers were injured from flipping and crushing everyday—the poorly-laid light railroad had many bumps and sharp corners; at places the railroad was too crowded to even maintain the distance between two cars above one meter; workers were inexperienced and tried to run too fast.[121] Much more serious incidents were also reported. For example, a team of over twenty men was buried under a collapsed tunnel in Foziling Reservoir in an explosion.[122] However, except for occasional criticism of cadres for their responsibility in these incidents, there was hardly any attempt to systematically reevaluate the work pace and work preparation across the board. In fact, injury had become a common theme in propaganda, as a proof of the peasant workers' fearlessness in the face of danger and their enthusiasm for the labor competitions.

This blatant inconsistency writs large in the internal discourse on Huai Control as a hydraulic engineering endeavor. The astronomical numbers in earthwork statistics, the stories of labor models and technological innovations, and the grandiose verses praising the magnificent dams rising above the water—all composed the carols of enchantment and self-enchantment. Yet

[121] "What Caused the Incident at Sanhezha Construction Site 三河闸工地上为何发生事故," *Zhi Huai* (1952) no.8.
[122] Report on the inspection of upper-stream Huai-River reservoir projects," *Zhi Huai* (1952) no.4, 10-11.

amid the celebration, blind mistakes leading to catastrophic consequences were clearly presented and received due criticism. In April 1952 the then Minister of Hydraulics Fu Zuoyi inspected the five largest reservoirs accompanied by a team of Soviet and Chinese scientists and experts. The resulting report makes terrifying reading which suffices to illustrate the scale of the looming disaster.[123] First of all, much of the design was done without accurate geological surveys, and much of the construction was done without complete designs. The original designs of tunnels and sluice gates failed to consider important geological features of the sites, therefore had to be changed over and over. By the time that the building of Shimantan reservoir was over, the design of the reservoir had not yet finished! It was unsurprising that the tunnels of the reservoirs had "huge" problems, as all three reservoirs started the dam building before the tunnels were completed—a serious violation of construction procedure. The rapid and massive labor mobilization outpaced the engineering design, and the peasant workers were hastily put into work so that they were not idly consuming the grain. The article admits "some mistakes may be fixable to a certain extent, others would remain a loss forever."[124] The grave disappointment with the quality of the work led to the decision of expelling Qian Zhengying, who was responsible of the engineering design of the above reservoirs, from the Commission.[125]

It is doubtful that the Soviet experts should be blamed for all the careless designs and construction pitfalls even though they were responsible for the decision of building these reservoirs on the upper stream. Comrade Bukov was struck by what he saw in the inspection: in

[123] Ibid.
[124] Ibid, 10.
[125] Qian Zhengying, "Preface," *Essays In Memory of Wu Jue,*1. In this article Qian says she was punished for the flooding after the reservoir construction.

more than one case, the design of reservoir was made single-handedly by one person and was approved by layers of authorities without any examinations. So much work was done with so little, or even no, calculations. "[We] rarely held meetings to discuss engineering design or other technical issues. Even less did we listen to the masses [on these matters]." The report lamented.[126] Moreover, although the projects were just finished, many records of calculations and designs were already lost or never kept at all. This made certain inspection impossible because whatever was already under water at this moment had become truly invisible. One cannot help but noticing the glaring contrast between the attention paid to soil transportation work methods and the obliviousness to engineering design. In this beginning stage of cadre-centered socialist construction, the "technology" in practice was primarily the engineering of people. The two legs that supported Maoist developmental model were still extremely imbalanced even with the support from the Soviet Union.[127]

The cadres' ignorance of engineering technology was not the only cause of the astonishing failures in many parts of the project, embezzlement, and for which exaggerated budget and corner cutting, were rampant in Huai Control. The corruption and waste exposed in the infrastructure building projects in the first years of the socialist regime directly led to the launch of Three-Anti and Five-Anti campaigns. One of the most notorious cases on Huai River was the dysfunctional sluice gates and gate hoists of Shimantan Reservoir in Henan. The sluice gates were made with steel plates from dissassembled old ships that could hardly be welded

[126] "Report on the inspection of upper-stream Huai-River reservoir projects," 11.
[127] The basic principle of "Walking on Two Legs" was raised by Mao in 1956 in "On the ten relations." The phrase was coined in 1958 "Instructions on the Education Work."

together. The gates were leaking everywhere. The hoists, designed to release 32-ton pull force when operated by two men, could hardly reach 20-ton even with six men hoisting it together, therefore turned out to be absolutely useless. The manufacturer—Shanghai Taichang Shipyard—was blamed for "secretly changing the design" and the owner Ying Shuqi was accused as solely responsible for this particular crime. However, it was obvious that most of the cadres in the purchase department were complicit.[128] Eleven high-level cadres in Henan Huai Control Command Post 河南治淮指挥所 were exposed to have embezzled over ten billion yuan (early PRC currency) through false report of purchase price from various Shanghai manufacturers. Particularly, the 3300 wheelbarrows they ordered from Shanghai Bicycle Joint Manufacturers were budgeted at nearly three times the purchase price.[129] As suppliers and contractors of Huai Control mostly hailed from Shanghai, their transactions with various Huai Control agents became critical issues for interrogation during the Three and Five-Anti Campaigns.[130]

The Final Note

[128] "Another criminal evidence that unlawful capitalists are undermining the Huai Control Project 不法资本家破坏治淮工程又一罪恶事实," *Zhi Huai,* (*19*52) no.1; also in Zhang, *Inside*, 43-45.
[129] Zhang, *Inside.*43-45.
[130] Zhang Jianguang 张剑光, "Anti Bribery, anti tax frauds, anti embezzling national assets, anti corner-cutting, anti stealing national economic information, denounce the Shanghai unlawful merchants' crimes in sabotaging Henan Huai River Control Project 反对行贿 反对偷税漏税 反对盗骗国家资财 反对偷工减料 反对盗窃国家经济情报 控诉上海奸商破坏河南省治淮工程的罪行," *People's Daily*, March 3, 1952. Zhang Jianguang was the Deputy Director of the Political Division of Henan Huai Control Headquarter. On the interrogations of Shanghai Huai Control suppliers, also see Yujie Li, "Birth of the Phoenix: Petty Capitalists in the Socialist Transformation of the Shanghai Bicycle Industry," *Twentieth-Century China* 47, no. 3 (2022): 266–86.

In August 1975, typhoon Nina made its landfall on China's southeast coast and quickly turned north to the inland. It stopped and "stagnated" above the valley of southern Henan, where reservoirs of upper stream Huai River concentrated. A violent storm unmatched in recent history hit the area. The water in the reservoirs had already been above the designed level—due to the failure of the design to account for the fact that the precipitation in this area tends to concentrate in a short period of the year instead of distributing over time—and largely out of maintenance. On August 8, the water spilled over the dam of Banqiao Reservoir. In a few hours, Banqiao, Shimantan and 58 other middle and small size reservoirs in the area either overspilled or their dams straightly broke. The reservoirs collapse made Nina one of the deadliest typhoons in human history. The estimated death number is between 60 to 230 thousand, although some believed it could be much higher. This is, but one disaster directly caused by the early 1950s Huai Control. To this day, people along Huai region still live in the long shadow of this monumental project of early People's Republic.

Chapter Two. The Unplanned Economy:

Muscle-Powered Transportation in the 1950s Beijing

"Transportation is an independent production sector. Marx calls it the fourth material production sector, due to the fact that transportation is the continuation of production in the circulation process. Transportation cannot change the natural characters of the transported goods, nor add to their volume. But most of products have to reach from the production site to the consumption site through transportation, in order to realize their use value. In this way, transportation participates the material production process of the social products and increases the exchange value of the transported goods."[1]

Sun Shizheng, "Basic Knowledge: Transportation Volume and Circulation Volume"

Introduction

This chapter examines the way in which state institutions extended their control over muscle-powered transportation in the early 1950s. It explores how the scattered shipping forces supported by animal and human labor—wheelbarrows and mule carts—came under the state regulation. We shift our analytical attention from the labor process on infrastructural sites of the previous chapter to the political economy of muscle-powered shipping on the road. Throughout the Maoist years, the transportation sector was not a priority for state investment. During the years of the First Five Year Plan (FFYP, 1953-1957), the belief that the modernization of transportation could only happen after the modernization of industry, precisely heavy industry, was especially strong.[2] Only fifteen percent of domestic investment of the FFYP went into the

1 Sun Shizheng 孙世铮, "Basic Knowledge: Transportation Volume and Circulation Volume 基本知识:货运量和货物周转量," *Statistical Work Communication 统计工作通讯* (1955) no.7, 34.

2 Han Tuofu 韩托夫, *Transportations in the Transitional Period 过渡时期的交通运输* (People's Publishing House, 1955), 67-68. "According to the principles of socialism, socialist production is based on advanced technologies…Without a foundation of high-tech industries, it won't be possible to technologically transform other national economic sectors…To develop transportation sector without first develop in the heavy industry is impossible. 根据社会主义的

sectors of transportation and postal service, nearly seventy percent of which was spent on railways.[3] With limited development of high-standard roads and investment in automobiles, road transportation relied heavily on "backward," muscle-powered technologies in the 1950s.

This reliance posed great challenges to the planning of transportation. And the challenge was exacerbated by the fact that planners were at the same time service provider and administrator. This chapter analyze the tension between the scattered, mobile nature of MPT forces and the authorities' need to rationalize the MPT. It does so through a close study of the Beijing transportation authorities: the administrative duo of the Beijing Bureau of Transportation and Traffic Administration (BBTTA), and the state-owed enterprise called the Beijing Transportation Company (BTC). This duo played many roles for the capital city's transportation—it was its administrator, service provider, and planner. This chapter describes their years of effort to control the dispersed muscle-powered transportations in and out of the city, in order to establish a state monopoly, fix transportation costs, and make the transportation sector plannable. As administrators, they largely hemmed in the private transporters under their supervision, but this control was exerted through constant expansion of categories of indictable behaviors. As the service provider, they forcefully established a monopoly, but this monopoly was often threatened by other state actors entering transactions with the owners and drivers of

---

法则，社会主义的生产是要在高度技术的基础上进行的。。没有高度技术水平的工业基础，就不可能对一切国民经济部门进行技术改造。。如果不首先发展我国重工业的基础，要相应地发展我国的交通运输业是不可能的."

[3] "National Bureau of Statistics 国家统计局, "The Transportation Production and Development in Our Country 我国交通运输的生产和建设情况," *A Collection of Selected Archives on National Economy 经济档案资料选编 (CSANE thereafter), Transportation and Communication Volume 交通通讯卷 (TCV thereafter),1958-1965*. (Zhongguo Caizheng Jingji Chubanshe, 2011) 26-32. "The First Five Year Plan for the Development of National Economy of the People's Republic of China 中华人民共和国发展国民经济的第一个五年计划," *CSANE, TCV, 1953-1957*, (Zhongguo Wujia Chubanshe, 1998). 20.

horse-drawn carts behind their back. As planners, they operated under a statistical system that, on one hand, expected from them a statistical literacy and a top-down perspective they did not possess, and, on the other hand, failed to provide effective tools to map the muscle-powered transportation economy.[4]

Despite the indispensable role that muscle-powered transportation played in the economy, the plan and the statistical regime upholding it failed to incorporate it. This failure could only be partially explained by the accounting difficulty caused by the dispersed nature of muscle-powered technologies. Also important was the conflation of the plan and the reality. In this case, the prescribed linear development of technology resulted in a "planned" decrease in the use of muscle-powered transportation for which the real economy was far from ready. The inability to plan for the muscle-powered transportation deprived any meaningfully directive function of the Beijing transportation plan.

However, the state believed that centralization could facilitate the rationalization of transportation. The centralized control of the transportation power was considered the prerequisite of overcoming the low level of efficiency and high cost of transportation that hindered the program of industrialization. Rationalization based on centralization not only

[4] The statistical system was largely borrowed from the Soviet Union. The existence of private economy in the 1950s China meant that the Soviet model did not apply to a significant part of the national economy. See Xue Muqiao 薛暮桥, *Papers on Statistics 薛暮桥统计论文集,* (China Statistics Press 中国统计出版社, 1986). Xue mentioned that the very limited statistical human power had to be used on the statistical work of important sectors and industries. In general, "the state sector is more important than the private; the large enterprises are more important than the small ones; the small industries are more important than the handicrafts." Less effort to produce accurate statistics was made in the less important sectors and industries. 46. Within the hierarchy of statistical priority, transportation was listed below the industry and at the same level with commerce. However, unlike the commerce, to which the National Statistical Bureau devoted a nationwide, exhaustive survey in 1955, the statistical work of transportation sector was only conducted by personnel within transportation sector instead of statistical workers. 60. For a history of the PRC's statistics, see Arunabh Ghosh, *Making it Count.*

demanded local sacrifice for the national good, but also reinforced a sector-centered perspective: the transport authority—not those whose goods were transported—decided what counted as rational transportation. While increasing the arbitrary power of the transportation authorities, the rationalization program did little to overcome inefficiency, which had its root in both the technological conditions and the territorial conflicts of the bureaucracy.

The history of Beijing transportation authorities of this period thus speaks to the unsettled historical evaluation of China's 1950s. Often called in retrospect the golden age of the Maoist China, the 1950s was a period of forceful state building, rapid industrialization, and expansion of social welfare. The establishment of the planned economy was the hallmark of the age. However, the fiscal crisis at the end of FFYP and the disastrous outcome of the attempt to escape from that crisis cast a shadow on the glow of the golden age. Was the relative success of the 1950s achieved through economic planning? Or, on the contrary, did the effort to implement the plan result in a rigid bureaucrat-coordinated state monopoly that eventually ended the 1950s prosperity?[5] In this chapter, I try to reach to a deeper understanding of the economic plan through the case study of freight transportation in Beijing. In doing so, I ask: How much did the plan reflect the real economy? How did the plan—based on the modernistic ideal of rationalization—reconcile that goal with the premodern technological conditions?

This chapter begins from a reading of a plan document produced at the end of this period. It then turns to the origins of the BTC as a way to control prices and transportation resources in the early years of the People's Republic. I will then go on to show how the political economy of transportation changed with the implementation of the planned economy. Specifically, the state

[5] On bureaucrat-coordinated economy as one of the basic features of Soviet-style planned economy, see János Kornai, *The Socialist System: The Political Economy of Communism* (Princeton, N.J: Princeton University Press, 1992).

began to "see" in terms of rail freight, almost willfully blinding itself to the MPT that, in reality, carried the bulk of its goods. Finally, it shows how even within the confines of the state's aspirational assumptions regarding industrial transportation, ministerial turf wars constantly impinged on the way of executing the plan as different agencies competed for control of resources and revenues.

1. The Plan on Paper

The document I examine here is the "Beijing Municipality's Second Five-Year Plan for Transportation" compiled in early 1957 by Beijing Bureau of Traffic and Transportation Administration (BBTTA).[6] Historically, the Second Five-Year Plan mainly stayed on paper, as the shock industrialization of the Great Leap Forward dramatically changed the developmental path. However, for the purpose of this chapter—a better understanding of the "golden age" and what led to the drastic turn later—this document serves well. The document includes both a summary of the development of Beijing transportation from 1952 to 1957 and the plan for the next five years between 1958 and 1962.[7] A product of this particular historical juncture, it will help me to bring out the various questions I intend to explore.

So far it sounds all natural and opportune. But the truth is the document is deeply problematic and using it poses certain methodological predicaments. It is a conventional practice to cite numbers from this type of documents when we try to sketch "the changes" in certain aspects of economic and social life of Maoist China. In most cases, we use them with a hint of conceit that they were not the best of numbers, but they were the best we can get. After all, we

[6] "Beijing Municipality's Second Five-Year Plan for Transportation 本局编制的北京市交通运输第二个五年规划" Beijing Municipal Archives (BMA) 117-001-00008, c.a. 1957.
[7] The summary covers years from 1952 to 1957, but the FFYP is officially from 1953 to 1957. The statistics related to 1957 are marked as "estimates" in the summary.

had made much progress in our research on the PRC with the help of these documents. In writing this chapter, I was tempted to employ this conventional practice many times. But this is at great tension with one of the major goals of this chapter, which is to probe into how such a document was compiled and what it tells us about plan making and planned economy in general. As I dived deeper into these questions it became clearer that the statistical landscape these documents paint is filled with contradictions. How are we supposed to use them as historical materials?

The first people to face these methodological questions on how to approach planning statistics were the PRC planners themselves. The planners best understood how the sausage was made—why some numbers had to go up and others go down—but the shared ground ends there. The historian's mission is to show how the historical actors ended up in that puzzling landscape and how their attempt to escape led them to a much darker place. For the planners the question was how to make all this work—being certain that they were on the right path they headed forward heedless to the greatly compromised vision.

The rest of this section is a technical description of a part of the document. Along with it, I will note what the document tells us and what it obscures. It is thus not a complete analysis of the SFYP of Beijing's transportation but a narrative that aims to bring out the various questions about the plan and the rationalization of transportation, which will be interrogated throughout the chapter.

The "Beijing Municipality's Second Five-Year Plan for Transportation" is comprised of two major parts: local transportation within Beijing 市内运输 and long-distance transportation to and from Beijing 长途运输. Each part includes both freight transportation and passenger transportation. Our focus here is the sub-part on the freight transportation in Beijing. It lasts only pages, and is comprised of four main sections. These are: First, "A summary of freight

transportation development during the FFYP and an evaluation of the completion of the FFYP;" Second, "Problems with the execution of the FFYP;" Third, "The SFYP and its principles and basis;" and Fourth, "Problems with the making of the SFYP." The first and third sections are statistical, while the second and the fourth offer a narrative of what factors had affected the execution of the FFYP and what might affect the SFYP. This structure follows the common format of plan documents. The document employs several statistical categories specific to transportation. These consist of "transportation volume 运量", or the weight of transported goods in tonnage; "circulation volume 周转量," the product of weight and distance of the haulage in ton-kilometers 吨公里; and the number of vehicles 运力. Only in the third section laying out the SFYP, a fourth category, "annual production per payload 车吨年产量," is used to elaborate on the productivity of automobile transportation—and only automobile transportation—in the perceivable future.

The first table in the first section, presented below as Table 1, summarizes the freight transportation in Beijing during the FFYP establishes the basic approach of the planners to illustrate the transportation as a form of production. The columns are headed with the years—from 1952 to 1957—and the average annual growth rate at the end. The rows are headed by different transportation means: automobile, horse-drawn carts and "other." Under automobiles, subcategories are broken out by form of ownership, meaning either local state-owned or public-private jointly operated. This structure shows that at the grand scale of things, the development of freight transportation was considered to be closely linked to two factors: the composition of different modes of transportation, and the composition of different forms of ownership. Low-technology vehicles and private ownership appear very high in proportion: horse-drawn carts fulfilled nearly sixty percent of all transportation volume, and only less than two percent of these

carts belonged to the state. The same point is proved by the second table that provides the proportion of transportation volume and circulation volume carried out by different kinds of vehicles and vehicles of different forms of ownership. According to the second table, presented below as Table 2, horse-drawn carts fulfilled 69.89% transportation volume and 60.93% circulation volume from 1952 to 1957. Cleary, horse-drawn carts dominated the freight transportation of the capital city. These number may well understate the importance of horse-drawn transportations, for reasons we will discuss later.

Table 1 The whole-city transportation volume fulfilled during the FFYP

	1952	1953	1954	1955	1956	1957 est.	SUM of 5 years	1957 % of 1952	Annual growth (%)
Transportation volume (kt)	15,148	20,550	25,813	27,209	30,430	31,718	135,720	210	16
1. Automobile	1,641	2,256	2,277	3,799	7,487	8,790	24,609	535	40
Local state-owned and public-private jointly owned	174	414	643	1,575	6,145	7,378	16,155	4,240	112
2. Animal-drawn carts	10,586	13,440	14,535	17,444	17,749	16,639	79,757	156	9
3. Other (private auto, push carts, porters)	2,921	4,854	8,951	5,966	5,194	6,389	31,354	219	17
Circulation volume (ktkm)	115,290	165,020	186,745	194,070	221,789	230,589	1,000,213	200	15
1. Automobile	22,863	42,869	36,214	55,360	96,361	116,205	349,009	508	38
Local state-owned and public-private jointly owned	2,440	7,819	12,799	27,048	82,649	98,979	229,294	4,057	110
2. Animal-drawn carts	70,243	83,191	72,401	66,182	61,161	60,388	343,323	86	N/A
3. Other (private auto, push carts, porters)	22,164	38,960	80,130	72,528	62,267	53,996	307,861	244	20

Source: Beijing Municipality's Second Five-Year Plan for Transportation. BMA 117-001-00008.

Table 2 The proportion of transportation volume and circulation volume fulfilled by each transportation means

	Transportation Vol. %			Circulation Vol. %		
	Automobile	Animal carts	Others	Automobile	Animal carts	Others
1952	10.83	69.89	19.28	19.85	60.63	19.22
1957	27.71	52.14	20.15	50.39	26.19	23.48

Source: Beijing Municipality's Second Five-Year Plan for Transportation. BMA 117-001-00008.

After learning basic statistical structure, it is important that we understand how the statistics came about. One simple sentence before Table 1 states that the statistics of Beijing

transportation in the FFYP was based on two sets of data sources. These were, "the estimation based on survey of the transportation volume in the entire city 全市货运量的调查估算" and "statistical records of various types of vehicles held by transportation work units 运输部门掌握的各种运输工具运输的统计资料." They sound as ambiguous in English as in the original Chinese. Nevertheless, the synthesis of the two data sets was necessary because it was required by the methodology of statistical work of the time. The BBTTA employed what Arunabh Ghosh calls "exhaustive enumeration" methods to collect data from its own grassroots units. But since the transportation work units did not control nor had complete knowledge of all the transportation capacities in the city, this enumeration could never be truly exhaustive.[8] It thus had to be complemented with numbers fed by consignors who employed most freight transportations, such as construction and the general goods companies. And due to the incompleteness of the external data, a level of estimation was required to delineate situation of the entire city.

Table 3 The composition of transportation means in the whole city

Number of Transportation Vehicles in the Whole City							
	1952	1953	1954	1955	1956	1957 (est.)	% change 1957 to 1952
Automobile	723	831	856	1539	1758	1983	185
Animal carts	13,708	18,387	16,223	9,605	12,771	11,318	85
Manpowered carts	326	350	3792	8076	7860	8976	2753.40

Source: Beijing Municipality's Second Five-Year Plan for Transportation. BMA 117-001-00008.

Then the quality of the data could be affected by factors both internal and external to the transportation department. How well did they know the "records of various types of vehicles" that they supposedly held? Could the way they conduct "survey of transportation volume in the

[8] On the institutionalization of "exhaustive numeration," see Arunabh Ghosh, *Making It Count,* 41-44. Ghosh shows that the limitation of the exhaustive method was well recognized, but other methods, such as typical example investigation, remained marginal in the 1950s.

entire city" provide them reliable numbers? Did the consignors themselves have good data? Did the coordination between the consignors and the transportation sector allow them to have quality communication? All these concerns the basic institutional infrastructure of information and knowledge in early PRC that a successful planned economy could simply not do without.

These questions glare at places where strange patterns appear, or things fail to add up. This is the case where horse-drawn carts are concerned. In Table 3 that provides "the transportation capacity of the entire city," the number of horse-drawn carts appeared to zig-zag dramatically throughout the years. Unlike transportation by automobile, in which statistics on transportation volume, circulation volume and the number of vehicles show a high-level of correspondence. The growth rate of the amounts of automobiles and their share of freights largely matches that of the general transportation and circulation volume, indicating a gradual but steady investment in transportation automobiles. The trajectories of changes in the amounts of horse-drawn carts, on the other hand, hardly fit the changes in their share of freights.

Table 1 and 2 tell a relatively neat story. According to these tables, the transportation volume of horse-drawn carts steadily grew every year while the circulation volume gradually declined starting in 1954. This means that more horse carts were used in shorter-distance transportation, leaving long-haul freight to trucks. Indeed, this was a goal of the transportation department.[9] But when numbers from Table 3 enter the picture, things become more puzzling. When the circulation volume by horse was as high as 61,161 ktkm in 1955, the number of carts dropped to 9,605—the lowest point during the five years. A calculation of utilization rate per day per cart renders a significant 54% increase from 1954 to 1955, only to have it drop back to

[9] "An Overview on the Implementation of Planned Transportation in Beijing 北京市实行计划运输的基本情况," BMA 004-016-00335, c.a. 1955.

normal level next year.[10] Any scenario in which such a drastic change could indeed happen—all horse-drawn carts began to haul goods in both days and nights; they did not leave the city throughout the year, or all carts added additional animal power—was unrealistic. Nor were they mentioned in any records.

The category of "other" is a total statistical jumble. It covers both human-powered transportations, such as tricycles, wheelbarrows, and porters; as well as automobiles belonging to non-transportation work units (no distinction made between these and those counted under "automobile"). While Tables 1 and 2 seem to use "the others" rather successfully to fill the whole picture, the statistical construct collapses in table 3. The number of human-powered vehicles was a negligible 350 in 1953. In 1954 it jumps to 3792, followed by another leap in 1955 to 8076. While the numbers of automobiles belonging to non-transportation work units were not collected in 1952 and 1953. In 1954, an improbable "3" was recorded. It then went above four hundred in 1955 and ends over six hundred in 1957. There is barely any correspondence between the numbers of vehicles and the transportation they fulfilled. It makes one wonder if they could acquire information from consignors to construct table 1 and 2, then why not table 3? The table 3 being "transportation capacity of the entire city," they could have estimated the numbers of vehicles based on the neat picture depicted by table 1 and 2. Such questions may sound trivial, but it raises questions about how the grassroots planners understood their work. This is not only to question their statistical literacy and accountability, but also their

[10] The plan does not include a table of utilization rate. I calculated the utilization rate per cart per day based on the statistics provided in the plan. The calculation process is as below: dividing the circulation volume carried by a type of vehicles by the number of the vehicles of the same year (tkm per vehicle); dividing the quotient by the average workdays per year (work days for horse-drawn carts is assumed to be 270 days). The utilization rate per cart per day was 16.53 tkm in 1954 and 25.52 tkm in 1955. The average number of horses for each cart was not specified in the document but evidence is against a sudden change in that number.

motivations in compiling the plan.

Ultimately, these are also questions about the institutional capacity of Beijing transportation department to acquire, process and present information, particularly when it pertains to muscle-powered transportation and transportation capacity outside of the BBTTA's direct control. Such information was supposed to serve as the base for a commanding understanding of the transportation economy, upon which future plans would be made. However, a look into the Section three and four challenged the basic assumptions of the continuity of plan and its empirical basis.

The Bureau's plan for Beijing's freight transportation over the next five years is straightforward and simple. The first table provides a steady annual growth of transportation volume at 4.86%. This number is derived from "the infrastructure construction plan based on the city's population growth plan." The fact that the annual growth rate during the First Five Year presented in the summary was much higher—15.9%—did not seem to inform the deliberation. If this could be justified by the belief that the government had absolute control over the infrastructural constructions, the second table (here as Table 4) exposes the arbitrariness in the planning. The table, titled "the number of vehicles by type at the end of each year during SFYP," appeared to need even less data sources. In both the numbers of horse-drawn carts and human-powered vehicles, it presents absolutely no change—a straight flat line—from 1958 to 1962. In other words, the planners could not predict what the policies would be in these respects and so gave up any pretense of planning. All increase in freight transportation would be fulfilled by increases in automobiles. But the modest investment in automobile could not meet these needs—even an underestimated one. As a solution, the plan added more trailers and even set in more double shifts for automobile vehicles. When even that fell short, planners plugged the gap with

"other" vehicles, namely, vehicles recruited from non-transportation work units. In such a way, social mobilization was integral to the plan, and not an auxiliary measure to make up for its incidental failures. In other words, this plan, embodying a rational approach to the management of transportation, was premised on a demographic plan largely defying the manifested trend—the transportation plan was ready to accommodate a 4.5% annual growth of Beijing population which the city's population growth rate in the 1950s was thirteen percent per year.[11] It was further constrained by a commitment to prevent proliferation of "backward technologies" in the capital, and amended with ad-hoc measures. The plan was meant to be a guide for economic activity driven by scientific certitude, but it was full of uncertainties from the moment of its drafting.

Table 4 The number of vehicles by type at the end of each year during SFYP

Numbers of Vehicles by type at the End of Each Year in the SFYP							
	1957	1958	1959	1960	1961	1962	1957 to 1962 (% change)
1. Automobile	1,341	1,431	1,531	1,671	1,821	1,971	147
Double-shift percentage	39.8%	40%	40%	36%	35%	35%	n/a
Trailers	330	330	330	330	330	330	100
Auto potential	2,207	2,333	2,473	2,669	2,879	3,089	
2. Animal carts	11,316	10,864	10,864	10,864	10,864	10,864	95.99%
3. Manpowered Carts	8,976	8,976	8,976	8,976	8,976	8,976	100

Source: Beijing Municipality's Second Five-Year Plan for Transportation. BMA 117-001-00008.

We cannot dismiss this SFYP made by BBTTA as an insignificant and irrelevant document. The reason is sobering. This chapter will show that great political, legal, and institutional changes had to happen to enable the production of this particular document. Behind the flimsy six pages was the endeavor to control the unruly muscle power and to establish centralized, rationalized system of transportation. In the process, the answers to the question who could get what from where by what means were profoundly changed.

[11] Source: World Bank. https://populationstat.com/china/beijing

2. Striking Down the Transport Bosses

In the 1950s, Beijing witnessed its most massive wave of construction in centuries. The rush of building activity filled the city's roads with bustling vehicles laden with construction materials. Sand, brick, and stone accounted for fully half of intra-city freight, followed by foodstuffs, coal, light industry materials, and consumer goods.[12] The predominance of construction materials in the city's freight transportation gave it a distinct seasonality. Demand surged in summer and autumn, before shrunk to a fraction during the cold months. Such a seasonal fluctuation would not have been particularly stressful if transportation did not largely depend on the animal-drawn carts. But the majority of horses, mules, donkeys and their drivers hailed from the surrounding rural area. The partial overlapping of the critical agricultural seasons of planting and harvesting and the busy construction seasons posed severe challenges to the city's transportation administrators. This timing conflict caused constant and drastic changes in the supply-demand ratio and led to volatile price fluctuations, which the administrators were charged to prevent. The regulation and rationalization of muscle-powered transportation in 1950s Beijing was foremost a struggle against these forces that diminished the authority's control over transportation prices.

The government attempted to control transportation prices earlier than in many other industries. Historian Li Ruojian believed that, apart from the importance of transportation to the operation of the economy and to the new regime's preparation for the Korean War, the transporters themselves were seen as problematic. Across the country, porters engaged in violent

[12] This general composition was formed soon after 1949. See "Beijing Inner-city Transportation in 1951 一九五一年北京市运输情况," BMA 004-003-00223

confrontations with agents of the new government in late 1949. This damaged the economy as well as the new state's dignity. A clampdown on the "porter bosses" (*batou* 把头 or *loubao* 搂包 in Beijing dialect) in major cities quickly ensued. In previous decades, urban transportation had largely become the domain of organized crime and local toughs who found patrons in the government or the police force. In Beijing, *loubao* emerged when the Nationalist Government set up taxation checkpoints in railway stations in 1928. Those enjoying the personal favor of the taxation officers and policemen could smuggle their freight out without paying taxes. Gradually they built a business transporting goods for consignors and came to control stations, porters, vehicles, and wagoners.[13] Under their command, the trade of inner-city transportation was hardly distinguishable from the secret societies: the boss demanded loyalty and tribute from the porters and the porters depended on the boss for protection and income. Fights over territories and goods between different sects and collective militant protests against the government were just part of doing business. It is hardly surprising that these porters—seen by the new government as violent, criminal, and politically reactionary men—should be the first to be reformed through collectivization.

In March 1950, the State Council issued the "Provisional Resolution on Abolishing the Feudal Control System in Porter Trade Across the Country 政务院关于废除各地搬运事业中封建把持制度暂行处理办法" and began cracking down on the porter bosses.[14] The Measures

[13] Li Ruojian 李若建, "Boundary of Power: A Study on the Transformation of Urban Transportation in the early 1950s 权力的边界：20 世纪 50 年代初期市内运输业变迁研究," *Open Era 开放时代*, (2012) no.4,72-91.

[14] The State Council 政务院, "Provisional Resolution on Abolishing the Feudal Control System in Porter Trade Across the Country 关于废除各地搬运事业中封建把持制度暂行处理办法 1950-3-24," *CSANE*, *Wage and Welfare Volume, 1949-1952.*(Zhongguo Wuzi Chubanshe, 1996), 31.

describe *batou* as a person exercising "feudalist control" over the porters, exploiting their labor, and cruelly abusing them. It did not define *batou* simply in terms of their position in the transportation trade but lumped a variety of accusations—murder and rape included—into their deeds. Until 1952, nearly twenty thousand people composing four percent of total employees in the nation's trade were judged as *batou* and sentenced to various levels of penalty. After the first strikes against the *batou*, the Beijing Porters Company (BPC) collectivized the city's porters, cart-pullers, and wagoners in August 1950, thus launching the consolidation of Beijing's freight market. Organized into teams, workers now received daily jobs from the BPC, to which the workers gave a five to fifteen percent cut of their income in return. Political education quickly began, along with the selection of activists for promotion to the rank of cadres. Before the end of 1950, more than 65 percent of the BPC cadres were former porters and wagoners.[15] However, the swift change of identity hardly altered their way of action. The forthcoming years continued to witness much aggression from these new cadres stylized in the old time.

Besides taking control most of the city's distribution centers, the BPC also began acquiring exclusive shipping contracts with many companies under the auspices of the Beijing Bureau of Commerce. The city's heavy reliance on muscle-powered transportation granted BPC's dominance over automobile companies. The already small share of automobile transportation was largely run by private companies. The state-owned Beijing Automobile Transportation Company (BATC) played at best a marginal role in Beijing's transportation. The BPC's advancement into the market share of auto transportation forced the private automobile owners and BATC to team up. They filed a joint petition to the municipal government, proposing to establish a transportation coordination committee. Their hope was that such a committee

[15] Li Ruojian, "Boundary of Power."

would give them some power to negotiate the respective shipping prices of horse-drawn carts and trucks. Perhaps displeased by the fact that the private trucker owners led the initiative, or perhaps recognizing that the automobiles were far from becoming the major transportation power, both the Ministry of Transportation and Communication as well as the Beijing Bureau of Industry and Commerce Administration reserved from approving the petition. Instead, they supported the BPC's proposal to incorporate the automobile sector and renamed the new establishment the State-Operated Beijing Transportation Company (BTC).

According to the BTC, there were two imperatives behind the incorporation. First, the BPC and the automobile companies each had their own clientele. Some consignors not tied to either side exploited the division and hired "non-organized" vehicles, giving opportunities to middlemen—"*loubao*" in Beijing dialect—to woo away the drivers and to manipulate the price. Second, the weighty task of transporting the entire capital's freights could not be done without close coordination between the two types of transportations. Such technological distinction would be temporary after all because "the future for the BPC lies in replacing the backward tools such as wheelbarrows and horse-drawn carts with the more advanced automobile and weightlifter. Therefore the agenda of the two parties are indeed the same!" The new BTC reconciled that in principle horse-drawn carts should carry freights within ten kilometers, and haulage further than ten km belonged to the automobiles.

The consolidation of the two types of transportation proved short-lived. After fifteen months, the automobile part was carved out again. This was possibly due to the ten-kilometer rule, or else to the failure to abide by it, that made the conflict between carts and cars irresoluble. Beijing in the early 1950s was not the sprawling metropolis it is today. Ten kilometers is roughly the distance from Qianmen, the major railway station on the southside, to Andingmen, the

biggest distribution center on the north end of the city proper. The scale of the city and the cheapness of horse-drawn carts had already disfavored the automobiles, as much as the likely narrow lanes through the city which slowed down automobiles, if not making them altogether immobile. Being tucked under a rigid, unified regulation in which the carts enjoyed a regulatory priority may have taken even more business away from the truckers. In any case, this series of institutional changes illustrate that coordination and an ideal balance between different technologies was not forthcoming, despite strong government intervention.

3. Beijing Transportation Company

The BTC without automobiles grew to be a bigger, stronger, even more aggressive version of the former BPC, while its responsibilities became more onerous and daunting. If the BPC dealt mostly with the unruly inner-city porters, the BTC, overwhelmed by the rapidly increasing transportation volume, faced infloods of rural horse carts. The cadres of branch offices scrambled to take possession of all carts entering their districts, signing them into the company's management. Although many of these horse-drawn carts were owned by the wagoners themselves, some belonged to owners who hired the wagoners and shared revenue with them. Regardless of the form of ownership, the BTC worked hard to corral all of them into its "unified management." This demanded that all of them wait for the BTC to assign them transportation tasks, as well as that they follow the BTC-stipulated price schedules and submit fifteen percent of their revenue to the BTC.

The word *tongyi* 统一 (unify) had a strong presence in the BTC's objectives description. Primarily, the municipal government expected the company to "unify the dispatch of transportation power 统一调配运输力量," "unify the transportation cost 统一运输价格," and to

which later would be added "unify the source of goods 统一货源." All this meant that the BTC ought to be the only authority in charge of Beijing freight transportation. In the absence of detailed instructions regarding the scope and degree of these unifications, the BTC took its objectives to their logical extreme. Only through one hundred percent control of all vehicles in the city, would Beijing transportation be truly centralized and able to run as efficiently as military logistics. Similarly, only through total centralization could the BTC ensure a unified, gradual decline of transportation cost and thus "save for the nation." With such an important responsibility, the BTC was able to fight against any forces that inhibited its total control. Any individuals or vehicles that slipped through its grasp and were hauling goods around without its authorization, even if legally, were seen by the BTC as undermining its whole enterprise.

Not surprisingly, BTC cadres began to notice enemies everywhere. First and foremost were the *loubaos*. Some of them had been persecuted in earlier years as "*batou*" but were audacious enough to resume their old trade. Others had begun their brokerage career only recently, riding the tide of a booming transportation market. In the busy seasons, they reacted faster to the clients' request and offered higher payment to the cart drivers than the BTC. During the slack seasons, they maintained business by lowering prices. For the BTC, such maneuvers were disrupting the order that the company tried to uphold and eroding its control over the transportation force.

Nor were the wagon owners, the drivers, or the clients innocent in BTC's eye. The owners, who did not labor at all, were earning a bigger share of profits than the BTC. In a report to the Municipal Party Committee, the company bitterly complained that "the state had invested so much to establish this company, yet a big portion of our nation's transportation cost went to the pocket of the wagon owners! We suggest that the owners' profit must be further limited and

the BTC's commission should be raised. This way the company can provide more welfare to workers and invest in more vehicles."[16] When asked about whether BTC had used the commission income to buy vehicles, they admitted bluntly "no new vehicles were purchased. The commission fee was mostly in the loss due to our inexperienced management." The Committee did not approve a higher commission. On the contrary, it suggests lower commission might help the company to control the transportation force more effectively.

The drivers and their clients were also faulted for their collaboration with the *loubaos*. Some drivers left the BTC to join *loubao* organizations, others became *loubao* themselves and took other drivers away with them. The BTC lamented that those that remained complained about the low pay in the busy season and about lack of work in the slack months. Even the BTC's clients, many of whom were government units or state-owned enterprises, hired *loubao*'s vehicles despite exclusive shipping agreements with the BTC. In a 1953 report about the *loubaos*' activities, the BTC even included some of these work units in its list of *loubao*. Among the eighteen cases listed in the report, five were individual brokers, seven were registered private transportation companies, three were state enterprises such as Beijing Railway Bureau who hired *loubao*, two were private factories, and the last one was Hebei Transportation Company—the BTC's counterpart in Hebei Province! Presumably, most of their vehicles "were in the hands of *loubao*."[17] Such indiscriminate indictment of offenders evoked a street toughness in the cadres work style. But more important was the sword of "unification," which empowered the BTC to attack almost anyone who stood in its way.

---

[16] "About the Question of the Nature and Developmental Direction of BTC 关于运输公司性质及发展方向问题," BMA 101-001-00057, ca. 1953

[17] "Report on the Investigation on the Activities of Local Transportation Companies, Loubaos, and Batous 关于本市私营运输行及搂包把头活动情况的调查报告" BMA 022-012-00933, 1952

The fluctuation in transportation price frustrated the municipal government and led to another wave of cracking down on private transporters. On August 6, 1953, the Administration Bureau for Industry and Commerce announced that any entity that did not own transportation vehicles were henceforth prohibited from carrying construction materials. Violators would be dealt with as a *loubao*. In one stroke, many legally registered transshippers 转运行 were deprived of most of their business. A lawsuit against such a broker illustrates how a vague legal framework allowed the authorities to exclude the brokers from operating transportation business.

The appellant was one Xi Jingxing, a partner in the Hengtong Transshipping Co., which was licensed to operate transshipping services and hotels. Mr. Xi was sentenced to three years in prison by the People's Court of Beijing Municipality for "stealing from the state by committing *loubao* and fraud." Xi appealed to the Supreme People's Court. The plaintiff was the Beijing Bureau of Public Affairs, which submitted to the court a response to Xi's appeal. The response first explained why Xi was in fact a *loubao*, not a law-abiding transshipper. It made a distinction between transshipping, transporting, and *loubao* in the following way:

> "Transshipment is a business that when the enterprise does not own any vehicles but delivers and receives goods on behalf of the clients and take a commission from the clients according to the number of goods delivered or received. The client bears the cost of transportation. Transportation is different from transshipment. The enterprise has vehicles, transports goods for clients with their own vehicles and earns transporting fee. *Loubao*, on the other hand, owns no vehicles. But they control vehicles, takes over construction projects' transportation work, deducts the drivers' pay. It is in nature a feudal, monopolizing behavior."[18]

In trying to cast *loubao* in a bad light, the letter used many vicious sounding but vague words such as "control 把持,""take over 包揽," and "deduct 克扣" to describe their behaviors.

[18] "Bureau of Public Affair's Letter on Abolishing Private Loubao to Improve the Transportation Work and the Report on the Investigation on Hengtongfa Company's Illegal Activities 公用局关于取缔私营搂包以利运输工作的函及恒通发运输行违法问题的调查报告"BMA 022-012-01430, ca.1953

The distinction between transshipping and *loubao* remained unclear despite the disparity in the tones. In the case of Xi, his company—licensed for transshipping—did not own vehicles. When he got his contract from the People's Palace of Culture's construction project, he hired vehicles to transport gravel for them. He took a share of the payment and gave the drivers the rest. There was no evidence that he did not pay the promised amount, nor did he—at least in his view—"control" any vehicles or "take over" the People's Palace of Culture project.

The Bureau of Public Affair pinned the case on the fact that what Xi transported were construction materials, which was excluded from the operation of transshipping services. They wrote: "The Administrative Bureau of Industry and Commerce (ABIC) announced on August 6 that enterprises without vehicles are not allowed for construction materials transportation. We found the evidence that Xi completed the shipping on August 8. Therefore, he had violated the restriction." In other words, the ABIC's stipulation was immediately effective. Xi protested that he had not known about this new rule and most of the job was done before August 6. In his defense, he followed strictly the transportation price issued by the Beijing Finance and Economic Committee. However, the Supreme Court agreed with the Bureau of Public Affair's argument, decided Xi was indeed a *loubao*, and upheld the three-year sentence.

If the court's rule exemplified the hard approach to illegalize the previously legal transshipping business, a soft, yet no less definitive measure was taken to effectively outlaw the transportation by self-owned animal-drawn carts outside of the BTC's direct control. The BTC requested that the Municipal Taxation Bureau rescind all tax receipts it had issued to the animal-drawn cart transporters outside of the BTC "in order to effectively ban the *loubaos*." The standardized receipts certified by Taxation Bureau were issued to all legally registered, tax-paying enterprises. Since the receipts were essential for the consignors' accounting of a

transaction, transporters unable to provide certified receipts would have trouble transacting business with law-abiding, tax-paying counterparties. In response to the BTC's opinion that all horse-drawn carts had to acquire receipts from the BTC, the Taxation Bureau conceded. Their response was even apologetic, not without a hint of relief:

> "We did consider how dispersed, non-organized horse-drawn carts impacted the organization of transportation. Therefore, a higher tax rate was applied to them. But because they don't have to pay the ten percent commission fee [to the BTC], as well as some other reasons, we often see horse-drawn carts drivers quitting the BTC and coming here to ask for registration of their carts as non-organized vehicles. They rarely listened to our persuasion to return to the BTC, and often stubbornly sit in the office and refused to leave. We also found the situation very hard to manage."[19]

This change of hands of a regulatory tool—the certified receipts—followed the larger, structural formation of important socialist institutions. As the power to issue certified receipts shifted from Taxation Bureau to the BTC, the specialized, sector-based administration was strengthened and local, general administration was weakened. This reflected the rise of "*xitong* 系统"—structures established for specific functions, as the Chinese state emulated the Soviet model of centralized economy planning.[20] In the CCP's parlance, the "xitong" administration—vertical, ministry-led sectoral administration was also described as "strings"条条, when brought

---

[19] Letter from Beijing Bureau of Taxation to Beijing Financial Committee 北京市人民政府税务局送北京市财经委员会 "On Scattered Animal-Drawn Carts' Use of Unified Receipts and on BTC's Unified Regulation of ADC in the Future 对零散兽力大车领用统一收据情况及今后应有市运输公司统一管理的意见报请审核" BMA 004-014-00025, 09-01-1953.

[20] *Xitong* is the vernacular term in Chinese for the sectorial system found in the socialist countries. Earlier scholarship often refers to "xitong" as "branch" of government. See Franz Shurman, *Ideology and Organization in Communist China*. More recently, authors also define xitong as "the bureaucratic system with which a work unit is officially identified and affiliated." See Xiaobo Lü and Elizabeth J. Perry, eds., *Danwei: The Changing Chinese Workplace in Historical and Comparative Perspective*, (Armonk, N.Y: M. E. Sharpe, 1997), 229. Xitong remains to be an important institution even in the reform years. But it is much understudied. On the transplantation of Soviet system, also see Xu Hanbing, "The transplantation and entrenchment of the Soviet economic model in China," Thomas Bernstein eds., *China Learns from Soviet Union, 1949 to Present*, (Lanham: Lexington Books, 2010).

up in the context to contrast with the "blocks"块块—the horizontal, general administration constituted by local governments, particularly the provincial governments. Shifting one to the other signified change from centralization to de-centralization, or vice versa. Seemingly small issues such as which unit should issue certain kinds of receipts was a typical policy adjustment constituting the larger shift. Although grassroots function units like BTC often reported to both its superior within the *xitong* and to the local authority, their behavior changed with the larger shift between strings and blocks. This exchange between the BTC and Beijing Taxation Bureau shows that the elimination of private economy for the purpose of transportation rationalization greatly empowered specialized regulation units such as the BTC.

Interestingly, a report issued the same year from Beijing Bureau of Public Affairs to the Beijing Finance and Economic Committee shows that this shift of administrative power did not go unchallenged, especially when the competence of specialized administrators was in question. The report from Jia Tingsan 贾庭三 and Wang Zhenwu 王镇武, the leaders of Beijing Bureau of Public Affairs 公用局, to Zhao Pengfei 赵鹏飞, the Vice Chairman of Beijing Finance and Economic Committee shows that there was serious concern about the BTC's capability and accountability among the high-rank officials in the general administration.[21] Jia and Wang criticized that the loss of a clear mission had turned the BTC into a jumbled hybrid: "It is not truly a state-operated enterprise, not a cooperative, nor is it quite an administrative organ." As a nominally state-owned company, it was an unsuitable container for the massive troop of privately-owned horse-drawn carts under its control. Jia contended that a syndicate of carts owners 由车主组成马车运输联合会 might be a more appropriate organization for

[21] "Report on the Extent Problems of BTC 关于北京市运输公司存在的问题的报告," BMA 004-003-00108, 04-21-1953.

transportation operation, which then should be put under the administration of the ABIC—in other words, back to the "block." "In principle, it should be managed in the same way as the private handicraft economy." This way, they argued, administration and operation of the capital's transportation can be effectively separated. Especially against the BTC's request to raise the commission charge, Jia and Wang proposed that BTC's commission should be reduced so that the tax could be raised accordingly. The serious tone of the report and the extent its proposed measures departed from the status quo testified the writers' great dissatisfaction with the BTC's work. It also shows that the shift to specialized administration, for a more forceful appropriation and restriction of private sector, was not yet inscribed on the stone or shared—even among government officials—as a common vision of socialist economy.

4. Unification of Prices

In 1954, the municipal government decided to separate the administration and operation of the capital's transportation, though its measures differed from those that Jia and Wang had proposed. Instead of letting ABIC assume command, the Bureau of Beijing Traffic and Transportation Administration (BBTTA) was set up to manage the city's transportation affairs. It became the direct supervisor of the BTC. Interestingly, Wang Zhenwu, the vice Chief of Bureau of Public Affair and one of the writers of the report that had criticized the BTC, was appointed chief of the new BBTTA. This was perhaps due to his proper credentials, perhaps out of a desire for cordial inter-institutional relationships.[22] However, neither clear separation of responsibilities nor the appointment of a critic as the BBTTA chief succeeded in ensuring accountability. On the

[22]"An Overview on the Implementation of Planned Transportation in Beijing 北京市实行计划运输的基本情况," BMA 004-016-00335, ca.1954

contrary, with the administration and operation still in the same *xitong*—and thus tied together in the same "string"—the new organizational hierarchy gave rise to an institution whose arbitrary power grew even more disproportionate. The result was the crippling of the rationalization effort that underwrote its very establishment. In short, the fact that the BTC remained a monopoly meant the administration often failed to discipline it. More often, the Bureau and the Company acted in unity to enforce their vision of rationalization. This vision came at great cost to other sectors, even as it expanded the transportation *xitong*'s bureaucratic authority.

The BBTTA and BTC's core mission was to stabilize and unify transportation prices. Without transparent and stable transportation costs, the prices of transported goods would deviate from the plan and thus distort the plans of sectors in need of shipping services. If all sectoral plans contained transportation-related uncertainty, it would be impossible to converge on a national economic plan to guide the nation towards prosperity. Furthermore, the difference between transportation prices in the same market created undesirable preferences and would disturb the distribution of transportation power. The BBTTA and BTC's number one imperative boiled down to four words: unify the transportation price (tongyi yunjia 统一运价).[23]

However, beneath the bold, aspirational vision expressed by these four words, the specific standards of price unification and the means to achieve it remained elusive. In 1950, the newly established BPC attempted to "unify the transportation price" through a "democratic and collective" pricing procedure. According to BPC, they painstakingly calculated transportation prices for all major goods, taking into consideration a multitude of factors: Calculated prices were primarily "based on the deserved income of the labor hours of the porters" and made "in

[23] On the centrality of price stability for planned economy, see Isabella Weber, *How China Escaped Shock Therapy* (Routledge, 2021).

reference to the price in the past." It took the current transportation price for grain as the baseline and applied a percentage mark up or mark down for other goods depending on their bulkiness, density, and general difficulty to transport. For example, the fee for glass was 15 percent higher than grain, while tea was 20 percent lower. Prices went up every three li and were adjusted by the actual condition of the roads. This pricing system, the BPC claimed, was the product of extensive research and inclusion of opinions from all sides. The company cadres interviewed all major consignors, held discussion sessions with the porters, even submitted their draft to a collective discussion in a meeting consignors and workers were both presented. "Everyone is in charge of deciding the transportation price in Beijing. All disagreements were brought up and solved publicly." They submitted the prices decided in the meetings to the ABIC. Upon approval, they went into effect for three months and were expected to be adjusted—through same collective process—at the end of the three-month period.[24]

The price so democratically decided should be more appropriate to a socialist economy than the faceless jumble of numbers, chaotically and coldly reflecting demand and supply, as in a capitalist economy. However, the transportation prices decided through this collective effort in March 1951 had to be completely scratched after three months. The BPC found that "the cost of draft animals' feed and workers' living expense is now 39 percent higher than three months ago."[25] Although there was inflation in 1951 largely due to the war effort in Korea, it did not amount to a level so severe.[26] This number likely reflected the workers' demand to raise the fee

[24]"Summary of the Beijing Porter Company's Work in the First Season of 1951 北京市搬运公司一九五一年第一季工作总结报告," BMA 022-010-00386, 1951.
[25]"Beijing Porter Company's brief on the work in the first half of July 北京市搬运公司七月份上半月工作简报," BMA 022-010-00386, 1951.
[26] According to A. Doak Barnett, the wholesale commodity index in Shanghai raised 17.39% between Jan 1950 and Feb 1952. A. Doak Barnett, *Communist China: The Early Years, 1949-55*. (New York: F. A. Praeger, 1964), 160.

expressed in the language of BPC's own pricing principle. Pricing problems were accentuated by a seasonal supply crunch that the BPC had not anticipated. That is, the busy season for construction and for agricultural work coincided in the late spring and early summer. This meant that non-BPC animal-drawn carts charged hefty fees for their desperately needed services—sometimes more than double of the BPC's price. The comradely agreement on the unified price was torn into pieces by this seasonally determined, spasmodic change in the relationship between supply and demand.

Another round of collective pricing determined a new set of unified prices for all transporters under the BPC. These prices remained in place for almost a year, perhaps because the strenuous pricing process prevented the BPC from implementing the seasonal adjustments it intended. Only the recession following the Three-Anti and Five-Anti campaigns, and the ensuing plunge in non-organized horse-drawn cart fees, forced the company to reevaluate its unified transportation prices. Now renamed as the BTC, the company ceased the collective pricing process. Instead, through a combination of legal persecution and regulatory centralization, the BTC put their effort in hemming in the dispersed animal-drawn vehicles, hoping to eliminate factors disturbing its unified price regime. By the end of 1953, it claimed to control thirteen thousand horse-drawn carts, about 85 percent of all freight-carrying horse carts in the city.[27] With the BTC's increased control, the city implemented a new brand of "unified price" that obliterated in a stroke the collectivist spirit that its earlier version tried to embody.

At first, this "unified price" was implemented only in brick transportation. As an essential construction material, bricks accounted for more than twenty percent of all intra-city freight transportation. The Finance and Economic Committee (FEC) described how irrational brick

[27] "Report on 1953 Transportation Work 1953 年运输工作报告," BMA 004-003-00108, 1953

transportation had been: “Because the distance between brick factories and construction sites varies, the transportation fees so differ. Construction projects only want to buy from factories nearby, which often results in crosshauling and irrational supply, and causes much waste.”[28] At first glance, this is a curious complaint. By definition, purchasing from nearby prevents crosshauling. But the transportation units must have been fed up with the consignors’ haggling—“selecting the factory and choosing the vehicle” instead of simply accepting the BTC’s arrangement. For a more orderly distribution, the Beijing Finance and Economic Committee passed a new measure to centralize the allocation of all construction materials and began the trial of “unified price” with bricks.

What this unified brick price regime entailed was a strict top-down control of brick distribution. The FEC’s central distribution office would first determine how many bricks to allocate to a construction project. Then, the project would transfer a fee to the office (after 1953, this fee went directly to the BBTTA) based on the volume of bricks. The FEC would then assign the work to either the BTC or the auto transportation company and remit the corresponding fee. The consignor and the carrier would settle the account after the job was completed, according to the actual vehicle used and mileage overhauled.[29]

The FEC could see a variety of merits in this unified price scheme. First, it made the onerous work of composing and approving construction budgets much easier. It also put the transportation companies’ mind at ease—it was now at their discretion to decide when to transport whose bricks from where, thus put a stop to the chaotic, self-interested competition that resulted from consigners’ preferences for closer-by factory’s products and for cheaper horse-

[28] “BBTTA’s Summary on the Unification of Transportation Price of Bricks for Construction Purpose in 1953 市运输局 1953 年建筑工程用砖实行统一运价的总结,” BMA 004-014-00027
[29] Ibid.

drawn carts over more expensive automobiles. As for complaints about unified price raised by construction projects, the FEC simply brushed them away and even criticized the projects for not fully understanding the policy. According to the FEC, "Some thought that they took a loss in paying the unified price because they are located right next to a brick factory. Some thought that since they already paid the fee, they could request a haul anytime they wanted. Still others went out to hire non-organized vehicles despite having paid the unified price [fee] ahead of time…These behaviors bring various levels of losses to our nation."[30] In other words, the loss that the construction projects had to bear due to the unavailability of transportation service was indeed their own fault. The Committee admitted that the BTC's delayed service had become a norm instead of exception. The settlement of account could linger indefinitely. Yet in the Committee's evaluation, the implementation of unified price in brick transportation was a success. They went on to apply it to other major freight contents, including gravel, stone, and lime in 1954. It is astonishing that the Committee as a municipal organ would take only the perspective of the transporters and ignore the consignors' interest. One can only surmise that the simplicity of the scheme provided the municipal leaders a sense of clarity and control—however troublesome the consequences might be. Such "one cut for all 一刀切" policies would become a label of the communist regional-level government.

A dispute between the BTC and the Bureau of Grain demonstrates sharply the growing arbitrary power of the transportation units that resulted from prioritizing unification. The Bureau of Grain was itself an administration that was greatly empowered by centralization and unification. One of the most important and best-known state policies of the PRC, the Unified Purchase and Sale of grain, gave it a virtual monopoly on grain marketing throughout the

[30] Ibid.

country.[31] As a unit upon whose routine operation the urban population's livelihood depended, the Bureau of Grain often had the upper hand when inter-administration conflicts happened. In July 1954, the BTC informed all its major consignors that from then on, the company would not start shipping their goods upon receipt of deposit but only after all payment was cleared. The BTC explained that consignors' delayed payments had caused serious cash flow problems and made it difficult for the company to organize private horse-drawn carts. The Ministry of Transportation responded by suggesting its subordinate units require pre-payments before shipping goods. The Ministry also suggested negotiations with consignors and flexibility in implementation. However, the BTC's decision was abrupt and absolute—requiring prepayments without any negotiation or flexibility at all.[32]

All consignors yielded, and began prepaying for transportation, with one notable exception: the Bureau of Grain. The BTC promptly cancelled more than twenty planned grain shipments. Before long, foodstuff was running out of stock in various districts and neighborhoods. The Bureau of Grain complained to the municipal government that, "Our own accounting procedure cannot permit prepayments," only to have the BTC to submit a lengthier and more forceful counter-complaint. The municipal government summoned the BTC and its 21 major consignors and let the consignors to air their frustration with the BTC. These complains included excessive transportation delays, excessive delays in settling accounts, loss of goods during transportation, and an utter lack of coordination between the headquarters and their branch offices, among other things. The municipal leader sharply criticized the BTC and asked

[31] On the grain procurement process and the role of the Bureau of Grain, see Jean C. Oi, *State and Peasant in Contemporary China: The Political Economy of Village Government* (University of California Press. 1991).

[32]"Report on the Impacts of Prepayment of Transportation Fee on Grain Supply 关于预收运费影响粮食供应问题市粮食局和运输公司的报告," BMA 004-014-00042, Aug-Nov, 1954.

all parties to better engage each other in future communication. But in effect, it eventually backed the transporter's prepayment policy.[33]

By late 1953, the problems of state-owned regional transportation enterprises had become a thorn that inflicted agony across the country. A 1953 Ministry of Transportation report, citing the common complaints, criticized these enterprises for their "hefty fees, low efficiency, excessive paperwork, and rampant accidents." These problems had to be attributed to the prevalence of "capitalist mode of management" among the enterprises' cadres. The state-owned enterprises had not played so well their leadership role. The solution, the report pointed out, is to strengthen the administration and making more comprehensive plan. "[We ought to] strengthen our leadership and management over privately-owned transportation vehicles. Some thoughts and deeds [of our cadres] do not intend for grasping the transportation capacity of the whole country or including various transportation forces into the track of the plan, or rational utilization of the different forces, but focus on blind competition, monopoly, and exclusion. These thoughts and deeds are not only wrong, but harmful."[34]

5. Another Look at the Plan

The establishment of the BBTTA in 1954 was thus part of the nationwide endeavor to strengthen the administration in order to facilitate more practical economic plan. In reality, however, it institutionalized the "rationalizing transportation from transport sector's perspective" approach. Although one of the main agendas of the local transportation administration was to

[33] "Records of the Meeting on Transportation Fee Settlement Problem 市运输公司运费结算问题座谈会会议记录," BMA 004-014-00042, 1954-11-08

[34] "Summarizing Report on the 1953 National Transportation Meeting by Ministry of Transportation 交通部党组关于 1953 年全国交通会议总结报告, 1953-10-15" *CSANE, TCV, 1953-1957*. 3-4.

build a better statistical understanding of the dispersed transportation power, as the above report shows, units like the BBTTA were left to their own to figure out how to achieve this goal. In fact, in The First Five Year Plan of the Development of National Economy of the People's Republic of China—the plan of all plans—muscle-powered transportation was not tabulated at all. This becomes less surprising when we realize that the FFYP was written in a language of unequivocal progress. The section of "Transportation volume by the major transportation sectors" begins with "Compared with the year 1952, the increase in transportation volume and circulation volume by several major transportation sectors will be as below."[35] The rest of the section goes on to put numbers on the increases of transportation by railroad, by steamship, by automobile and aircraft. Although there was no illusion that muscle-powered vehicles had stopped being a major transporting means, it was deemed certainty to decrease and retreat from the stage, therefore had no place in the Plan in which growth is only measured by the fulfillment of modern technologies.

The blindness to the muscle-powered transportation was not limited to the plan. Muscle-powered transportation was methodologically excluded from The Statistical Workers' Handbook for Transportation and Postal Services. Published by Statistical Press and distributed by Xin Hua Bookstore, the handbook was intended as an introduction to basic statistical knowledge regarding transportation and postal services.[36] Its main purpose was to explain the categorical and indexical terms that would appear in the current system of reporting forms that required the cadres' proper calculation. The primer starts from foundational concepts such as transportation volume and circulation volume. It then introduces "transportation ratio 运输系数," a concept

[35] "The First Five Year Plan of PRC, 1955-7-30" *CSANE, TCV, 1953-1957*. 20
[36] Editorial Committee, *Handbook for the Statistical Work in Transportation and Postal Service 运输邮电统计工作手册*, (Beijing, Statistics Press, 1956).

important to the predicting of transportation volumes based on the gross production volume. Transportation ratio is defined as "within one type of goods, the proportion of the amount of goods that must be transported for production and consumption usage among all that was produced in a given time period of a given region or the entire society." To arrive at an accurate transportation ratio, it was essential to "eliminate the repeated counting of transportation volume." This meant that "the volume of same batch of goods could only be counted once, no matter how many times it was transported and by how many different types of vehicles." Repeated counting would lead to an inflated transportation ratio. The author conceded that it was nearly impossible to achieve an accurate calculation of transportation ratio in China at the current stage "particularly because of the dispersed nature of the grassroots transportation vehicles." The multiplicity of transportation enterprises also made repeated calculation hard to avoid. Therefore, the author states, "it is only meaningful if we take only one type of modern vehicle which is already within centralized management [into the calculation]." Although not specified, the reasonable choice of the "one type of modern vehicle" could only mean the freight train.

The way that this concept was introduced raises many questions. To begin with, the fact that distance is not a factor in the ratio raises the question what counts as transportation. Since almost no goods can be consumed *literally* at their production site, the calculation requires a method for deciding which goods "count" as being transported. The solution might be found in the definition of a parallel concept known as the "residents mobility ratio." The resident mobility ratio is "the number of departing passengers in proportion to the number of residents in a given area during a given time." We can deduct that only inter-regional freight transportation should be counted as "transportation." What, then, counts as a "region"? The handbook has no answer. But it is reasonable to assume the author had in mind something like "area with centralized

transportation administration." Transportation from Beijing to Hebei? Yes. Transportation within Beijing? No.

The transportation ratio—no doubt a concept imported from the Soviet Union—was an important guide to state action, as it could direct investment decisions regarding the development of national transportation system in proportion to the development of the national gross production. But understanding transportation based on this ratio neglected local transportation and muscle-powered transportation. The transportation ratio almost never appears in documents produced by local transportation administrations. However, its effect on transportation planning in general is closer to that of a guide or a target, rather than a statistical reflection of actually occurring economic activity. The handbook itself is telling. The authors, after introducing foundational concepts, separate the contents into five chapters: railway, water-bound shipping, road transportation, aviation, and postal service. Nowhere is muscle-powered transportation included. The Road Transportation chapter begins with an explanation of "Road mileage," which is "the length of all roads that automobile can pass." All sixteen items in the chapter are all automobile specific. In other words, one can learn nothing about how to make sense of muscle-powered transportation statistically. Nonetheless, this ratio thinking—and avoidance of making sense of the horse-drawn carts—was endemic in local transportation plans.

In 1954, the newly established BBTTA upgraded the effort to draft an annual transportation plan for 1955. Perhaps upon the request from the FEC, the BBTTA submitted an attachment to explain the "basis and methods 依据与方法" of its plan making.[37] This document shows that the plan focused primarily on the automobile transportation. Although it claims that

[37]"Reports on Problems in the Compilation and Implementation of the 1955 Transportation Plan (esp. on Evidence and Methods) 一九五五年交通运输计划编制情况及计划执行中存在问题的报告（着重依据与方法）" BMA 005-001-00176.

the calculation of transportation volume and circulation volume was based on a comprehensive survey and careful estimation of the production volume of major freight contents and their distribution pattern across the city, it offers no explanation for how the calculation was conducted, nor whether they employed the transportation ratio or any other formula. The BBTTA reflected on the great difficulty of making a reasonable plan. All these difficulties related to reaching an accurate counting for automobiles transportation: What proportion of the transportation volume should be fulfilled by automobile? How many automobiles belonged to "public-private joint operations?" What about the automobiles "outside of the plan?" And how to solve the fuel deficit problem? Horse-drawn carts appeared only once, at the end of the document. The passage reads, "The development of auto transportation is not isolated, but related to the reform of the private horse-drawn carts. We already have a preliminary plan to balance the transportations by automobiles and horse carts. But it might have to be adjusted since our municipality is trying to persuade the animal carts to return to the countryside or aid the transportation in other regions."

This enumeration of "basis and methods"—with its almost complete omission of the horse-drawn carts transportation—did not seem to have satisfied the municipal government, since the BBTTA had to submit a revised version.[38] Much of what was added consisted of data on horse-drawn carts, but it barely provided more information on how the revision was done. The document is full of jargon; a "comprehensive survey" led to "preliminary plan of balance." Through "repeated discussion" and "taking a variety of factors into consideration," a ratio of automobile and horse-drawn carts transportation was decided. There was no explanation on what the actual calculation process was. Then seemingly in a slip of tongue, it contradicted itself by

[38] Ibid.

saying that the horse carts plan "was made by BTC alone." In other words, the "repeated discussion" may not have happened at all. In any case, the report claims that the number of horse-drawn carts was reached "according to the principle of increasing the efficiency of horse-drawn carts"—in other words, the plan assumed a falling ratio of horse-carts to horse-cart carried freight volumes. Although the whole process remained nebulous, the BBTTA affirmed that, "the proportion of horse-drawn carts transportation must be reduced: we estimate its share in the gross circulation volume could go down to 57 percent in 1955."

Perhaps this is the moment to recall what we see at the beginning of this chapter—the salient abnormality in 1955 on the curves of Beijing transportation during the FFYP caused by plummeting numbers of horse-drawn carts. Although it would be impossible to know how closely the data in the summary adhered to the reality, we can put forward a few hypotheses. First, there was indeed a mobilization to turn horse-drawn carts away from the capital city and it might have achieved certain level of success. However, the fact is there did not seem to be more complaints about stressed transportation capacity from the consignors in 1955. If that reduced capacity had been made up by human-powered transportation, as the data in the summary seem to show, then it did not make sense that the transportation volume by human-powered transportation decreased from 1954 to 1955. In other words, this statistical abnormality cannot be explained by changes in reality, whether or not that change had happened. Another hypothesis then is, the principle of "increasing the horse-drawn carts' efficiency" was a fiction of official planning, that persisted from the plan-making stage to the record-making stage, and from the administration to grassroots cadres who filled the forms. As a result, the horse-drawn carts' share of circulation volume shown in the summary was down to 34 percent in 1955 instead of 57 percent—a number that BBTTA promised to achieve in its annual plan for 1955. In fact, the

summary has that the share actually was already as low as 38 percent in 1954.[39] If this is true, the BBTTA's declaration in 1954 was then completely meaningless. The second hypothesis, which the incoherence of numbers could support, points to the willful conflation of the plan and the reality. Statistics became a prescriptive tool that served to reinforce the plan, rather than being an objective check of reality that the success or failure of plan could be measured against.[40]

There were many other factors that could warp the plan. Another such factor was consignors' exaggeration of the volume of goods they needed to ship. The "planned transportation" scheme put great pressure on the consignors: requiring them to submit annual, seasonal, and monthly plans with strict deadlines and allowing little room to negotiate a change of contents once the plan was submitted. Attempting to secure adequate service from the transportation companies, the consignors slam larger numbers into their plans. Such practice—common in provinces and municipalities alike—created an artificial stress on the transportation capacity on top of the actual stress.[41] The various regulations to punish such disinformation, for example, removing the consignor's privilege for earlier shipping, did not seem to stop it from

[39] "The Second Five Year Plan of Beijing Transportation by BBTTA 本局编制的北京市交通运输第二个五年规划," BMA 117-001-00008, c.a. 1957.

[40] After the GLF disruption of statistical work, the BBTTA resumed to collect data on the transportation volume and transportation capacity. However, inaccurate counting and guesswork were rampant, according to the BBTTA's internal report in 1961, to an extent that the cadres who collected data complained that "we have no idea what the city can use these numbers for." The BBTTA since then stopped counting for transportation it did not run or vehicles it did not directly controlled, i.e. the "transportation volume by capacity in the society 社会运量." When the city needs the BBTTA to provide the comprehensive cross-city data, the BBTTA worked with the Bureau of Statistics to perform "survey on typical samples 典型调查" for estimation. BBTTA, "Report on the extent problems in the transportation volume statistics from districts and counties 关于各区县目前在组织货运量统计数字上存在问题的报告," BMA 005-001-00553, 1961-09-07

[41] "Analysis on the Balance Between Transportation Means and Transportation Volume Based on Actual Examples 公路运输运力运量平衡分析实例," *Statistical Work 统计工作* (1957) no.9. 23-24.

becoming rampant. To alleviate the weight that these exact requirements put on the consignors, a measure for "piecemeal goods" was then widely adopted. If there were small amount of goods that, for legitimate reasons, not included in the plan, they could then go through a so-called "out-of-plan shipping." This measure was then used as a loophole by both the consignors and the carriers. By "turning the bulk into the odds 化整为零," the consignors found their way around the rigid and penalizing plan scheme. For the transportation companies, "out-of-plan" shipping was often favored for the lack of scrutiny. Despite that the danger of exploitation of this alleviation measure was vividly clear to the authority from the day of its enacting, the "out-of-plan" transportation grew to be a constant feature of the socialist economy, and a headache of no cure for the government.[42]

6. Transportation Rationalization

1954 was an important year in the history of Chinese planned economy. The endeavor to manage the national economy through vertical, sectoral administration reached its first peak. In the transportation sector, 1954 could be called as the year of rationalization: "helihua合理化" became an explicit principle of action and dominated all things related to transportation—from academic research, to top-level policy design and down to daily work of drivers and wagoners. To make transportation more rational meant to make it more economical. 1950s China had very limited modern transportation infrastructure. The vast distances between the resource-rich regions and the industrial regions meant that transportation costs hampered the country's industrialization. The economizing of transportation required first and foremost the elimination

[42]"Resolutions on Consignments of Goods in Beijing 北京市货物托运办法 (1954)," BMA 004-014-00041; "Provisional Resolutions for Planned Transportation in Beijing 北京市计划运输暂行办法草案 (1957)," BMA 117-001-00033.

of "irrational" transportation. That is, any transportation that had a more economical alternative—by a change in route, in vehicles used, or any other factor—should be replaced with its efficient alternative. Thinking at national scale, the elimination of irrational transportation concerned more than just making every shipping faster and cheaper. It had to start from a bold reconceptualization of the spatial and temporal factors of transportation at a grand scale.

The elimination of irrational transportation had to start from defining what constituted irrationality. The National Statistics Bureau specified four main categories of irrational transportation.[43] First, was irrational transportation in cross-hauling 相向运输. "When goods of same properties or same use value—thus interchangeable—are transported from different departing locations towards each other, and when their routes overlap entirely or partially, we call this transportation cross haul."[44] For example, let's assume that both Shijiazhuang and Nanjing produce apples, and both Beijing, close to Shijiazhuang, and Shanghai, close to Nanjing consume apples. The rational method would be to ship Shijiangzhuang apples to Beijing and Nanjing apples to Shanghai. If instead the northern Shijiazhuang's products were sent to Shanghai, and the Southern Nanjing's to Beijing, it wasted transportation power, raised the cost of transportation, and increased the cost of apples. This makes perfect sense until it runs against the complexed material world where goods from different locations rarely have "same properties" and "same use value." The planners were very much aware of this but decided that a little adjustment here and there in supply requirements were a necessary sacrifice that all enterprisers and consumers should make for the larger national interest of rationalization.

The second type of irrationality was repetitive shipping 重复运输. "[It happens] when

[43] *Handbook on Statistical Work in Transportation and Postal Service.* 12-14.
[44] Ibid. 12-14.

goods go through unnecessary transfer, unloading and reloading, before arriving at the destination."[45] The necessary transfers, such as that from road to waterway or change of vehicles as conditions of roads demand, were excluded. In fact, whenever water bound transportation was possible, it was always considered more economical, and thus more rational. Adding transfers may fit a network carrier—the railway company or airline company—very well, but what the planners pursued was not the maximization of the individual company's profit, but utility at national scale.

The third kind of irrationality related to the length of the route from the location of departure to the location of arrival. Two scenarios may be counted as "overly long-distance transportation 过远运输." In the first, "goods that could be transported through shorter route go through longer, circuitous route;" and in the second, "when certain goods available nearby are acquired and transported from afar."[46] The definition of overly long-distance transportation thus largely overlap with cross haul and repetitive transportation. In fact, despite the three kinds were always painstakingly listed out as separate problems, the transportation companies often brought them up in one breath in their description of the effort taken to rationalize the daily work of transportation. The blurry lines between categories of irrationality presaged difficulties in arriving at systematic, differentiated solutions to these problems.

The fourth was the "irrational division of task among different types of transportation means." The widely shared preference of railway transportation was always invoked as an example of this irrationality.[47] If everyone behaved more rationally, they should use more automobile in short-distance road transportation and take it to waterway when longer shipping

[45] Ibid.12-14.
[46] Ibid.12-14.
[47] Ibid.12-14.

time is acceptable. The irrational preference of certain means perceived from a higher, total point of view, again, could be completely rational as far as the consignors are concerned. Moreover, the division of transportation administration along the technological lines—railway, road, waterway—meant the individual transportation units were not well positioned to correct this irrationality. It could only be done from the very top.

The task was vast and daunting, but the government was confident. After all, the kind of rationalization they envisioned could only be achieved under a highly centralized administration. Moreover, they had the Soviet as a model for emulation. In fact, as some of the contributors to the program of transportation rationalization proudly pointed out, in a capitalist society, "not only the question of how to rationalize transportation cannot be answered, the raising of the question itself is impossible."[48] It is not for the consignors and carriers to decide whether certain shipping they carried on was rational or not in economic terms. The irrationality had to be detected from above. For this reason, the structure of vertical, sectoral administration (or *xitong*) was critical. It made for precisely the conditions that allowed for the centralization of information and knowledge related to any specific goods in need of transportation.

The reconceptualization of the spatiality and temporality of transportation began with the production of, in Henri Lefevre's words, the "representations of space" by ministry-level administrations.[49] Far more than just maps, these representations of space, often titled as "chart of rational flow of goods 合理流向图" were not meant for open interpretation and individualized use (fig. 9). They dictated who got what from where through what route. They did so by reducing the physical complexity of logistical and political economy into orderly arranged shapes, lines,

[48] Gao Guangli 高广礼，"On Further Rationalization of Goods Transportation 关于进一步合理地组织商品运输的问题," *Education and Research 教学与研究*, (1955) no.1. 27-31.
[49] Henri Lefebvre, *The production of space* (Cambridge, Mass., USA: Blackwell, 1991).

and vectors. They were thus not only aiming at a reformulation of transportation, but more importantly, at a reformulation of distribution on the principle of minimizing haulage cost.

The application of "rational flow" started with coal, when the State Council passed "The decision on the gradual implementation of zoning of coal regions and the rationalization of coal transportation to achieve the balance between production and consumption of coal" in July 1954.[50] The production volume of coal by tonnage was the highest among all industrial products and it occupied more than one third of the national freight transportation volume by rail. A 1953 survey by the National Committee of Economic Planning found that "irrational transportation" of coal was "extremely serious."[51] Coal supply for Shanghai came from as many as fourteen coalmines across the country. The furthest was two thousand kilometers away in the Northeast. Crosshauling was excessive. Beijing acquired significant coal from Kailuan Mine, on its east near Tianjin, while Tianjin received a similar amount of coal shipments from the Datong mine west of Beijing. Many rail stations far from coal mines were used for transfers, resulting in "repetitive transportation." The Committee of Economic Planning charged that, "In 1953 alone the irrational transportation of coal had wasted 1.8 billion ton-kilometer worth of transportation power, meaning 135 thousand train cars could have been used for shipping other goods."[52]

---

[50] "State Council's Decision on Gradual implementation of zoning of coal regions and the rationalization of coal transportation to achieve the balance between production and consumption of coal 政务院关于逐步推行煤炭分区产销平衡合理运输制度的决定," BMA 002-006-00141, 1954-7-1.

[51] The National Plan Committee 国家计划委员会交通运输计划局, "Reasons for the implementation of zoning of coal regions and the rationalization of coal transportation 为什么要实行煤炭分区产销平衡合理运输，1954-7-21" *CSANE, TCV, 1953-1957*. 313-316.

[52] Ibid. 313-316.

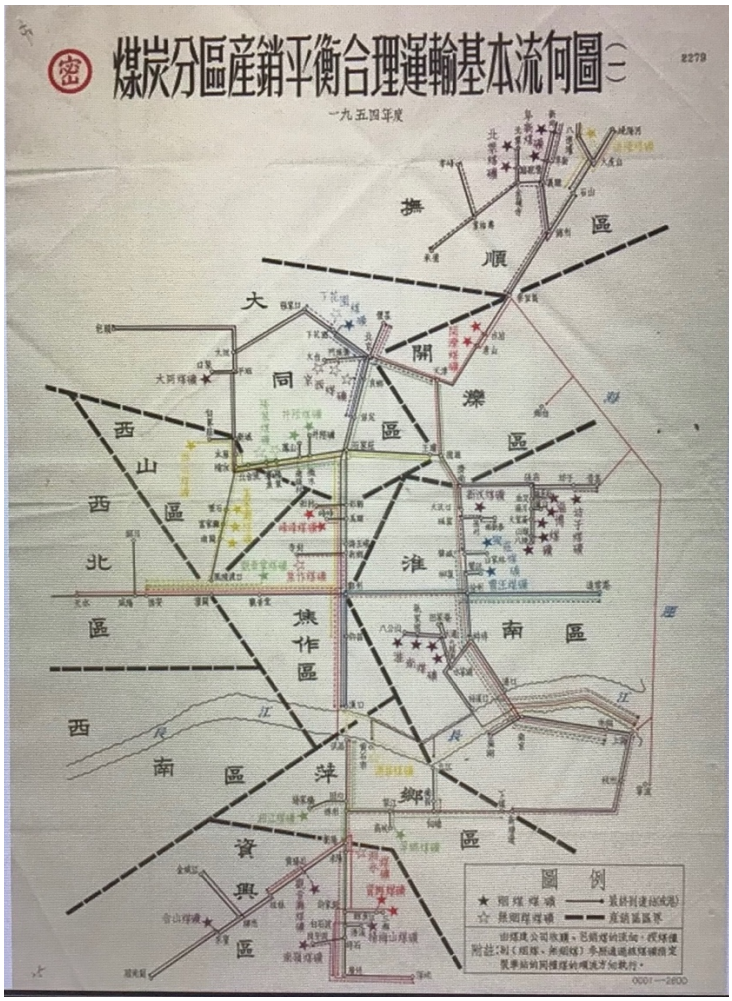

Figure 9. Chart for Coal's Production-Consumption Balanced Zoning and Rational Transportation Flows

Source: BMA 002-00600141

The high cost of coal transportation had both geographical and historical causes. To a large extent cross-country flows were inevitable because the coal resource is rich in the north and the east, poor in the south and the west. The history of China's industrialization in the past decades created a highly imbalanced and fragmented spatial pattern. The mines, coal processors, and major coal consumers such as steel mills were often far from each other. Moreover, even coal—a fungible commodity par excellence—varies in type and quality from one origin to another. Coal users' specific needs—high burning temperature or smokeless-ness—may not be satisfied by what is available nearby. The government was keenly aware of the many reasons

behind the "irrationality." But it firmly believed that through centrally coordinated effort, much of the waste could be avoided.[53] The exorbitant transportation cost compelled the leaders to carry out the rationalization of transportation before any substantial geographical rearrangement of industries could be done. The Northeast had begun a system of rational transportation of critical materials including coal, grain, timber, and concrete in 1952. According to the central government, the success in the Northeast meant it was now time for wider application.[54]

The measure at the center of the new program was the demarcation of the whole country into thirteen coal zones. The Ministry of Fuel Industry, the Ministry of Railway, and the Ministry of Transportation worked together under the National Committee of Economic Planning for nine months to decide on a zoning solution. In each zone, there are major coal mines and major coal users—cities and industries. In principle, coal mined within a given zone would be used in the same zone, therefore, not to be shipped outside of its zone. This would prevent much of the cross haul and overly long-distance transportation. Within a zone, there were designated routes connecting the places of production and consumption. The designers of the zoning plan hoped that, after a few years of application and improvement of the system, the routes could become even less entangled. The ideal would be "one-for-one" transportation, meaning a major coal user—for example, the city of Tianjin—would have its supply all shipped from a single origin. For now, they conceded, exceptions and leeways had to be granted, for users needed time to adjust to supply of different properties and the policy makers needed time to have a full and

[53] Overlooking the particularities of coal product in planned production and distribution was also exemplified in Japan's managed economy in 1930s. See Victor Seow, *Carbon Technocracy*, 172

[54] "Northeast Executive Committee's Instructions and Stipulations on the Improvement of Rationalizing Transportation Work 东北行政委员会关于改进合理运输工作的指示及规定," BMA 004-016-00348. This document actually shows many of the consequences of rationalization of transportation based on zoning discussed in the chapter were already manifested in Northeast experiment.

detailed understanding of the production and consumption of coal. Nonetheless, the bottom line was southern coal—not enough to meet the needs in the south—would never go north, and coal of superior quality were reserved only for the very most important heavy industry. A series of strict rules were issued—on the application for coal allocation, auditing of the application, granting of exceptions, designation of shipping and transferring stations—to ensure the effective implementation of the new system.[55]

In early 1956, the zoning policy was extended to grain. Since the Unified Purchase and Sale of Grain came into place in 1953, the loss of grain in long-distance shipping because of poor storage conditions had been an acutely painful issue for the government leaders. The disparity of grain-to-population ratio among different regions of the country was only part of the problem, they believed. Grains were being shipped around the country often for certain dietary demands—people in wheat growing region also want to have rice and rice-made foods sometimes, and vice versa. Such unessential needs had cost the nation dearly. The first objective of the rationalization of grain transportation was to "resolutely reduce" this kind of exchange of different types of grains among different zones.[56] The implementation of the grain zoning had profound impact on Chinese population's dietary pattern during the Maoist years. One of the many consequences was that rice quickly became very rare in much of northern China. Urban dwellers and peasants in

[55] Central Financial Committee and National Plan Committee 中财委, 国家计划委员会 "Report on Gradual implementation of zoning of coal regions and the rationalization of coal transportation for balancing the production and consumption of coal 关于逐步推行煤炭分区产销平衡合理运输制度的报告 1954-1-8," *CSANE, TCV, 1953-1957*. 292-309. Also see "Provisional measures on zoning of coal regions and the rationalization of coal transportation for balancing the production and consumption of coal 煤炭分区产销平衡合理运输暂行办法," BMA 004-001-00111.

[56] Ministry of Grain 粮食部 "Reports on the trail implementation of zoning of grain regions and the rationalization of grain transportation for balancing the production and consumption 关于试行粮食分区产销平衡合理运输的报告, 1955-11-22" *CSANE, TCV, 1953-1957*. 321-326.

small pockets of rice cultivating areas got occasional taste of rice. For the majority of peasants in northern China, rice mostly disappeared from their table. It remained a staple on the black market until the dismantling of Unified Purchase and Sale of grain in the 1980s.[57]

The enforcement of national-scale rationalization of transportation was uneven—more was achieved in grain than in coal. The Ministry of Railway recorded a reduction of 94 kilometers in the average transportation distance of grain half year into the new system. But un-planned cross-zone transportations were inevitable because it was impossible to predict the change of production volume in each region. The irrational transportation of coal, the government found, actually increased in 1956.[58] The growing number of such mistakes may well be a result of the growing effort to record them. But there was no doubt that the particular needs of the industrial coal users were harder to ignore than that of the food consumers. In fact, appeals

[57] Due to the difference of the grain productivity between the North and the South, the central authority was not able to fully stop the "North-bound transportation of Southern Grain 南粮北调" until the mid-1970s when northern grain production significantly increased and eventually exceeded the South in the mid-1980s. But the southern rice was supplied mainly to urban dwellers and heavy-industry concentrated areas. See Zheng Yougui, Kuang Chanjuan, and Jiao Hongpo 郑有贵 邝婵娟 焦红坡,"Evolvement from 'north-bound transportation of southern grain' to 'south-bound transportation of norther grain: Its causes and a comparison of each region's advantages in grain production and consumption 南粮北调向北粮南运演变成因的探讨—兼南北方两个区域粮食生产发展优势和消费比较,"*Researches in Chinese Economic History 中国经济史研究* (1999) no.1. 97-104.The commitment to end the "northbound transportation of southern grain" was intensified during the Cultural Revolution. Production of non-grain crops dropped in the North for the purpose to achieve self-sufficiency on grain. See Marc Blecher and Wang Shaoguang, "The political economy of cropping in Maoist and Dengist China: Hebei Province and Shulu County, 1949-1990," *The China Quarterly*, (1994), no.137.63-98. I also collected anecdotes about the lack of rice in the North from other sources. For example, "Bartering rice 换大米,"Memoir published on wechat account "Tianyuan Dao 太原道." Also oral history of my family and Pingyao peasants.

[58] The National Statistics Bureau 国家统计局, "The implementation of zoning of grain regions and the rationalization of grain transportation for balancing the production and consumption in the second season of 1956 一九五六年第二季度粮食分区产销平衡合理运输制度的执行情况 1956-10-24," *CSANE, TCV, 1953-57.* 343-346.

for out-of-zone coal supply and reports on productive crisis caused by the change of fuel flooded into the State Council and related ministries. But all these problems, in the central planners' eye, were local and temporary, thus could be solved one by one in due time. The rationalization of transportation had to be extended, not only to other major goods, but also down the hierarchy of administration to the local level.

7. The Feud

Following the central government's suggestions, the rationalization of transportation began at the regional level with a focus on construction materials. Hebei Province, Beijing and Tianjin municipalities bonded into a "mineral construction-material zone" and began to compose a "rational flow" of sand, bricks, stone, lime, and cobblestone—materials essential for infrastructural building.[59] Here we should embark on a close examination of the chart for bricks to understand the principle and plausibility of the design (fig. 10). The designers of the chart strictly followed the principle of minimization of the distance between the origin and the destination. Several places—Chaoyangmen (Beijing), Shijiazhuang, Tanggu (Tianjin)—were the centers of inflow. A group of places near each of them served as providers. Also, to prevent cross hauling, not one place was marked as both for outflow and inflow. In other words, the relation between supply and demand of a given place was considered stable. This could be true for large cities like Beijing and Tianjin, which always consumed more than produced. It was also true for rural/suburban places that provided bricks for constructions elsewhere. But it could become tricky when it came to somewhere in the middle of the spectrum. Baoding is a case in point. The

[59] "Provisional Method on Rationalizing the Transportation of Mineral Construction Materials in Hebei, Beijing, and Tianjin 河北省、北京市、天津市矿物性建筑材料分区产销平衡合理运输试行办法," BMA 005-001-00230, October 1956.

largest city in Hebei at the time, Baoding was historically a consumer city that was classified as a place of brick outflow. A slight construction surge could very likely turn the supply-demand relation upside down. But the rational flow chart, by nature, had to exclude such contingencies. Another important factor the chart does not show was how the routes of "rational flows" corresponded to the jurisdiction of different transportation authorities in the region. This turned out to be a thorny problem that greatly obstructed the region's transportation, let alone the rationalization of it.

When the rationalization program was extended down to the municipal level, the set of problems changed. The program, initially conceptualized for centrally controlled materials and a well-developed railway system, hardly spoke to the physicality of inner-city infrastructure in which horse-drawn carts and trucks trampled over dirty, bumpy roads. The priority thus shifted in its local implementation. There were of course plenty of instances of cross haul and unnecessary loading and unloading that should be addressed, but for the BBTTA, the "irrational use of transportation means" was a much bigger evil. What irked them the most was consignors' preference for the backward, but cheaper horse-drawn carts.[60] This problem, more than anything else, directly challenged BBTTA's power to monopolize the control of Beijing's freight transportation. The dispersed nature of rural horse-drawn carts made it possible for consignors and carts owners to strike deals behind the BBTTA's back. If the individual cart owners were still vulnerable to the BBTTA's persecution, the organized carts backed by another transportation administrative authority—in this case the Hebei Transportation Bureau (HTB)—had become a constant thorn in BBTTA's side.

[60] "About the Major Problems of Goods Transportation in Beijing and Proposals for Future Improvements 关于北京市内货运目前一般情况存在的主要问题和今后改进的初步意见," BMA 004-016-00348, 1954.

The Hebei transportation authority's presence in Beijing was officially sanctioned and justified by the seasonal shortage of transportation power in the city. The HTB maintained a mighty force—two to four thousand carts—on the ground to "support" the BTC's work, while in truth becoming a major competitor. The saga between BTC and HTB was filled with mutual accusation of one side eroding the other's organization. Sometimes carts under the BTC were lured away by the HTB, at other times BTC cadres disbanded small HTB teams with face-to-face threats. The BTC's complaints about the HTB started with its own establishment. The mutual resentment grew into skirmishes along the years and escalated into the status of a feud while the whole transportation system was embarking on the "rationalization" program.

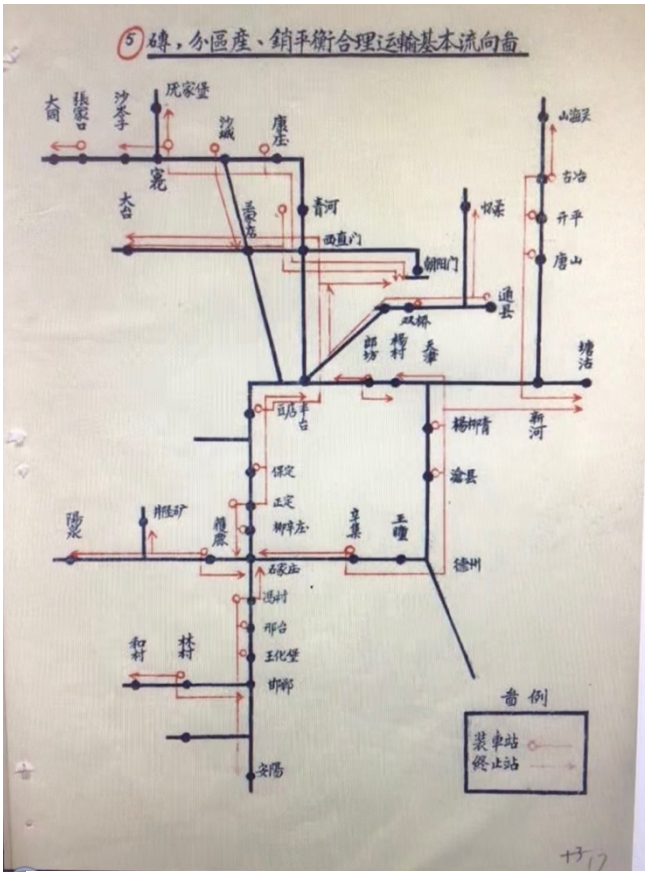

Figure 10. Chart for Bricks' Production-Consumption Balanced Zoning and Rational Transportation Flows. ***Source: BMA 005-001-***

In September 1954, the HTB put a complaint about BTC on the table of Beijing FEC. The BTC had been forcing the HTB carts drivers to register at their offices, the report says, and even "slandering" the HTB by saying that "we consider the Hebei carts non-organized carts." According to the report, the BTC cadre sent a policeman to an HTB branch office and summoned an HTB staff to BTC's Andingmen office. There cadre Wang Sen pressured the man to hand in the roster of the horse-drawn carts drivers. He was "slapping table and yelling" that "we just cannot do our job if you

guys are not disbanded." The HTB protested: "Did Cadre Wang speak for the authority? We don't think so! We'd like to know how disbanding us would benefit him!" The Committee of Finance and Economy turned to the BBTTA, requesting the latter an investigation into the issue and to convene with the HTB for reconciliation.[61]

The BTC turned a deaf ear to the municipal government's requests. In December, a more public, and more damaging skirmish between the two parties took place. Most of Beijing's construction materials came from nearby Hebei counties, and neither BTC or HTB had exclusive rights to operate on these routes. The neat lines and arrows on the Chart of Rational Flows broke down at the territorial clashes between two paralleled monopolizing organizations. When the BTC sent 15 trucks and 150 horse-drawn carts to Lishui Bridge area (southwest to Beijing, nowadays within Beijing municipality) to load and haul sand to the city for several Beijing consignors including the construction team of the State Council, the local branch of HTB barricaded the road and forced more than one hundred carts to unload their contents. The leader of the local branch allegedly said no Beijing vehicles would be allowed there from then on. Some Hebei wagoners even lay down in front of a truck and threatened with death. Same attempt to block Beijing vehicles also happened in Qinghe, northwest to Beijing, where a major prison-labor brick factory was located. Now it's the BBTTA's turn to plead to the municipal government about the HTB's wrongdoing. "The action of HTB had seriously disrupted the construction work in the capital—many of them are of great political importance! Such behavior had to be stopped. And it should be made clear that all haulage for Beijing consignors are

[61] "Correspondences on Solving the Transportation Problem with Hebei Province 关于解决本市与河北省在运输上存在问题的往来文书," BMA 004-014-00052, September to December, 1954.

responsibilities of the BTC alone!"[62]

The feud between the two companies rose to the level of absurdity in early 1955. On February 6, the People's Daily published an article criticizing both sides with great severity. The article, entitled, "Beijing and Hebei transportation departments must stop their hideous competition," revealed how much their animosity had cost the passengers traveling between Beijing and various Hebei cities.[63] Readers had been writing to the newspaper describing the "peculiar phenomenon" they experienced and witnessed. Reader Zhang Qun complained that he could not get a bus ticket to Tangshan after visiting a half dozen of bus stations in Beijing. At the same time, other readers told they were "surprised" by the daily sight of an empty bus running towards Tangshan from Beijing. Why? The Beijing company and Hebei company both pointed their finger at the other. The former said the Hebei company's Tangshan bound bus was stopped after a heavy rain season in 1953. Furthermore, Hebei resumed operations "without notifying Beijing." The HTB countered that the resumption was called for by passengers' need and was in accord with the previous operation agreement. Beijing was at fault for refusing to provide supportive service. A similar drama played out on roads connecting Beijing to Baoding, Xiong Xian and several other Hebei localities. Although both companies offered passenger transportation service on these roads, all the buses ran completely empty on their return trip. This was because ticket sales were the responsibility of "guest stations," operated by the local company on behalf of the non-local carrier. Thus, the BTC operated an HTB "guest station" in Beijing that was in principle able to sell HTC tickets. In practice, alas, the guest stations refused

[62] "Correspondences on Solving the Transportation Problem with Hebei Province 关于解决本市与河北省在运输上存在问题的往来文书," BMA 004-014-00052.
[63] "Beijing and Hebei Transportation Departments Must Stop Their Hideous Competition 北京市与河北省公路运输部门必须纠正竞争的恶劣做法," *People's Daily,* 1955-2-6. 6.

to sell tickets of their rival companies. The ticket sellers at Qianmen Station in Beijing allegedly said, “let them [HTB busses] run empty for a few more times so they will know to stop coming.” Such great waste of resource and the inconvenience it brought to the passengers, the *Daily* lamented, were caused by “unprincipled competition” between the two companies. The detrimental competition here, the paper stressed, was capitalist in nature. Despite calling each other “the brother company,” they manifested not brotherly solidarity but “localist, operationalist, capitalist” mindsets.

“Capitalist” was, perhaps, a mischaracterization of the nature of the conflict. For one, neither side could employ lower price as a tool—the primary tool in capitalist competition. The “unified price” scheme empowered the state business agency like BTC at the front of mobilizing, appropriating, and controlling the private agents such as the thousands of horse-drawn carts owners and drivers. But it also greatly limited their capability when they tried to behave like an individual economic enterprise. After all, even with a “soft budget constraint,” they were still expected to generate revenue and pay tax. With less applicable market tools, they resorted to more militant ways to assert dominance. As many men working in transportation—cadres and wagoners alike—were quite accustomed to hooligan behaviors as part of survival strategies for their pre-1949 livelihood, they were not shy of stirring havoc and exerting intimidation in dealing with their “brother units.” The extravagant waste and inefficiency brought by this “competition” were then tolerated by the soft budget constraints and reinforced their own monopolizing status. As such, the aggressive behaviors proved to be effective for achieving the enterprise’s goal, even as they violated the ethics of the unified command economy in which all enterprises presumably share the same goal.

The Final Note

It is not difficult to perceive how such a downward spiral would continue to hinder the advancement of the national logistical capability. Throughout the FFYP period, the engrossment of the private sector created big, consolidated state enterprises. In heavy industry and manufacture, this process had—to different degrees—increased productivity and improved the level of standardization. But it also created a rigid vertical industry-administrative system. The individual sector was designed to be the pillar of planned economy, within which the data collected from bottom-up and quota assigned top-down. Rationalization—as a set of directives to economize—was then carried out along the line of individual sector. However, the endeavor to rationalize was undermined by both inter-sector barriers and in-sector conflicts. Coordination across sectors became increasingly difficult, particularly with the growing arbitrary power of sectors who monopolized scarce resources. Within this sector, the competition between paralleled monopolies was exacerbated by the tension between a highly monolithic, modernistic design of rationalization and the dominance of dispersed, pre-industrial technologies. In the case of BTC and HTB, despite the repeated scolding and intervention by upper-level authority, the confrontation repeated itself on almost every route connecting the province and the municipality well into early 1958. The constraints the FFYP development of sectoral administration put a heavy shackle on the economy. Antidotes were in desperate need. Only that the antidote—with its tremendous dose of radicality—nearly killed the patient.

Chapter Three

A Tale of Two Reservoirs

Introduction

China has more reservoirs than any other country in the world. Most of its more than 80,000 reservoirs were built during the short few years of the Great Leap Forward (GLF).[1] Never in the history of human societies was so much muscle power so intensely consumed by hydraulic construction, and efforts of this scale will probably never occur again. Accompanied by a nationwide mass campaign to upgrade the MPT technologies, this construction dramatically changed the material culture and environment of China. The campaign aimed at the optimization of the productivity of MPT vehicles with partial upgrades—ball bearings and rubber tires replacing wooden wheels, for example. In the GLF lingo, this massive effort to semi-mechanize tools was called "technological revolution"—obviously too grandiose for the scale of technical change, but not too much an exaggeration considering the scope of the campaign.

This chapter is about the labor and technology of the construction of two Beijing reservoirs during this time, Shisanling and Miyun. To choose one or two projects to represent all GLF reservoirs is impossible. Yet nor would an historical investigation of the labor process and technologies based on a broad national, or even regional, overview of hydraulic building of the time be plausible, either. Case studies naturally biased towards high-profile, better-documented projects, which Shisanling and Miyun reservoirs are. There are several reasons that this chapter writes about both reservoirs instead of focusing on one. First, Shisanling reservoir was one of the

[1] Editorial Committee, *Annuals of Water Conservation of People's Republic of China 中国水利年鉴*, (Shuili dianli chubanshe 水利电力出版社,1990).

earliest large GLF hydraulic projects. As such, it was completed before the GLF reached its crescendo marked by the establishment of People's Communes and the craze of backyard furnace iron making. The reservoir's purported success, or rather, the success of its stories, fueled the optimism that accelerated the Great Leap Forward. The construction of the Miyun reservoir began in precisely the atmosphere of optimism brought about by Shisanling. As a result, it suffered from serious miscalculation at great cost. A nine-month plan stretched into two years. The reservoir was completed at the very end of the Great Leap Forward when many other projects had been aborted by the severe economic depression. A history of the two reservoirs thus provides a relatively full trajectory of GLF reservoir building.

Second, I use the two case studies to emphasize the differences in how urban dwellers and peasants experienced the GLF. For the former, the GLF started as a call for rising to devote oneself to the socialist construction. The campaign was enthusiastically embraced by many as it replaced the tense air of the anti-rightist movement with a collective passion for physical labor. The Shisanling reservoir was a major site for the Beijing elites to experience voluntary physical labor, as well as an important stage for artistic productions that promoted voluntarism and collectivism. Miyun Reservoir, on the other hand, had less of a propaganda mission but much more economic and strategic importance. It was not a theatre of Maoist ideals but a series of construction sites in which nearly two hundred thousand peasant workers labored under pressure for productivity, food shortages, and frequent coercion from cadres. Though volunteers from the city worked side-by-side with the peasants, their experiences of the GLF never converged.

Most importantly, putting the history of the two reservoirs together builds a fuller picture of the GLF's "technological revolution" and a deeper understanding of Maoist developmental strategies. In the process of the Shisanling reservoir's construction, a political framework of

technological revolution was established, encouraging all kinds of trial and error to improve productivity. Meanwhile, any sentiments doubting the efficacy of such practices was criticized as rightism. Adventurous experiments with tools and machines became a political obligation. In the artistic representations of the Shisanling's construction, these technological adventures were linked to a rapid realization of communism. In contrast, Miyun saw a more practical selection of grassroots technological innovations. The GLF constructions developed and proliferated intermediate muscle-powered transportation technologies, such as double-wheeled wheelbarrows. However, the ultimate goal of tool reform—a self-sufficient, indigenous path towards technological modernization—failed during the GLF. The super collectivization maximized rural labor *mobilization*, but as a form of labor *organization* was ill suited to mechanized production and thus to Miyun reservoir construction. The intermediate technologies, to the extent they enhanced coordination between labor and machine, could not play the role of making industrial workers out of peasants—a goal dreamed of by the central leader at the beginning of the Great Leap.

1. The Shisanling Reservoir

The east is red, the sun has risen! We drove our car to the Reservoir of Shisanling. Two decades ago, this place was just poor farmland, with nothing but Wenyu River's grass, rocks and dried vines. Since Chairman Mao told us to build the reservoir, ten thousand Great-Leap heroes were tuned into Titans. In the day their sweat poured like rain under the sun, during the night the shiny web of mercury lights kept them run. They raced with the flood, and they never knew of fatigue. After only a few months they finished at the great dam's very peak! No matter how unruly that ancient dragon was, it was subdued under the power of this deity-bonding rope of iron! At last, we can enjoy the light breeze caressing over the lake. The beautiful ripples are like the wrinkles on the famous Suzhou silk, aiyaya, the wrinkles on the silk.

Tian Han, "The Song that Commemorates the Shisanling Reservoir's Merit"[2]

[2] Tian Han 田汉, "The Song that Commemorates the Shisanling Reservoir's Merit 十三陵水库歌功记," 1958. Translation is mine.

The Shisanling Reservoir, also known as the Ming Tombs Reservoir, is now a popular tourist destination lying at the west outskirts of Beijing. Shisanling, literally "thirteen tombs," was where the Ming imperial house (1368-1644) built the terrestrial palaces for its deceased emperors. The eternal peace that the Zhu-family rulers hoped to attain was shattered in the 1950s, first in 1956 by the debacle of an archeological excavation of the Ding Ling—the second largest tomb among the thirteen—and later by the stormy construction of a reservoir in its vicinity in 1958. Both projects—the destruction and the building —symbolized the heightened sense of epoch making on the part of the revolutionary party and its spiritual leader. The construction of Shisanling Reservoir was the opening fanfare of the Great Leap Forward's march. It was a demonstration, an artwork consisting of hundreds of artworks. Its symbolic importance to the historical narrative lay in overwriting the imperial past to the socialist present, Its location at the heart of the country, and its rapid completion by voluntary labor, much more than its scale or hydraulic value, made it an icon of the Great Leap Forward.

When the first team of peasant workers arrived at the designated site for Shisanling Reservoir in January 1958, many local water conservancy projects had been initiated across the country. However, a model project was yet to be established. "Great Leap Forward"— the idea of rapid economic development through intensive investment of labor had found its ground in the central government. The swift and successful "socialist transformation" in the mid-1950s seemed to prove that Communist China was able to achieve what even the Soviet Union was not: a thorough transition to socialism without much bloodshed. Since China had now entered the stage of socialism, the next thing to do was to go all in to build it. This newfound confidence led Mao to pledge that China would surpass the UK in fifteen years, a claim modeled after Khrushchev's

boast that the Soviet Union would overtake the United States in fifteen years when the two met in 1957 during the forty-year anniversary of Bolshevik Revolution in Moscow.[3] "What had originally started as a friendly boasting match between Khrushchev and Mao," historian Lorenz Luthi says, "grew into a Chinese attempt to overtake the Soviet Union economically."[4] Mao's pledge resonated across the nation, inspiring pride that China, if not yet as powerful as the Soviet Union, at least was not a mere follower but a country with nearly equal global status.

The political economy within China constituted a more concrete, if less pride-worthy, reason for diverging from the Soviet developmental path. China's dependence on the development of heavy industry required both intensive capital investment that was unaffordable for the PRC, and a reservoir of technical expertise that, already in short supply, was increasingly distrusted by the Party leadership. The Hundred Flower Movement in 1957 unleashed a wave of criticism against the party and the government, which was poorly received by the Chairman and his colleagues. Embarrassed and appalled, the party leadership retaliated by launching the "Anti-Rightist Campaign." This campaign persecuted and humiliated the intellectuals, along with party members deemed to be too close to them. Between 300,000 and 700,000 people, mostly cultural, technical, and administrative elites, were labeled as "rightists" and removed from their jobs.[5] The

---

[3] Mao Zedong et al.,*The Secret Speeches of Chairman Mao: From the Hundred Flowers to the Great Leap Forward*, edited by Roderick MacFarquhar, Timothy Cheek, and Eugene Wu, (Cambridge, Mass: Council on East Asian Studies/Harvard University: 1989), 14

[4] Lorenz Lüthi, "Sino-Soviet Relations during the Mao Years, 1949-1969," *China Learns From the Soviet Union, 1949 to Present*, 2010, 38.

[5] There are different accounts on how many were labeled "rightist" in 1957. For example, Barry Naughton adopted the number 800,000. See Barry Naughton, *The Chinese Economy: Transitions and Growth* (Cambridge, Mass: MIT Press, 2007). Dali Yang believed there were 550,000 people labeled as rightist during the campaign. Dali L. Yang, *Calamity and Reform in China: State. Rural Society, and Institutional Change since the Great Leap Famine* (Stanford, Calif: Stanford University Press, 1996). More on the history of 1957, see Timothy Cheek et al., *Special Issue: The Crucible of 1957: Place and Perspective in Mao's Revolution, Twentieth-Century China (45),* no.2, May 2020.

Party was determined to prove that this group was not only unnecessary, but detrimental, to the great project of socialist construction. The year 1958 would unfold in waves of zealous repudiations of rational constraints, which, had now become synonymous with rightism.

The imbalance between industry and agriculture had begun to show its negative effect after a few years of Soviet style development. The nationalization of industry and commerce, followed by a new wave of capital investment, led to a rapid growth in urban state sectors. Nearly five million workers had been absorbed into the state sector in 1956. Roughly half of these were urban dwellers previously employed in private businesses, while the other half were rural migrants to the cities. Enlargement of the state sector and increases in workers' wages and welfare benefits put more pressure on the rural sector. Meanwhile agricultural output had stagnated since collectivization.[6]

It was against this background that the Party's Third Conference of the Eighth Congress in September and October of 1957 issued "The Principle of National Agricultural Development from 1956 to 1967 一九五六年到一九六七年全国农业发展纲要 (commonly known in Chinese as 'The Forty Principles [四十条]')." Mao, often proudly claiming that as the "son of a peasant" he was particularly knowledgeable about agriculture, personally drafted the Program. The forty principles laid out what Benjamin Schwartz called "Mao's best-case scenario" for every aspect of rural China, from agricultural technologies and rural politics to education and gender equality.[7] Water Conservancy was of primary importance among the principles.[8] The

[6] Barry Naughten, *The Chinese Economy*.
[7] Benjamin Schwaltz, *The Secret Speeches of Mao*, 26.
[8] The Central Committee of Chinese Communist Party 中国共产党中央委员会,"The Principle of National Agricultural Development from 1956 to 1967," Bulletin of the State Council of People's Republic of China 中华人民共和国国务院公报 (1956) no.5. 11. Title 10 is on water conservancy. http://www.gov.cn/gongbao/shuju/1956/gwyb195605.pdf.

Program demanded that "in seven to twelve years, normal floods and draughts should be basically eliminated." This was to be achieved through a combination of "construction of large-scale hydraulic projects and control of big and middle-sized rivers" by the central state, and "small-scale hydraulic projects, control of small rivers and all sorts of soil and water conservation work" that "the local [government] and agricultural cooperatives should take charge in building."[9] Once the consensus on the Twelve Year Program was reached among the central leaders, the Eighth Congress issued its "The Decision on the Mass Movement of Agricultural Hydraulic Construction and Fertilizer Composting in This Winter and Next Spring." This decision put twenty to thirty million rural laborers into hydraulics construction by October 1957. The number grew to seventy million in November, and eighty million in December. By January 1958, one hundred million peasants were digging ditches and building reservoirs.[10] Along with the high tide came an urgent need to set an example that would demonstrate the state's ideal model for hydraulic construction.

Against this background, the Shisanling project emerged as the perfect demonstration piece. The decision to build Shisanling Reservoir was made faster and with less deliberation than putting a traffic light at a street crossing in a contemporary American city. On December 26, 1957, Beijing Municipal Engineering Design Institute submitted a proposal to the Municipal Committee, which approved it on January 4, 1958. On the 12th, the "Shisanling Reservoir

[9] Ibid, 11. "一切小型水利工程（例如打井、开渠、挖塘、筑坝等）, 小河的治理和各种水土保持工作, 都由地方和农业生产合作社负责有计划地大量地办理. 通过上述这些工作, 结合国家大型水利工程的建设和大中河流的治理, 要求从 1956 年开始, 在 7 年至 12 年内, 基本上消灭普通的水灾和旱灾."

[10] Bo Yibo 薄一波, Reflections on some crucial political decisions and events 若干重大决策与事件的回顾, Zhonggong Zhongyang dangxiao chubanshe 中共中央党校出版社, 1991.

Construction Command Headquarter" was established. Eight days later, first ten thousand workers arrived at the construction site to "break the soil"—the project officially began.

Telling the story of the reservoir's great hydraulic value began simultaneously. On January 30, 1958, People's Daily introduced the project to its readers across the country. "The reservoir is located at the mountain mouth east of the Ming Tombs. When it is completed, it will store 66 million cubic meters of water, irrigate 250 to 300 thousand mu of land, and greatly reduce floods and droughts along the Wenyu River. The major engineering project is a 600-meter long, 160 meter-wide at bottom, 8-meter wide at top, 30-meter-tall dam between two mountain peaks. The water will be contained in this natural mountain ring."[11]

The claim that the Shisanling Reservoir would greatly benefit the agricultural production of the nearby area and save the people from the devastation of floods was soon popularized and dramatized through countless stories. For example, the film "Rhapsody of Shisanling Reservoir" opens with a narration recounting the misery of the Wenyu River peasants. The film recalls how, "…for so many centuries, every year the flood swamped the hundreds of thousands mu of farmland in this basin. So often it turned into howling torrent and in a blink of eye, the peasants' lives and wealth were washed away without a trace!" The sorrowful and indignant narration is accompanied by a scene of massive flooding filled with debris. The Shisanling Reservoir, said to be originally part of the Third Five-Year Plan, was to be built "in advance" to end this annual suffering of the peasants once and for all.

The film diverged from reality in several important respects. In fact, the Wenyu River was not especially disaster prone. Nor, indeed, was the Shisanling Reservoir located at a critical

[11] "The PLA Beijing decided to support the Shisanling Reservoir's construction with four hundred thousand laborers 加速十三陵水库建设，北京驻军决定支援四十万人工," *People's Daily*, 1958-1-30,

point for controlling the river. The Wenyu River has three major tributaries and several small branches. The South Sand River, East Sand River and North Sand River met at Shahe Town in Changping County, a northern suburb of Beijing. From there, the Wenyu River ran 63.5 km until flowing into the northern Grand Canal. It flooded a few times in the early twentieth century, when the deteriorated dikes could not meet the challenge of unusually heavy downpour. But in general, it a short river with clear water and nowhere near as prone to flooding as the Huai River or Yellow River. The dam of Shisanling Reservoir was placed on the East Sand River, the smallest of the three main tributaries in terms of volume of flow. This means its contribution to the volume control of the main river was insignificant, and indeed, especially unsuited to the task of river control. During the discussion of the feasibility of the proposal submitted by Beijing Municipal Engineering Design Institute, the Ministry of Geology actually opposed the plan. According to the Ministry's assessment, the plans would result in a "dry reservoir." A letter from the Ministry warned, "Not only will this reservoir be unable to store water, but it will also present the possibility of water surges that will endanger the dam. Furthermore, the farmland outside of the reservoir may suffer from alkalization."[12] The Ministry of Geology proved prescient. The Shisanling Reservoir did indeed turn out to be "dry." In the following years, the authorities often had to limit the use of water upstream to keep the reservoir at a desirable level. Such measures came at a cost to agricultural production.[13]

But the location was propitious in other ways. Allegedly, it was Zhou Enlai who first raised the idea to build a reservoir in this area during his visit to the Ming Tombs in spring 1954.

[12] Peng Zhen, "Speech on the completion ceremony of Shisanling Reservoir, 1958-7-1," BMA 001-006-01329.
[13] "Report on Vice Premier Chen Yi's instructions on the work related to Shisanling Reservoir 陈毅副总理对十三陵水库工作指示报告, 1959-3-28," BMA 098-001-00410.

"The Ming Tombs are a famous cultural relic and a must-see for foreign guests," Zhou pointed out, "It is quite a shame that the vision of mountains is not matched with a view of water. A large water surface can really enhance the beauty of the place." Zhou's comment was relayed to the leaders of Beijing Municipality by Li Baohua, the Vice Minister of Water Resource and Electric Power.[14] The Ming Tombs is less than a half hour drive away from two famous Great Wall sightseeing spots—Ju Yong Guan and Ba Da Ling. If an artificial lake that could provide a refreshing scenery and delicious lake fish were added, the West Beijing visiting experience would no doubt be more pleasant and the great capital more impressive. These considerations were faithfully reflected in the design of Shisanling Reservoir, which proposed building a ring road around the reservoir, traditional style sight-seeing towers on the dam, and adding new public transportation routes to connect the reservoir to other West Beijing tourist hotspots, such as the Great Wall and the Summer Palace. However, since it was to become the model project for agricultural hydraulic building, the tourist value of Shisanling Reservoir was not mentioned in public speeches or propaganda in 1958.

In fact, more important than its functional value—whether touristic or hydraulic—was the propaganda value of the mobilizing and construction. The reservoir became an end in itself. The construction was a massive performance meant to inspire revolutionary romanticism and galvanize the nationwide productive warfare of the Great Leap Forward. As such, the temporal space of the Shisanling Reservoir construction site became a location for countless textual and

[14] Shi Yijun and Xu Lianying 史义军 徐莲英 "An account on the central leaders' participation in the construction of Shisanling Reservoir in 1958 一九五八年中央领导参加十三陵水库建设记事"https://m.fx361.com/news/2021/1221/9218132.html. See also *Changping wenshi ziliao 昌平文史资料.*

visual production and representation. Journalists reported, artists painted, musicians toured, comedians entertained, films were shot, and everyone labored—all on the Shisanling Reservoir.

For a historian who has an interest in reconstructing the labor process, the history of Shisanling Reservoir's building is thus a difficult subject. It is part of a history in which even archives read like fictions. And in a parallel manner, the actual fictions written during and for the Great Leap Forward have been questioned with respect to their validity as literature.[15] Those who had participated in the reservoir's building, if still available for oral history interviews when this chapter was being written, were young students and their memory accounted for just a short-period and a small fraction of the construction. Yet all these difficulties made Shisanling Reservoir an excellent case for a different kind of history writing. That is, instead of dwelling on the genuineness of sources and validity of the claims of achievements, we take the Shisanling Reservoir as what it really was—a site for storytelling. It was a story full of heroes and daring innovations, a story in which physical labor had thought-transforming power, a story that the future was just a leap from the present, a story that the tellers themselves had believed in so much that they forgot it was just a story.

This is not to say the actual labor and technologies in the reservoir building were unimportant or inaccessible to historical research. On the contrary, the technological spectacle on Shisanling was abundantly, even obsessively, documented in both textual and visual forms. However, such documentations were not meant for logistical or social scientific purposes, but as themselves technologies of enchantment. To borrow Reinhart Koselleck's words, they are a form

[15] Paola Iovene, *Tales of Futures Past: Anticipation and the Ends of Literature in Contemporary China* (Stanford, California: Stanford University Press, 2014).

of text where the "space of experience" and "horizon of expectation" blended into one.[16] The same could be said of the machines and tools themselves: the "innovative" use of which, if begun by an urge to multiply their productive capacity, ended up turning the construction site into a theatre of production. This theatre was then taken as "raw material" for endless poetic, artistic and cinematic adaptations that constituted the Great Leap Forward of Arts and Literature (文艺大跃进). This history of Shisanling Reservoir building thus deals with a continuum of discourses: from private memory to documentation designed for enchantment, to works of socialist realism.

If the discrepancies among these genres are important, so too is the uncanny likeness.[17] We may begin from how most of Chinese learned about the reservoir, which is, first through newspapers and public speeches disseminated to them in one way or another. They told a story of rapid modernization with spectacular technological innovations. We will then move to how the reservoir builders, particularly the voluntary labor of cadre and students, experienced the event of the Shisanling construction. For them, the event formed lasting somatic memory due to the extremely demanding labor of muscle-powered transportation. Compared to this memory, images of innovative technologies seemed so vague and nearly nonexistent. Scenes from two films are inserted into the narrative, to illustrate the centrality of non-muscle-powered technologies in the Great Leap Forward imagination of a happy present and a perfect future. In doing so, I will show that early success stories like the Shisanling Reservoir normalized extraordinary performance and made multiplication of productivity a common expectation. Such

[16] Reinhart Koselleck, *Futures Past: On the Semantics of Historical Time* (New York: Columbia University Press, 2004).
[17] On the disappearing of distinction between documentary and fiction in GLF cinematic work, see Ying Qian, "When Taylorism Met Revolutionary Romanticism: Documentary Cinema in China's Great Leap Forward," *Critical Inquiry* 46, no. 3 (March 1, 2020): 578–604.

success stories eventually served as the launch pad on which the outrageous exaggerations of productivity that characterized the Great Leap Forward were able to take off.

2. "Technological Revolution" at Shisanling

On February 19, 1958, the day after the Chinese New Year, People's Daily published an article celebrating the "boiling work spirit" on the Shisanling construction site during the festival.[18] This is but one of more than 180 People's Daily articles about Shisanling Reservoir published during 1958. The author Fu Dong assumed a casual boasting tone blended with an appearance of casualness, typical of the vernacular style of revolutionary adventurism exemplified by Mao. He wrote, "I heard that this reservoir is three times as big as Kunming Lake (of the Summer Palace), holding twenty times the volume of water. Its dam is five hundred meters long and as tall as an eight- or nine-story building. The soil to be moved [for this project] is half again more than that of the Guanting Reservoir." Fu continued, "If my memory is right, it took about three years to build Guanting. But this reservoir is said to be finished in three or four months. This is quite astonishing!" Arriving at the reservoir, he was pleasantly shocked by what he saw: "My first reaction was, 'How magnificent!' Over twenty thousand people are working in this 2 km long, half km wide construction site. The crowds covered the mountain like clouds…Countless people are moving soil with wheelbarrows. It looks like they are running, but more like flying. I thought the carts must be light. I was shocked at being told each loaded cart weighs a ton!" The machines described by Fu are surreally spectacular. He writes, "Quite a few bulldozers are walking on the two mountains. They are not walking on a flat surface, but up and

[18] Fu Dong 傅冬, "The Boiling Enthusiasm—A Sketch of Shisanling Construction Site 干劲在沸腾—十三陵水库工地速写," *People's Daily,* 1958-2-19.

down along diagonal lines. For one watching from afar, it looks like they are hung in the air at the middle of the mountain… Light railways are everywhere, almost as dense as spider webs."

Fu then described his experience visiting the various offices at the site, depicting the lack of rationalization and preparedness on the construction site with pride and admiration. "I went to the Design office. Before long two men rushed in asking for design prints. The staff Yang Xinmin said, "Now everything is overwhelmed by the mass's work enthusiasm! Usually when you build a reservoir, you would first do the survey, then make the design, then start building. But now all these things are simultaneous, or even reversed! The mass are demanding tasks from the Works Office. The Works Office is pressuring the Design Office for the print. But what can the Design Office do! Much of the necessary data is not available yet." Fu then visited the Supply Office. Expecting to see "a few hundred of supply workers," he was again surprised: The Supply Office was in a small courtyard with just a few staff busy on phones. A cadre explained, "It has never been so straightforward. As soon as you mention the three characters 'shi-san-ling' anything can be solved in a few minutes. It works like a charm…All of Beijing is our Supply Office, every person is our buyer."

The supply office cadre laughed at the reporter's request to interview purchasing staff. Almost everything at Shisanling was lent, rented, or simply given free of charge to the reservoir, as long as they asked for it. For example, "When Qinghe Brick Factory heard that the reservoir needed a light railway, they immediately disassembled theirs and sent it here." Present-day readers might be baffled by such an obviously impossible illustration, published without a hint of sarcasm. But this was truly a product of the revolutionary zeal, and perhaps credulity, that marked the early GLF. Neither the construction without design nor the disruption of production elsewhere due to the "voluntary" support to Shisanling Reservoir deserved hesitation to hold

back the enthusiastic praise. On the contrary, they were seen as evidence of surging productive fever and socialist mutual-aid spirit, and as proof that such fervor was superior to bourgeois rationality and expertise.

The article then moves on to take the readers into the passionate scene of mass labor. Doing so, it reads like a film script introducing the main characters. First came the Liberation Army soldiers. A group of them were transporting soil from the mountain down to the center of the construction site. Wearing only shirts on a cold winter day, the soldiers were sweating while explaining their work to the reporter. “The transportation distance is about 3.5km round-trip. At the beginning we could only make six rounds a day. Now we can run eight rounds.” “That means,” the reporter explained, “five men would push two tons of soil with mining cars for 30km per day.” He then encountered a woman who passed him with light gait carrying two baskets of sand weighing about 50kg. “Before I could ask any questions, she already walked away.” A bystander told him that the woman was a sent-down cadre from the Institute of Oil Engineering. At that moment his attention was caught by chanting and singing from the mountain. It turned out that a team of peasant workers was holding a competition with the soldiers. The song they were singing was newly written and composed by a young peasant, who could not help but be inspired by the exciting labor scene on the reservoir. Soon the dusk fell. Suddenly “a hundred spotlights” flashed on and illuminated the entire construction site. People kept on working, accompanied by the songs blasted from loudspeakers. The sound and light brought the author’s mind to Tiananmen Square, the center of the nation. “Look, the happy people are dancing in the Square! And yes, people are dancing here too! This is the dance of the socialist construction. This is the dance of the socialist labor!”

This article, like many other articles and speeches of the time, shows a fundamental paradox of Great Leap Forward rhetoric. On one hand, the official propaganda must emphasize that much had been achieved in China's industrialization. The busy machines are the image of this achievement. The web of railways, the powerful trucks and tractors and the blazing lights that turn the night back into day all claim that this is a "modernized construction site 现代化的工地." Such a spectacle of modernization points to a communist not-so-distant future. On the other hand, there are the omnipotent laboring masses who did not seem to need the machine to save them from the hard work. Not only that their physical power can be boundless as soon as their spirit is electrified by the prospect of communist future, but they are also perfectly capable of all those things thought to be the exclusive domains of the bourgeois intellectuals. They build, they write, they sing. This image of labor is in sharp contrast with the early 1950s as we saw in the Huai River Control. The conservative attitudes of traditional peasants disappeared, the new commune members are ready to leap forward together with other revolutionary groups: the soldiers and workers. If the promotion of "work methods" in the early 1950s still treated labor exhaustion as a matter of fact and tried to offer certain relief, the physical limits were now said to be purely subjective matters, from which one could and must liberate oneself.

This paradox does not stop at the rhetorical level. But the rhetoric was so powerful that it could distort reality and giving birth to a myriad of practices that aimed to bring the two sides—the men and machine—closer and together for the ever higher productive goal. These practices are no longer the "work methods" that aimed to enhance labor efficiency through disciplined and effective body movements but acts of "technological revolution" that push the machines beyond their limits. The motive was not the insufficiency of mechanical equipment per se, but the determination to create "miracles" and the belief that such miracles *could* be created. Ultimately,

such beliefs had destructive real-world consequences. In this frenzy to increase production, no machine was powerful enough to relieve any person from backbreaking labor, nor could the machines themselves avoid the fate of being worked to the point of collapse by humans.

Nevertheless, it was precisely the purported miracles of technological revolution that were promoted as the primary achievement of the Shisanling Reservoir project. At the reservoir's completion ceremony, then-mayor of Beijing Peng Zhen, gave a speech themed on "the masses' courageous revolution of technologies."[19] Mayor Peng said that the reservoir builders "realized the highest revolutionary force and creative spirit by inventing and improving transportation means." The first example of creativity was "directly driving the trucks up to the dam to transport soil," instead of unloading soil from trucks and transporting them up to the dam by other less intrusive means. This was proposed by comrades from the Regiment of Railroad Soldiers 铁道兵团 in the end of April, when the construction term was renewed to end by July 1 so the reservoir could be resented as a gift for the Party's 37th birthday. "A lot of engineers and technicians were against it at the time," Peng said, "some were afraid that running trucks on the dam would damage the soil structure and the working surface; others thought it was too costly—not that many trucks could be found." All this opposition did not stop the trucks from becoming "the most effective tools for shock work." A total of 348 trucks transported 410 thousand cubic meters of soil—one third of the entire dam work.

Not only were the trucks running up to the dam, but they did so dragging multiple trailers or a train of mining cars behind them; these too, are innovations mentioned by Peng Zhen. A security staff member suggested that a big truck could pull as many as four trailers. "The

[19] Peng Zhen, "Speech at the Completion Ceremony of Shisanling Reservoir," BMA 001-006-01329.

experiment was successful," Peng stated, "now a truck like this can haul 19 tons of soil, increasing the efficiency by three times." The mining-car train was "invented" by a military school teacher Meng Zhaofu, who succeeded in driving one truck pulling a dozen of mining cars. The weight of soil so transported surpassed many times of the automobile's own loading capacity. Again, concerns about damage to the trucks or the light railway were considered nothing but cowardly adherence to conventions. This method was vigorously promoted and "became a major transportation method in the reservoir construction." "People called it 'the fantastic train' and 'locomotive crusher (气死火车头)!'" Peng told the audience merrily. Later, the truck-pulling method was "advanced into" tractor-pulling, for "the tractors are faster, more powerful and more economical."

Innovations that in other settings could be used for labor saving led only to labor intensification at a GLF reservoir. A flipping loading platform, also praised by Peng Zhen, is a good example. The idea belonged to Zhao Quan, a Party member from the Eighty-Fifth Middle School of Beijing. During the early stage of the construction, the trucks, as well as truck drivers, were supplied by Beijing Bureau of Transportation. "Due to deeply entrenched conservatism," the usage rate of the truck was extremely low because each truck had only one driver who worked only one shift. How to maximize the trucks' transportation capacity in their limited operating time became the key to increase the efficiency in general. Comrade Zhao redesigned the loading platform into a row of "flipping dustpans." The loading speed immediately increased from three minutes per truck to five seconds. One truck per shift then could transport forty loads instead of just eleven. However, the job on the loading platform did not become lighter, it

remained to be the most arduous work on the construction site[20] because faster loading meant only busier preparation on the platform.

These practices, glorified as technological innovations, were the highlights of two films themed on the building of Shisanling Reservoir—the Song of the Reservoir [Song]水库上的歌声 produced by Changchun Film Studio and Rhapsody of the Ming Tombs Reservoir [Rhapsody]十三陵水库畅想曲 by Beijing Film Studio. The similarity of the two films' titles testifies how straight and narrow the proper propaganda line had become, yet the two films were tailored for separate social engineering purposes. *Song*, with its story line revolving around a peasant family's reunion at the reservoir, portrays how the peasants and soldiers contributed to the building of Shisanling Reservoir with their strength and ingenuity, and how the reservoir in turn inspires the commune members to develop agricultural hydraulics at home. *Rhapsody*, while also celebrating the peasants and the workers, caricatured the intellectuals, especially those who held doubts about the Great Leap Forward. Many scenes in *Song* were shot in situ at Shisanling when the reservoir was still under construction. The Rhapsody, first written as a play by Tian Han in June 1958, used documentary footage of the construction site when adapted into the cinematic form. Both films displayed original footage of the daring technological "innovations" and the superhuman labor performance to transpose the fantastic into the real and vice versa. For example, in Rhapsody, we see the "one-arm hero" Li Shixi, a real-life labor model, run with a fully loaded wheelbarrow. Despite having only one arm, he is said to outperform three men combined. Another military labor model Comrade Ma also appeared on the screen with two giant baskets that "even four men together cannot lift up." One of the characters, a writer who was

[20] Zhu Chuandi, oral history interview. 2020-5-9.

once a base area soldier, then immediately lifts the baskets of two hundred jin of soil. These documentary acts meant to prove that the miraculous was now normal.

Technological innovations were not only an important visual component for *Song*, but a critical plot mover. All innovations that had been officially praised by Peng Zhen were depicted in the film, including trucks with multiple trailers, flipping loading platform, and the rotating compacting method. Certain other innovations neither mentioned by Peng nor documented by textual or visual records of Shisanling reservoir also entered the films. A simple cable pulley system played an important role in the film, even acquiring its own trajectory of development. The heroine of the film Gao Lanxiang, a Youth League member in her commune, first came up with the idea of setting two poles at the top and bottom of a slope and sliding the basket down along the cable held up by the two poles to speed up soil transportation. Her fiancé, Gu Zhiqiang, is a soldier who had just joined the Shisanling Reservoir construction, for which he decided to postpone their wedding. Lanxiang, herself the leader of the women's production team, wholeheartedly supports Zhiqiang's decision. She was offended by the commune leaders' suggestion for her to visit him at Shisanling. Only after the commune leaders told her that she was to go there to learn how to build a reservoir, was her protest replaced by cheers; she then went to Beijing with Zhiqiang's father. The minute the two arrived at Shisanling, they immediately joined the labor. Even the old Gu, having been missing his son so much, looked not for the young man but for baskets so that he could carry some soil right there and then. As for Zhiqiang, having heard from the loudspeaker that his family was there, he continued the labor competition with a peasant team instead of leaving to meet them. His team lost the competition. Just when he was looking for ways to increase the team's productivity, his father found him and taught him what Lanxiang created at home. Zhiqiang further developed Lanxiang's single-line

sliding system into a double-line cable pulley device: two parallel ropes reached from the top of the slope to the bottom, each having a hook attached to the pulley running on the cable. The ropes were set at the distance of a carrying pole and at the height of man's shoulder. Soldiers at the top of the slope hang a carrying pole with two loaded baskets onto the two hooks. It would then be glided down and immediately shouldered up by a man waiting at the bottom of the slope. With this smart secret weapon, Zhiqiang's' team won the competition. He shared this innovation with the peasant teams, while Lanxiang diligently studied the technologies of reservoir building. He and Lanxiang then held a simple, "revolutionary" wedding on the construction site.

The cable pulley device in the film, as well as the train of mining cars trailing the truck and the tractor, are but two examples of the Great Leap Forward's wild reimagining of ways for production growth. They were not wild because of their technological novelty, but rather owing to the belief that by simply adding semi-mechanical components—regardless of cost and adaptability—and multiplying the work speed, the production process would be fundamentally transformed, and modernization quickly achieved. As the campaign unfolded, this type of "technological revolutions" proliferated.

The whole country was thrown into, so to speak, a storm of "-izations." These "-izations" consist of an endless list of phrases ending with the character "hua 化." The hua character was simply prefixed with a noun referencing a machine or mechanical component. The most famous examples are "vehicalization 车子化" "ball-bearing-ization 滚珠轴承化", and "cable-pulley-ization 绳索牵引机化" , often dubbed as the "three big tool reforms 三大工具改革" of the Great Leap Forward. In the late half of 1958, the zealous promotion of tool reforms even gave life to the claim of "eliminating the carrying poles" in major state construction sites. But before

entering into that particular myth of words, an examination of voluntarist labor on Shisanling Reservoir—very much dependent on the carrying poles— is in order.

3. Utopia in the Ming Tombs

"We went to Shisanling in March. It was still cold, but I remember wearing only a T-shirt while working. What we did was mainly digging and transporting soil. The distance was about four hundred meters, and the soil loading platform was 20 meters high. It is incredible how much energy we had at that time—everyone was running with the heavy baskets. The [success of] the First Five Year Plan was very encouraging for the intellectuals. Industrialization had been the dream for all aspiring Chinese in the past century regardless of their political stance. We wholeheartedly supported it. [As students] we had already missed the First Five Year Plan and we didn't want to miss more. That's why we were able to work like that at Shisanling. I was very glad that I could participate in the [national] construction."

—Zhu Chuandi, interviewed on May 9, 2020

In 1958, Zhu Chuandi was a third-year college student at Tsinghua University, majoring in Automobile and Tractor Engineering. About one third of the student body was chosen to go to Shisanling, although more had expressed their wish to go. The criterion was mainly physical fitness. In a university that valued sports, where many students routinely ran two long-distance races every week, Zhu had good reason to feel proud to be chosen. He and his Tsinghua teammates worked on the reservoir for nine days. Their work was simple physical labor, like that of everyone else on the reservoir. However, unlike soldiers and peasant workers, who had been accustomed to heavy labor of construction, students and cadres were put into a course of body and mind reforging through intensive somatic and emotional experience distinct from their daily work. For Zhu, and for many other Beijing dwellers, building Shisanling reservoir was a memory of light and heat, the peak of enthusiasm and innocence before everything quickly turned into madness, and then depression. However, voluntary labor [yiwu laodong], as an activity, did not fade but became more entrenched in the social life of the People's Republic. Through voluntary

labor, a series of practices of regulation and self-regulation thought to be conducive to mass labor efficiency were habitualized to even the most cerebral individuals of the country.

From early February to the end of June, the Central Government, Beijing work units dispatched nearly ninety thousand staff to the Shisanling Reservoir to do voluntary labor. The government staff formed the First Brigade on the construction site, under which the First Company was constituted by personnel of the Standing Committee of the National People's Congress and the State Council. The Supreme Court, the Supreme Procuratorate and the Ministry of Justice formed the Fourth Company, and the Beijing Municipal Party Committee formed the Sixth. The constituents of the First Brigade look like attendees of the National People's Congress and People's Political Consultative Conference, including "the Prime Minister, ministers, ordinary cadres, service workers, members of various democratic parties, members of ethnic minorities including Manchurian, Mongolian, Chinese Muslim, Tibetan, Korean, Kazakhstan, Uighur, etc, professors, engineers, writers, high intellectuals, Catholic nuns, Buddhist monks and Taoist monks."[21] As with the NPC, diversity was meant to demonstrate both discipline and national unity—an aesthetic described by Hannah Arendt as "heterogeneous uniformity."[22]

The building of Shisanling Reservoir set the way to temporarily change the function of different work units and individuals to meet a single productive goal, quite irrelevant to what they were established or designated for. Over the course of five months, all government offices and universities in Beijing busied themselves drafting rosters of voluntary labor, organizing them into teams and companies, and dispatching them to the reservoir. They made sure the teams

---

[21] "Summarizing Report on the Government Units' Staff's Participation in the Voluntary Labor at Shisanling Reservoir ('Summarizing Report' hereafter) 机关工作人员参加十三陵水库义务劳动的总结报告," BMA 001-027-00137.

[22] Hannah Arendt, *The Origins of Totalitarianism*, First edition (New York: Schocken Books, 2004).

succeeded in fulfilling their tasks, and upon their return, sent new volunteers to replenish the labor force. The volunteers were temporarily transformed into new construction managers and laborers. The First Brigade's final summary report notes that one good practice worthy of future replication is that, "The labor troop should be equipped with personnel to fill particular temporary positions, such as brigade commander, political commissar, secretary, tool managers, communicators, and technical staff."[23] The ranks within this temporary troop may have roughly corresponded to the ranks in the office, but the individual's functions could hardly be the same as their office work.

To make this temporary labor force effective, specialization was imperative. As soon as a team arrived, each member would be assigned a task for the coming days of work. Zhu remembered how a fourth-year female student of Hydraulic Engineering, the technician designated to their team, led them to a chosen pit and explained the properties of the soil and techniques of digging and carrying the soil. His work remained the same over nine days: transporting soil with a carrying pole and two baskets from the pit to the mining-car loading platform 400 meters away. On the platform, there are other men in charge of arranging the baskets into right positions and loading the soil to the mining cars. He put the loaded baskets down and ran back to the pit with other empty baskets. Such specialization allowed the individual labor efficiency to increase rapidly in short time, as Zhu's own experience testified.[24]

The Summary describes how a team on the platform should specialize and coordinate its members. The job was streamlined into several parts, and each was finished by person(s) of different physical strength. Baskets were passing through hands so everyone could basically

[23] "Summarizing Report," BMA 001-027-00137.
[24] Interview with Zhu Chuandi. 2020-5-9.

stand on a fixed spot—the baskets had been placed to their positions by another team specializing in just that. First, someone needed to lift the loaded baskets and pass them to the men on the edge of the platform. This was heavy work that required at least one strong laborer or two normal laborers, so that "the baskets would not touch the ground" before being taken to the next step. The men on the edge were to dump the soil in the mining car. Their job was the heaviest and had to be done by "two men with strong arms." The loaded baskets were so heavy that the baskets often fell with the soil into the mining car. In this case, someone agile was dedicated to picking up the empty basket from the mining car to keep the workflow moving. Eventually, another person took care of putting the empty baskets together so the carriers could pick up several at once. This was the lightest part and usually done by "a relatively weak woman." If it happened that the mining cars came into the station faster than usual and the soil supply on the platform started getting low, then the strongest laborers of the team would shift to soil transportation to maintain the turnover speed of the mining cars. According to the Summary, this set of practices was first formulated by a team from Beijing Municipal Party Committee—referred to as the Number Six Company. "In a few days, the time needed for loading a mining car was reduced from four minutes to one minute and twenty-five seconds."[25] Every second mattered, as if these were Formula One pit stops. In this process, ministers and cooks, high intellectuals, and Catholic nuns, all had to become comfortable with dirt and sweat and enter into a rhythm of movement with the bodies around them and turned into one bio-organic machine.[26]

Such intensive labor pushed many people into a physical state they never experienced before. Many completely exhausted themselves in just a few days, because as office workers,

[25] "Summarizing Report," BMA 001-027-00137.
[26] Richard White, *The Organic Machine: The Remaking of the Columbia River*, (New York: Hill and Wang, 1996).

they were “full of enthusiasm but lacked experience [of physical labor].” The Summary suggests that gradual intensification was important. “The first few days are for exercising and learning techniques. From days three to five, [a team] can launch its labor competition. This is the time to ‘charge and attack’ with full force.” Zhu Chuandi’s recounted that in their first two days on the job, students were not allowed to load baskets to the top nor to run while carrying the soil, to prevent early exhaustion. Even so, once the restrictions were lifted from day three, Zhu remembered, his legs were immediately swollen and continued to be so throughout the rest seven days due to the intense work. The swelling made squatting almost impossible such that using the toilet became tremendously difficult. Yet he became better and better at carrying soil. By the end he was able to transport nearly six square meters of soil in one day—a fifty percent increase from the beginning. The Summary describes similar increases of efficiency among the First Brigade members, claiming that it was not uncommon for many to start at less than one square meter per day and reach over four-square meters by the end of their nine or ten day long labor.

Many found a new appreciation of, even passion for, physical labor in this heightened atmosphere of dedication and with their own growing sense of accomplishment. This enthusiasm was then channeled into reforming of thoughts and attitudes: mental labor was not superior, in fact, it might be inferior to physical labor. Thus, intellectuals must learn from the laboring mass. After the Anti-Rightist Campaign, the intellectuals, a category to which many of the volunteers belonged, became increasingly insecure about their political and social status, even if they had not been fitted with the “hat” of rightist. Not only did the mental pressure accumulated in the soul-searching study sessions and the writings of self-criticism find some relief in simple physical exertion, but they also gained a sense of reassurance that one could always be accepted as a valuable part of the socialist construction through labor. A teacher from an engineering

school said, “I have been teaching physics for years and talked about the center of gravity all the time. But when I actually pushed a cart, I tripped and flipped it over. Only after so many rollovers did I finally grasp the center of gravity.” According to the Summary, this makes clear, “that empty theory is absolutely useless. Only when it joins practice, it exerts great power.” Some participants confessed that at the beginning they were suspicious about the “militarized life,” thinking that certain requirements such as folding the blanket into a neat cube or the singing session after eight hours of labor was nonsense and counterproductive. But after working as a part of a closely coordinated team they realized that how important discipline and obedience are. “Without which, it would be impossible to complete such a massive engineering project in such a short time.”[27]

The participation of the reservoir building then became a great opportunity for individuals to perform collectivism. When not on shift, many sought out other ways to contribute. The summary says, “Some helped in the kitchen, some cleaned the campground, some fixed the tent, some helped the neighboring team to repair tools. Not one person was resting.” A ninth-grade cadre Man Jianmin devoted himself to killing flies and made the record of killing 270 in one day! One can only imagine that, while others were busying themselves with communal work, it would be not only inappropriate but also risky to stay aside alone. Fortunately, the egalitarian atmosphere and distance from ordinary work environment created a space of communal living. Its congeniality, even temporary, made such performance more easy and sincere. Evidently, even those “passive with office work” appeared to become eager to help. The Summary concluded that mass labor was the best way to destroy egoism, writing, “Everyone realized that within this labor army of thousands, they themselves were nothing but a regular foot

[27] Ibid.

soldier. In this massive and intricate machine, they were but a small screw. The power of the individual is really insignificant."[28]

The spirit of voluntarism peaked when Mao, along with other national leaders Liu Shaoqi, Zhou Enlai, Zhu De and Deng Xiaoping, came to the reservoir. On May 25, the first day of the Fifth Conference of CCP's Eight Congress, Mao decided to take the entire Central Committee to participate in the mass labor at Shisanling. The objectives of this sudden initiative might have been two-fold. First, the image of the central leaders laboring with the mass would send a strong signal across the country that the Great Leap Forward was a total production movement that required every citizen's physical labor. Second, it was also Mao's sport to tie the Central Committee together. Although consensus on the Great Leap Forward among the Committee had been reached, Mao wanted further public shows of support from his colleagues.

Later, footage of the central leaders working at the reservoir was screened across the country and viewed by millions of cinema goers in towns and outdoor film watchers in villages. In the footage, Mao took off his jacket while briskly walking towards the work site. He then used a shovel to dig the earth wearing just a white shirt, surrounded by people intently looking at him, with admiration and excitement. Liu Shaoqi was also shown digging soil with a shovel in a white shirt. Zhou Enlai appeared in his jacket, passing loaded baskets to the person next in line. The seventy-year-old Zhu De had his jacket open, in a more rustic style, carrying two baskets with a pole.[29] In the following days, almost all of the Eighth Congress conference attendees, consisting of high-ranking officials from all over China, came to labor at the reservoir. Wang Zhen and Wang Enmao, two revolutionary veterans who had led the reclamation of Nan Ni Wan in North

---

[28] Ibid.

[29] " 'National Leaders Labor with Us' on Screen Today '领袖和我们同劳动'今天在首都上映," *People's Daily*,1958-5-29. 7. These scenes are also shown in *Rapsody*.

Shaanxi, a mass labor movement during the Sino-Japanese War, appeared digging and carrying soil "like in the old days."[30] The glorious labor not only brought back the Party's own revolutionary tradition, it also showcased the Party's internationalism. Foreign ambassadors and their wives came to carry soil at Shisanling.[31] The Soviet National Symphony held a 90-minute-long concert on the construction site. The People's Daily announced that several Indian presses published the picture of Mao and other leaders' working on the reservoir.[32] The newspaper also published a poem by Alex Qasim (sic), an Albanian visitor to the Shisanling Reservoir, celebrating the achievement of Chinese people and the friendship between China and Albania.[33]

Probably no central leader worked as many hours on Shisanling as Zhou Enlai. In the previous two years, the Prime Minister had pushed a series of anti-adventurist policies to stabilize the national economy after the high tide of Socialist Transformation. Mao nursed a grudge for more than a year before finally pushing back with the anti-rightist campaign.[34] The Great Leap Forward was not only anti-anti-adventurist, but more adventurist than ever. Zhou needed to demonstrate that his loyalty to the Great Leader was unquestionable, and he was ready to embrace his initiative with firmest conviction. After going to the reservoir with Mao, Zhou organized more labor expeditions to Shisanling. On June 15, Zhou Enlai led 500 staff of the Central Government and Ministries to the reservoir for a week-long labor session. He had to

---

[30] "Attending the Voluntary Labor at Shisanling Reservoir 参加十三陵水库工地义务劳动," *People's Daily*, 1958-5-27. 4.
[31] "Diplomats from the Soviet Union and Other Brotherly Countries Participated in Voluntary Labor at Shisanling Reservoir 苏联等兄弟国家外交人员到十三陵水库参加义务劳动," *People's Daily*, 1958-6-1. 1.
[32] "Newspaper in India Published the Photo of Chairman Mao Laboring at Shisanling Reservoir 印度报纸刊载毛主席在十三陵水库劳动的照片," *People's Daily*, 1958-6-8. 3.
[33] Alex Qasim 阿列克斯恰齐, "Shisanling Reservoir 十三陵水库," *People's Daily*, 1958-6-9. 8.
[34] Yang Jisheng discusses the power struggle among the top leaders before the GLF in details. Yang, *Tombstone*.

leave the reservoir early for a Politburo meeting. To make up for the missing time, the sixty-year-old Zhou went again a week later. This time he stayed in a small bungalow in Changping and worked eight-hour shift on the construction site for two days. Zhou's right arm could not be fully extended due to an old injury. But he carried and pushed, sweating, and smiling.[35] It was also he who used his own authority to fend off the question about the security of the dam raised by the Soviet hydraulic scientists and the Ministry of Geology. Zhou declared that "We will survey, design, build, reserve [water] and observe [the situation] all at the same time. Let's leave the conclusion to the future."[36] Thus, Shisanling gave Zhou the opportunity to completely reverse his earlier, anti-adventurist policy orientation.[37]

The opposition to the Shisanling Reservoir project was dramatized in Rhapsody, with the characters altered from the real life. After the opening narration of the long history of misery that the peasants endured under multiple dynasties and the Nationalist government, the film shifted into a scene in the headquarter of the reservoir. There, a group of men listened carefully to the Party commissar's presentation of the reservoir's magnificent design. The group included a scientist, a professor, a journalist, and a writer, but no Soviet expert. Two of them stood out as obviously holding negative opinions about the building plan: a Professor Huang and a journalist named Hu. It was probably not a coincidence that the professor shares the surname of Huang Wanli, the hydrologist who vigorously opposed the Sanmenxia project on Yellow River, an effort that earned him a rightist hat. But Journalist Hu's prototype seems to come from traditional

[35] Shi Yijun, Xu Lianying, "An account of central leaders' participation in building Shisanling Reservoir in 1958"
[36] Peng Zhen, "Speech," 26.
[37] Dali Yang discusses Zhou's responsibility to the Great Leap famine in more detail. Yang argues that Zhou's decision to continue exporting grains during the GLF greatly worsened the famine. Dali Yang, *Calamity and Reform in China*.

popular drama. His story line shows that he abandoned his fiancé in the village and pursued a college girl in the city after he started a career in Beijing—much like Chen Shimei, a notorious character in late imperial dramas whose name was indeed synonymous with unfaithful men. By making Hu such a disgraceful character, the film connects the opposition against reservoir building directly with moral decadence. As for Professor Huang, the film shows that when everyone is living a merry life under communism twenty years later, he is the only old, sick and unhappy person. He then confesses, "The internal thought conflict has bothered me for twenty years. The me of yesterday and the me today are constantly in battle, and the yesterday me just will not give in! I cannot help but becoming more and more depressed." If an intellectual cannot steer his thought in line with that of the Party and the mass, the film clearly indicates, he will live the rest of his life in pain and loneliness.

The last thirty minutes of the Rhapsody shows how communist utopia was imagined in the time of the Great Leap Forward. The future Shisanling People's Commune is an idyllic world with high-technology conveniences. Like in the "Peach Blossom Spring (also translated as The Peach Colony)" dreamed of by the third-century writer Tao Yuanming, everyone is happy and content, and nature is green and lush.[38] Large sailboats cruise the reservoir while children play under a giant tree that bears a hundred different kinds of fruits. However, this is definitely not a futuristic space with fundamentally different social and political arrangement. The individual's amazing self-realization occurs under the auspices of the state and the Party, both still firmly in

[38] A Note of the Peach Blossom Spring by Tao Yuanming, Jin Dynasty, in which the author describes a utopia inadvertently discovered by a fisherman: "He saw before his eyes a wide, level valley, with houses and fields and farms. There were bamboos and mulberries; farmers were working and dogs and chickens were running about. The dresses of the men and women were like those of the outside world, and the old men and children appeared very happy and contented." Tao Yuanming, "The Peach Colony," trans. by Lin Yutang, *Chinlingo*, accessed May 19, 2023, https://www.chinlingo.com/articles/601771/.

place. The group of men we saw at the beginning of the film are reunited. Through their conversation, we know that now both the urban-rural divide and gender inequality are eliminated, yet the women still happily serve at the all-male tea party. Interestingly, although machines now take care of all production, the bountiful fruits are brought in by carrying pole and baskets, signaling the cherishing of the labor tradition. Except for the gloomy Professor Huang, the male characters have either just returned from an "international peace conference," or will soon embark on the newest rocket to visit Mars. All these were achieved simply by the hard work in the last twenty years. Today's backbreaking labor will bring a happy, abundant, and laborless future, which is not that remote, and will surely be realized in everyone's lifetime.

The *Rhapsody* was a product of the climax of Maoist adventurism and optimism. In fact, Tian Han finished the writing in just a few days. It took less than a week for the National Youth Arts Theatre to bring it onto the stage.[39] The rapid completion of the Shisanling Reservoir in real time, the lightning speed of the production of its artistic representation, and the depiction of the expeditious arrival of the communist society in these representational work formed a corpus of tales that fueled the national confidence in the speedy development laid out by "the General Line for Socialist Construction 社会主义建设总路线."[40] The high tide of hydraulic building was raised even higher after the completion of Shisanling Reservoir. A myriad of large-scale projects was launched across the country almost simultaneously. Among them was the Miyun Reservoir—the major water source for Beijing and Tianjin in the coming decades. The early GLF's tremendous success in labor mobilization—both physically and spiritually—led to an

[39] Paola Iovene describes the production and the content of the play in *Tales of Futures Past*.
[40] The second meeting the the Eighth National Congress of the Chinese Communist Party passed the "General Line for Socialist Construction" proposed by Mao. The General Line is summarized in "Get all out, strive for the best, achieve the greater, faster, better, and more economical socialist construction 鼓足干劲、力争上游、多快好省地建设社会主义."

extreme form of labor organization. The next section of this chapter will show that the communization of rural society and the mass organization of its labor force not only directly contributed to the great famine but proved to be ill-fitted for the construction task they were created for.

4. The Miyun Reservoir

The Great Leap Forward reached its peak in late 1958. In the countryside, the former agricultural cooperatives were combined into large, "high-level" communes. Peasants in these big communes were organized into "corps" consisting of thousands of people that were in a state of "permanent mobilization."[41] These corps assembled daily to work on one of the many GLF initiatives that relied on intense use of their muscle power. Most men were dispatched to dig ditches and build reservoirs, others searched for metal objects of all kinds—woks in people's homes and statues in temples were two common sources—and threw them into backyard furnaces. Still others, in response to Mao's call for deep plowing, dug the farmland until soil at depths of three or even five feet came to the surface, effectively making the land infertile. The Great Leap devoured not only metals but also wood. Timber served as fuel for the backyard furnaces, as well as materials for wheelbarrows, plows, and all kinds of tools that the productive warfare consumed at breakneck speed. Mountains were shaved bald, and people's tables and chairs were expropriated and disassembled. Urban dwellers, besides busying with working in their own "iron factories" built at any open space available to their work unit, were also often sent to the countryside for a short period of voluntary labor to help with the agricultural activities

[41] Jürgen Domes, *Socialism in the Chinese Countryside*: *Rural Societal Policies in the People's Republic of China, 1949-1979*, (McGill-Queen's University Press, 1980).

as peasants were fighting other battles. Many of these city dwellers witnessed a bumper harvest of the year that became half rotten in the field because no one had time to collect it. Meanwhile, the commune mess halls removed all restrictions of food provision and offered excessive meals. The frugal peasants managed to shed their uneasiness with the wastefulness in this short-lived extravagance of "commune supply system" 供给制. After all, had not Chairman Mao himself become concerned about "what should we do with too much grain?"

The building of Miyun Reservoir was launched amidst this productive fervor. It was both typical, as one of the thousands of Great Leap Forward hydraulic projects, but also special. Its importance to the water supply of Beijing and Tianjin meant that it was a prioritized project for the state and the stakes were much higher for those in charge of its construction. The reservoir thus enjoyed privileged access to resources in labor, machinery, and engineering expertise. As a result, the reservoir was built in a relatively short time—although much longer than was initially planned—and succeeded in serving the capital for decades. This distinguishes it from many GLF projects that were aborted before completion or completed but never met the standard for sustainable service. As a project that enjoyed the best technological and financial provisions of the time, it is not another GLF failure. Rather, it shows what it took to build a successful project, one that could materially increase economic production in the way that the argument for the superiority of state socialism had been premised.

Though its strategic importance and competent execution set Miyun apart, the project was also typical in many respects. Like other projects of its time, it relied on the massive GLF labor organization based on communization, the highest level of collectivization that the socialist China ever reached to. During this period, peasants were not only thoroughly alienated from land in terms of ownership, but also deprived of the basic means of maintaining domestic life. Many

families lost their kitchen appliances to the steel-making campaign and mess hall movement. In historian Yang Jisheng's words, once they lost their "rights to woks and spoons," their "rights to subsistence" were forfeit as well.[42] Their labor thus became a free good that could be assigned to any work at the state's will. However, for the party leadership who could not wait to see the quick realization of communism, this labor force fell far too short of the knowledge, skill and discipline required by modern industry.[43] The new emphasis thus turned to drilling the rural population into multi-functional forces that were ready to be mobilized on agricultural, industrial, or military front at any moment. It was indeed a leap from the early 1950s; within less than a decade, the goal had been raised from making "new socialist peasants" to forging people that were "peasant, worker and soldier in one" (*yi nong yi gong yi bing* 亦农亦工亦兵). This total mobilization quickly led to over-exploitation of rural labor. Even in the prioritized Miyun Reservoir, labor shortage was a constant problem.

Based on a grossly simplified understanding of the economies of scale, the central leadership believed that high levels of collectivization would be conducive to agricultural water conservancy and mechanization.[44] The history of the building of Miyun Reservoir provides

---

[42] Yang Jisheng, *Tombstone.* "失去了饭勺权，就失去了生存权"

[43] Gerschenkron talks about how economically backward countries are most jealous of the advanced countries for their industrial labor. Alexander Gerschenkron, *Economic Backwardness in Historical Perspective:* (Cambridge, MA: Belknap Press, 1962).

[44] A series of GLF polices were passed in the Enlarged Meeting of the Political Bureau in Chengdu during March 1958, including "Suggestions on the development of local industries 关于发展地方工业的意见" and "Suggestions on appropriately combining small-scale agricultural cooperatives into large-scale cooperatives 关于把小型的农业合作社适当地合并为大社的意见." The latter articulated the need to enlarge the scale of cooperatives for agricultural hydraulic building: "The agricultural irrigation of our country is rapidly developing. In a few years, farming will be mechanized. If the scale of agricultural cooperatives is too small, it will impede the organization and development of production. To suit the needs for agricultural production and cultural revolution, it is necessary to combine small-scale cooperatives into larger ones in some localities. 我国农业正在迅速地实现农田水利化，并将在几年内逐步实现耕作机械

ample evidence that super collectivization created a multitude of obstacles for technological development. First, during the Great Leap Forward, a movement of "tools reform" was promoted nationally to compensate for labor shortage and increase labor efficiency. One lasting effect of tools reform was the proliferation of double-wheel barrows. These replaced carrying poles and baskets and enhanced the capacity and speed of muscle-powered transportation. However, the tools reform as a whole failed to fulfill its founding principles. Tools reform was supposed to exploit collective creativity based and allow for economic self-sufficiency. These ideals proved to be unattainable under the "militarized" mass labor organization. In Miyun, tools reform eventually relied on central supplies to achieve a measure of success.

Second, labor organization under super collectivization was averse to mechanized production. The labor process in mechanized construction at Miyun Reservoir was determined neither by the operational capacity of machines nor the peasant workers working with the machines. The labor organization corresponded, rather, to the structure of rural collectivization. In this structure, local cadres became the dictators of labor process. This resulted in overexertion of machines and laborers on one hand, and poor coordination on the other. In general, although the Great Leap Forward hydraulic projects produced an abundance of intermediate tools, allowed some peasants opportunity to learn technical skills, and significantly expanded agricultural irrigation, it failed to reform rural population into multifunctional labor force.

化，在这种情况下，农业生产合作社如果规模过小，在生产的组织和发展方面势将发生许多不便。为了适应农业生产和文化革命的需要，在有条件的地方，把小型的农业合作社有计划地适当地合并为大型的合作社是必要的." Xie Chuntao 谢春涛 and Dali Yang discuss the rationale of communization based on the need of water conservancy construction. Xie Chuntao, *Eagre of the Great Leap Forward 大跃进狂澜*, (Henan People's Press, 1990). Dali Yang, *Calamity and Reform in China*. 36.

And this failure came with tremendous human cost. The case of Miyun Reservoir reveals multiple ways in which hydraulic projects aggravated the suffering and losses of the broad population, even though Hebei and Beijing were far from being the most devastated by the GLF. First, a significant part of rural labor was withdrawn from agricultural production for an extended period, which, as recognized by the government a few years later, was a "mistake we made in 1959 and 1960."[45] Second, rural collectivization further increased the power of local cadres over the peasants. Construction work pulled peasants away from their supportive network and subjected them even more fully to the control of cadres. Many of them lived under food deprivation, corporeal punishment, and public humiliation that hostile cadres freely exercised. Last, large reservoir projects dislocated a great number of rural people, who were uprooted from their home village with extremely meager compensation. Many were forced below the level of consumption needed for survival. The great leader might have thought he was pulling the peasants up to build a glorious future. But as an old Chinese saying puts it "pulling seedlings does not make plants grow, it only kills them." Millions perished because of the Party-state's impatience to realize economic growth.

The plan to build Miyun Reservoir was originally scheduled for the third Five-Year Plan. The project was partly a manifestation of the GLF adventurism, but more importantly, it was an answer to a problem that arrived much earlier than expected. The rapid industrialization and urbanization in the previous years increased the need for water in Beijing and Tianjin even as the water supply had decreased. The rivers that used to flow into Haihe River, the lifeblood of Tianjin, were now blocked at their upper stream by a multitude of local irrigational projects.

[45] "Report on Beijing-Miyun Water Diversion Project by Beijing Municipal Party Committee 中国共产党北京市委员会京密引水工程报告,"BMA 001-006-02307.

Many people in Tianjin had to drink processed briny water. The major water source for Beijing, the Guanting Reservoir, had to distribute part of its water to Tianjin while the reservoir itself was rapidly shrinking due to silting. The water level of Guanting dropped to the lowest level allowed for electricity generation. A petition jointly submitted by the leadership of Hebei, Beijing and Ministry of Hydrology and Electricity to the Party Central and State Council described the situation, "The water deficit has already become a serious obstacle for the industrialization of Beijing and Tianjin. The situation is indeed dire."[46]

In the two months between the submission of the petition to the beginning of construction, the scale of the project grew significantly on paper. It is unclear who proposed the expansion, though it may have been the designers at the Tsinghua Department of Hydrology. In any case, the fact that the expanded plan went through the collective decision making so quickly speaks much about the GLF "think bigger" mentality. The late June version proposed two major dams and five subsidiary dams, entailing a total earthwork of 15 million cubic meters, and requiring 150 thousand peasant workers. When the construction began in late August, the project had grown into building "two major dams and a dozen of subsidiary dams" in ten months. The earthwork would total 23 million cubic meters, and 300 thousand peasant workers were to be summoned to complete the project. The labor force would be drawn from 26 Hebei counties and Beijing districts. Although only ten of them were direct beneficiaries of the reservoir, all areas were supposed to devote four to five percent of their population to the building of Miyun

[46] "Proposal on the construction of Miyun Reservoir by Hebei Provincial Congress Committee, Beijing Municipal Party Committee and Congress Committee, and Ministry of Water Conservation and Electricity. 河北省委省人委、北京市委、市人委、水利电力部关于修建密云水库的请示," BMA 001-014-00441.

Reservoir. This number may sound modest by the standard of large hydraulic projects in socialist China, but it was quite onerous in the context of the total production warfare of the GLF.[47]

The timeline of construction announced in the opening ceremony on September 1 was even more optimistic. Despite acknowledging that peasant workers could not all arrive and begin working at once, a condition naturally resulting in slower progress at the beginning, the project leadership declared that half of the work must be completed before the end of year. This ambitious timeline was arguably based on several calculations. First, such a display of optimism and determination had become a political necessity. In addition, difficult goals set from above were meant to drive the lower level to try harder. However, as it turned out, all these tactics would hit the hard ceiling of reality.[48]

The managers of the Miyun Reservoir project, compared to those in charge of early 1950s Huai River Control, had become one step more specialized. They were now involved in daily rural and agricultural administration instead of being freshly from guerilla warfare. The Vice Chief of the Beijing Rural Affairs Department, Wang Xian 王宪, assumed the position of Chief Commander. A three-person small group composed of Qian Zhengying 钱正英, the Vice Minister of Water Resources; Zhao Fan 赵凡, the Chief of Beijing Rural Affairs Department; and Ruan Bosheng, the Vice Governor of Hebei Province, oversaw all affairs related to the construction of Miyun Reservoir. Qian had been one of the very few hydrologists on the early 1950s Huai River Control Committee. Combining an impeccable political background—she

[47] "Overview of Miyun Reservoir 密云水库介绍," and "Proposal on the Organization of Peasant Laborers and their Living Arrangement 关于民工组织领导和生活管理工作方案," BMA 001-014-00542.
[48] Wang Xian 王宪, "Speech on the Starting-Construction Assembly 在开工誓师大会上的讲话," BMA 001-014-00542.

joined the CCP at the age of 16—and academic credentials in Civil Engineering, Qian was the kind of expert that the Party needed and trusted. Zhao Fan had just led the construction of Shisanling Reservoir as the project's Party Commissar, and thus had a proven track record for hydrology projects. But the three-person group was not really a committee for the persons of Qian, Zhao and Ding to direct construction work. Rather, the group was more of a platform to coordinate between different bureaucracies, namely, between the Hebei and Beijing regional governments and the technocrats in the Ministry of Hydrology. The reservoir committee's contact point in each county and district continued to be the top officials of the locality. Indeed, committee rules stipulated that, "[T]he chief of each county's corps must be the magistrate of the county/district; the Commissar of the corps must be the Party Secretary."[49]

The organization of peasant workers followed the principle of "militarization." As it was established across the country during the GLF, the peasant "corps" contained a structure of ranks including regiment, battalion, company, platoon and squad 团营连排班. The goal of militarization was to train the rural labor force into "new peasants" who possessed not only agricultural but also technological and military knowledge. The reservoir's labor regulations prescribed an eight-hour labor time "so that there would be enough time for military training and schooling." The peasant workers would not only master the skill of shooting through regular shooting practices, but also receive "four hours of political and engineering studies and eight hours of cultural studies each week" during their work on the Miyun Reservoir.[50]

Whether these attractive programs would be carried through was something the peasants could only find out later. But at that moment, they had to meet the reservoir's requirement for all

[49] "Proposal on the Organization of Peasant Laborers and Their Living Arrangement 关于民工组织领导和生活管理工作方案,1958-8-25," BMA 001-014-00542.
[50] Ibid.

kinds of provisions. Each peasant worker had to bring either a shovel or a pickaxe; every two persons were to bring a wheelbarrow of over 300kg capacity and a pair of baskets; every five hundred peasants were to bring an animal-drawn cart, specifically one that could be pulled by two animals and fitted with rubber tires. Beijing suburb districts were responsible for contributing an additional two hundred animal-drawn carts. "Each cart, equipped with two animals and two men, is equivalent to ten peasant workers." Such a high demand for wheelbarrows and animal-drawn carts would put tremendous strain on the rural communes. In reality, the quotas were implausible and were never met. It was also made clear that the reservoir would not feed the laborers. The grain quota of the peasant workers would be transferred from their communes to the reservoir. Any food deficit was to be solved by "raising pigs and planting vegetables near their camps." At the same time, a strict limitation on non-productive labor, such as cooks and gardeners, was imposed. The materials for building the camps, of course, were also the peasants' own obligation. On top of all these, they were also to bring drums and gongs and honorary banners to "enliven the construction site." But the most urgent requirement of all was a spirit of "no going home without finishing building the reservoir."[51]

5. Run with Two Wheels! —Tools Reform at Miyun

Two months into the construction, it had become clear that it would take more than the Central government's support to secure the supply of both labor and machinery. Even though the Hebei Provincial Party Committee guaranteed that the peasant workers for Miyun Reservoir would be "sent by the promised time and at the promised quantity and quality," the reservoir only had 150 thousand workers by the end of October—a number they had expected to reach one

[51] Ibid.

month before. At the same time, they found that "a traffic jam of prioritized projects" diminished supplies and delayed the delivery of much-needed machinery. All over the country projects originally planned for the next decade were rolled out during the GLF.[52] Within just the Haihe River region, where Miyun is located, nineteen large reservoirs and a few dozen smaller reservoirs were simultaneously in construction in late 1958. The reservoir leadership found that they were in stiff competition for critical inputs such as steel, timber, cement, and mechanical equipment that had to be distributed directly from the central government.

Two important measures were adopted to compensate for the shortage in labor and machines. First, the reservoir leadership pressed the local cadres by "contracting" the work down to each county and district. From November 1, 1958, the whole project was divided up and separately contracted to each corps. The task of each corps was determined not by the actual number of peasant workers and the current productivity, but the promised number of peasant workers and the standard work quota. Apparently, the leadership hoped that by defining a specific amount of work as responsibility of a county/district, the local cadres would find their own ways to squeeze more labor out of the peasantry under their administration. However, the reservoir kept the right to change the terms of the contracts at its convenience, because the design of the entire project was not yet finalized. The contracting system had important consequences, which will be analyzed later in this chapter. The second measure was a broad tools reform campaign conducted across the reservoir. Since the beginning of the Great Leap

[52] Zhao Yuxiu 赵毓秀, "Speech: Strengthen Budget Management and Construct the Reservoir Economically 发言: 加强预算管理,贯彻勤俭建库," *Miyun Reservoir Construction 密云水库建设*, no.4,BMA 001-014-00535. *Miyun Reservoir Construction* is an internal bulletin published by Miyun Reservoir Party Committee, distributed among cadres working on the project. It is not paginated. Because I can only acquire copy of articles through Beijing Municipal Archives, sometimes the issue number of a particular article is missing because the information was not included in the copy.

Forward, tools reform had been promoted nationwide as a key solution to address the tension between planned productivity increases and labor shortage. As the reservoir leader Wang Xian stated, "Simply relying on labor intensification is not enough. Improvement of tools is the key to enhance efficiency and to complete the construction before the deadline."[53] The reservoir decided to borrow widely from the previous construction projects on creative methods to increase the efficiency of muscle-powered transportation.

A somewhat experimental tools reform at Miyun Reservoir was thrust into a mass race after Chief Secretary of State Council Xi Zhongxun's visit on November 16, 1958. In the past few months, the central leaders had been busy identifying the most daring practices that boasted most miraculous effects on productivity enhancement. A tale of marvel recounted by Xi was that of the Leading the Tao River Up the Mountain project [Tao River project]引洮上山 in Gansu Province. The Tao River project began in June 1958 and was aborted in June 1960. Today, it stands out as one of the most impetuous programs even by the standards of GLF mania. Recent historical research has shown that the project was one of the major causes for the particularly high Great-Leap famine mortality in Gansu Province.[54] However, during the GLF, the Tao River project was championed as a model of Revolutionary Adventurism for its novel design and audacious goals. Xi's speech at Miyun depicted a picture of communist paradise where labor is

[53] Wang Xian 王宪, "Report on the Fourth Meeting of the Reservoir's Party Committee 在水库党委第四次全会上的报告, 1958-11-1," BMA 001-014-00542.

[54] Yang Jisheng, *Tombstone.* Yang estimated that the mortality rate among the peasant workers across the two-year span of the project is around 50%. Also see CCP Gansu Province Tao River Project Committee, 中共甘肃省引洮上山水利工程局委员会,"Report on the labor safety 关于劳动安全的报告, 1958-12-3," *Selected Collection of Archival Materials from Gansu Tao River Project 甘肃省引洮上山水利工程档案史料选编*, (Gansu People's Press, 1997). As early as in December 1958 the food deprivation among the peasant workers had made eating "神仙土"(a kind of fine clay) a serious "labor security" problem. 172.

"so lively and joyful" thanks to the successful tools reform. Xi's speech was half a response to the Miyun Reservoir's persistent demand for more machines and half an instigation to raise the peasant workers' enthusiasm to revolutionize the tools. It demonstrates clearly how make-believe was publicly performed by the state authority and made into principle of action.[55]

Xi started by introducing the fantastic achievement on the Tao River project. "There," he said, "the highest labor productivity is over two thousand cubic meters per person per day, and the average productivity is 76.78 cubic meters." Knowing that these numbers could not be credible to his audience—average productivity at Miyun was less than one cubic meter then—Xi admitted that he himself did not trust the numbers at first. "I went to Gansu with doubt. But as it turned out it was all true. They were not bluffing, nor exaggerating. I saw it with my own eyes." He asserted that based on his observation, the Tao River project would not take two years but "can be done in a year and half." What made the Tao River even more impressive was the fact that this was accomplished without machinery. Unlike in Miyun, "there is no trace of trains, automobiles, or tractors. The very few wheelbarrows have only wooden wheels not rubber tires." This was obviously a subtle dig at the Miyun leaders who likely took the opportunity of Xi's visit to request more machine supplies. At the Tao River, Xi insisted, they had eliminated "the phenomenon of carrying with backs and shoulders," relying on not the modern machines but "the tu ways." "The so-called tu ways," Xi said, reiterating Mao's concept, "are indigenous to China. They are popular, basic knowledge accumulated through the thousands of years of history of our country. It is accessible to everyone." Building on the indigenous knowledge, the Tao River

[55] "Comerade Xi Zhongxun's Report on the Cadre Meeting at the Headquarter on Nov 16 习仲勋同志十一月十六日在总指挥部干部会议上的报告 ('Xi Zhongxun's report' hereafter)," BMA 001-014-00542.

peasant workers had transformed the arduous and time-consuming labor into "effortless and pleasant communist work."[56]

Xi then went on to describe the brave inventions at the Tao River, whose names resembled formidable modern military weapons. They are "rocket-style soil transporting machine, airplane-style soil transporting machine, wheel-less automated loading and unloading machine, land cruiser, aircraft carrier, and land cruising warship." What did a "rocket-style single-wing soil transporting machine" look like? It was "a wood plank one foot in width and three foot in length that costs about 1.5 yuan." Gliding on chute made of red clay, it "requires just three persons to operate. It can transport six baskets—57 cubic meters soil—every time." Xi stated, "This is 26 times more efficient than transporting by carrying pole." The airplane-style soil transporting machine was explained thusly, "You tie six baskets tightly together and put them in the middle of two poles and place them on a gliding board. Add another layer of baskets on the top to form the shape of a plane." This device supposed to raise the average productivity to 50 cubic meters per person per day. Another tool—called "non-electric trackless electric trolley"—is two connected carts pushed by three persons. With it "each person can transport fifty to seventy cubic meters soil every day." These "new technologies," Xi stated, came from "combining the universal truth of Marxism and Leninism with the reality of China." They demonstrated "the ingenuity of Chinese people."[57]

These innovations from the Tao River so highly praised by Xi were nothing particularly "indigenous to China", nor they fruit of accumulated knowledge through thousands of years of history. No human society does not know how to work with gravity. These "technologies"

[56] "Xi Zhongxun's Report."
[57] Ibid.

required neither embodied skills that take years of training nor a sophisticated social division of labor. They were the results of the destruction of established social relations and deterioration of knowledge and skill in the society. The "rockets and airplanes" perhaps did help to increase productivity, given that the peasant workers on Tao River could barely carry soil due to starvation. But they were desperate creations under the pressure of unrealistic production goal, testifying to the loss of collective ability for real technological innovations. Although the promotion of such innovations did not mean the technological level had retreated to that of the ancient time, but it was certainly a gross misconception, indeed a distortion, of what constituted the "indigenous" or "traditional." Both History and Nation were used as mere semantic vessels to hold the population into identification with the rhetoric and practices that the Party needed to propagate at the moment.

In her discussion of the Maoist scientific farming, Sigrid Schmalzer says that "Tu science represented a serious bottom-up challenge to technocracy, but it was always forced to compete with the tendency toward dogmatism and the insistence on imposing models from the top down."[58] GLF tool reform manifested what *tu* technology could become when dogmatism and imposition Schmalzer mentioned were at their peak. Furthermore, examples like this remind us that technology is always situated in specific ways of social organization. Schmalzer points out the important difference between *tu* knowledge in Maoist China and indigenous knowledge in colonial context. We may also discern the difference of *tu* technology of Maoist China with traditional peasant technology in earlier time, by acknowledging their fundamental difference in social organization. In fact, like Jacob Eyferth points out, the deskilling of Chinese rural

[58] Sigrid Schmalzer, *Red Revolution, Green Revolution*, 25.

population was not merely a result of modern technologies replacing the traditional ones, but importantly the destruction of social relations in which skills were embedded.[59]

Xi's prescription for Miyun was the same as his advice to all other construction sites he visited in recent months: to learn from Tao River and to thoroughly mobilize the masses for a tools reform campaign. "It is not true that peasant workers here are less spirited." Xi said this to preempt complaints from the cadres, who might try to shift the blame to the masses. He continued, "The key is to figure out ways to reduce labor hour and labor intensity, and to raise the productivity per capita to two to three cubic meters per day. This could certainly be done with successful tools reform."[60] The attractive prospect of reduction in labor hour and labor intensity was intended to motivate the peasant workers. However, as it turned out, tools reform did not lower labor hours or intensity. Eventually these were brought down, not by technological innovation, but by hunger.

Immediately after Xi's visit a campaign of "learning from Tao River, Superseding Tao River" was launched at Miyun. Fortunately, the leadership did not take the "learning from Tao River" so literally as to promote the making of "rocket-style single-wing soil transporting machines." They emphasized that the tools reform should be oriented towards the reservoirs' own conditions and objectives. Primarily, the reform ought to focus on how to maximize the productivity of the modern machines such as trains, small locomotives, automobiles, and conveyor belts. Secondarily, "where there are no *yang* machines, several *tu* ways should be thoroughly exploited, including double-wheel barrows, wood tracks and cable pulleys."[61]

---

[59] Eyferth, *Eating Rice from Bamboo Roots*.
[60] "Xi Zhongxun's report."
[61] "The Current Development of the Technological Revolution Movement 当前技术革新运动情况," *Miyun Reservoir Construction.* BMA 001-014-00542.

Apparently, the *tu* tools were meant to be substitutes of *yang* machines. The double-wheeled barrows and wood track carts were to be used on horizontal transportation when trains, automobiles and mining cars were inadequate or unfitting; the cable pulleys were for vertical transportation where conveyor belts were lack. All these substitutes, of course, were not novel innovations newly created at Miyun. What made them proudly *tu* is the fact they were always made in situ, using cheap and most available materials such as wood planks and ropes, tailored to meet the specificity of the work environment and solve the immediate exigency. They were, indeed, embodiments of self-sufficiency that the state ardently encouraged.

Although the Miyun Reservoir's report on their tools-reform achievements listed more than a dozen novel tools, only a few had meaningful impact on efficiency. By mid-December, the objectives of tools reform were summarized into "six -izations"—the promotion of six items that would help eliminate manual transporting and loading/unloading of soil. They included manual winches for upward transportation, wood-track carts for downward transportation, double-wheel barrows for horizontal transportation, slopes for train loading, tippers for train unloading, and elevated platforms for automobile loading.[62] The effort put into the production of the six items was uneven. Particularly, reservoir's leadership identified the building of double-wheel barrows as the priority of the reform, even treating it as the yardstick to measure the accomplishments of the campaign. In the two weeks of late November, the corps made more than fourteen thousand double-wheel barrows—over one thousand per day, indicating that a significant amount of labor was temporarily shifted from earthwork to barrow making.[63] For

[62] Wang Xian 王宪, "Speech at the Reservoir's Fifth Committee Meeting on Dec 13 在 12 月 13 日水库党委第五次全会上的发言," BMA 001-014-00542. "Meeting Memo of the Sixth Meeting of Miyun Reservoir's Three-Person Group 密云水库三人小组第六次会议纪要, 1958-12-21," BMA001-014-00535.
[63] "Current Development of the Technological Revolution Movement." BMA 001-014-00542.

vertical transportation, the manual winch was said to be "particularly welcome." In dam building, unlike in the Tao River project, gravity is not the friend but an enemy since the vertical transportations were almost always upwards. However, it is hard to imagine a manual winch would actually make lifting soil much easier. The tipper is a wooden triangle used to support the raised end of a train car so that soil can be poured down. The slope is a wood plank placed in between the loading platform and the truck, so that soil can be more easily pushed into the truck instead of being shoveled manually. Tippers and slopes—as simple wood structures—required very little investment of materials and time. Soon the tools reform on Miyun Reservoir became almost equivalent to "double-wheel-ization"—a sweeping endeavor to make and adopt the double-wheel barrows.

The proliferation of double-wheel barrows was one of the lasting GLF legacies. The wide use of these humble vehicles continued into the 1990s. Even today, it is not rare to spot them in remote Chinese villages. The promotion of double-wheel barrows at Miyun shows clearly how "semi-mechanized" devices mediated between muscle power and machines. Their adoption was not only pushed by the needs to multiply the productivity of muscle-powered transportation, but also pulled by the increasing use of modern machines—trains and trucks—that required faster feeders to actualize their value. Compared to other items of tool reform used in the reservoir building, the wheelbarrow was the least bound by the specific work environment and required minimal work force to operate. Therefore, it is not surprising that even the corps that were reluctant to engage in tools reform more generally—due to concerns about the cost of materials and labor time—were willing to put effort into the making of wheelbarrows.

As soon as it became the focal point of tools reform, the double-wheel-ization campaign produced a series of changes in reservoir construction—both materially and organizationally.

First, it raised the demands for artisanal expertise and the dissemination of it. Carpenters, blacksmiths, and bicycle repairmen were sought out from all regions involved in the Miyun project.[64] After a few months many peasant workers learned to build and repair wheelbarrows themselves. In May 1959 there were more than one hundred thousand wheelbarrows on the reservoir.[65] The intense use of them and the shortage of repair resources meant that many had to fix their own damaged wheelbarrows. Second, it became imperative to reshape the work environment and labor process around the use of double-wheel barrows. In order to create a wheelbarrow-friendly construction site, all the roads had to be leveled with lanes separated for two-direction traffic. Finally, more traffic security personnel had to be added.[66]

Most importantly, the double-wheel-ization impelled an institutional change because the contracting system constrained tools reform. The contracting system was both a top down and bottom-up original organizational model. It was top down since the leadership distributed labor recruitment and construction quotas to lower-level cadres. It was bottom up in that they depended on the communes' voluntarism to raise productivity. However, this model turned out to be far from adequate to a successful tools reform campaign. At the beginning, each corps was asked to meet their target of wheelbarrow production by employing their own artisans and sourcing their own materials. Given the general lack of means, they were encouraged to substitute for hard-to-get materials with cheaper, more accessible kinds. The Wuqing County made the barrow's boxes with woven straw instead of wood planks and was praised for being

---

[64] Yang Zhenzhi 杨振芝, "Speech: Make Technological Revolution, Fight for Semi-Mechanization and Mechanization of Construction 发言：全党动员、人人动手、大搞技术革命，为实现半机械化和机械化施工而奋斗," *Miyun Reservoir Construction*.
[65] "Protocols on the Use of Push Carts 关于手推车管理办法的规定," *Miyun Reservoir Construction*, no.12. 18.
[66] "Yang Zhenzhi's Speech"

economical, flexible and innovative.[67] Before long the reservoir was filled with shoddy, easily broken wheelbarrows, taking up many of the resources intended for tools reform for tools repair. The Reservoir's Party Committee eventually decided in the mid December that the reservoir would defray the cost of materials used in tools reform.[68] The untenability of the extreme economic exploitation of the peasantry had become more and more tangible. In the end, even the tools reform—a movement initiated with the belief of indigenous knowledge and popular creativity, with the spirit of voluntarism and self-sufficiency—was unsustainable.

6. Building Socialism in the Famine

The combination of the contracting system and the reservoir's central supply of materials quickly produced a new set of problems. The former had made each corps its own little kingdom in which the financial, material and labor sources were all in the power of local cadres. The latter now enabled rampant hoarding, waste, and embezzlement. But this was as much a function of the system itself as of insufficiently publicly minded officials. There was a fundamental tension between the system's centralized supply and decentralized accounting. An internal report described the problem, writing, "the Office of Supply is supposed to monitor the corps' accounting but does not have the power; the corps claim that they are responsible and diligent, but they are not."[69] The corps commonly exaggerated their needs for materials. Once acquired, a big portion of the supplies either disappeared into thin air or stayed somewhere unattended while

[67] "About the Construction in November and the Plan for the December 关于 11 月份施工情况和 12 月份施工任务部署," *Miyun Reservoir Construction*.
[68] Wang Xian, "Speech at the Reservoir's Fifth Committee Meeting on Dec 13," *Miyun Reservoir Construction.*
[69] Zhao Yuxiu 赵毓秀, "Report on the Meeting of Budget Work 在预算工作会议上的报告, 1959-3-22," *Miyun Reservoir Construction*,no. 9.

their use value diminished daily. In one instance, six thousand pairs of rubber boots were distributed when there were only 700 workers who needed them. Still some workers stood in the water without the boots. Some cadres had the carpenters make furniture for their own use using the reservoir's timber, and others renovated their personal bicycles with new tires allocated for tools reform. The reservoir leadership asked the corps to conduct a "material check-up" in early March 1959. An impressive number of materials and tools were "cleared out." However, the real extent of waste and embezzlement remained difficult to gauge.[70]

More severe was the labor condition under the corps-responsibility structure. Unlike the early 1950s Huai River project where cadres from different regions were involved in the daily management of the work force, now every aspect of the peasant workers' life on the reservoir was in the hand of the cadres from the same communes and counties. This pattern extended the established authority that cadres had exercised in their rural communities. The state had depended on rural cadres to carry out its many political and economic initiatives, especially the unified purchase of grains, throughout the 1950s.[71] The cadres' power over the peasant population gradually grew through the decade and peaked at the formation of large communes and the establishment of mess halls.[72] As a result, even at a construction site where all people and machines were working in plain view, the internal management of the corps was far from transparent to the reservoir's upper leadership. At any given moment, the leadership had only a rough idea of the number of peasant workers on site, and this idea could be quite far from the

---

[70] Ibid.
[71] Ralph Thaxton, *Catastrophe and Contention in Rural China: Mao's Great Leap Famine and the Origins of Righteous Resistance in Da Fo Village*, (Cambridge; New York: Cambridge University Press, 2008); Vivienne Shue, *Peasant China in Transition: The Dynamics of Development Toward Socialism, 1949-1956*, (Berkeley: University of California Press, 1980).
[72] Yang Jisheng discusses about rural cadres' abuse and coercion extensively in *Tombstone*.

reality. Part of the fraud in numbers derived from common tricks played by labor managers—in this context the cadres, in other context the foremen— to collect extra stipends or wages. For example, in January 1959, the number of labor days reported to the Office of Work by the corps added up to 5.8 million while the number to the Office of Supply—which distributed stipends—was 6.1 million. But the distorted number was not only a result of greed but also neglect. Even for the smaller unit such as a platoon, the cadre often did not know the exact number of his men. Unlike the foremen, the cadres did not necessarily have their career prospect tied to fulfilling the contract or maintaining a team of workers for future projects. Nor were they themselves men of expertise and discipline who could impart the spirit of industry to the peasant workers under their control. The plan of making multi-functional labor force out of the peasantry went sorely awry when the rural cadres were chosen as the implementers.

One incident illustrates pressure that rural cadres could exert on the peasant workers. Liu Qihai, a twenty-five-year-old from Pinggu County in Beijing, was found hanged in an empty house near the headquarters on January 19, 1959. Liu's death was preceded by a series of peasant worker suicides, but his death prompted the leadership to investigate. On January 5 Liu and his coworkers were given a set of work protection garments including a pair of fleece pants for a special task. After the work, these clothes were handed to the corps' office to be taken back to the headquarters. According to the investigation report, Liu left work early to sneak into the office and steal a pair of fleece pants. When the corps' leaders noticed its missing, they immediately started a search and was became certain that Liu was the thief. Despite the cadres' threat of arrest, Liu refuse to admit the crime. In the end, an accountant named Zhang Wencai managed to convince him, and Liu took out the stolen pants from its hidden place. A mass struggle session ensued. A cadre from Liu's village took the lead to insult him with the

disgraceful history of his family and tales of his father's and brother's "illicit activities." Another cadre joined the insult and asked, "how many sluts have you slept with?" In the end, Liu was put onto "consecutive shifts" under surveillance of other peasant workers. He was first noticed missing at 3am on January 10. Four hours later, his body was found.[73]

The report on Liu's death, while displaying a critical tone towards the cadres involved, was not sympathetic to Liu. It emphasized that Liu had always been "idle and promiscuous." "Since he came to the reservoir in August 1958, his mind was never settled, and he was inactive in labor." His death did not bring any real damage to the cadres; except for one cadre who got "a record of fault," most cadres involved received "warnings." None were removed from their jobs. As Liu's was the only suicide case discussed in length in the internal communication, cadres involved in other cases might have received even less punishment. The report's negative depiction of Liu reveals that the peasant workers had no ways to plead to authorities outside their own units. The fact that he was away from home did not mean that his marginalized status in the village community was left behind. It was perpetuated by the structure of labor organization and only now he had to endure its consequences all alone. Quite unlike the voluntary labors in Shisanling, who found themselves in a short honeymoon of collectivism, the peasant workers on construction sites experienced escalated violence and deprivation from their management during the Great Leap Forward, marking the severe deterioration of the rural social fabric.

Hardship on the job, coercion by cadres, and sometimes outright starvation made peasant worker runaways a serious problem in early 1959. The peasant workers at Miyun may not have been as starved as those in Henan or Sichuan, but in 1959 even professional elites in Beijing had

[73] "Report on the Facts of Peasant Worker Liu Qihai's Suicide and Recommendations on Measures 关于五团三营一连民工刘起海自缢而死的情况及处理意见的报告," *Miyun Reservoir Construction.*

started experiencing hunger and many suffered from hunger-related diseases.[74] The food shortage worsened the labor shortage and affected labor productivity in Miyun as in elsewhere. However, still trying to meet the initial deadline, the reservoir leadership decided that breaks for both cold weather and Chinese New Year would be cancelled. Only a temperature of minus 20 degrees combined with a wind above five degrees would authorize a break.[75] When it became clear that the eighty thousand laborers slated to arrive in late February would not come at all—a sign of general labor shortage—the reservoir changed to two-shift system, raising the average daily labor time to twelve hours.[76] The hardship of reservoir work became unbearable for many. Oral histories from other construction sites testify that, even if one could eat a little more at the reservoir than at home, the hunger, hardship, and mental stress drove many to run back home in the belief that "at least my family would not let me die."[77]

To stop the runaways and to raise the labor productivity, the reservoir made an important shift to a wage system. From March 1, 1959, all peasant workers started receiving wages from the reservoir instead of their own communes.[78] According to the Interim Measures of Peasant

---

[74] Jeremy Brown, "Great Leap City: Surviving the Famine in Tianjin," in *Eating Bitterness: New Perspectives on China's Great Leap Forward and Famine,* edited by Kimberley Ens Manning and Felix Wemheuer, (Vancouver: UBCPress, 2011). 226-250.
[75] "Decisions from the Sixth Meeting of Miyun Reservoir Committee 密云水库委员会第六次全体会议决议," *Miyun Reservoir Construction*.
[76] "Wang Xian's Speech at the Seventh Committee Meeting's Expanded Meeting on Feb 25 王宪同志 2 月 25 日在中共密云水库委员会第七次全会扩大会议上的总结发言"*Miyun Reservoir Construction.*
[77] Oral history interview with Li Chenguang 李晨光, August 2018. Li labored on a reservoir in Shanxi during the GLF.
[78] "The Construction Headquarter of Miyun Reservoir on the Temporary Ways to Pay Peasant Workers' Wage 密云水库修建总指挥部关于民工工资支付暂行办法, 1959-4-15," *Miyun Reservoir Construction.* This certainly corresponded to the policy turn in Spring 1959 to rein in the tendency of "equalitarianism and indiscriminate transfer of resources (in Chinese 一平二调)." The central policies were reversed again after Lushan Conference in late 1959.

Workers' Wage Payment issued by the reservoir's headquarters, the peasant worker's wage would be connected to their actual amount of work, with 70% directly paid to the worker and 30% to the commune nominally reserved for a collective dividend. However, the wage system was far more complicated than the simple adage of "more labor more gain." First, the amount of work is presented in the form of work points as it was in the communes. The work points were based on norms for different types of specified jobs. Since the specifications issued by the Office of Work were far from comprehensive and lagged the changes brought about by tools reform, it was expected that the cadres of different corps would "use it as a reference and make their own work points system." Thus, how many work points an individual peasant worker received became largely subject to the cadres' discretion. The wage system greatly relieved the financial burden of the communes. But it did not release the peasants even slightly from the control of their local cadres, but rather only bound them more tightly to the reservoir duties.

The reservoir leadership tried to mitigate the tension between the cadres and peasant workers, but their measures—mainly in the form of campaigns—did not produce meaningful or lasting changes. A "Corps Rectification Campaign" was initiated in December 1958, trying to check both the "warlord attitude" of cadres and the "lack of discipline" among the workers through mutual criticism of both sides.[79] Its reported success was belied by a series of peasant workers' suicides. In March 1959, a "Six Good Campaign" was put forward to improve morale and productivity. The Six Good was a long list of prescriptions of model behaviors in both work and life. The use of imperative sentences allows an unspecified shift of the subject between the cadres and peasant workers. For example, under "Good at the management of daily life," the first

[79] "Current Situation of the Recification of the Zunyi Branch 遵义支队整风情况," *Miyun Reservoir Construction.*

item is “Good balance of labor and rest. Make sure to sleep for eight hours and labor for eight hours. Labor time can be extended, if necessary, but should not be longer than twelve hours.” It reads like a vague request to the cadres to not overexert the workers. Under “Good at political awareness” it says to, “Obey the leaders and abide by disciplines. No absenteeism and escapism,” which is certainly a demand on the workers. The guidelines under “Good at both literary and military studies” sound even less clear to whom they were given: “Seize the time to study and become literate in five months; Read newspaper regularly and learn about the world affairs; Continue military training and learn how to shoot and fight; Learn some technical and management knowledge and become a *tu* expert; Do cultural activities regularly—songs ought to be sung in all corps and paintings hung in all tents.” These slogans resemble a propaganda poster but provided little guide to action. Moreover, they were obviously impractical given the pressure of production. Taken as a whole, the Six Good campaign reveals a loss of focus in political work, which had been strongly emphasized in the early 1950s. Compared to the urgent need to maximize labor output, neither disciplining the cadres into proper political agents nor drilling the peasants into multifunctional socialist subjects was eagerly pursued.

To the leadership’s relief, the much-needed machinery had mostly arrived in February 1959, boosting productivity by fifty percent relative to December 1958. Besides the significant growth in the length of railways and the number of trains and trucks, a newly arrived 60 conveyor belts replaced the “semi-mechanized” vertical transportation devices of manual winches and cable pulleys. The addition of machines restored the motivation to complete the construction of dams by July 1 before the advent of the flood season. It also prompted a change of work patterns, which were now adjusted to meet the needs of the machines. Again, the leadership raised a slogan bound to create a fast, hectic work environment: all machines were to

be in a round-the-clock "no sleep, no damage, no waiting" mode. Moreover, "the machines must not accommodate the humans." Rather, the labor allocation and work pace had to be streamlined to suit the pace of the trains and conveyor belts. A part of the machines were "sent down" to the corps to maximize their use. These machines were managed by both the Office of Work and the corps. The former was in charge of assembling and maintaining the machines and teaching the workers how to operate them. The latter was responsible for the production management—where the machines should be used and for how long, how many laborers would be assigned to work on them, etc.[80] The use of the machines at the corps level shows vividly a style of problem solving in which the *yang* machines were adopted but stripped from the ensemble of technical expertise and rationalized management of its *yang* technical environment.

The use of conveyor belts serves as a great example. First, it seems that these machines arrived at the construction sites without instruction manuals. Or if they had manuals, nobody cared to read them. This is to say that the loading capacity and operation procedures were absolutely not observed at the beginning. It was only after the quick breakdown of many conveyors that the assumption that "more is better" began to be questioned. Still, the load was never determined by the specified capacity but by the machines' breaking point.[81] Second, the separated responsibility turned out to be a major obstacle in rationalizing man-machine cooperation. Under the structure of the contracting system, tasks were divided and assigned to each labor unit. Although there was an idea that the size of a task should roughly fit the size of the unit, the number of laborers was never trimmed to correspond to the requirement of a smooth

[80] Wang Xian 王宪, "Speech at the Seventh Committee Meeting's Expanded Meeting on Feb 25 二月二十五日在中共密云水库委员会第七次全会扩大会议上的总结发言," *Miyun Reservoir Construction.*

[81] "Ninghe Branch March Forward Triumphantly Upholding the Red Flag 宁河支队高举红旗乘胜前进," *Miyun Reservoir Construction.*

machine coordination. The separation of responsibilities based on rural administration structure were able to work efficiently when all laborers relied on same muscle-powered tools. But this organizational structure fit poorly to the work with machines. Paying no heed to the machines' capacity and bounded to a labor organization pattern fitted better with muscle-powered transportation more than with machines, all corps operating conveyor belts had a hard time mapping out how to keep the operation smoothly and sustainably.

These problems made cadres' role even more important, especially senior cadres in the corps. Cadres, instead of technicians from the Office of Work, were to design the labor process working with the machines. "Design" might be a wrong word as it indicates a stabilized pattern. Often the higher-level cadres had to closely monitor the work process and give out ad-hoc commands to adjust the man-machine coordination. The constant problem was the imbalance between the loading at the bottom and the unloading at the top of the dam. Striving to never let the conveyors run empty, much effort was put into loading the machines. It took the cadres some time to realize that unloading was in fact more labor and time consuming, for it involved distributing the soil. However, a formula of balance was never established, due to the unstable condition of the conveyors and the lack of regularity in the loading pace. The solution was to regularly have "conveyor belt experimental fields" conducted under the direct supervision of higher-level cadres.[82] New "best practices" in conveyor operation became a constant subject in the internal communication. Ergo, while the productivity rate of the machines was increasing, the coordination pattern never stabilized.

[82] "Regulations on the Use of the Conveyor Belt 关于加强皮带机管理的几项规定,1959-5-12," *Miyun Reservoir Construction.*

Certain changes in labor organization occurred in some corps that echoed the shift in agricultural policy in early 1959. One of the "best practices" was to break down the larger unit of labor into smaller ones. This mirrors the reemergence in communes of production teams as a labor unit under the larger production brigade.[83] In an article praising the Ba County's mass line work, it is said that peasant workers Zhang Jianhua and Li Shuchun suggested that the "squad," previously the smallest unit of labor organization, be broken up into teams. The peasant workers complained that "[working as a squad] is too crowded and it is impossible to tell who is working hard and who is not." Assigning specific tasks to smaller teams served to "strengthen the sense of responsibility" and "eliminate mutual dependence."[84] The article provides no further information on whether the size of the team was determined by the task or the peasant workers' voluntary choice. Based on the indication that the team is a relatively fixed unit, it is more likely the latter. It was thus not the maximal solution for man-machine coordinated production. But simply by reducing the size of labor unit, it enhanced the flexibility of labor combination and thus labor efficiency. The fact that it was introduced as a good practice shows that the reservoir's leadership had been dependent on, rather than committed to, the labor organization pattern based on rural administration. However, there is no evidence that breakdown of squads was widely adopted. The allocation of labor was largely a decision of the cadres in different corps. One can certainly imagine that in a corps where cadre-peasants relationship was more hostile, the workers would be less motivated to propose a new solution, nor the cadre be willing to adopt them for it would add to the administrative burdens.

[83] This temporary relaxation of communization was rolled back after the Lushan conference, which extended the GLF and multiplied its catastrophe.
[84] "Report on Ba County Branch Implementing the Mass Line 霸县支队永清团贯彻群众路线报告,1959-5-31," *Miyun Reservoir Construction*, no.13.

The reservoir leadership's dependence on the county and district cadres grew when the summer was near. The initial determination to complete the project before the flood season led to the simultaneous building of the major dams and subsidiary dams, leaving no path for the rivers to run down. This ambitious plan was facing an imminent risk: the flood could arrive before the dams reached the required height. If that happened, not only what had been built would be destroyed, the temporarily blocked and raised flood would become more disastrous to the downstream area. The reservoir leadership ascribed the problem partly to the local cadres in that the promised number of laborers was never reached and running away by peasant workers' remained a problem. On April 26, the reservoir held a meeting of Party Secretaries from all counties and districts involved, explaining the severity of the situation, and demanding their cooperation to ensure the labor supplies. During the meeting, the reservoir committee leaders took turns emphasizing that all promised labor, "not one less," had to arrive in ten days. Moreover, the team of cadre had to be expanded and strengthened. Not only that every corps should have two sets of cadre teams to lead the two shifts, each county and district government should set up an Office of Miyun Reservoir Work for the single purpose of supporting the project. The local leaders were asked to visit the reservoir more frequently because "based on experience, such counties are more productive."[85]

Neither persuasion nor pressure could make the local cadres deliver more peasant workers to the reservoir. A month later, the number of laborers remained the same. With too many projects going on, there was simply no labor to spare. The meeting might still have been effective; at least the number did not drop, even during the wheat harvest weeks in June.

[85] "Record of the April 26 District and County Party Secretaries Meeting 4月 26日区县委书记会议," BMA 001-014-00542.

However, when the earlier target date for completion, July 1, was approaching morale on the construction site slipped further down. Believing they were soon going home, cadres and workers alike looked for opportunities to skim a little something from the reservoir. Cooks embezzled flour, while repairmen pilfered tires and ball bearings. Workers on a conveyor belt unit even took small parts away from the machines, putting more than twenty conveyors out of function. Wrenches and screwdrivers disappeared by the hundreds. Thousands of sacks were looted away by peasant workers in broad daylight. The reservoir was especially concerned about the hoarding behavior of cadres, which not only enabled embezzlement but also hurt productivity. Corps kept asking for more wheelbarrow materials from the reservoir, while plenty of parts lying in their warehouses not being assembled. In desperation, the reservoir even once demanded for every new part requested, the corps had to recycle an old, broken one. This policy was so unpractical that one doubts it was ever observed[86].

The imminent flood kept all workers on the reservoir for another two months. The rain season did not begin until early August. However, the major dams were still a few meters shorter than the flood-blocking baseline. Under the pressure of the rising water, the earth-rock-filled dams—having not yet consolidated—began to show signs of erosion. After a few days of rain, the headquarters had to make the difficult decision to break open one of the subsidiary dams to rescue the major dam from collapsing. In one day, ten-kilometer-long emergent banks were built on both sides of the flood route by a hundred thousand peasant workers. The task to open the subsidiary dam was entrusted to the Liberation Army soldiers. To control the damage, they used only picks and shovels to dig up a one hundred meter long, a dozen meter deep notch on the

[86] Zhang Yisan 张益三, "Report on the Meeting of Logistical Work 在后勤工作会议上的报告,1959-5-29," *Miyun Reservoir Construction*.

dam.[87] The rain stopped soon after the flood was released. It was to the reservoir's luck that the 1959 North China rain season was particularly late and short.[88] Yet even here, the "greater, faster, better and more economical" manner of socialist construction tripped over its own feet and compromised with self-made delays and waste.

7. The Dislocated

The construction of Miyun Reservoir was not completed until a year later. In September 1959, the reservoir returned three quarters of the peasant workers back to their counties. Despite the prerequisite that part of them would return after autumn harvest or at the beginning of the next year, the number of peasant workers did not grow much for the remainder of the project.[89] The disastrous outcome of extracting too much labor away from agricultural production had become painfully clear. Even a prioritized project like Miyun Reservoir had to reconcile with the new reality that the nearly unconditional support from the communes was no more. Fortunately, the most labor-intensive dam earthwork was almost done, the rest of the construction required less muscle power but more technicians.

The reservoir had been aggressively fetching and keeping technical workers from all possible sources. Thousands of students from universities and technical schools were used as free staff under the name of internship. In an extreme case, the reservoir kept more than two hundred students of Beijing Construction Engineering Institute on site for over a year. Many of them were

---

[87] "The Tenth Meeting of the Miyun Reservoir Three-Person Group 密云水库三人小组第十次会议, 1959-8-5/6," *Miyun Reservoir Construction*.
[88] Huang Jiajia 黄加佳, "Watering the Capital: The Construction of Miyun Reservoir 水润京华—密云水库修建记," *Beijing Daily*, 2018-4-10.
[89] "Three-Person Group's Report on the Labor Arrangement after the Flood Season 三人小组关于水库工程汛后劳动力安排的报告,1959-8-22," BMA 001-014-00542.

freshmen who had not yet taken a single class since their admission. The school's leaders wrote letters to all the members of Miyun Reservoir project leadership, including Zhao Fan and Wang Xian. Their requests were either ignored or politely rejected, on the ground that the students were desperately needed by this important project. Finally, a staff member of the Institute wrote directly to Kang Sheng, a member of the Politburo. Kang wrote a sharp rebuke to the reservoir for conscripting students for labor, saying, "This is utterly unreasonable." The students were then allowed to go back to school.[90]

But the reservoir's retention of human capital more often went unquestioned, which proves the absolute priority of water conservancy in the Maoist developmental scheme. When the construction was finally wrapping up in the mid 1960s, the Miyun Reservoir proposed to establish a permanent, massive hydraulic engineering construction team by retaining nearly all technical workers. The proposal answered the call from the central government that every province or directly administrated municipality should establish a standing hydraulic construction force.[91] The Miyun Reservoir intended to build a unit of ten thousand people, including seven thousand peasant workers who had received technical training during the reservoir's construction. Beijing Municipal leaders approved their proposal in principle and left the details to be sorted out. Immediately, all the work units that had lent technical force to support Miyun pleaded with the municipal government to let them retrieve their staff. However,

---

[90] "Municipal Committee's Request to Miyun Reservoir about Transferring Back the Students of Beijing Architectural Engineering Institute 市委大学部关于要求从密云水库调回北京建筑工程学院中技部学生的请示," "Summary of Faculty and Students' Participate in Laboring at Miyun Reservoir 高校师生参加密云水库劳动总结," BMA 001-002-00401.

[91] "Report to Municipal Committee on the Allocation of Cadres and Technicians After the Completion of Miyun Reservoir Construction 关于密云水库竣工后现有干部技工的处理意见向市委的报告, 1960-7-27," "Proposals on the Establishment of the Bureau of Miyun Reservoir Administration and Its Staffing 关于成立密云水库管理局和干部配备意见的请示报告," BMA 001-014-00619.

such exceptions were few. Even Beijing Municipal Bureau of Civil Engineering, a work unit responsible for the city's infrastructure building and maintenance, could only recall half of their staff. Interestingly, the wheelbarrow repairmen, particularly those from the city, seemed to have more leeway. A quarter of Beijing repairmen had run away from the reservoir before the end of the project. Becoming a reservoir building worker meant social elevation for the peasants, but not so for the city dwellers. Hailing from district-level small factories instead of state-owned enterprises, the repairmen's relatively marginal status and deeper roots in the city allowed them more freedom to act on their own. The reservoir headquarters asked for the municipal government's help to call them back "in order to meet the urgent needs of the construction and to teach them a lesson." However, those runaways managed to evade the reservoir's search efforts to the end, perhaps with the assistance of their original work units.[92]

The unwillingly transferred technicians were lucky when compared to another group of people dislocated by the reservoir. Fifty-six thousand peasants were displaced to make room for the reservoir. They lost their homes and their land, nearly everything they had, when they were transferred to the project. In March 1961, months after the construction was completed, a document was sent to the Party Central from Beijing Municipal Party Committee reporting the problem of the Miyun Reservoir migrants. According to the report, more than fifteen hundred peasants had moved back to their villages and were "living in newly-dug caves, on heaps of hays, or in the bare field." Their houses, of course, had long been demolished but thankfully the water had not inundated the area. The early March of Beijing suburbs were still very cold, especially in the mountainous area. But these people could no longer bear living one more day in

[92] "The Construction Headquarter of Miyun Reservoir's Request on Transferring Back the Absentee Bicycle Repairmen and Push-cart Workers 密云水库修建总指挥部要求调回私自回来和请假不归的修理自行车和手推车工人的问题,"BMA 002–012-00062.

the communities that were relocated to. Thanks to this radical move, their dire situation finally drew the government's attention after two years of fruitless petitions.[93]

The report admitted that in late 1958 and early 1959, the peasants of the reservoir area were "swept out of home." Their houses were immediately demolished after they were urged to move, leaving most of their belongings behind. Due to the shortage of transportation means and the urgency of clearing the place, they were not even allowed to bring food or basic appliances such as a vase or basin. The meager compensation amounted to barely a fraction of their losses, and in any case was paid to the commune. Each individual received only eight yuan. Having been told that "everything was prepared for them in the new village" by their local cadres, they arrived at the receiving communes only to find out that they had to live under other people's roofs. They had "no yard, no toilet, no pigsty, no nothing." To their despair, not only were they driven away from the most fertile land of Miyun to far inferior areas, but the average land per capita dropped from 3.8 mu to 1.7 mu. Moreover, they lived in extremely hostile and stressful social environment because the receiving communes also suffered from having to share already very limited housing and land resources with the newcomers. Most of these newly combined villages had an average income in 1961 less than a quarter of that in 1957. Although both the migrants and the local villagers were starved, the migrants had fewer resources to cope with the famine. Even their scavenging of tree leaves was met with threats from the locals. When the central government issued policies to compensate villagers for losses incurred during in the process of communization, the migrants got nothing since their communes no longer existed.

[93] "Beijing Municipal Committee's Report to the Central North China Bureau on the Miyun Reservoir Migrants Problem, and Documents on Migrants' Housing, Foods, and Compensation. 中国北京市委关于密云水库移民问题向中央华北局的报告及移民建房、粮食、退赔等文件," BMA 002-013-00039.

The experience of being uprooted was not only economically devastating, but mentally traumatic. When the municipal government held a hearing with the migrant representatives, the sorrow, depression, and despair were evident. Besides accounts of extreme difficulties, they now suffered, many of them mentioned random details of their old lives. A production team leader Zhang Dekui talked about the doors and windows of his old house, which was probably invested with much craftsmanship and suffused with fond memories. Another team leader expressed the difficult feelings through his wife's words, "The woman cries every time when she thinks she could never see her mother's tomb again [which is now under water]." Leaving their home and land was "like cutting through the heart." Their animals died, if not during the move, then starving to death after they settled down. Many old people died in the first winter for want of fuel and food. When the spring came, they found themselves lacking all kinds of tools to start farming. Having to borrow everything from the locals made them even less welcome. Verbal and physical abuse against them and their children became part of the daily life. It was such total loss of hope in the new locality drove the fifteen hundred people back to the condition of cavemen.[94]

The great diminishing of per capita land meant that the migrants, as well as the villagers of receiving communities, turned to rely more on sideline income. Compared to 1957, the sideline income had increased from five percent of total income to nearly forty percent in 1960. With few natural resources or handicraft production, their sideline business was primarily selling of muscle power. While their men went to the reservoirs, mines and quarries carrying and digging, their animals labored on the roads hauling. When the municipal government finally stipulated that the Miyun Reservoir was responsible for compensating the migrants, the first thing the peasants demanded was wheelbarrows. Muscle powered transportation as a source of

[94] Ibid.

livelihood became increasingly important for the most deprived rural population. As next chapter will show, the decentralized nature of muscle-powered transportation was both indispensable and problematic in an underdeveloped, planned economy. The contradiction between mobilization of labor and the restriction of rurally sourced muscle-powered transportation reveals a fundamental paradox of Maoist development.

The Final Note

China has the largest number of reservoirs. By 1990 there were 82,848 reservoirs of all sizes in the country, most of which were built during the Great Leap Forward.[95] Yet the exact number of reservoirs built in the years between 1958 to 1961 is difficult to come by, due to the collapse of statistical work in the Great Leap Forward. The impressive quantity came along with a multitude of quality problems. According to official statistics, 3496 dam collapsing incidents occurred during the half century from 1954 o 2006—4 percent of all reservoirs.[96] This number may not sound astonishing, especially in the context of the eventful history of socialist China. But there is no denial that reservoir safety has been a perennial concern of the state and society of China.[97] In the aftermath of the GLF, the central government conducted a countrywide survey

[95] Editorial Committee, *Annuals of Water Conservation of People's Republic of China 中国水利年鉴*, (Shuili dianli chubanshe 水利电力出版社,1990). 639-641. 1973 is the first year with precise statistics on reservoirs in the Annuals, according to which, there were 72131 reservoirs across the country then.

[96] Wang Guoan 王国安, Zhang Zhihong 张志红, Li Rongrong 李荣容, and Li Baoguo 李保国, "Evaluation on the Flood Prevention Criteria Based on the Numbers of Reservoir Collapsing Incidents 从水库垮坝数量看我国的防洪标准," *People's Yellow River 人民黄河* 31 (2009) no.7.

[97] After the catastrophic Yangtze flood in 1998, the Ministry of Water Conservation conducted a nationwide survey on the hydraulic infrastructure, which shows approximately 50% of all reservoirs were out of maintenance or in imminent danger of collapsing. See "The Threat from forty thousand impaired dams 病坝之患，四万病险水库的威胁," *China Economic Weekly 中国经济周刊*，2011-8-24.https://www.yicai.com/news/1036818.html.

on the condition, safety, and management of reservoirs. In the larger Beijing area, there had been more than forty reservoirs built by 1963. Many of these reservoirs, including Shisanling and Huairou, had one or more defects in design and construction: capacities turned out to be insufficient; dams began to leak; sluice gate failed to function; or lack or straight absence of management. In the following decades, much of the hydraulic work in China involved enlarging spillways and elevating dams to prevent reservoir failures.[98] Reservoir building fundamentally reshaped China's geography, geology, and environment. They were essential to the growth of China's agricultural output in the following decades, yet they also endangered human and wildlife communities in many ways. To this day, the reservoirs are sometimes invoked as great examples of the merit of the Party and Chairman Mao, other times as the proof of the destructive effect of Maoist developmental path. A final evaluation should not be intended here. This chapter is dedicated to those who sacrificed their lives in building these reservoirs. May they rest in peace under the now silent waters.

[98] "Inspections on the Large and Middle-sized Reservoirs at Beijing Suburb and Report on the Expansion, Renovation, and Axillary Construction Plans 关于京郊大中型水库最近排队情况及1963 年扩建改建配套计划的报告,1962-12-12," BMA 096-002-00027. "Beijing Bureau of Water Conservation and Meteorology's Proposal on Holding the Meeting on Engineering Management and Flood Prevention 北京市水利气象局关于召开工程管理及防汛会议的请示, 1964-4-17," BMA 096-003-00004.

Chapter Four

Formation of the Muscle-Powered Sphere

Introduction

When Henri Cartier-Bresson came to China in 1958, ten years after his first visit, the drastic social, political, and visual change of the country captivated the photographer. In 1948 and 1949, he had shown the world the Republican China in its last tumults: panicking Shanghainese packed the street like sardines trying to rescue a bit of wealth from the catastrophic inflation; carts loaded with the KMT officials' household possessions stood ready to flee; Liberation Army soldiers sat on the roadside tight and straight, and suddenly, parades celebrated the downfall of the old regime and the arrival of the new. There was also the last glimpse of a traditional China: scholars, eunuchs, a man in long gown walking through the winter mist of the Forbidden City. A Communist at heart, Henri Cartier-Bresson returned to China hoping to see a new regime "that would solve the glaring social and economic problems" he had witnessed.[1] What he saw was not what he expected. The New China "…had become a gigantic beehive," he noted after an arranged visit to the Shisanling reservoir. There, Cartier-Bresson had watched the wide, scarred land and the innumerable, busy bodies of laborers. His host and interpreter wanted to impress him with the great achievements of the People's Republic by showing him a reservoir in Beijing, a hydropower station in Henan, and an oil and gas field in Xinjiang—all industrial projects that promised to modernize China with new source of energy. Yet everywhere what he noticed first and foremost was the use of human muscle power. It was "human arms and human

[1] Henri Cartier-Bresson, Michel Frizot, and Yin-lung Su, *Henri Cartier-Bresson: Chine 1948-1949, 1958* (Paris: Fondation HCB: Delpire, 2019). 223-231.

backs, which are called upon to build these factories which themselves will manufacture the tools and machines, trucks and tractors, capable of overdriving this production."[2] The body laboring with pre-modern tools became the central motif of his 1958 photographs, among which images of muscle-powered transportation takes a prominent share. In Beijing, he photographed the paiziche 排子车, a large cart used for transporting big items (see fig. 11). Seven men, twenty to fifty years old judging by look, hunched over the ground, from their shoulders tight ropes drew such a cart loaded with a lathe. The sweat on the shirtless bodies glittered more brightly than the metal cranks, tubes, and wheels of the machine. In fact, paiziche also appeared in his 1948 photos, there it was loaded with a large piece of furniture with elegant floral pattern painted on its drawers. No longer sweating for someone's valuable possessions, Chinese laborers now exerted for the nation's industrialization. In the 1958 photos, the bended torsos and bulged muscles, dragging ropes, carrying baskets and pulling carts, were not only that of the paiziche pullers and dock porters, but also of university students, factory workers and regular peasants. "Such sights are a frequently seen symptom of China's growing pain of industrialization," Henri Cartier- Bresson wrote in the caption of one of these photos. Indeed, industrialization was painful. The physical strain is not only present in the scarred landscape, but in the weary bones, the displaced and injured joints, and the inflamed, fractured muscles of a generation.

The photographer's interest in labor and the primitive means of labor induced protest from Chinese critics. According to them, the "bourgeois realism" manifested in Henri Cartier-Bresson's photos "degraded the image of Chinese workers" and in effect "attacked the principles of socialism."[3] To a modern reader, such reaction may seem ironic. Labor and pre-industrial

[2] Ibid.
[3] Ibid.

means of construction were praised and glorified in the Party's own propaganda. But for the party, the "essence" of such labor was to contribute to China's modernization. Thus they desired photographs reflecting not only the backward present, but the world to come: a prosperous, modern nation and a happy, strong population; not the unsightly, straining bodies, and primitive tools in the photographs. The criticism against Henri Cartier-Bresson's photographs was just a small manifestation of the tension between the dire need of the muscle power for China's industrialization and the resentment of it as a sign of the nation's backwardness. This tension, as this chapter will show, resulted in a redefinition of the MPT's role in the economy and re-organization of the MPT forces. The process began with the Great Leap Forward's dismantling of centralized regulations of the MPT. By the mid-1960s, before the Cultural Revolution, it had given rise to a socially and economically delineated muscle-power sphere.

Figure 11. Henri Cartier-Bresson, "Workers pull a new mechanical lathe on a cart," Beijing, June 1958
Source: Henri Cartier-Bresson: Chine 1948-1949, 1958.

The muscle-power sphere was the socialist state's other. It was excluded from the state's developmental investment and was expected to not only support itself but also support the state.

It was largely rural, but it is conceptually different from "the rural." It is marked by the pre-modern technologies of its production and reproduction, as well as the lower-than-the-state, collective forms of ownership. Nothing separated the state sector from everything else more definitively than the technologies in use. Agriculture, handicrafts, and short-distance transportation largely belonged to this sphere, although its boundaries were not always commensurate with theirs' as the level of mechanization slowly increased in these sectors owing to decades of muscle-power labor. Despite policies that aimed to push the muscle-power sphere down and confine it to the countryside, the boundary of the muscle-power sphere remained fluid. City dwellers who found themselves targeted in political attacks could fall into this sphere: engineers sent to re-education farms, or expelled students absorbed into "the district wheelbarrow cooperative." From there, losing all welfare and privileges attached to urban status and moving to a village could be the next, dangerous, step—as it happened in the down-to-the-countryside movement.[4] For the peasants, work in MPT offered a unique opportunity to enter the urban space and earn a better living, even after the household registration system was institutionalized. However, as I will show in this chapter, despite that the human and animals engaged in MPT constantly trespassed the rural-urban boundaries, they did not signify constant mobility of the rural population at large. On the contrary, peasants under the new political economy of the MPT became even more immobile. (The social relation and human-animal relation within the muscle-power sphere were vulnerable to externally imposed disruptions as laborers—human and animal—were largely conceived as interchangeable. This interchangeability was the foundation for equality within the collective. Such disruptions resulted

[4] Emily Honig and Xiaojian Zhao, *Across the Great Divide: The Sent-down Youth Movement in Mao's China, 1968-1980*, (Cambridge, United Kingdom: Cambridge University Press, 2019).

in economic setbacks, poverty and in extreme cases, loss of lives. The disruption was then often followed by directives to establish and stabilize new relations to at least maintain substance.)

This chapter traces the forging of the muscle-power sphere through the lens of MPT from 1958 to the early 1970s, although this process could be seen as having started when the state sector took shape in the mid-1950s. However, as this chapter will show, during the Great Leap Forward the logistical crisis of the rush industrialization as well as the new labor organization under communization led to the break between centralized transportation administration and the rural MPT. The walking-on-two-legs developmental principle came from a realization that the labor-intensive, low-technology production would not retreat as the modern sector grew. Rather, low-technology production would have to go through a substantial expansion for a long period of time before being replaced. As the previous chapter shows, this expansion placed great pressure on centralized administration designed for more industrialized economy. The GLF's constitution of the people's commune attempted to enliven the rural economy by making the commune the owner of rural resources, including the very important MPT.

A few years of rush industrialization did not make the rural economy a diversified and prosperous one as it was imagined. It left behind destructed nature, deteriorated infrastructure, and a starved population. The communization proved to be an extremely costly experiment. The unrestrained input of labor, assets, and natural resources under the commune ownership for various GLF initiatives led to rampant abuse and waste of both labor and material resources. During the great depression—and a great famine—following the Great Leap, Chinese peasantry was probably the least mobile social group in the nation's history. The animals experienced an even greater famine than human, which effectively depleted the countryside much of its MPT power. The population of draft animals in many places never recovered to its level in 1954 in the

rest of Maoist era.[5]

The years following the GLF witnessed more rigorous measures to reduce the muscle-power sphere in the cities and push it out as much as possible. As such, the downsizing of urban population targeted primarily low-skilled labor. To rescue the economy, the central government had to reverse the course of rapid urbanization and focus on reviving the agricultural production. Despite the still acute need for MPT, the urban transportation departments in large cities sent their horse-drawn carts to the countryside and took painstaking steps to replace them with modern vehicles. In Beijing, porters and cart-pullers—those men photographed by Henri Cartier-Bresson—were disbanded from their collectives as the authority removed their means of labor from the urban centers to modernize the city's appearance. Across the country, the transportation departments were asked to "support agriculture." The primary result was the transferring of draft animals and animal-drawn carts down to the countryside.

But these measures barely eased the labor and transportation shortage of the countryside, and even caused or exacerbated other distortions. Several factors perpetuated MPT shortages. First, the division of transportation obligations between the state and the peasantry put a heavy toll on the rural MPTs. In addition to their duty to transport the state procurement of grain, cotton, and other unified-purchase items to designated transfer spots, the peasants also had to meet their own transporting needs for essential materials such as fertilizer and coal. The peasants had to take possession of these heavy goods from the closest production site, which might sometimes not even be within the same county. The main tasks of the lowest level of state-owned transportation units—the county transportation bureau and company—did not include

[5] "Changes in the draft animal inventories in Beijing Suburbs." BMA 002-022-00029. This document shows draft animal in Beijing suburbs decreased from 326,754 in 1957 to 298,734 in 1965. For later change, find more citations.

providing transportation service to the peasantry, despite repeated emphasis on "supporting the agriculture." Second, rural MPT became a major source of cash income for rural collectives. Freed from the centralized transportation administration since the GLF, rural MPTs now hired themselves directly out to state-owned factories and construction projects—often hundreds of kilometers away from home. Rural collectives pooled their resources to support these MPT ventures. They bred and purchased horses and mules while largely neglecting the reproduction of cattle and donkeys. More importantly, they allowed their strongest male laborers to leave agricultural production to engage in transportation work elsewhere as long as they could bring home much-needed cash. These rural initiatives helped generate income for the expansion of farm-land hydraulic infrastructure and mechanization of agriculture, but they also exacerbated labor shortage and created income inequality among the peasants, threatening both food security and political stability—the Party's first and foremost concerns.[6]

The muscle-power sphere was thus both a product of the Communist Party's developmental decisions and a problem that challenged its own vision of socialism. The MPTs, as one of the valuable resources of this sphere, became the carrier of the rural local interests and a disintegrative force of this particular sphere. This chapter illustrates this broad change in the role of MPTs in both urban and rural settings, drawing evidence particularly from Beijing and Pingyao, a county in the northern province Shanxi. As earlier scholars have pointed out, there is

[6] The MPT work in the city was so lucrative that those in it often earned several times of what equivalent labor did in agriculture. Their income could well be higher than many low-level factory workers in the city. It has been believed that the urban-rural disparity was so great that "virtually no rural resident had a yearly income equal to the lowest paid urban worker." Deborah Davis, "Chinese Social Welfare: Policies and Outcomes," *The China Quarterly*, no. 119 (1989): 577–97. This shows how irresistible this sideline job was.

no typical village to study the countryside of socialist China.[7] Similarly there is no typical county either. I focus on Pingyao for several reasons. Pingyao is well known for its importance in Chinese history of business and finance. It was an affluent financial center that once had its business network reaching beyond the boundary of Qing empire.[8] By the 1970s it had become a county poorer than its neighbors—as the Communist Party confined the rural production mainly to agriculture and Pingyao's farmland was of inferior quality. Pingyao locals thus had great incentives to develop their MPT sidelines. In this respect, they were representative of many rural residents from the poorer parts of northern China. I also had the fortune to have two Chinese scholars, Ma Weiqiang and Deng Hongqin from Shanxi University, who have done extensive research in Pingyao to introduce me to their local contacts. I was thus able to conduct oral history interviews with men who worked in the MPT in the 1970s. Archival research in Pingyao County Archives helped to contextualize their stories.

1. Transportation by the People

Up until the Great Leap Forward, the stress on transportation capacity was primarily treated with rationalization measures on the one hand and the overuse of transportation means on the other. Based on the belief that the development of heavy industry was the prerequisite of the development of all other sectors, the FFYP seriously underinvested in transportation. Even the rail freight volume—which consumed the lion's share of transportation investment—could only

[7] Friedman, Edward, Paul Pickowicz, and Mark Selden. *Chinese Village, Socialist State*. (New Haven: Yale University Press, 1991).
[8] Wang, Luman. *Chinese Hinterland Capitalism and Shanxi Piaohao: Banking, State, and Family, 1720-1910*. (Abingdon, Oxon; New York, NY: Routledge, 2021). Huang Jianhui 黄鉴晖, *Study on Shanxi Merchants in Ming and Qing 明清山西商人研究*. (Taiyuan: Shanxi jingji chu ban she, 2002).

grow at a pace 3 percent slower than the industry outcome each year. In 1957, despite the widening of the gap between transportation need and capacity to a concerning level, the cross-board cut of investment budget still tilted dangerously against a catching-up of the latter: as the industrial investment reduced by 0.8%, the investment reduction in transportation and postal service sector amounted to 22.5%[9]. Furthermore, the allocation of funds in the transportation sector favored the infrastructure more than the transportation means, further exacerbating the overuse of vehicles. According to the National Economy Committee, from 1952 to 1957, the transportation volume by rail increased by 107%, yet the number of freight train cars grew only 63.8% and the locomotives a mere 2.1%. Transportation volume by road increased 279% while automobiles (including trucks) increased just 60%.[10] If the transportation shortage was already severe by the end of the FFYP, the GLF completely overwhelmed the extent transportation capacity and created a logistical crisis that no measure of rationalization could possibly address.

The Great Leap began in early 1958 with a wave of hydraulic construction across the country. Earthwork required great amount of transportation. However, this pressure was mostly felt locally and believed to be surmountable by more forceful labor mobilization and intensification. The most threatening logistical crisis came in September 1958, after the central government launched the mass campaign for steel production. Suddenly, the entire railway system and much of the road and river shipping were brimming with ore and coal. All other freights—grains included—were piling up everywhere and could not get a space on the busy vehicles. The painstakingly established system of coal zones was dismantled over-night. The

[9] Bureau of Transportation under the National Economic Committee 国家经委交通局, "Suggestions on several problems related to transportation and communication sector, 关于运输和通信事业中几个问题的意见, 1959-1-17," *CSANE, TCV, 1958-1965.* 13-18.
[10] Ibid.

transportation for steel production paralyzed the circulation of all other goods for several weeks. In late September, the central government issued a series of urgent directives to mobilize the whole party organization and the entire population into a logistical warfare 全党全民办交通. First, local governments were asked to establish "transportation command headquarters" immediately. The party chief of the locality should directly lead the transportation work, all major work units must put all their vehicles under the command of the headquarter. Government units, enterprises, armies, schools, and collectives must allocate a portion of their members into transportation.[11] In Beijing, each district established their own transportation headquarter, organizing the population into many transportation teams. Not only "students, industry and commerce, government cadres each formed a transportation brigade," the residents—now all organized into production cooperatives—helped the large factories with their transportation task. The small shopkeepers and peddlers were required to spend half day on their normal business and half day in transportation. Such a logistical warfare required much greater organizational and political clout. In this "all-people in transportation" mobilization, the transportation bureau and company played only instrumental role—although a more professional one. They could no longer be the authority in charge of organizing and dispatching transportation forces.[12]

As the local Party secretary was appointed the direct leader, transportation was set to break off from the sectoral administration and become a mass campaign. However, the spread of backyard-furnaces steel production across the country meant that transportation pressure was still building. In fact, the backyard furnaces, being less efficient than a standard blast furnace,

[11] The Central Committee of CCP 中共中央, "Instructions on strengthening the current transportation work 关于加强当前运输工作的指示," *CSANE, TCV, 1958-1965.*
[12] "Suggestions on the composition of the Beijing transportation coordination headquarter and its tasks 关于北京市运输协作指挥部区指挥部的组成及其任务的意见," BMA 117-001-01059, c.a.1958.

required more intensive feeding of ore and coal, which entailed greater transportation needs. Soon enough, the railway became "principally for coal shipping" (以煤运为纲). The construction of "special coal- transportation lines" for even minor coal mines commenced simultaneously. But the small-scale and local nature of the steel production campaign meant the majority of the shipping had to be carried out by local MPTs.

The Party Central and State Council formally launched a "mass campaign for short-distance transportation" in September 1959. This new directive made the contribution of human and animal labor into transportation an obligation of the People's Communes.[13] Foreseeing the exacerbation of logistical stress in winter due to the surging demand of coal, the central government requested that top political authorities of each locality—the Party committees and People's Congress Committees—take into hand "the plan and dispatch the rural human and animal labor as well as transportation means" for a "fiery and blazing short-distance transportation mass campaign." The task for the rural forces was to improve "the transportation of coal, ore, iron, timber, grain, construction materials, and perishable commodities," but primarily, to move the thirteen million tons of coal to the closest transportation nodes. To ensure that communes would provide constant transportation support, the central government not only sanctioned but encouraged the establishment of both "professional" and "side-line" transportation teams within the commune. The latter could engage in transportation when not needed in agriculture, but the former was allowed to work primarily in transportation. By officially initiating a mass campaign, the central government affirmed the role of the rural muscle-powered transportations in the economy, approved a portion of rural MPTs' departing

[13] The Party's Central Committee and the State Council 中国共产党中央委员会, 国务院, "Instructions on implementing the mass campaign for short-distance transportation 关于开展群众短途运输运动的指示, 1959-9-25," *CSANE, TCV, 1958-1965.*

from agriculture, and even lent it a layer of political propriety.

Minjian yunshu 民间运输 was the term used to refer to the muscle-powered freight transportations. While *yunshu* means straightforwardly shipping/freight transportation, *minjian* is a multifaceted word freighted with its own complexed connotations.[14] Literally "among the people," *minjian* often describe a folk, indigenous, and mundane characteristic, as in *minjian gushi* (folklore), indicating a space not fully penetrated by the power of political and cultural elites. Another layer of meaning of the word is "un-official," as in *minjian jiaowang* (un-official communication), which derives from *min* in traditional Chinese referring to the general population as an entity distinct from *guan* (official/bureaucratic). In this usage, the *minjian* often serves a purpose that the state authority sanctions—at least for the time being—but willingly cedes to non-state actors.[15] In Maoist China, as the state became omnipresent in social life, *minjian* became less a space that court ideology found hard to reach and more a condition delineated in economic, technological, and institutional terms. In the case of *minjian yunshu*, it could be superficially read as "transportation by the masses," but in its actual application it referred to transportation by muscle-powered means. Even horse-drawn carts owned by state-owned enterprises were called "*minjian*" vehicles 民间运输工具. Its terminological antithesis was "modern vehicles" 现代运输工具, not, say, Commune-owned vehicles.[16] However, the true

[14] Although there are occasional appearances of the word in traditional Chinese text, *minjian* is much widely used in twentieth-century vernacular Chinese. A keyword search in cnbksy 全国报刊索引 shows that it appeared in Chinese-language newspapers twice between 1913-1919, 28 times in the 1920s. It proliferated in the 1930s and appeared 1600 times in that decade. It showed up 582 times in the 1940s.

[15] Once such *minjian* activities went beyond the state's allowance, the term is often replaced by other adjective, such as "*si*"(private) or "*dixia*"(underground), to indicate an illicit nature.

[16] As seen in post-1958 transportation statistics. For example, in "The actual numbers of transportation tools owned by communes and government units and a compilation of

meaning of the word in this context should be detected beneath where these two readings overlap: what characterizes it was the double exclusion from what is modern and what constitutes the state. As the wheelbarrows and wagons did not belong to the modern technology, the porters and wagoners were hardly constituents of the "high form" of socialism.

The fact that the majority of the muscle-powered vehicles belonged to the rural area resulted in a close association of several concepts in official discussion of transportation: *minjian* transportation, short-distance transportation, commune-operated transportation (社办运输), and later rural sideline transportation (农村副业运输). Since the GLF, it became common to bring these together in statements, highlighting the critical link between the muscle-powered technology, collective ownership, and its supplementary economic function. For example, in its 1959 report on the industry of transportation, the National Statistics Bureau described "*minjian* transportation is distributed broadly in the rural area and has always been the main force in the rural, short-distance transportation." The report extolled that "it had demonstrated formidable power in 1958, fulfilling 52 percent of national transportation volume."[17] Indeed, the mass mobilization of muscle-powered transportation sustained the Great Leap Forward. As a result, it became an irreplaceable component of the rural collective economy.

2. Collectivization of the rural MPTs

On a chilly February day in 1956, the peasant Lü Shouting 吕寿亭 drove his cart to the

transportation materials 公社机关企业运输工具实有量及运输交通资料汇编, 58-12-15," BMA 133-005-00131.

[17] The National Bureau of Statistics 国家统计局, "The beam of the Party's General Line illuminated the transportation and communication work 党的总路线的光辉照耀了交通运输事业, 1959-10-3," *CSANE, TCV, 1958-1965.* 18-20.

county seat of Laiyang, Shandong. The cart was rather new, bought only a little over a year ago along with the two big, strong mules now pulling it. At that moment, on his way to have them appraised before transferring to the newly established horse-drawn carts transportation cooperative, he might have regretted for this investment. He had been shrewd enough to not let what was going on in the village affect his own business: neither the mutual aid movement, nor even the unified purchase of grain impacted him as much as they had on others. He had his mules—the old ones were sold in 1954 for these two—with them he made good money and lived such a carefree life. His own land was tilled by hired hands, a situation that gave his wife much concern. She worried about less the cost than the gossip and glances from other villagers—everyone knew the government was against it. But Lü Shouting's income from transportation made it worthwhile. He never quite considered himself a peasant; farming was not for him. When he was in his twenties, around 1940 amid the war, he peddled salt for a few years, riding a bicycle to-and-from a Qingdao salt mine. With Japanese troops occupying the area, he was the only person in the village bold enough for this. This experience might explain why he was elected the *baozhang* (village headman, 保长) in 1942, since he was seen as a well-traveled, daring man. The Communists took over the eastern Shandong peninsula in 1945 and ended his *baozhang* career. That was fine with Lü; he quickly went back to the peddling that he had always enjoyed. Without a mule or a donkey, he pushed around a wheelbarrow to a neighboring town on their market days. Its wooden wheel was coated with a layer of rubber—hence the name "rubber-skin cart"胶皮车—and he loaded it with groceries and toys. But Lü's best life actually started after 1949. His ex-wife passed away and left behind two daughters, but the new wife soon gave birth to a son. In 1952, he made the bold decision to go into transportation. Living right beside a busy road, Lü could see with his own eye that those horse-drawn carts rushing by were making

good profit. He purchased an old mule and a shabby cart and partnered up with a roadhouse in Laiyang, which found consignors for him for a small fee. The private transportation brokerage was much more tolerated in countryside Shandong than in big cities such as Beijing. His business boomed. He upgraded his cart and animals and built his village's first house with a red-tiled roof. But now, on his way to the appraisal, he felt uneasy.[18]

Lü Shouting's life took a sharp turn downward after 1956. We will return to his story before long. Thanks to historian Jiang Chengyang's splendid work of family history "The bandit and his children," we have an exceptionally rich account of a man's life that was both made and destroyed by his participation in transportation. Lü's profile highlighted some qualities common among the rural wagoners. Many of them were relatively well-to-do before the Land Reform. The majority were subsequently categorized as rich peasants and middle peasants. A small portion labeled as landlord or even transportation capitalist 运输业资本家 usually possessed more draft animals than Lü did. According to Jiang, Lü Shouting was not involved in the agricultural cooperative in his village but joined instead the transportation cooperative in Laiyang County. Whether a person owning horse-drawn carts joined agricultural or transportation cooperative could be determined by how much he was involved in each of these activities at the time of collectivization. But there was hardly a clear-cut line. In fact, when someone like Lü Shouting did end up joining an agricultural cooperative, they often turned out to become a discontent and "problematic" member. This was common in rural suburbs of Beijing,

[18] Jiang Chengyang 姜成洋, "The 'Bandit' and His Children: Reminiscence and History of an Eastern Shandong Family '土匪'和儿女们：一个胶东家族的历史追忆," PhD diss.,(Chinese Academy of Social Sciences (CASS), 2021). Jiang bases his research on both grassroots archives from the village where Lü Shouting lived and extensive oral interviews with Lü's sons and daughters. The family history is skillfully woven into the history of the Jiaodong Peninsula in the 20th century.

where the policy of prohibiting rural horse-drawn carts from joining transportation cooperatives—to preserve the animal labor power for agriculture—was more seriously enforced. From the earlier stages of rural collectivization, the "landlords, rich-peasants, and transportation capitalists" had shown a tendency to challenge the authority and "damage the unity" of the collective. A certain rich peasant Zheng Zhijun of Laiguangying Agricultural Co-op was disgruntled at being passed over for leader of the co-op's horse-drawn carts team even though he had contributed a larger than average share. Zheng believed that the co-op's leadership should go to people who were more educated and made more contribution; obviously he had the wrong idea of what the collective was about. His attempt to influence the co-op's leadership election eventually got him expelled. Other rich peasants were banned from getting loans from the credit after a short period of enjoying that privilege. In Bajiaoxiang, the rich peasants used more than 90 percent of their loans to purchase draft animals, carts, and tires, or to fix the horse-drawn carts they already had. Their intent was mainly to enrich themselves by investing in their transportation businesses.[19]

Those who previously had horse-drawn carts were also more likely to quit the co-op and become "independent households 单干户." A 1957 survey of Beijing's rural co-ops found that, in Haidian district, among the households that quit for "feeling unfree and dissatisfaction with the reduced income," almost half used to be in horse-drawn carts transportation. Many immediately purchased animals and carts after quitting.[20] It was unlikely for them to get their

[19] Party committees of the Eastern and other suburbs 东郊等区委, "Reports and requests on instructions about landlords, rich peasants, and transportation capitalists joining the cooperatives 关于处理地主、富农、运输业资本家入社问题的请示、报告 March to November, 1954," BMA 001-006-00899.

[20] Rural Work Division of Beijing Municipal Party Committee 市委农村工作部, "Investigation report on the capitalist activities of independent households and households exiting cooperatives

own horses and wagons back, but some cash was returned to them as compensation. Those who could afford a few draft animals devoted themselves to transportation, others bought a wheelbarrow or bicycle to sell vegetables in the free market. What especially concerned the authorities was a different group of people—party cadres involved in "independent" activities, particularly in transportation. Liu Yuchen was one of these cadres whose words and deeds alerted the municipal Party committee. Liu was identified as a poor peasant during Land Reform. He used his gains from Land Reform to purchase animal and wagons, hired a wagoner, and started a sideline transportation business, while he himself worked as a cadre in the township. During the agricultural collectivization in 1954, Liu's economic standing had improved enough to be categorized as a middle-peasant. Nonetheless, he was appointed the head of the Shuguang Agricultural Co-op, and his assets in transportation, naturally, became collective property. Despite his position as the co-op's leader, he grew increasingly disillusioned and made "reactionary" comments. Personally, he was upset with the reduced income. As a cadre, he felt that the government's failure to keep its promises made his job very difficult, saying "the government no longer represents the co-op members' interests, it is just playing tricks with us."[21] According to the survey, this demonstrated his "serious discontent towards the Party and the government and a nostalgia for the middle-peasant lifestyle." In general, the pattern in Beijing's rural suburbs, as in other places, was that the rich and middle peasants turned out to be the social groups that destabilized the collective the most. But at a closer look, what these rich and middle peasants shared was not a larger possession of land before collectivization, but a considerable portion of income from non-agriculture work.

---

and their class background 有关农业社退社户、单干户发展资本主义活动及阶级情况的调查报告, June 1957," BMA 001-014-00381.

[21] Ibid.

Maoist rural policies were based on a simplified ideal type of the Chinese peasantry. Jacob Eyferth has described this conceptualization of "model of rural people" as "frog-in-the-well peasants who live essentially local lives, whose main bonds are with a territorially defined community and with the land they work, who do not participate in regional or national exchange networks, and who are therefore unqualified to participate in public life."[22] Not only did the reality of the rural population fail to fit this ideal conceptualization, the artisans, peddlers, and wagoners were particularly ill-matched. This explains their bitter attitude toward collectivization. What made them deviants from the ideal peasant was not just the way they made their living, but the skills they had acquired, the entrepreneurship they had cultivated, the ambition they once held, all of which had drew them away from farming and all of which were now taken away from them. Even if they could still use their skills for the collective—those who knew how to drive a horse-drawn cart often continued driving one for the co-op—they became an interchangeable part, a unit of labor. The more extreme the collectivization was, the less they could maintain social relations that facilitated their well-being and identified who they were.

The relations being demolished were not only interpersonal, but also between human and animal. The result was devastating for draft animals, even as their muscle power was in great demand for the construction of socialism. Although something as bloody as the mass slaughtering of domestic animals during the USSR's rural collectivization did not become common in China—preventive measures were taken—collectivization started a long, painful process of suffering, starvation, and death for Chinese draft animals. We may now return to what happened to Lü Shouting after the day when his mules walked into the co-op's stable and were no longer his.

---

[22] Eyferth, *Eating Rice from Bamboo Shoots,* 5.

The Laiyang Transportation Cooperative, like other cooperatives established in rural China in the 1950s, was not a collectively self-governed entity as their names may suggest. Instead, a cadre appointed by the government would lead wagoners like Lü Shouting and assign jobs to them daily. Which cart and animals would be the ride of the day for the wagoner was up to the cadre's discretion, as was their cargo and destination. But horses, mules, and donkeys, unlike carts and wheelbarrows, have their own temperament and habits. They and their human masters come to understand each other's movements and expressions, requests and needs through years of mutual company at home and on the road. Riding an animal-drawn cart required not only skills—techniques that could be applied on different items more or less consistently—but also familiarity with the animal. The wagoners needed more than knowing how to make the animals walk and how to make them stop--even these most simple techniques take at least months of practice. They must be able to make the animal meet challenges--for example, to pull very heavy load on steep and slippery road—that depended on the mutual trust between them. In a transportation co-op, there was no time nor space for this trust building. Jiang Chengyang mocked the cadres' thoughts: "What socialism can you build if worried about such [sentimental] trivialities."[23] In fact, reports on accidents caused by animal-drawn carts increased noticeably since the establishment of transportation co-ops across the country. It would not be unreasonable to attribute at least part of it to the lack of coordination between the wagoners and the animals they were driving.

Four months after he joined the co-op, Lü Shouting drove one of the co-op's mules out in the morning and returned with the same mule blinded in one eye. According to the co-op's record, he had beaten the mule and injured its eye. We have no way to learn how Lü himself

[23] Jiang, "Reminiscence and History," page number undetermined.

would explain the accident. But the leading cadre was certain that, given the commonly demonstrated impatience with the co-op animals and the discontent that the drivers displayed, this had to be treated seriously in order to warn others against committing similar misconduct. Lü was publicly reprimanded and suspended from work for eight days and this accident was written into his dossier as a case of "dissatisfaction with the collectivization." However, such incidents never truly ended in Maoist China. They became part of one's "personal history" that had to be reexamined again and again in future political campaigns. For Lü, this case came back to haunt him rather soon. In late 1957, the Campaign of Purge the Anti-revolutionaries was suddenly intensified across the country, echoing the Anti-rightist Campaign. In Laiyang, the cadres were pressured to fill the quota of the purge and pay particular attention to those hiding within newly established public-private joint enterprises and cooperatives. Lü, having once served as *baozhang* under the KMT and recently "deliberately damaged the collective's property," conveniently fit the bill. He was sentenced first for five years, then to ten year, then, as Shandong had so many purged anti-revolutionaries that their prisons were over capacity, he was sent to a labor camp in Qinghai. In October 1958, when the whole country was in the craze of the Great Leap Forward and his colleagues rushed here and there with their mule carts, Lü was on his way to the northwestern wilderness, a place that in the ensuing great famine would turn into a hell of mass death and cannibalism. There he would spend the next fourteen years.[24]

The extent of mass participation in logistical transportation during the winters of the GLF years was perhaps greater than any warfare in human history. The Ministry of Transportation reported twenty million laborers involved in short-distance transportation in the winter of 1958.

[24] Jiang, "Reminiscence and History," TBD. On the Qinghai labor camps in the early 1960s, see Yang Xianhui 杨显惠, *Records from Jiabiangou 夹边沟记事*, (Tianjin Classic Books Publishing House 天津古籍出版社, 2002).

In late 1959, the Ministry's "incomplete statistics" shows a daily average labor input of twelve million people in the transportation campaign.[25] The actual number could be many times higher than this, as the Ministry only counted those involved in "societal transportation 社会运输," namely transportation work outside of their own commune. In Beijing, every one of four rural animal-drawn carts were in "societal transportation."[26] As no animal-drawn cart could possibly be idle in these seasons—if the animal was not too sick nor the cart too broken—the Ministry's "battle of ten million" statement was indeed an understatement. For those involved in this campaign, the experience resembled less an enduring battle than a series of breathless assaults. The local "headquarters" led by the Party secretary busied themselves with gathering the rural transportation forces to tackle the constantly shifting targets. The rural carts were steered around from coal mines to railway stations, from granaries to construction sites— "today at the east, tomorrow the west" as the disoriented wagoners and wheelbarrow pullers complained. A report from Shanxi described how a high priority "assault" was conducted in Pingyao. The report reads, "During the grain transportation [campaign], Party secretary Ren took the role of general commander, the entire County Party Committee, the County Magistrate, the Party secretaries of all communes, and all together 1,400 cadres went on to the road, stationed at main junctures, monitored and instructed the mass campaign. Nearly five million *jin* of grain—an amount used to take three and half months to ship—was done in three days!" This picture of leading cadres turning into road police revealed not only how anxious they were at trying to secure the state grain purchase amid boiling rural industrialization, but also how much political pressure and

[25] National Statistics Bureau 国家统计局, "Overview of short-distance transportations in the last three years and problems 三年来短途运输情况和问题, 1961-3-7," *CSANE, TCV, 1958-65*. 517-519

[26] "Request for instructions on several problems regarding the People's Communes' management of transportation 关于人民公社办运输几个问题的请示报告, 1959-5-3," BMA 117-001-01112.

scrutiny was imposed on the rural MPT laborers.

This intensive, all-in logistical war lasted for so long that exhausted and injured animals as well as broken vehicles could hardly get rest or repair. More labor was then invested in "tool reform," making new carts and upgrading the old ones with newly minted ball bearings, in the attempt to sustain the campaign with quickly churned-out productive tools. People then witnessed those little balls crumbled or falling out from the bearings as they tried to pull these carts along. In Daxing District, Beijing, 280 horse-drawn carts out of six hundred stopped working after an exhausting winter in 1958[27], and repair supplies were nowhere to find. But compared to the debilitation of the draft animals, the vehicle damages were at least reversible given a recharge of supplies. The GLF struck down the draft animals as fast as it felled the country's forests and shaved its mountains, and the recovery of animal populations was as slow and difficult as that of trees.

3. Life and Death in the GLF Animal Farm

"After eating all the bark from trees and the edible grass, a gang of them charged into the Ximen estate compound like a pack of starving wolves. My master tried to protect me by threatening them with a club, but he lost his nerve under the menacing green light that blazed in their eyes. He threw down his club and ran away. I trembled in fear in the presence of that gang, knowing my day of reckoning had come, that my life as a donkey had come full circle…

"Take it!" I heard someone in the yard yell. "Take the independent farmer's grain stores! Kill! Kill the independent farmer's crippled donkey!"

… A heavy blow on the head stunned me and drove my soul right out of my body to hover in the air above and watch the people cut and slice the carcass of a donkey into pieces of meat."

Mo Yan 莫言. *Life and Death are Wearing Me Out 生死疲劳*

In his novel "Life and death are wearing me out," Mo Yan let his protagonist die and be reborn six times—a landlord executed in the Land Reform, this suffering soul lived through the

[27] Ibid.

late half of twentieth century as a donkey, an ox, a pig, a dog, then a monkey, before resuming the human form. It is certainly not coincidental that the first incarnation was a donkey and that donkey had to be dismembered and devoured by starving villagers during the great famine. Having been a landlord in the previous life and serving an independent farmer in this life, the donkey embodied the resistance against collectivization and the disastrous fate that resistance invoked. Its heinous death, however, was less allegorical than realistic. Millions of donkeys received the same fate during the famine years.

At a nationwide scale, the GLF and the great famine was perhaps the darkest age for China's domestic animals. This is not to say that they lived a heavenly life heretofore. The fate of draft animals had always been total sacrifice to human—meeting the knacker or butcher after a life of heavy labor. In her 1930s novel *The Field of Life and Death*, Xiao Hong wrote about the misery of peasants in northeastern China in the early twentieth century. With arguably more impactful and touching prose than Mo Yan's, Xiao presented a heart-wrenching scene in which the old woman Wang took her old horse to the knacker. She sent this creature, who lived with her and labored for her, to its death, and the money she collected for its hide was taken away from her in the same day. Both Xiao Hong and Mo Yan likened the fate of the draft animal to the fate of Chinese peasants. The still more miserable end of the animal brings out their master's helplessness living at the bottom of the society. In the year of famine, this lowest hierarchy of all social hierarchies—peasants and their draft animals—meant that, while both struggled across the line of life and death, the animals' suffering could only be amplified by, thus times worse than, that of the peasants.[28]

[28] On animals in rural China during Mao era, see Peter Watson Braden, "Serve the People: Bovine Experiences in China's Civil War and Revolution, 1935-1961" (Ph.D., United States -- California, University of California, San Diego, 2020); Jongsik Christian Yi, "More-Than-

The early half of the 1950s was a better time for both the peasants and the draft animals. The central government embarked on a husbandry revival program immediately after 1949. A nationwide registration of livestock and a broad ban on slaughtering of work-age draft animals stabilized the livestock population which had been declining throughout the war years. The tremendous effort put in the prevention and treatment of epizootic diseases proved to be largely successful.[29] New breeding stations were set up across the country. But more importantly, the government provided significant support to private breeders in the form of loans, training, stud introduction, cash rewards to the winners of breeding competitions, and even initiating a round of propaganda to "elevate their social status." Peasant households were also encouraged to improve their livestock raising practices—those who excelled were given "model" titles and their methods summarized and promoted by cadres.

One such model emerged in Beijing was a man named Xu Xiangyi. A 1952 report on Xu illustrated a diligent and enterprising, middle-peasant, exactly the kind a few years later would become most resentful towards collectivization. Xu was fifty-five years old and the head of an eight-person household. Grown up with livestock and been "always fond of them," he had been making money wheeling a donkey cart since the age of sixteen. His oldest son, at the age of 27, "focuses on sideline production, specifically, wagon driving." With no other full-body male labor in the household, Xu hired a man for his farm. Widely recognized for his competence, Xu was chosen as a member of the village's Production Committee 生产委员. The report described

---

People's Communes: Veterinary Workers, Nonhuman Animals, and One Health in Mao-Era China" (Ph.D., United States -- Massachusetts, Harvard University, 2022),

[29] The Ministry of Agriculture issued both "Provisional measures to award draft-animal breeding 奖励役畜繁殖办法草案" and "Provisional measures to protect farming cattles 保护耕牛暂行办法草案" in February 1951. See also Husbandry and Veterinarian Division of Ministry of Agriculture 中央农业部畜牧兽医司, "Husbandry and veterinarian work in 1950 一九五零年的畜牧兽医工作," *CSANE Agriculture Volume 1949-52*. 828-835.

in detail his methods of feeding and watering his animal, noting, "He gives them water fresh out of the well. After a haul, he lets the animals rest a little before feeding them some hay, which would be followed by a small amount of water. He'd feed them with grains in small portions until they are full, then let them drink enough water afterwards." He often cleans and oils their hooves, changing the nails once every month and the horseshoes every two months. A lot of work went into the frequent cleaning of the mangers, the stable, and the animals themselves. He often told his son to "use the animal lightly and feed them heavily" and "do no overload them for extra money." Xu's care for his mule and donkey earned him not only the title of model, but also bumper harvests of cotton. His field was amply fertilized thanks to the two animals.[30]

The promotion of mutual aid did not have a noticeably negative impact on livestock raising, as the collaborative use of draft animals among several households had already been a well-established practice among the peasants. Still, the government was cautious about potential abuse. The Ministry of Agriculture clearly stipulated that within a mutual aid team there should be one household in charge of the raising and maintenance of the animal, while all households should share the cost.[31] The government even promoted a livestock insurance program as part of the endeavor to improve the husbandry in agricultural area. The program, however, was unsuccessful and short-lived. Before the insurance companies, banks, veterinarians, and peasants could have learned how to work together effectively, the launch of agricultural collectivization in 1955 curtailed the program.[32]

---

[30] "Production model in the Beijing suburb: Report on the husbandry model Xu Xiangyi from the eleventh district Shiliuzhuang 京郊丰产模范: 了解十一区石榴庄牲畜模范徐祥义报告," BMA 009-002-00236.
[31] Ministry of Agriculture, "Provisional measures to protect farming cattles."
[32] China Insurance Company 中国保险公司, "Summary of the closure of husbandry insurance in Beijing suburb 关于京郊牲畜保险业务结束工作总结," BMA 004-010-00070.

Slaughtering of draft animals became rampant in 1955 as the collectivization intensified across the country.[33] It was less pre-emptive resistance against collectivization (as in the Soviet case) than dissatisfaction with the cooperatives' evaluation terms that drove peasants to slaughter or sell their livestock. The cooperatives preferred strong, adult animals and their offer for older, younger, or weaker ones was too meager. At times, it was lower than the price of the hide, making the sale a losing proposition from the perspective of many peasants. Even when these animals did change hands, the cooperatives tended to sell them in exchange for bigger ones. The result was they would end up being slaughtered anyway. The state's unified purchase and sale of grain largely accounted for this behavior. The grain quota for animals feed that the cooperatives were allowed to keep was often lower than their actual needs. Some rural collectives, particularly those that produced more vegetables or cash crops, had to purchase a portion of their livestock's grain feed from the state at a sometimes prohibitive price. For example, the price of animal corn feed was the same with the regular corn for human. In Beijing, prices of feed grains in the suburbs were kept at the same level with that of the feed supplies to urban transportation units for a long time, while the later enjoyed much higher income. The municipal government believed keeping the price equal would prevent urban units' illicit procurement of feed from the countryside. From the cooperatives' point of view, raising the weaker animals was a money-

[33] CCP's Central Committee, "Urgent directives on strengthening the protection of farming animals 关于大力保护耕畜的紧急指示 1955-1-15," State Council, "Directives on the protection of young draft animals 关于保护幼畜的指示 1955-12-17," State Council, "Directives on the prevention of slaughtering cattles and the protection and development of cattle population 关于防止滥宰耕牛和保护发展耕牛的指示 1955-12-30," State Council, "Announcement on the policies of resolutely forbidding cattle slaughtering and protecting cattles 关于坚决贯彻禁止宰杀耕牛和保护耕畜政策的通报 1955-12-31," *CSANE, Agriculture Volume 1953-57*. 927-937.

losing business.[34] The government took a series of remediating measures. It imposed requirements on the agriculture and supply-and-sale cooperatives to purchase animals from the peasants, implemented strict restrictions on slaughtering, and tightened the regulation of livestock markets. It "reformed" thousands of livestock brokers, persecuting those involved in "price gauging" and re-allocating many to other trades.[35] Despite the preventive measures, the livestock population continued to drop and another drastic decline happened in 1957 as the agricultural cooperatives were "transitioned to higher form" and collectivization extended into more areas, particularly transportation. The traditionally livestock-exporting area, feeling the pressure to protect their own husbandry from further shrinking, restricted the outbound sale that had been critical for breeding in importing area, thus exacerbating the general decrease in the livestock population. [36] The statistics on livestock, although already alarming, actually understated the problem. This is because of the common practice of reporting higher than actual numbers of livestock in order to retain more grain from the state's unified purchase.[37]

Collectivization also fundamentally altered the composition of rural livestock. Most remarkably, it devastated the oxen even though the animal had always been the pillar of farm

---

[34] Beijing Bureau of Grain 北京市粮食局, "Proposals on the price adjustment of agricultural draft animals' feeding grains in Beijing suburb 关于郊区农业牲畜饲料用粮价格调整意见的请示 1957-8-13," BMA 002-009-00119.

[35] Beijing Municipal Supply and Marketing Cooperative 北京市供销合作社, "Report and suggestions on animal conservation, husbandry and marketing 关于保畜经营、牲畜工作、市场情况等的报告意见, 1956," BMA 088-001-00319.

36 Party Central Committee and State Council, "Directives on farming animal related problems 关于耕畜问题的指示 1957-3-19," *CSANE Agricultural Volume 1953-57*. 935-937.

37 Examples are numerous at the grassroots level. One example from my research comes from Pingyao. "Pingyao County Party Committee Three-level cadre meeting materials 平遥县委三级干部会议材料: "The phenomenon of concealing production volume, deceiving the government, and resisting the unified purchase in Tantou Baisheng agricultural cooperatives in Ninggu xiang has been severe 宁固乡滩头百胜农业社隐瞒产量欺骗国家抵抗征购的现象十分严重 October to December, 1957" Pingyao County Archives (PCA) 3-1.1-22.

labor in north China. The agricultural cooperatives had little incentive to economize on labor by maintaining abundant farming animals, since in effect peasant labor was nearly free. Donkeys fared only slightly better. In many cooperatives donkeys were then kept primarily for mule breeding, to the extent that inter-donkey mating was prevented, which, of course, resulted in further decline of donkey population. Agricultural cooperatives across the country invested their money in horses and mules, while neglecting or intentionally downsizing their oxen and donkeys.[38] This pattern persisted throughout the Maoist era, despite the government's repeated exhortations on the importance of oxen and donkeys to agricultural production. The decline of oxen and donkeys was not because horses and mules were better at farming larger, collective land. The crucial factor here lies in the muscle-powered transportation. The collectives depended heavily on these animals for their often most important sideline income to subsidize the agricultural production.

But even the much-valued horses and mules suffered and died immature death en masse everywhere in rural China during the Great Leap and the great famine. The Ministry of Agriculture was very aware of the decline of livestock since 1956 and its acceleration since 1958. In June 1959, it concluded that in Shandong, Hebei, and Henan alone, the number of draft

[38] Beijing Municipal Party Committee 中共北京市委, "Forwarding the report from the Municipal Husbandry Office on situation regarding the draft animals 批转市畜牧办公室关于大牲畜情况的报告, March 1961," BMA 001-005-00364. Working group on husbandry in Beijing Municipal Office of Agricultural Technological Reform 北京市农业技术改革办公室畜牧专业组, "Plans on technological reforms in Beijing husbandry sector from 1963 to 1967 北京市1963-1972 年畜牧业技术改革规划," BMA 133-001-00277. Jiang Yizhen 江一真, "Speech on the National Husbandry Conference on June 16, 1965: Promote the Dazhai spirit, raise the new high tide of husbandry production 发扬大寨精神，组织领导好畜牧业生产新高潮: 一九六五年六月十六日江一真副部长在全国畜牧工作会议上的报告," BMA 002-022-00008. See also Beijing draft animal statistics in 1974, 1975 and 1976. BMA 133-006-00284, BMA133-006-00307, BMA133-006-00324.

animals was reduced by 1.65 million in the last sixteen months. The situation in most of other provinces, if not as severe as these three, demonstrated the same trajectory. The Ministry identified the primary cause of the devastation as the communization of livestock raising.[39] The establishment of the People's Communes created havoc in the maintenance and use of draft animals. While ownership was transferred up to the commune level, the animals were used by both the commune and the lower-level collectives. The traditional method of raising animals that had been based on a stable human-animal relation, and that was practiced so sedulously by Xu Xiangyi, had already been deteriorating since collectivization, It all but vanished during communization. Often it was hard to pin down whose obligation it was to care for the animals on a given day. Even if there were "rules," they were rarely enforced since the animals were driven to different locations by different entities. People were unclear when was the last time the animals were fed, nor would they always feed them in separate mangers. As a result, weaker animals could be starved for days without anyone noticing. Peasants mocked this rough, inefficient, and impersonal way of feeding animals as tantamount to "livestock canteens," a play on the communal eating mandated for humans. [40]

The Ministry of Agriculture's 1959 directive failed to fully recognize the adversary effect that extreme exertion had on the animals. Instead, it emphasized the importance of breeding as the key measure to revitalize animal population. In fact, the draft animals labored non-stop for all sorts of GLF initiatives—hauling coal to the steel making furnaces, moving bricks to new factory constructions, and deep-plowing the farmland—even the studs and the pregnant animals were

[39] Party's Central Committee, "Directives on strengthening the raising, using, and breeding of farming animals 关于加强耕畜的饲养、使役和配种等管理问题的指示 1959-6-5." *CSANE, Agricultural Volume 1958-65.* 807-808.
[40] "Report on the current situation of the raising of draft animals and suggestions for the next steps 关于郊区当前大牲畜饲养情况和今后意见的报告, 60-12-23," BMA 001-014-00607.

not exempted from these duties. When Tongxian, a county southeast to Beijing, started their hydraulic work on Tonglan River, the county devoted 3200 draft animals to the project. Upon the completion, only one third of them returned. These survivors were so emaciated that many died later on.[41] Many places became laxer in enforcing rules governing animal usage. If Lü Shouting's incident happened during the GLF, he might not have needed to pay such a high price for it. Some communes in Beijing suburb stopped punishing animal abuse, partly because if an animal died, it was hard to tell whether the direct cause was abuse, exertion, or starvation.

The winter of 1960 sent millions of draft animals to their deaths, just as people in the countryside struggled to survive the famine themselves. While the animals could barely see any grain in their feeds, the short-distance transportation campaign continued, extracting the last bit of muscle-power from these creatures. Transportation teams across the country operated at high casualty rates. Their mules and horses either died or could barely stand, let alone haul coal on ice-covered roads. In Beijing, many rural communes reported losses of animals in one wintry month equal to six month's or more during the previous year. The situation in vegetable-producing counties was the worst, as they had the least grain and hay reserves.[42] In Spring 1961, there was a severe animal labor shortage for heavy agricultural work such as plowing and pushing the waterwheel. The animals were too weak to reproduce, leading to a breeding season with abnormally low rates of pregnancy and birth.[43] The recovery of the draft animal population

---

[41] Ibid.

[42] Ibid. Starvation caused much severer loss of pigs. The animal farms owned by Beijing Commerce Department had about 70 thousand pigs by the end of 1959. In 1960, the Commerce Department reported 58969 deaths, among which 32385 died in winter 1960. See "Commercial sector's plan on husbandry production in 1962 and a summary of current work 商业系统 1962 年畜牧生产规划及工作总结," BMA119-001-00688.

[43] Beijing Municipal Party Committee, "Forwarding the Husbandry Office's report on the situation of draft animals 批转市畜牧办公室关于大牲畜情况的报告, March 1961," BMA 001-005-00364

was so slow and difficult that it never reached to the 1954 level. The state learned the hard way that, even the seemingly free and bottomless muscle power had its limit, and its price.

Table 5. Population changes of different draft animals from 1949 to 1962 in Beijing area.[44]

Year	Horse	Mule	Donkey	Oxen	Sum
1949	8815	22734	162086	34356	229356
1954	11162	35461	232490	91789*	372630
1957	16585	30377	185700	92999*	362754
1962	24770	23459	119663	101931*	270294

Table 6. Changes in population of draft animals and animal-land ratio[45]

Year	Land Area (thousand mu)	Sum of animals (thousand)	Land area per animal (mu)	Animals used in agriculture (thousand)	Land area per animal used in agriculture (mu)
1949	7695	229.4	34.76	183.5	43.4
1954	8848	372.6	23.72	297.6	29.6
1957	7989	327	24.43	252	31.7
1962	6651	270	24.65	189	35.1

When the heat of GLF was replaced by the chill of the great economic depression, it became clear that the rush to industrialize greatly damaged, instead of developed, the extant infrastructure. Both the means and modes of transportation were greatly deteriorated, and the damage was particularly severe in the rural area. According to the Ministry of Transportation, the

[44] "An analysis on the historical statistics of Beijing husbandry production 北京市牲畜业生产历史统计资料分析," BMA 005-002-00491. The numbers of oxen seem to be high and growing, but the report also says that "in 1962, most of the oxen are female and for reproduction purpose. Only 48.9% participates in farming." The number might be unrepresentative for North China, for the rural suburb of Beijing supplied diary and meat to the city. Strictly speaking, they should not be counted as draft animals. It is also notable that the numbers of different draft animals do not add up to the sum numbers. The document does not explain this indiscrepancy.
[45] Ibid.

number of horse carts owned by transportation departments and transportation cooperatives—where they had relatively good data—was reduced from 150 thousand in 1957 to 95 thousand in 1962, partly due to the depletion of horses and mules, and partly due to lack of maintenance materials, especially wood.[46] In places reliant on waterways, the number of junks fell sharply, also due to the diminished supply of wood and tung oil. In many places the condition of roads and waterways became worse than the war era. The GLF initiatives directly or indirectly destroyed the previously navigable waterway systems. Reservoirs, dam locks and aqueducts disrupted rivers. Felling and burning forestry for timber and fertilizer led to soil erosion that silted the river beds. Previously navigable areas in East China increasingly depended on more labor-intensive land transportation. Taixing, Jiangsu had been a prosperous county with a well-established navigation system for centuries. All its four major waterways were silted up by 1962, and rural labor had to be mobilized for hauling and carting grains and other goods in lieue of waterborne freight. In the Spring of 1962 alone, the county's daily labor input in transportation coal was above five thousand, even reaching ten thousand at the peak.[47]

The land transportation infrastructure also deteriorated during the GLF. It consumed more labor input, while GLF road building failed to expand the road system in useful ways. On the contrary, because of squandering of funds and materials on numerous projects, even the higher quality roads were now in worse condition due to lack of maintenance. A joint report by the Ministry of Transportation, the All-China Federation of Supply and Marketing Cooperatives,

[46] Wang Shoudao 王首道, "Shift the focus of transportation work to the development track based on agriculture 把交通工作转移到以农业为基础的轨道上来, 1962-11-3," *CSANE, TCV, 1958-65.* 528.
[47] Mininstry of Grain, the National Supply and Marketing Cooperative, and the Ministry of Transportation, "Request for instructions on fixing rural roads and dredging the navigation channels of small rivers and tributaries 关于解决整修乡村道路、疏浚小河支流航道问题的请示 1962-11-19," *CSANE, TCV,1958-65.* 533.

and the Ministry of Grain acknowledged that, "There are about eight hundred counties in the major areas for grain and cash crop production. Historically these were areas with better transportation infrastructure…but the roads are now in great need of maintenance and repair. The general accessibility has been greatly reduced, many of them cannot be open to traffic."[48] Counting only grain and goods channeled through the Supply and Marketing Cooperatives of these eight hundred counties, the report stated, the volume transported by *minjian* transportation means amounted to 20 million tons. Half of this was fulfilled by human labor without assistance of junks or animals. To put this number into perspective, the unified purchase of grain in 1962 collected about 38 million tons from the entire country, meaning over a quarter of all grain was shipped by human muscle power.[49] Given that transportation conditions in other areas could only be worse, the amount of backbreaking human labor input for grain transportation was unsustainably high, while more efficient *minjian* transportation means—junks and animal carts—were lost to the inefficiencies of the GLF and the exigencies of famine.

The increasing burden of transportation on the peasants' shoulder was not limited to grain. In the aftermath of the GLF, villagers often had to travel longer distance than before to fetch necessities such as coal and fertilizer. Since the establishment of the unified purchase of grain, the divide of grain shipping obligations between the peasants and the state transportation departments was generally clear: the first leg—described as from the production site to the nearby market town or stipulated in a distance corresponding to the average distance, usually 15 to 20 km—was the peasants' obligation. Transportation across distances longer than this was

[48] Ibid.
[49] Luo Pinghan 罗平汉, "Several problems on grain production and marketing from 1958 to 1962 一九五八年至一九六二年粮食产销的几个问题," *CPC History Studies 中共党史研究* (2006) no.1. 27-36.

either fulfilled by the state or by peasants with costs defrayed by the state.[50] But the obligation of transportation in the other direction—shipping of goods intended for rural consumption—was much less clearly delineated. There was no line item in the Transportation Departments' plan that stated how much and how far down they ought to send the supplies needed by rural area. Before 1957, such demand was met by a combination of private transporters, state forces, transportation collectives, and peasants themselves. After the GLF, the shrinkage of transportation capacity in both state sector and professional transportation cooperatives meant that the peasants were left to themselves more than before. But this was not the only cause for the cut down of transportation service to the countryside, the shortage of transportation power only amplified the institutional deprivation of countryside that had been built in the socialist system of China.

A 1962 National Economic Committee's survey of a Shandong commune presented the systematic problems in detail. The Committee found that, "In Laiwu County, the major problem now is that [we] are sending the supplies, such as coal, salt, and fertilizer, down to the countryside. The rural production teams have to haul them from coal mines, train stations, or county seats by themselves."[51] The Committee lamented, "[T]his has taken too much labor away from agricultural production. It also greatly increased the production teams' cost of transportation and made these supplies more expensive than their listed prices." The Committee

[50] Each province had their own, but similar, policies. In Shanxi, it is stipulated the first 15km was peasants' obligation. See "Shanxi Province provisional measures to ensure the safety of grain transportation to granaries 山西省公粮安全运输入库暂行办法, 1953-7-14," Shanxi Bulletin on Municipal Administration 山西政报 (1953) no.15. 21-23. This document also stipulated it was the obligation of "all healthy men between 18- to 50-year-old, as well as all animals with more than one pair of teeth and capable of transportation" to ship grain for the state.

[51] Transportation Bureau of the National Economic Committee, "Investigation and report on supporting the agriculture with local transportation forces in Laiwu County, Shandong 关于山东省莱芜县地方交通支援农业问题的调查报告 1962-12-20," *CSANE, TCV, 1958-63*. 535.

reported that peasants from Chaye Commune in Laiwu had to fetch coal from a mine one hundred li away. They relied completely on muscle-powered transportation. “Time spent on the road and waiting at the mine added up to five days. Only 30 *jin* is hauled on each labor day, which makes it 130 thousand labor day per year spent on fetching coal alone.” The peasants reportedly petitioned the government to ship the rural supplies further down by trucks, “just like how they would reach down to pick up produces and grains.” The unfairness and indeed inefficiency of this division of transportation obligation was obvious to the state as well as to the peasantry. Its adverse effect on agricultural production raised the central government’s concerns.

The Committee offered an analysis of the problems and a set of solutions. The first problem was there were too few trucks at the county level to fulfill the demand for sub-county freight. Trucks were concentrated at the provincial level and their primary task was to “guarantee the transportation of goods [from the countryside up] to the province and the state.” Meanwhile, “sub-county transportation was not allowed into the provincial transportation department’s monthly plan.”[52] In this way, the Committee admitted that it was not only the capacity, but more importantly the priority, of transportation that restricted the peasants’ access to supplies. The Committee suggested a provisional measure allowing provinces to allocate a portion of trucks to, and temporarily station them in, certain counties. As we will see later, this solution was altered—horse carts instead of trucks were sent down—to help solve the rural logistical crisis while ensuring the fulfillment of transportation priorities.

The second problem was the deterioration of rural infrastructure. Laiwu County had built over one hundred kilometers of roads in the 1950s. But by 1962, “due to the low standard of construction, most roads were greatly impaired” and “almost no road is now passable for trucks.”

[52] Ibid.

The repair of roads had to be funded primarily by the communes and brigades themselves, with a portion sponsored by the county and provincial government.[53] This would continue to be the general funding pattern for rural roads. Such building projects also put significant burden on the rural community. The commune and brigade leaders had to figure out their own ways—sometimes against the state's policy—to accumulate enough cash to fund these projects. We will discuss this subject further later in the chapter.

Third, the transportation enterprises, including both provincial state-owned truck companies and county-level horse-cart cooperatives, were not sufficiently incentivized to carry out rural transportation. For the trucks, delivery to the countryside was a nuisance. They complained about how difficult the roads were and how slow the peasants unloaded the trucks—in a word, the price they charged was not worth the trouble. For the same reason, even the members of the county wheelbarrow cooperative avoided going to rural villages. The fourth reason that the Committee identified was of a similar nature. The state-owned commercial units and higher-level Supply and Marketing Cooperatives often demanded the peasants to take care of the shipping of their own goods, because the price difference between different levels could barely cover the transportation cost. As peasants had to haul their own supplies, they were in effect forced to "pay" a surcharge for many goods, though the payment was made in the form of their own labor rather than in cash.[54] In other words, every time goods were hauled to and from the countryside, the economic impact was equivalent to a hidden price scissors; resources were transferred from the peasantry to the state sector.[55]

---

[53] Ibid.
[54] Ibid.
[55] On price scissors, see Barry Naughton, *The Chinese Economy: Transitions and Growth*, MIT Press, 2007. John Knight, "Price Scissors and Intersectoral Resource Transfers: Who Paid for Industrialization in China?" *Oxford Economic Papers* 47, no. 1 (1995): 117–35.

The Committee offered soft suggestions that did not touch the root causes of these problems. First, it asked the transportation enterprises to "carry out a more profound Increasing Production and Practicing Economy Campaign," by which it actually meant "cutting costs and downsizing the institutions."[56] This reflected the state's endeavor to scaling down urban institutions and population, not restructuring of the transportation enterprises institutional obligation to serve peasants needs. Second, it proposed that the commercial departments and SMO be permitted to add more transfer stations closer to the villages. But in the same sentence, the Committee admitted that "this seemed implausible if the loss continued to occur."[57] There was no intention to either expand the obligation of the transportation enterprises to serve the peasants or allow greater range of pricing to allow the market to allocate transportation capacity in the countryside.

The increasing immobility and infrastructural deterioration in the countryside described above was part of the larger picture of national economy of the early 1960s, which, in the aftermath of the GLF, teetered with a much-weakened agricultural sector carrying the swollen urban population. As the central government launched a campaign to reconfigure the urban-rural population ratio, the transportation departments, like all other sectorial branches, started trimming its organizations and personnel, especially its low-technology components. Low-technology workers and their tools were either shed from the state-owned enterprises down to collective-form enterprises, thus losing the privileges and welfare exclusive to the state sector; or they were sent down to the countryside under the initiative of "supporting agriculture." In

[56] Transportation Bureau of the National Economic Committee, "Investigation and report on supporting the agriculture with local transportation forces in Laiwu County, Shandong 关于山东省莱芜县地方交通支援农业问题的调查报告 1962-12-20," *CSANE, TCV, 1958-63*. 535.
[57] Ibid.

transportation, the "supporting agriculture" initiative took its most concrete form in the sending down of horse carts, together with the animals and the drivers. At the same time, human-powered transportation component was carved out and reconstituted as urban cooperatives. The result of this reconfiguration was a more rigid socioeconomic hierarchy determined by technology. A leaner and more modern state sector was now rooted more firmly in urban areas and an immense, self-sustained muscle-power sphere mainly in forms of collective economy occupied the countryside and the bottom-layer of urban society.

4. Constructing the Muscle-Powered Sphere

As the moralizing connotation of "supporting agriculture" slogan suggested, the state posited this social and technological reconfiguration as extending a helping hand to the peasants. Yet it was plainly clear that it was more of a rescue to the state sector than to the peasantry. The animals and carts sent down to the countryside were not free or necessarily cheaper than the going prices.[58] Many enterprises required cash from the purchasing brigades before agreeing to sell their animals and carts. Such "aid" then turned into loans for the rural collectives to pay back in installment in several years. Second, as the National Statistics Bureau made clear in its report on the initiative, the main benefit, besides the stated boost to agriculture, was to "reduce the supply of grain and feeds" for these urban human and animal consumers. In addition, it will "also

[58] The draft animal market existed in most of years in the Socialist era. The price remained more or less stable but was not fixed or unified by the administration. On evaluation of socialist China's draft animals, see CSCPRC Animal Sciences Delegation, Jacob Andrew Hoefer, and Patricia Jones Tsuchitani, *Animal agriculture in China: a report of the visit of the CSCPRC Animal Sciences Delegation* (Washington, D.C.: National Academy Press. 1980).

induce the modernization of urban transportation."[59] Therefore, the reallocation of horse carts from city to countryside did not start from area where rural labor shortage was the most severe, but where places with more developed urban centers and prioritized industrial and mining enterprises, such as Beijing, the northeast and Shanxi Province. In other words, the central government expect that shedding the backward muscle-powered carts would allow these cities and enterprises to expedite their pace of technological upgrading.

The plan was to gradually send down 130 thousand large animals from the 60 major northern cities. This number slightly exceeded that currently engaged in transportation—126 thousand—and amounted to half of the entire population of large animals in these urban areas. The relocation was conducted in a cascading fashion starting from the bottom. That is, animal carts of counties further from city center were the first to be moved down to communes and brigades. Carts from nearby suburban counties then moved to fill in the need of these counties, carts of the urban centers then relocated to the nearby suburb counties; the urban transportation capacity would then be reconstituted by trucks, three-wheel automobiles, and tricycles. This arrangement was designed to ensure a peaceful reallocation of the human labor attached to these horse carts, by trying to minimize their socioeconomic loss in moving down this spatially defined social hierarchy. In late 1961 alone, Beijing transportation departments sent down 2482 workers along with 5656 animals and 2319 carts along with 1500 porters.[60] By 1965, Beijing

[59] The National Statistics Bureau 国家统计局, "Investigation report on dispatching urban draft animals to support agriculture 关于抽调城市大牲畜支援农业的调查报告 1962-8-31," *CSANE,TCV, 1958-65.* 532.

[60] BBTTA, "Summary of the transportation work in districts and counties from 1959 to1961," BMA 117-001-00230. The number of horse carts sent down from Beijing in 1962 was about the same. The number of sent down workers in 1962 is unclear but it could be more than 1961. More urban dwellers had to leave to the countryside as the urban compression intensified in 1962.

transportation departments retained only 250 horse carts in urban and nearby suburban areas.[61] Many of these sent-down horse carts drivers and porters were long-time city dwellers, with residence and family members in the city. The department reported "a smooth transition," suggesting little to no popular challenge to the changes.[62]

The void that the sent-down horse carts and porters left behind was not immediately filled by motorized vehicles. Nor did the step-by-step, cascading relocation always go seamlessly. As goods began to pile up at train stations and warehouses, the city and its enterprises had to resort to muscle-powered solutions. The Beijing Transportation Company, for example, had to increase the number of *paiziche* (the large carts pulled by multiple men that so captivated Bresson) to cope with its sudden loss of transportation capacity. Many factories and mines, having just sent away their animal carts to the countryside, sought out commune transportation teams to help with their daily haulage. As mechanization could not take place as quickly as the driving out of the MPTs, the tension between the urge to remove them from the urban space and the siphon effect it created that drew in other MPTs remained strong.

But the logic of modernization through first squeezing out the old to make space for the new dominated the Beijing urban policies. As the capital city, it could afford a more costly and more thorough driving out of its MPTs, allowing the central government to showcase a modern socialist urban space. In 1964, the central government initiated a "Two-Catchup-and-Three-Elimination Campaign" 两赶三消灭. This campaign aimed to identify existing managerial

---

[61] "Explanations on the preliminary suggestions to Beijing 1965 transportation plans 北京市交通运输 1965 年计划初步意见说明," BMA 117-001-00408.

[62] On urban population changes. see Kim Wing Chan, *Cities with Invisible Walls, Reinterpreting Urbanization in Post-1949 China*, (Hong Kong, Oxford University Press, 1994). Also see Kam Wing Chan and Xeuqiang Xu. "Urban Population Growth and Urbanization in China since 1949: Reconstructing a Baseline." *The China Quarterly*, no. 104 (1985): 583–613.

shortcomings and improve the production efficiency. Its objective was indeed so vague that the central government did not even announce what the two and three were respectively. Local administrations and enterprises were asked to fill in with goals and problems recognized by themselves. This campaign provided political cover for the Beijing transportation authority to advance its modernization agenda. The BBTTA announced that its focus would be on the MPT components, and it would eliminate a series of wrongdoings allegedly rampant among the horse cart drivers, *paiziche* pullers, and porters. These wrongdoings included serious accidents out of negligence, serious damage of goods, bad attitude, cheating on transportation fees, late delivery, theft, being too choosy about tasks, among others. The administration then articulated its plan to "solve these problems." Its solutions did not include usual measures of "criticism and education." Instead, they pointed to mass layoffs.[63]

The elimination campaign came up with varied solutions to different forms of MPTs. The *paiziche* force was to be completely disbanded. These had multiplied in number since the relocation of urban horse carts to the countryside. However, the authority now decided that they were even more unsightly than the animal-drawn ones. Not only were they slower and prone to block traffic, the view of teams of sweating and panting men, who "always remained topless regardless of the season," was "not compatible to the capital's status." The "most inappropriate and unreasonable" among all were carts pulled by men and animals together. *Paiziche* as a means of transportation had to be discarded from the capital all at once. The administration admonished any intention to recycle these vehicles in city center and nearby suburb, only

[63] BBTTA, "Implementing '*liang gan san xiao mie'* in *minjian* transportation sector; Notification on holding the meeting of districts' and counties' Chief of Transportation Bureau; and other documents 贯彻交通会议关于民间运输业两赶三消灭工作及召开区县交通运输局长会议的通知等文件," BMA 117-001-00381.

permitting the sale to communes of further suburban counties. The *paiziche* pullers, totaling 2226, were transferred to other jobs and work units, but, the administration emphasized, not as permanent workers in state-owned enterprises.[64] In other words, their status as cooperative members remained unchanged.

For the horse-drawn carts, the administration issued a strict ban on entry into the city. A survey showed that half of the horse carts still present in the city were hired by various work units. They were hauling coal and firewood for the Bureau of Commerce, grocery for the Non-staple Food Company, manure and garbage for the Health Bureau, construction materials for Bureau of Housing Administration, and towing heavy materials inside of factory and station compounds. The other half hailed from the surrounding communes to deliver vegetables to distribution centers in the city. Following the Beijing Municipal Congress's decision, the BBTTA ruled that horse carts used for internal transportation could continue their operation, albeit strictly inside the work unit's compound. All bureaus and companies that hired horse carts to haul goods were ordered to replace the horse carts with trucks or motorized tricycles. As for the vegetable delivery carts, they were to stop at distribution centers located at the city proper boundary, while transportation from these centers into the city were to be done by motorized vehicles. If the complete replacement of vegetable delivering carts turned out to be impossible, the BBTTA conceded, the carts were to avoid major streets and schedule delivery for early hours.[65] All in all, the bottom-line was that horse-drawn carts, if not to be completely removed, should at least be hidden from the view of the capital's dwellers and visitors.

---

[64] "Report on the organization of transferring members of *paiziche* cooperatives to other trades 关于组织起重排子车社员转业工作的报告," BMA 117-001-00384.
[65] "Investigation report and provisional suggestions on the rectification of inner-city horse-drawn carts transportation 关于整顿城内马车运输的调查情况和初步意见," BMA 117-001-00381.

The administration then formulated a set of retirement policies for MPT workers, to encourage the older ones—men above 60 and women above 55—to leave their jobs. Those with a working spouse or children would be given a one-time compensation equivalent to five to fifteen months of the average tricycle rider's wage—depending on when they entered the cooperative. Those without would receive monthly aid between 15 to 25 yuan.[66] The state would foot two-third of their post-retirement medical bills. These terms, although not comparable to the state worker's pension, guaranteed basic subsistence to the retirees. However, many of the old MPT workers resisted the package, pleading that they still had enough strength in them to work. The prospect of relying on one's children or drawing meager aid from the Civil Affair Bureau was distressing. There were more workers applicable to the policy among passenger tricycle riders with an average age of 58. They thus became the main target of the government's persuasion. The BBTTA issued detailed instructions to its cadres about what to say and what not to say to these reluctant tricycle riders. Interestingly, what the cadres must convey was not that age line was not up for negotiation, but that the tricycle as a tool was backward, and riding tricycle as a vocation was not only physically exerting but also backward. They could not exist any longer in Beijing, a city of "high international esteem and great influence."[67] In other words, the issue was less about removing their diminished labor power from social production, than an attack on muscle-powered technology as such. This was not the first time that Beijing MPT workers had their livelihood threatened by a modernization attempt. In 1920s, the rickshaw pullers rallied together to fence off the encroachment of streetcars. They "met, petitioned,

[66] "Measures to layoff and transfer members of *minjian* transportation cooperatives 民间运输合作社社员退职转办法等," BMA 117-001-00420.
[67] "Key points on how to persuade old, weak, and handicapped members of Passenger Tricycle Cooperatives to retire 关于动员客运三轮车老弱残社员退职的宣传提纲," BMA 117-001-00420.

marched, protested, fought, and finally rioted" and eventually succeeded in protecting their territory and income against the bus company.[68] But now, fewer and older, and more importantly, facing not fragmented municipal power groups but an authoritarian state, they had no choice but accepting its terms. The Maoist socialist state could wield more powerful political and administrative tool—welfare included—to alter its technological environment.

Throughout the early 1960s, 24 million urban dwellers were relocated to the countryside, reducing the urban population back to its 1957 level. It was generally believed that these were the same people who flooded into cities during the industrialization of the GLF.[69] However, a closer look at the group sent down from urban transportation sector reveals a clear technological logic, suggesting pre-GLF origin place was not the only criteria for the mass re-location. There was certainly considerable overlap between the GLF city bound migrants and low-technology labor with precarious status who were removed post-GLF. Yet Beijing transportation department's steps to downsize its workforce clearly targeted MPT workers, including many long-time Beijing dwellers. It was thus a population downsizing combined with a technological upgrading—if not by substantial advancement in technology, then by cutting off the heavy bottom. Beijing might be a more extreme case in its endeavor of expelling MPTs. As the capital, it had to be the modern pinnacle of Chinese cities. Such an endeavor, in Beijing or elsewhere, did not always achieve their goal entirely or persistently, due to the lack of modern vehicles. But the logic that technological modernization had to be a strictly controlled trickle-down process—from urban to rural but more importantly from state sector to non-state sector— applied to Maoist China by and large.

---

[68] David Strand, *Rickshaw Beijing: City People and Politics in the 1920s,* (Berkeley: University of California Press*,* 1989). 243.
[69] Kim Wing Chan, *Cities with Invisible Walls,* 38-39.

As the party redrew the line between the urban and rural, it slowed down the industrial investment and reinstated the foundational role of agriculture for the national economy. At the policy level, it means that industrial investment targets would be based on what the agricultural surplus could support.[70] The state also increased production of farming machinery and fertilizers with an eye toward raising agricultural output. At the same time, the rural collectives were expected to finance agricultural mechanization largely by their own effort. This incentivized sidelines that provided better and faster cash income, which soon proliferated in the countryside, thus drawing labor and resources into non-agricultural work. On the demand side, the short-distance transportation remained heavily dependent on muscle-powered transportation. And the post-GLF adjustment had, as described earlier, largely completed the concentration of the MPTs into the collectives. The association between the MPTs and collective economy was so direct that in a 1963 article in Economic Research Journal by Chinese Academy of Social Sciences, the authors stated: "Modern vehicles mainly belonged to state-owned professional transportation enterprises, while *minjian* vehicles are the property of transportation cooperatives and People's Commune's production teams."[71] The indispensability of MPTs to the economy meant that rural transportation labor continued to be mobilized and employed outside of their locality, even becoming professionalized to such a high degree, enough to make us revise certain long held understanding of urban-rural divide. In the rest of the chapter, I will use Xiyoujia, a normal northern village in Pingyao, Shanxi as a case study, to trace the role of MPTs in the work and life

[70] Dong Fureng 董辅礽, "How to understand the essence of 'Agriculture is the foundation of national economic development 怎样从本质上理解农业是国民经济发展的基础," *Economic Research Journal 经济研究* (1963) no.7. 22-29.

[71] Lei Ting and Zhu Xingxi 雷汀 朱醒西, "The characteristics of short-distance transportation and its role in urban-rural exchange 短途运输的特点及其在城乡交流中的作用," *Economic Research Journal*, (1963) no.06. 33-38.

of regular peasants of Maoist China.

5. Cast Study: Xiyoujia, Pingyao County, Shanxi Province.

Pingyao County lies in the southern end of the mid-Shanxi plateau. It conjoins counties at its north and west to form the affluent core of the province known for its financial and commercial tradition. To the south, and east it neighbors the poor Taihang mountains, where the Communist Party built a strong base area during the Sino-Japanese war. Nowadays a famous tourist town, the county seat is always crowded with visitors from all over the country for its various historic sites. The well-maintained city wall as well as official and commercial architectural compounds testify to its tremendous prosperity in the late imperial era. But Pingyao's history goes far back to the ancient time. The county was established since the very beginning of imperial China in the Qin Dynasty. In fact, archeological evidence suggests that people had been populating where is now Pingyao ever since 2500 B.C. The Fen River, a major tributary to Yellow River, runs through the county, together with a few other smaller rivers, and sustained its agriculture for thousands of years. Yet by late imperial time, a significant portion of Pingyao's population had turned away from or did not only rely on farming for living. Pingyao merchants and financiers operated everywhere from major cities to the most remote corners of the Qing empire. The impressive Pingyao County seat was indeed built on their wealth.

By 1949, Pingyao, as well as other once prosperous mid-Shanxi counties, had declined from its heyday for almost a century. Yet the county did not lag in transportation infrastructure, at least by northern China standards. Two major modern arteries—Tongpu railway and Taifeng Highway (Taiyuan to Fenglingdu) ran through the county. A motor road connected Pingyao with its western neighbor Fenyang. Major towns were connected by cart roads, and many well-to-do

households owned carts drawn by a pack of two to four animals for transportation purpose.[72] But the agricultural output was unimpressive. Even in its best year in the early 1950s, the average output was merely 175 jin per mu.[73] Both environmental factors and the late-imperial marketization underlined the poor agricultural output. Much of Pingyao's farmland suffered from soil salinization, particular along the Fen River bank. The expansion of commerce and finance drew rural talent away from farming. And a well lubricated grain market helped to meet the food demand of the non-farming population. The relatively low importance of agriculture in Pingyao economy manifested in the meager amount of farm animals the county had. In 1953, tilling area per animal was as high as 228 mu.[74] In comparison, much of Beijing suburb averaged 30 to 40 mu per animal, while the state's agricultural development plan aimed at 20 to 30. In general, despite its success in history, Pingyao was poorly positioned for the post-1949 planned economy, in which private finance was criminalized, private commerce largely demolished, and farming became the designated occupation of country men and women.

Except that beneath the canopy of agricultural collective, a strand of men and animals were not farming when others were. From the early years of collectivization to the final years of Cultural Revolution, the transportation sideline continued to pose opportunities for some, and endanger the socialist collectivism and economic equality of others. As the demand for

---

[72] For example, in 1940s DongQuan village 东泉村—one of the four major market towns in Pingyao, over a dozen households owned horse carts for business purposes. See Guo Baowang 郭宝旺 eds, *Dongquan Village Gazetteer 东泉村志*, Shanxi jingji chubanshe 山西经济出版社.110-112. Statistics from Pingyao Transportation Bureau shows that the county had 1270 horse-drawn carts in 1949. "Affairs of Transportation Bureau and suggestions for rectification 关于交通局的情况及整顿意见," PCA 14-1-1.

[73] Pingyao County Party Committee 平遥县委, "Reports on agricultural production, agricultural cooperatives and grain purchase 关于农业生产、农业生产合作社、收购粮食的报告总结, Feb-Dec 1953," PCA 3-1.2.1-27.

[74] Ibid.

transportation capacity grew during the 1950s industrialization, the horse-cart owning households were allowed various options that kept them in transportation while the countryside went through rural collectivization. They diverged into four categories: members of transportation cooperatives, independent households, or members of agricultural cooperatives with or without putting their horse carts into the co-ops. In Shanxi, even during the 1957 high tide of forming high-level agricultural cooperatives, the government specified that horse carts currently serving in transportation should not be collectivized into agricultural coops. The state's intention to maintain a mobilizable rural MPTs force had its consequences. As the unified purchase of grain began to reduce the average foodstuff consumption in the countryside, the transportation households' higher income provoked complaints from farming households.[75] In 1957, Pingyao tried to lower its annual grain reserve standard to 380 *jin* per person, angry peasants beleaguered the local cadres, "crying and brawling, threatening to hang themselves." Many protested that they were already hungry last year with a reserve of 450 *jin*, there was no way to live on 380 *jin* of unhusked grain. They grieved that not only peasants were treated so much worse than workers, those in farming were also inferior to those in transportation: "Hauling animal eats six *jin* grain a day and farming animal eats three. Wheelbarrow pullers [in transportation coops] earns 50 *jin* a month and peasants have 30!"[76] Households in transportation had been generally richer than average even before 1949. The peasants' anger was thus more provoked by the state's betrayal: a promise of equality on one hand and severe deprivation of farming households on the other.

Nor did the harsh treatment meant that common peasants were exempted from providing

[75] "Materials from Three-level Cadre Meeting held by Pingyao County Committee 平遥县委三级干部会议材料, Oct to Dec, 1957," PCA 3-1.1-22.
[76] Ibid.

MPT labor. Besides necessary hauling and moving things around the farming field, they were also called upon for earthwork at hydraulic and other infrastructural projects. But these were not recognized or paid as transportation work. The disparity did not disappear even at the peak of the rural collectivization when People's Commune engulfed all previously un-collectivized transportation means. The horse carts, in high demand and being more mobile, tended to slip into "black market" transportation whenever the tight grip of official mobilization slacked. In contrast, the MPT labor in infrastructural project not only had no chance of profiteering but suffered greatly from cadres' coercion that characterized many GLF building projects. Six thousand Pingyao peasants, joining those from five other counties, went to build Wenyuhe Reservoir in the neighboring Wenshui County in 1958. Even today, the memory of Wenyuhe haunts villagers in this area, particularly those from Pingyao. According to the 1961 investigation into cadre cruelty at Wenyuhe, in pursuing fast completion of the task, cadres "bound, beat, hanged, froze" many peasants, and punished slow or disobedient peasant workers by putting them through a "political training course," during which their meals were withheld, and they had to work longer hours and endure corporal abuse. The dossier is filled with graphic and horrid accounts of torture and death, showing a labor environment much worse than the Beijing reservoirs discussed in Chapter 3. In several cases, extremely sick workers were thrown out of the dormitory for the foul smell their rotten wounds or for having diarrhea and left outside to die. Many of those put into the "political training course" had allegedly damaged the push carts or stolen cart parts and were treated as on a par with those having stolen food or attempted to run away. It is hard to know whether the damages were actions of sabotage or unintended accidents. But the centrality of push carts in the accusations and ensuing punishments reveals a world of extreme deprivation in which there were nothing but push carts between the peasant

laborers and the muddy and frozen dirt they worked on. According to the investigation dossier, during the months at Wenyuhe, 62 Pingyao workers died from starvation and abuse, 68 were permanently disabled, while others were driven to madness, although the investigation did not count their numbers.[77]

The years following the GLF witnessed a declination of grain output in Pingyao. Roads and irrigation infrastructure took away some land, and the rest was weakened by increasing salinization. The proportion of laborers went down from nearly 40 percent in the FFYP to 30 percent of the rural population. To revive grain production, brigades were asked to invest more in fertilizer, mechanization, and expand irrigation. Many decided "to patch up what was lost in agriculture with what comes from sidelines." By sideline, at this point, the brigade leaders meant primarily transportation. Those with sizable horse-cart teams sent them to industrial cities such as Taiyuan or Yangquan over the winter. Those with lesser means hired their men out at train stations as porters.[78] From then on, the transportation teams under agricultural cooperatives became a permanent establishment that straddled over the urban-rural boundary, even when at times tremendous political force was used to pull them back, as we will discuss in Chapter 5.

When the brigade leaders were scratching their heads for funds in the post-GLF restorative years, Sun Yongzheng was wandering around Xiyoujia and nearby villages looking for unguarded produce. Married in 1958 when he was 19, Sun had a growing family to feed. When I met him in Xiyoujia in winter 2020, Sun was 81 years old, living with one of his sons in a handsomely built house with a neat, spacious courtyard. Still mentally acute and sociable, Sun

[77] "Materials related to Wenyuhe Reservoir compiled during the Rectification Campaign in Pingyao County 中共平遥县整风运动中对文峪河水库的情况整理统计材料, Jan 1961," PCA 3-1.1-40.
[78] "Briefs on the Three-level Cadre Meeting 三级干部会议情况简报," PCA 1-1-44. Page 51.

nonetheless avoided talking much about his life in the 1960s. He became the leader of the Xiyoujia horse-cart team in 1971 and spent most of the 70s in Taiyuan. When asked about what he was doing before 1971, he brushed it off self-mockingly: "I was just ambling and rambling, doing whatever I saw that there was to do 胡跑乱窜, 见甚做甚." In fact, his ambling and rambling left quite a record in Xiyoujia brigade archive, making him one of the "individuals with serious political and historical problems." These individuals added up around two hundred in Xiyoujia, a village of a little over two thousand population. Sun's personal dossier included materials compiled in 1965, 1970 and 1971. From what had been "revealed" by others and confessed by himself, Sun was engaged in stealing, gambling, speculating, receiving kickbacks, and embezzling from 1959 to 1971. Interestingly, it appears that he went through phases—his "wrongdoings" became increasingly more sophisticated, and he never returned to the less seemly and less lucrative, earlier "illicit" activities, except for a persistent fondness for gambling.[79]

His trajectory, as shown in the dossier, was one that evolved from thief to peddler to foreman. Sun's first recorded thefts were during the GLF years. He stole 80 *jin* of carrots in 1959, and in 1960, 200 *jin* of turnips. However, after he buried the turnips in the field, a flock of sheep dug half of them out. He grew even more audacious—or more desperate with toddlers at home—and attempted stealing grain from guarded wheat-thrashing field in 1964. It was 4am in a summer night when he got into the field. Trying to conceal his movement, he climbed up to unscrew the bulb, and got an electrical shock. The guard switched the electricity off, and Sun fled home. An acquaintance of his later reported that it took two months for Sun to recover from the shock which bit off a piece from his hand. Sun's final unsuccessful attempt was to steal corn

[79] "Sun Yongzheng Personal Dossier 孙永正个人档案" in "Xiyoujia Brigade Archives 西游驾大队档案," in *Archival Collection of Chinese Social History Research Center*, Shanxi University.

with another young man in 1965, after which his thieving career was cut short by the Four Cleaning Campaign.[80] Perhaps the Campaign did teach him a tough lesson; Sun shifted gears afterwards. He went to Taiyuan and bought himself a Flying Pigeon bicycle—a choice slightly more conspicuous than average villagers who purchased their Red Flag bicycles in the county seat—only 5km south to the village. "You couldn't do without a bicycle," He put it simply, "people needed bicycles to speculate 投机倒把."[81] In Xiyoujia, many rode the 120km (approx. 75miles) to Taiyuan with their bicycles loaded with millet, fruits, and salt for sale on the black market, risking being caught and put into "study sessions." Sun also traded in the other direction—once he purchased eight bulbs in Taiyuan and came back to exchange them with foodstuff. He spent a lot of time traveling from one market town to the next, buying piglets in nearby Nanzheng village, for example, and selling them in a few months to Qixian, a county north to Pingyao. He also bought and sold vinegar and bran—marketable things that he could get his hands on. Sun worked harder and peddled more than most black marketers, but his income from such smalltime peddling remained meager. Starting from 1969, 30-year-old Sun decided to put the connections he had built through years of "ambling and rambling" to good use. He refashioned himself into a foreman of construction and transportation. He befriended someone in charge of the Station for Food Purchase and Sale in Hongshan, a town east to Nanzheng township where Xiyoujia is located. With the consent of the brigade leadership, he led a team of men from Xiyoujia to construct the buildings and the cellars for the station. During this time, when the demand arose, he began to organize coal shipping for the station as well. However, when the Campaign of One Strike and Three Antis 一打三反 started in early 1971, Sun met with

[80] "Sun Yongzheng personal dossier."
[81] Interview with Sun, November 2020

the most forceful persecution since the Four Cleaning.[82] It is hard to say what would have become of him had an older brother not been brigade head 村大队长.[83] In any case, after rounds of "study sessions" and surrendering his "illegal income," Sun decided he would do everything he could to get out of the village.

It is probably fair to say that both Sun's family background and his entrepreneur character made him the foreman of Xiyoujia's horse-cart team. Sun's "poor peasant" class label afforded a measure of protection from more severe punishment that his "wrongdoings" could in theory invoke. In addition to his brigade-head brother, one of Sun's sisters was a resident of the provincial capital, with a job and hukou in the city, who perhaps helped him with the transition to the city. Sun did not have an official title for this job but living in Taiyuan with a generous stipend was better than anything people could do in Xiyoujia. Before Sun's attempt to find Xiyoujia horse carts a somewhat permanent employment in Taiyuan, the production teams used to put the carts into transportation only in winter. Other men like Sun had taken them to coal mines in Pingyao and neighboring counties. Sun told me that roads to and from the coal mines were so dangerous that death and crippling injuries had occurred to cart drivers in those winters. To find a long-term employment in Taiyuan, he needed to form a relation with Taiyuan Transportation Bureau—where their team would be registered—on one end and acquire layers of approvals from brigade, commune and Production Committee of the Pingyao County 县委生产组 on the other. Once all these administrative organs gave the green light; the Taiyuan Bureau assigned Xiyoujia's transportation team to the northern suburb, where they would serve Taiyuan

[82] Campaign of One Strike and Three Antis: Strike down the counterrevolutionaries' sabotage activities; Anti-corruption and stealing; Anti-speculation; and Anti-waste and conspicuous consumption.
[83] "Sun Yongzheng Personal Dossier."

Steal Work for the next eleven years.[84]

The Xiyoujia transportation team, like hundreds of other similar teams from the countryside, thus devoted their muscle power to the urban, industrial economy in order to replenish the rural, collective economy. Sun led a team of eight or nine horse-drawn carts drawn from five production teams. Each cart required four mules and two men. Sun also had several push carts that he deployed as needed. On an average day, roughly half of the Xiyoujia transportation team were in Taiyuan, while the rest remained in the village supporting agricultural production. But even during the busiest agricultural season, at least two or three horse carts had to remain in Taiyuan. "We were their [Taiyuan Steel Work's] hands." Sun explained, "they knew spring plowing was important but other times their jobs mattered more."[85] Taiyuan Steel Work was a major state-owned enterprise and hired many transportation teams like Xiyoujia's. TSW provided space for them to build a stable and a dormitory, and free coal for heating. Other than that, the Steal Work had no obligation to their welfare. Food supplies for men and animals were shipped from Xiyoujia, for which the brigade needed to put in extra labor power. Wei Ming, another villager I interviewed, once hauled two hundred and fifty kilograms of animal feed with a pulling cart 平车 to Taiyuan. Wei went with five or six young men like him. They had to move fast in order to limit themselves to one night on the road, lest they incur excessive lodging expenses. By the time he arrived in Taiyuan, his feet were swollen.[86]

Sun's role was to obtain work from TSW and ensure it was completed safely and punctually. When asked to carry out a new task, he would ride his bicycle along the designated route to the destination, making sure that his team could work with the given physical condition

[84] Interview with Sun
[85] Interview with Sun.
[86] Interview with Wei. November 2020.

and to decide how many and which carts to use.[87] If the workspace was too small for horse-drawn carts, he would summon his smaller, pulling carts powered by a man or a donkey. Wei Ming spent three months in Taiyuan in 1977, hauling bricks with pulling carts. He still remembered vividly how thirsty he was in those days. Every cart was loaded to five hundred kilograms. "I trudged along, stopping every few steps. My sweat just poured down like rain. And there wasn't always drinkable water nearby." When I met Wei Ming in his house, the then-65-year-old Wei was recovering from lumbar disc surgery and had been restricted to indoor light activities. The back-breaking labor of his youth had returned as constant pain in his later years. Wei remembered receiving a stipend of 0.8 to 1 yuan per day to move bricks, on top of full work points by his production team's standard.[88] Compared to Wei, Sun enjoyed higher stipend—2 yuan per day—and much less onerous work. Differences in income between management and labor did not exist in village agricultural work but was common among the hired-out transportation teams.

After Sun Yongzheng accepted work from the TSW, he would dispatch the carts. The drivers would obtain a signed receipt upon the completion of the work, noting the details of their service: the transportation volume, the distance, and the amount of fee incurred. On a normal day, one cart would earn 30 yuan. By the end of each month, Sun would bring the receipts to Transportation Administration Station of Taiyuan Northern Suburb, where the accounts of local transportation consignors were held. The administration station transferred the fee to the Bank of Agriculture, and the Bank transferred it to the Pingyao Rural Credit Cooperatives. The brigade withdrew the money from the cooperative, and pro-rated it by workload contributed by the

[87] Interview with Sun
[88] Interview with Wei.

production teams. At the end of year, the TSW and the Xiyoujia transportation team would renew their contract, which Sun brought back to Pingyao for annual approval from the county government.[89]

The horse cart drivers' work confined them at the city's social and spatial margin. They served the TSW under watchful eyes. Whenever the carts were leaving the TSW compound, they would be subjected to an inspection at the gate. "Only empty carts would be allowed to leave. You could carry things in, but nothing out."[90] Horse-drawn carts were banned from entering main streets. One of the first things they learned while working in the city was to know where they could go and where they could not. Meanwhile, they had to be extremely careful at harnessing the animals when driving through streets crowded with bicycles. Any accident could mean loss of the job, not just of the individual driver, but the entire team. However, doing transportation work in the city was still preferable to farming in the village. For young men like Wei Ming, they needed to be on good terms with brigade and team leaders to get such opportunities. MPT work outside of village provided stipends and meals. The work was attractive enough that even dangerous jobs, such as providing MPT for reservoir construction, were highly sought after. Wei narrowly dodged a fatal incident while doing earthwork at Wuquwan reservoir in 1972. The other four men working with him were buried under a soil collapse while he was sent away to carry explosives.[91]

While the Xiyoujia transportation team served in Taiyuan, the transportation modes and means within the village hardly improved, and in some respects even deteriorated. The road in the village was made of un-hardened dirt. After a rain, it became so muddy and swampy that

[89] Interview with Sun
[90] Interview with Sun
[91] Interview with Wei.

carts could hardly pass. After a storm in the 1970s, the road in front of the Marketing and Sale Cooperative at the village center collapsed. It left behind a waterlogged hole in which a cart was swallowed up and a mule drowned. A major reason for the lack of road maintenance lies in the administrative and fiscal structure of Xiyoujia, where the basic accounting unit was the production team. The village—administratively the brigade—had no financial resources to repair the road. As we will see in next chapter, how to structure the rural finance was a critical issue that the "Learn from Dazhai" campaign tried to address. As for the transportation means, the amount of draft animals and push carts remaining in the village were far from sufficient. Wei Ming recalled that his production team only had about five push carts, made by a carpenter in a neighboring team. The production teams purchased the metal parts and tires from the county's state-owned hardware store, and the carpenter finished the rest. During the collective effort to level the farmland at the peak of the Learning from Dazhai Campaign, Wei spent several winters moving soil around the farmland with a pushcart. The locals called this "tucking and padding the land" 插垫地. This practical, literal description of the work used by the villagers differs from the official language—"soil improvement"—a vaguer phrase that hints at scientific expertise and assumes the purposefulness and effectiveness of the activity. Wei found my use of "soil improvement" humorous, commenting, "I guess it could be called that in your speech." For Wei, "tucking and padding land" was the worst kind of labor. It was onerous, counterproductive, and paid no stipend. Sun Yongzheng considered himself lucky for not having to do that. "That [work] was just agonizing." During those winters, while villagers trudging in the freezing field, most of the Xiyoujia mules and their drivers were busy in the city. However, the tension between the differences of MPT work at home and in the city had not become severe enough in Xiyoujia to draw Sun Yongzheng and his men back to the village.

The Final Note

In 1975, the "Learn from Dazhai" campaign intensified. The campaign included a wave of suppression of rural sidelines throughout Shanxi. Pingyao conducted a county-wide investigation into the sidelines, particularly hired-out MPTs, of its rural collectives. The investigation found rampant outflow of labor, leaving farm work behind, and selling MPT services to industrial and mining enterprises. The fact that Xiyoujia did not make it onto the list of more than a dozen brigades chosen for "typical surveys" indicates that their case was considered mild. In some brigades, production team leaders personally headed the transportation team, busy with pulling carts for coal mines even during the spring plowing season. In others, team members were allowed to individually own carts, resulting in the demolishing of the collective's carts to assemble private ones with their parts. Many of the brigades investigated paid higher stipends to those in MPTs than Xiyoujia did, and drew a larger proportion of both animal and human labor out of farm work.[92] These activities, deemed severely undermining to the collective economy and to socialism itself, provoked intense fractional struggles in many places, particularly in the rural bastion of Maoism—Dazhai. For what end rural labor should be used was not simply an economic question but a political one. I discuss the economics and politics of Dazhai through the lens of muscle powered transportation in the next chapter.

[92]"Problems, manifestations, and typical examples of capitalist tendencies as revealed by communes during the Three-level Cadre Meeting held by County Party Committee in January 1975 县委一九七五年一月三干会上各公社揭发资本主义倾向的问题、表现、典型事例," PCA 3-1-35; "Reference materials for Pingyao County Party Committee Office of Administration 平遥县委办公室参阅资料," PCA3-1-43-1102; "Investigation materials on sideline problems in communes, brigades and teams 关于各公社、县驻大队工作组、有关各队副业问题的调查材料, Aug 1975," PCA 3-1-64-1122.

Chapter Five.

The Dazhai Model: MPT in the Heart of Maoism

Introduction

It is difficult to tell the story of Dazhai without considering its environment. In fact, no history of northern China can be written without acknowledging the hostile climate and geography that have shaped this ancient fluvial land. William Hinton began his book *Fanshen* with a vivid description of the exhausting cycles of drought and flood that northern peasants endured year after year. "This ancient lag, this ever-recurring cosmic overlap of heat and cold, cold and heat, brings a violence to the climate of all North China that is incalculable in its effect," he wrote. Hinton went on, "From February to June cold winds blow from Mongolia outward toward the sea, gripping all the land from the Yangtze to the Amur in drought. Then after weeks of hot and pregnant calm, the skies reverse themselves. Fierce torrential rains sweep in from the Pacific, flash floods carve up the earthen hills of [Shaanxi] and [Shanxi], swell the rivers with mud-clogged water, and inundate the flat plains bordering the sea."[1]

For Hinton, the perpetual procession of flood and drought only partially explains the misery of the peasants. He believed that the feudal system under which North China operated before Land Reform made it impossible to improve farming conditions. Selfish landlords, an ineffective Nationalist bureaucracy, and the heavy tax burden all prevented collective investment in irrigation and other means to enhance land productivity. Hinton observed that, without capital for sidelines, at least half of the rural population was idle for five months of the year. "Unused resources, wasted manpower, declining production—these were the fruits of a system that in the

[1] Hinton, *Fanshen*, 3.

long run could only bring disaster on its victims and beneficiaries alike."[2] The collapse of this system in front of his eyes filled him with such hope and enthusiasm that his stirring encomium to the revolution continues to inspire readers to this day.

Hinton experienced this struggle between "man and nature" and between "man and man" first-handed in the late 1940s in Long Bow village, Changzhi, in Southeast Shanxi under the west face of Taihang Mountain. If one rode a horse northeastward along the Taihang for xxx days, covering approximately 200km of mountain roads, as many Communists cadres did at the time, one would reach Xiyang, a county nestled in flood-carved earthen hills that became famous less than two decades later for the Dazhai Brigade, a beacon of agricultural production held up to inspire the entire nation. Dazhai was to represent a new world, one completely different from what Hinton witnessed. The revolution had destroyed the oppressive social barriers Hinton lamented, though its iron fist continued pounding on rural society to vigilantly prevent the rise of a new exploitative class. Production was intense. In Dazhai, every inch of land was turned over and no muscle went unused. The winters were anything but idle. In fact, in the memory of Chinese peasants, "learning from Dazhai"—a campaign that lasted longer than the Cultural Revolution itself and was often used to stand in for the Cultural Revolution in peasants' recollection of the period—is viscerally associated with heavy labor in the wintry months, the exhaustion of digging and moving frozen soil, and waking before dawn to work in a cold sweat and on an empty stomach.

This chapter places muscle-powered transportation in the context of Maoist collective farming in the 1960s and 1970s. It shows how Maoist collective farming differed fundamentally from traditional farming and why, under the system of collective labor organization, the

[2] Hinton, *Fanshen,* 36.

allocation of MPT forces became a crucial source of tension. In the early 1970s, Dazhai famously launched a campaign titled "Carts and Horses Return to the Farm 车马归田" that forced MPT labor in the urban industries to go back to rural collectives. This campaign was initially carried out only in Xiyang County by the Dazhai's leading cadre, Chen Yonggui. But due to Dazhai's status as a supreme model, collectives across the country followed Xiyang's lead.[3] Although the state had instituted urban-rural division through many restrictive policies—the household registration system being an important one—it never entirely forbade rural MPT from participating in urban production, as the previous chapter has shown. Dazhai's campaign was thus a grassroots initiative aimed at consolidating the rural collective economy. Dazhai believed that MPT's engagement in urban industries undermined the rural collectives in two ways. First, it kept a significant portion of animal labor and some of the strongest male labor away from the villages. The Dazhai-style rural development was extremely labor-intensive. It required almost all full-bodied men to work on infrastructure projects, such as land reclamation and irrigation, for most of the year. Second, the mobility of the MPT forces made them critical vehicles for black market activities. Dazhai upheld an uncompromising ideal of rural self-sufficiency, which saw any free exchange not sanctioned by the state as capitalist in nature. Thus, cracking down on the transportation sideline was a defense of the ideal Maoist peasantry by the most ardent Maoist rural cadre.

This chapter reconstructs the system of agricultural production in Xiyang to provide a

[3] The political scientist Tsou Tang was the first in the West who paid attention to this movement, although years after its occurrence. Tang Tsou, Marc Blecher, and Mitch Meisner, "Organization, Growth, and Equality in Xiyang County: A Survey of Fourteen Brigades in Seven Communes (Part I)," *Modern China* 5, no. 1 (1979): 3–39. "Organization, Growth, and Equality in Xiyang County: A Survey of Fourteen Brigades in Seven Communes (Part II)," *Modern China* 5, no. 2 (1979): 139–85. See also "Tsou, Tang. Papers," University of Chicago Library Special Collections. https://catalog.lib.uchicago.edu/vufind/Record/8530965.

comprehensive understanding of the labor and technology of collective farming under the Dazhai model. In doing so, it also makes arguments pertaining to Maoist knowledge production and to the nature of collective farming. It demonstrates how Dazhai initially adopted traditional practices, such as terracing and gully damming, to improve land and address the north loess plateau ecological challenges. Collectivization changed rural labor organization and provided cadres with a mass labor force to carry out these tasks on an unprecedented scale. The expansion enabled by collective labor input transformed traditional conservation practices, making them much more environmentally destructive.[4]

This chapter further shows that rural cadres played a central role in knowledge production for collective farming. Collective farming could not have functioned without a corps of cadres to make plans, mobilize the labor force, and inspect the work at every step of production. Labor management was a form of knowledge crucial to collective farming. Moreover, in its Mao-era incarnation it was a new practice, one that scarcely existed in traditional household farming. Dazhai was lauded for its strong party leadership in daily production. Its celebrated cadres, including Chen Yonggui, Jia Chengrang, and Guo Fenglian, portrayed themselves as exceptionally knowledgeable, competent, charismatic, and selfless. This portrait of an ideal set of cadres was, in turn, presented by the party to the rest of the nation as the exemplar of rural governance. Their perfect image was belied, however, by a stubborn reality in which cadres could rarely meet the onerous demands placed on them.

[4] Judith Shapiro, *Mao's War against Nature: Politics and the Environment in Revolutionary China*, (Cambridge: Cambridge University Press, 2001). Chap. 3; Peter Ho, "Mao's War against Nature? The Environmental Impact of the Grain-First Campaign in China," *The China Journal 50* (2003): 55–56.

This chapter portrays the violent struggles of the Cultural Revolution in a new light.[5] It contends that much of the era's turmoil should be understood as driven by a desire to defend the collective production system and to force both cadres and peasants to meet the standard set by models like Dazhai. In short, political struggles should be seen as an integral part of the production system, serving as a technology of discipline and mobilization.

This chapter is based on archival sources from Xiyang County Archives, particularly those of the Xiyang County Party Committee and Dazhai Commune. The Dazhai Commune encompassed dozens of brigades, including the model brigade Dazhai. In this chapter, "Dazhai" refers to the model brigade, while the commune is always referred to as "Dazhai Commune." Readers may keep this distinction in mind to avoid confusion.

1. Xiyang before Dazhai

Even by North China standard, Xiyang's natural environment is unfavorable to farming. Its territory, which spans 100km east to west and 34km north to south, is covered almost entirely by rock mountains and loess hills. With an altitude ranging from 940 and 1400 meters, the frost persists for a long time and the growing season is only 140 to 170 days long. Rivers, mainly Pine Creek River 松溪河 and its tributaries, have carved 310 thousand short flood gullies as well as countless gorges, walls, columns, caves, funnels and grooves through the land.[6] The appearance of the eroded land is both depressing and awe-inspiring, showcasing "the power of natural

[5] More on the Cultural Revolution, see Joel Andreas, *Rise of the Red Engineers: The Cultural Revolution and the Origins of China's New Class*, (Stanford, Calif: Stanford University Press, 2009), Yiching Wu, *The Cultural Revolution at the Margins: Chinese Socialism in Crisis* (Cambridge, Mass: Harvard University Press, 2014). For an understanding of cultural revolution through the lens of production, see Covell F. Meyskens, *Mao's Third Front: The Militarization of Cold War China* (Cambridge, United Kingdom; New York, NY: Cambridge University Press, 2020),

[6] "Investigation report on the plan of Xiyang agricultural development 昔阳县农业经济发展规划调查报告 1957," Xiyang County Archives (XCA) 3-1-188.

processes as well as the magnitude of the task required to bring these forces under control" to any beholder.[7]

Although the loess layers are ancient, the human struggle with the nature in Xiyang began much later. Most of the mounds were covered with trees and shrubs until the late-nineteenth century. A major flood occurred in 1880s but did not cause severe damage to the land or dwellings. In the early twentieth century, the population grew significantly as refugees from other parts of the country came to settle in Xiyang. From the late Qing to the mid-1930s, the population is estimated to have grown more than sevenfold.[8] They slashed and burned the mountain vegetations and terraced the slopes, using much of what was left of the woods, including their roots, as fuel to survive the long winters. By the early 1950s, 70 percent of the farmland in the county was terraced, with more than a third of it on hillside slops of over 30 degrees; indeed, terraces with a gradient of 50 to 60 degrees were not uncommon. Such steep and high farmlands were extremely vulnerable to water erosion. An estimated 1 to 1.5 ton of fertile topsoil was lost per mu of land annually.[9]

As the soil disappeared, the stone piles that supported the terraces often collapsed. By the early 1950s, decades of individualized land reclamation had resulted in extremely fragmented terraced land, with an average area of 0.4 mu per plot. These stone walls, which marked the

---

[7] Vaclav Smil, *The Bad Earth: Environmental Degradation in China*, (London: M.E. Sharpe; Zed Press, 1984). 40.

[8] According to the *Xiyang Gazetteer* compiled in 1915, the number of male laborers in the county was between 4k to 5k. In 1936, there were 35476 male laborers and 28958 female laborers in the county 按民国四年《昔阳县志》考证, 清代全县男劳力 4000-4500 人,1936 年全县男劳力 35476 人,女劳力 28958 人.*Xiyang Gazetteer 昔阳县志*, (Zhonghua shuju 中华书局, 1999). This shows that the number of male labor in 1936 was about seven times of the late Qing. Given that family size was likely to be bigger in 1936 as population became more settled, the entire population may have grown more than seven times.

[9] "Investigation report on the plan of Xiyang agricultural development, 1957," XCA 3-1-188.

boundary of each plot as well as supporting terraces, occupied nearly 30% of the land. Strong summer storms tumbled them, damaging crops on their way down. Rebuilding the stone piles was arduous work; at 1950s levels of labor input, it took four to five years to rebuild walls lost in one particularly stormy summer. Even without the devastating power of summer storms, these walls needed to be regularly maintained, straightened, and fortified throughout the year, or the terraced land would quickly revert to barren slopes.[10] As a result, land preparation was mandatory and extremely labor-intensive, but poorly rewarded given the productivity of the land.

Although gullies and mounds dominated Xiyang's landscape, natural endowments varied across the county. Some areas are flatter, had better access to water, and, since the beginning of coal mining, had more abundant fuel sources. The area around the county seat had the best land and highest population-to-land ratio. It was also characterized by gentler slopes, broader river valleys, a relatively mild climate, and abundant mineral resources such as coal and iron, along with transportation access to regional industry and market centers. The east and west ends of the county extend to remote, high mountains. They had a long frost season and good pastureland, so people in these areas traditionally relied more on husbandry than on agriculture. Half of the county falls between these two ends, without particular advantages in either agriculture or husbandry, and was subjected to the cyclical tyranny of spring droughts and summer floods.[11]

The first few years after 1949 saw a gradual expansion of land reclamation, as the human and livestock population slowly increased. Collectivization in the form of "elementary agricultural co-operatives" in 1952 improved grain output in some communities. As part of the

[10] "Grasp the rule of production increasing, strive to make continuous production leaps 掌握增产规律 力争生产持续跃进, 1960," XCA 3-1-236.
[11] "Investigation report on developments and changes in people's work and life of the entire county 关于全县人民生产生活发展变化情况考察报告, 1956," XCA 3-1-103.

Communist's base area, Xiyang's mutual aid teams began as early as in 1942 under the Party's organization, out of which one elementary cooperative had already been formed by 1952. Like in other "revolutionary old areas," the Party chose the most loyal communities with strong cadre leadership to build the first new cooperatives.[12] After receiving training in the Jinzhong Municipality, local cadres from four chosen Xiyang villages established their cooperatives under the direct assistance of higher-level cadres from the county and the municipality. Also like in many other such areas, these early cooperatives succeeded in raising agricultural output. The co-op had a higher rate of labor input as seniors and women were attracted to work for the compensation. Collectivization also facilitated land consolidation, which even at a small scale created more valuable land in places like Xiyang where land fragmentation had been extreme.[13] Perhaps the most important reason for the higher yields was the change in crops. Previously, the three main crops—millet, corn, and legumes—were planted at a ratio about 4.5:4.5:1. The cooperatives expanded corn planting, which resulted in a higher output per unit. Agricultural collectivization prioritized high-yield corn at the expense of hardy, indigenous crops such as millet and soybeans.[14] This change had considerable labor and environmental implications. Millet is much more resistant to drought than corn, and legumes help retain nitrogen in the soil.

---

[12] Friedman, Seldon, and Pickowicz, *Chinese Village, Socialist State*. Pauline Keating, *Two Revolutions: Village Reconstruction and the Cooperative Movement in Northern Shaanxi, 1934-1945*, (Stanford, Calif.: Stanford University Press, 1997).

[13] "Report on the experiments on organizing agricultural cooperatives and mutual-aid teams 试办农业社与互助合作运动的计划报告总结, 1952," XCA 3-1-26.

[14] "National soybean production fell from a peak of 10.1 million tons at the outset of collectivization in 1957 to 7.3 million tons two decades later." Chinese official statistics quoted in N.R.Lardy, "Food consumption in the PRC," in *The Chinese Agricultural Economy,* Randolph Barker, Radha Sinha, and Beth Rose, eds., (Boulder, Colo.: London: Westview Press; Croom Helm, 1982), 147-62. Cited by Brian Landor and Thomas David DuBois, "A history of soy in China" in *The Age of the Soybean, An Environmental History of Soy During the Great Acceleration*, edited by Claiton Marcio da Silva and Claudio de Majo, (White Horse Press, 2022). 29-47. fn.41.

The transition away from these crops increased demand for irrigation and artificial fertilizers.

The model co-operative in Xiyang at this moment in history was White Goat Valley (Baiyangyu). Two thirds of all Party members in the village joined the cooperative, while one third stayed in mutual-aid teams to stay informed on the teams' affairs and continue the persuasion for further collectivization. The collective leader was Wang Dianjun, a hardy local cadre who procured food and rescued soldiers for the Party throughout the war era. The White Goat Valley co-op demonstrated that at this stage, economies of scale by and large benefited the members. Members pooled their household grain reserves and used them to purchase farming tools and fertilizers. Their output per mu reportedly reached 237 jin, 40 jin higher than the village average. Each individual retained 1103 jin of grain, more than double that of an independent household. However, the co-op's aggressive move to collectivize livestock met was with contempt. But the Party's determination was more steadfast than the peasants' resistance. The twelve party members within the co-op held strong and eventually pushed for the collectivization of all 164 draft animals.[15]

The fact that the Xiyang local cadre force was powerful, loyal, and more attuned to the Party's various new initiatives, as seen in their summaries and reports of local achievements, is manifest when contrasted to areas liberated later, such as Pingyao (Chapter 4). Wang Dianjun's cooperative was said to have made some technical breakthroughs, including having solved a persistent pest problem (谷子钻心虫问题) in millet and created a new seedling selection method. An official report described their five-step hoeing method: "The first shallow and the second deep, the third forms a round mound, the fourth scratches just the surface, and the fifth

[15] "Report on the experiments on organizing agricultural cooperatives and mutual-aid, 1952," XCA 3-1-26.

clears out all weeds and removes all muds."[16] This focused description of labor techniques resembles those of the work-methods on the Huai River (Chapter 1), even if they were less systematically summarized and not broadly promoted. Nonetheless, these techniques and their perfection were explicitly linked to collectivization. It was said that techniques belonging to the individual body were created under collective labor organization. Xiyang cadres enriched their reports with such appealing technical details, which were absent from similar reports from places like Pingyao. This indicates their strength in operating within the system of socialist knowledge production, even when Xiyang was poorer and its population less educated than Pingyao.[17]

The villagers' hopes for a better life kindled by cooperatives began to dim with the launch of the Unified Purchase of Grain in 1953. As cooperatives enrolled more and more households over the next three years, cadres were preoccupied with carrying out collectivization. As they focused on this, the attention to productivity-related issues decreased significantly. More importantly, as more and more production decisions had to be made at the cooperative level rather than the household level, cadres were confronted with problems they had never faced before. For example, the co-op, not the individual households, now had to collect and select seeds for future planting. In many co-ops where leadership had not yet built a team to which various tasks could be properly delegated, seed selection or other issues could be easily neglected, costing the harvest the following year.[18] Collectivization caused even more damage to forestry and husbandry. It started with the pre-collectivization felling of trees and slaughtering of livestock due to unfair appraisals and continued with neglect under collective ownership. By

[16] "头锄浅，二锄深，三锄上圆堆，四锄划破皮，五锄不留汗滩不留草," ibid, XCA 3-1-26.
[17] On base area literature, see Tony Saich, "Introduction: The Chinese Communist Party and the Anti-Japanese Base Areas," *China Quarterly* 140 (1994): 1000–1006.
[18] "Investigation report on developments and changes in people's work and life of the entire county,1955," XCA 3-1-103.

1956, the internal report from the Xiyang Party Committee reported that the rural economy had become "morbidly stagnant 死滞."[19]

In 1955, the "morbidly stagnant" economy collapsed into a crisis that sent Xiyang cadres into months of tumult. Neighboring Hebei Province notified the Shanxi Provincial government that many villagers from Xiyang had "outflown" to Hebei and requested the Shanxi authorities to bring them back immediately. Concerned with the negative image such outflow would cast on Shanxi's administration, the Provincial Party Committee sent an investigation team to Xiyang. It turned out that nearly fifteen hundred Xiyang peasants were in Hebei and other Shanxi municipalities. The outflow started from March and continued throughout the summer when farm work was desperately in need of hands. Several villages had only half of their full-bodied labor force at home to attend the summer harvest. In the worst case, Cart Temple Village (chesi cun 车寺村), located on the Hebei border, saw eighteen families and over fifty male laborers flee, leaving 140 mu of untilled land.[20] The investigation found that in some ways this behavior was normal. Many Xiyang peasants had family in neighboring areas and were accustomed to leaving home to find short-term employment elsewhere. Given that neighboring Hebei was composed of fertile lowland, short-term employment there had long been a source of income necessary to supplement the poor farming output in Xiyang for many peasant households. The climate difference between the lowland and highland creates a convenient time difference in farm work that allows the peasants to work across the border. However, what happened in 1955 went far beyond the traditional seasonal wage labor migration.

---

[19] "A comparison of the peasants' production and living standard between before and after the war 战前战后全县农民生产生活水平对比, Sep 1956," XCA 3-1-102.
[20] "Report on persuading people who blindly out migrated to return home and resume production 关于动员盲目外流群众回乡生产的报告 1955-7-17," XCA 3-1-77.

Only a fraction of those in Hebei found employment; the rest stayed with relatives, begged along the streets, or tried their hand at burglary. According to a report the Xiyang County Committee sent to the Provincial Committee, these people employed various "trickeries" to attract attention and win sympathy. Some "intentionally wore rags to appear destitute," while others "made jingles and painted Shanxi in a bad light." They told Hebei passersby that "there's no [natural] disaster. It's the government that made me so poor."[21] Such descriptions show vividly that the Xiyang officials held no sympathy but indignation at these peasants for the embarrassment they brought. Another report mentioned that many peasants, outflown or not, purchased expensive dried foods from Hebei, which "resulted in their households accumulating great debt and negatively impacted the work of the Agricultural Credit Co-op and the Supply-and-Market Co-op." Clearly, the regional authorities framed peasant behavior as of imprudence or even extravagance, rather than of desperation.[22]

The desperation was indeed a result of local cadres' excessive extraction of grain to boost their own credentials under the Unified Purchase Policy. In the villages where outflow numbers were highest, cadres intentionally reported a higher estimated output and sold an unrealistic high proportion of the harvest to the state. As a result, each individual was only able to retain 150 to 200 jin of grain, barely enough for basic survival of several months. Many sold their livestock and farming tools to purchase dry foodstuff from Hebei. After they ate up these highly priced sweet potatoes and turnips, they dug up wild herbs and plucked tree leaves. Edema became widespread.[23] In hindsight, the episode appears as a dress rehearsal for the Great Famine.

---

[21] Ibid.

[22] "Several major problems concerning the tense situation in villages 关于农村紧张情况的几个主要问题 1955-7-5," XCA 3-1-77.

[23] "Investigation report on peasants' out migration from Haojia Village, Dingyu District, Xiyang County 昔阳县丁峪区郝家村农民外流情况的调查报告 1955-8-15," "Investigation report on

At a minimum to serves as a reminder that the Great Leap Forward was not an aberration, but a likely destination of the innate political and economic logic of Chinese socialism.

Xiyang's 1950s experience also had a spatial characteristic typical of revolutionary base areas. Friedman, Pickowicz and Seldon have shown that the Communist state's rewards to peasants in northern revolutionary base areas was largely rhetorical.[24] During 1950s collectivization, the Party first tried out the social and economic programs that resulted in broad rural impoverishment and political distress in these loyal base areas, confident in the peasants' support but more so in the strength of local cadres to execute the Party's directives. These directives ended up enlarging instead of diminishing the economic gap between peripheral, poor areas and central, plain areas. One irony emerged in this process was that the base areas' remote location and the closeness to provincial boarder, which once served the Communists well in their political and military maneuver, were now exploited by the peasants for their own survival. Both the Communists' war-time maneuvers and the peasants' quiet outflows were considered illicit by state authorities of the time. As time went by, "Hebei" became a place name that appeared in Xiyang official documents more often than not related to some forms of peasants' underground activities that cadres vigilantly sought to forestall.

Xiyang was certainly not unique in experiencing a deadly stagnation at the shock of collectivization. To gauge the extent of peasants' hardship, the central government initiated a nationwide survey to compare contemporary rural livelihood with that of 1936, a year when the growing economy of Republican China had not yet been disrupted by the Sino-Japan war. The result was somber. Although the grain output per mu was about 10 percent higher than pre-war,

---

pesants' out migration from Chesi Village, Gaolao xiang, Xiyang County 关于昔阳县皋落乡车寺村农民外流情况的调查报告 1955-8-15," XCA 3-1-77.

[24] Friedman, Pickowicz and Seldon, *Chinese Village, Socialist State*.

with the population growth the per capita output was only approaching the 1936 level. Considering that a significant part would be subject to the United Purchase, the per capita grain consumption was obviously lower than before the war. The heavy burden of the grain tax, in addition to the cost of restoring land, road and houses, put the entire Xiyang population under approximately 2 yuan per capita of debt to the state.[25] Meanwhile, the rural economy had become less diversified and less balanced than the pre-war time. Compared to 1936, the production output of agriculture had increased about 11 percent by 1956, while forestry dropped a significant 23 percent and husbandry 15 percent. This change in balance was not limited to just Xiyang, as demonstrated by the steep increase in the price of forestry and husbandry products, which rose by 48 percent and 33 percent respectively. Collectivization and the Unified Purchase of grain had already distorted the structure of the rural economy and exacerbated the scarcity of forestry and animal products.[26]

To revive the economy, the central government turned to policies encouraging non-agricultural production in the countryside. In 1956, Xiyang made new plans to pursue a more diverse and balanced economy. The plan for the central, flatter area of the county was to primarily focus on grain production, with a small portion of valley land allocated for vegetables, and coal and iron mining would be developed where such resources were available. The mountainous area at the east and west ends of the county should primarily focus on forestry and husbandry. In particular, husbandry in those area had the potential "to generate income more than three times that of agriculture." For the remaining areas without particular advantages, they

[25] Matthew Lowenstein, "Return to the Cage: Monetary Policy in China's First Five-Year Plan," *Twentieth-Century China* 44, no. 1 (2019): 53-74.
[26] "Investigation report on developments and changes in people's work and life of the entire county, 1956," XCA 3-1-103.

should strive for "comprehensive development" in agriculture, forestry, husbandry and other sidelines. Such a plan shows that county leaders fully recognized not only the variance of environmental and economic conditions but also the profitability of non-agricultural production in parts of the county.[27]

Under the new policies, it was not orchards or coal mines requiring long-term investment that began to boom, but rather transportation sidelines. Transportation sidelines made use of readily available muscle power and promised quick and easy cash income. One year into the new policy, a third of Xiyang's total sideline income came from their mule-drawn carts: 2540 laborers and 7536 animals formed more than 130 teams "working in long-term sideline production" in transportation and construction. Cooperatives in the mountains sent out their men and horses, as did cooperatives around the county center. Except for hog raising and some handicrafts, other profitable sidelines involved crude exploitation of natural resources, such as saltpeter extraction and simply "slashing the mountain" for timber, charcoal, and herbal medicine. These sidelines rapidly improved the cooperatives' financial condition. In just nine months in 1956, sideline income per household amounted to a gratifying sum of 29.1 yuan. Encouraged by the improved financial condition of the cooperatives due to sideline income, cadres decided to allocate more labor to sidelines in the winter, rather than farmland maintenance and infrastructure building. They also continued to invest in transportation resources by purchasing more horses and carts. These investments were meant to prepare for the possibility of a bad harvest, in which case sideline income would have to make up for lost agrarian revenue.[28]

---

[27] Ibid.

[28] "Summary of sideline production in the previous year and report on the winter sideline production plan, 关于一年来副业生产工作总结和冬季副业生产工作计划报告 1956-11-14," XCA 3-1-97.

The heavy labor input in transportation and construction peaked during the Great Leap Forward, as did the scraping of natural vegetation. Xiyang's cheerful report on GLF sideline production describes relentless attacks on nature: "…Sixty-five types of sideline production were undertaken during the winter of 1958. These include chopping 850,000 pieces of mountain goods for 210 thousand yuan, slashing mountain grass and twigs 5 million jin for 150 thousand yuan, digging herbal roots 78 thousand jin for 17 thousand yuan, hunting predator animals, transportation, and weaving for 70 thousand yuan…" Most of the mountain goods were cut down in a "thunderstorm-style" mass assault. In Dingyu Commune, some 3140 laborers working on a copper mining project were temporarily drawn to "slash the mountain." In three days and two nights, they cut down 15800 wooden poles, 49,000 jin in twigs, 18700 short stakes, and 21,000 jin of herbal roots.[29] One can only imagine the flayed mountains left behind after this three days of rapacious "production." Such aggressive harvesting of natural resources was an exigency of the political economy. Xiyang's commercial departments had already made contracts with factories and companies in and outside of Shanxi that could only be fulfilled with a rapid infusion of sideline income. Extra cash incentives were implemented to encourage the quick fulfilling of the task.

Under the GLF's all-out developmental drive, destructive exploitation of nature went on under the name of rural sidelines. In the absence of both top-down regulations and long-term localized planning, the GLF's "comprehensive development" did not result in a more flexible allocation of labor and capital in the countryside. Rather, the upshot was single-minded pursuit of high output, which led to serious economic and environmental degradation.

[29] "Report on the great sideline production 关于大搞副业生产情况的报告 1959-1-11," XCA 3-1-212.

2. The Rise of Dazhai

Dazhai emerged as a model village within Xiyang during the Great Leap Forward, but it did not make its name by frantically championing GLF initiatives such as "slashing the mountain" or building backyard furnaces. From the very beginning, it was known for its achievements in grain production, and more importantly, for its spirit of collectivism and patriotism. In 1958, Dazhai's grain production reportedly reached an impressive 512 jin per mu, a level that even plain areas rarely met at the time. More importantly, it made a record for grain sale in Xiyang: over 2300 jin grain was sold to the state per household.[30] In other words, not only had Dazhai made great progress in grain production, but its people were also high-minded and selfless, choosing to devote the fruits of their labor to the state instead of enjoying it themselves.

With fewer than one hundred households, Dazhai's population was significantly below the Xiyang average. The village did not exist before the 20th century. Nestled in the southeast side of Xiyang, mountains surrounded the village to the east, south, and west, while the northern boundary was marked by a riverbed that remained dry most of the year and turned into a path for muddy flood in the rainy season. The topsoil of the farmland was washed away every year, leaving the land dotted with newly exposed rocks. In the early 1950s, the village had about 900 mu of farmland, only 2 percent of which was flat. For such a small, poor, and insignificant village to become Xiyang's grain sale champion, and for its land productivity to grow three times in ten years, remarkable changes in labor organization under strong party leadership were credited. Since collectivization, Dazhai marshaled its labor force into intensive land

[30] "A red flag for mountain-area construction: Dazhai has become different, has become richer 山区建设的一面红旗——大寨变了，富了, 1959," XCA 3-1-212.

improvement projects: it built reservoirs and flood channels, and most importantly, dammed five gullies in nearby mountains to create 80 mu of land (Gully damming is an important land making technology that will be further discussed in this chapter). "All of these were simply unthinkable before collectivization,"[31] one of the earliest reports on Dazhai's accomplishment stated. Indeed, such projects would not have been possible in pre-socialist Dazhai, when the state would not, and the local society could not, make such investments.

Yet not every agricultural cooperative put its men into the backbreaking labor of land improvement for months and years, even if they badly needed it. The leadership had to be determined, formidable, and effective, as was the case with Chen Yonggui and his colleagues, the leading cadres in Dazhai. The competence of the grassroots level leadership had two indicators: how well they bent the will of the mass to work more and consume less as good socialist peasants should do, and how well they courted the favor of upper-level authorities to acquire precious resources essential to the growth of agricultural production. Chen Yonggui, with the assistance of his colleagues, proved superb at both. They not only persuaded each household in Dazhai to sell 2700 jin of grain to the state, but they also succeeded in extracting 10 to 20 percent of collective income into public accumulation. This meant less distribution available for consumption to each laborer, but more accumulation available to the collective for investment. On the other hand, they also consolidated their authority among the peasants by bringing in results: Dazhai enjoyed favorable fertilizer supplies, abundant bank loans, and hundreds of students and soldiers sent by "upper-level leadership" to help with the harvest. The fertilizer supply in particular made Dazhai the envy of Xiyang, where fertilizers were in dire shortage. A 1958 report noted the exceptional aid Dazhai received from the state: "Since

[31] Ibid.

collectivization, the government has supplied 46800 jin of fertilizer to Dazhai." Such thankful acknowledgements later disappeared from Dazhai documents since they portrayed reliance rather than self-sufficiency.[32]

Except for the part about state aid, the image of Dazhai remained consistent from its early stage as a newly minted local model to the undisputable beacon of Maoist agriculture—indeed, one of the nation's billowing "Red Flags" in the official discourse—during the Cultural Revolution. Its core mission was to explore how to build technological and managerial systems that could optimize the output of collective farming as practiced in Maoist China. By 1958, Chen Yonggui and his colleagues had already found that collectivization enabled them to embark on infrastructural building that was impossible in previous times and to implement new farming strategies such as close planting (密植 mizhi) more easily. They had embraced land improvement and intensive farming, and to a large extent, made these endeavors and methods their own. They would continue to explore new solutions to the multitudes of challenges of collective farming, and they would become the model for the entire country to learn from, the provider of the most correct answers to all questions regarding socialism in the countryside, and then the last bastion of Maosim after the end of the collective economy.

Although there were many contingencies on the way from local model to national prominence, Dazhai did not win its status by luck. It had taken the increase of grain production as its primary goal before Mao enshrined grain output as agriculture's overriding goal with his famous exhortation to "take grain as the key link." It had always opted for the collective way, even during times when the central government allowed more space for private economy and market activity. These choices cannot be taken for granted. In fact, if they were, it could largely

[32] Ibid.

be attributed to the sweeping and persistent promotion of Dazhai model in the late Maoist years, which made their way the official default. The fate of another Xiyang model village, Knife Handle Pass (*daobakou* 刀把口), illustrates the significance of Dazhai's choices.

The Other Model

During the Great Leap Forward, Xiyang promoted three models that exemplified three different paths of rural development. Dazhai was chosen as the model for overcoming natural disadvantages to achieve agricultural growth, while White Goat Valley was now a model for "comprehensive development" of agriculture, forestry, husbandry, and sidelines. The third (at that time, appearing to be the number one) model was for husbandry, Knife Handle Pass village.[33] Knife Handle Pass represents the part of Xiyang in the high-altitude mountainous area, with open grazing land. These areas earned Xiyang the title of "Base for Husbandry 畜牧基地县," showing that, at least according to the plan, husbandry ought to be a pillar sector of the county. The Party secretary of Knife Handle Pass was a man named Zhang Laotai. Zhang's revolutionary background was no less illustrious than that of Wang Dianjun from White Goat Valley. He fought for the Communist Party's rent reduction movement in 1938, joined the Party in 1943, and became the party secretary of Knife Handle Pass in 1944. Having led the village through land reform and collectivization, by 1958 he had become the longstanding patriarch of Knife Handle Pass. Xiyang's official documents repeatedly stressed how "rich" the KHP villagers were, but much less about how much they contributed to the state. Such was the result of Zhang Laotai's management of KHP's economy.

Defying the stereotype of "old party member," Zhang ran KHP as if it were a for-profit

[33] "Grasp the rule of production increasing, strive to make continuous production leaps, 1960," XCA 3-1-236.

enterprise in a market economy. The by-laws of KHP's husbandry management featured clear specifications of responsibility, liability, penalty, and bonus, and an ostensible lack of emphasis on class consciousness and selfless, revolutionary spirit. After the devastation to livestock during the Great Leap Forward, KHP was the first village to stop the livestock "canteen" (i.e., collective raising of livestock) and returned to household-raising of collectively owned draft animals. They even went so far as to grant members living on the farther land in the mountain private ownership of livestock, to encourage resettlement and land consolidation. When other villages could barely keep the designated animal caretakers during the heady GLF, KHP had built a steadily growing team of shepherds and draft animal attendants. They were not shy about their rather old-fashioned way of training shepherds: "father teaches his son, older brother teaches the younger brother, master teaches his apprentices," omitting the almost mandatory statement that such important work had to be put firmly in the hands of poor, lower-and-middle peasants. The caretakers were authorized a variety of "rights:" they, instead of anyone intending to use the animal, were to decide which animal to dispatch. Caretakers could stop anyone from taking sick or pregnant animals to work. They would inspect the physical condition of the animals at the finish of their work, and had the privilege to request extra fodder as needed. Zhang Laotai himself was an expert in husbandry, especially breeding. He was said to have memorized the estrus periods of all female draft animals in KHP and was familiar with the estrus behavior of each. When the time came, he stayed in the stables for days and nights. Villagers called him, with a hint of amusement, "the animal enthusiast.牲口迷." With his breeding expertise, motivated caretakers, and a policy of granting generous bonuses for beyond-quota draft animal births, the KHP livestock population grew in the early 1960s to the level of three draft animals per household. This was remarkably high for North China. The prosperous husbandry provided

abundant animal labor and manure, which in turn boosted crop production. Its land productivity was said to be double from 1955 to 1960, approaching 500 jin per mu.[34] But most of KHP's income still came from husbandry. They sold mules and horses to both state trading companies and to other collectives throughout the 1960s.

Zhang Laotai preferred to motivate the brigade members by meeting their practical, material needs, rather than through lofty appeals to socialist morality. When a certain stableman Zhang Zhanshan was discontent with his job because he could hardly find time to take care of his household plot (*ziliudi*), Zhang Laotai reassigned his plot to be right next to the stable, saving him from running back and forth. When there was a shortage of fodder, the brigade purchased, with cash, straws collected by individual members from their household plot—an approach drastically different from the more commonly employed assault-style mass mobilization to address any urgent needs.[35] Even for the early 1960s—a time when economic policies allowed more space for things such as small plots and local markets—Zhang's management of KHP's husbandry was pushing the boundaries of what rural collectives could do. Zhang Laotai was perhaps confident in the path he chose for his village. He was, after all, an old revolutionary and a national labor model with impeccable communist credentials. He had twice been invited to attend the National Day Ceremony at Tian'anmen. His early experience convinced him that the ultimate goal of the Chinese Communist Party was to bring the people to collective prosperity, and that, he firmly believed, was precisely what he was trying to do in KHP.

Zhang cherished the early promises that the CCP had made to the Chinese peasantry. As history later proved, it was a mistaken perception of what collectivization meant. Not only did

[34] "Investigation report on the development of husbandry in Daobakou Brigade 刀把口生产大队发展畜牧业的调查报告 1962-7-19," XCA 3-1-314.
[35] Ibid.

the confinement of rural economy to grain production inflict enormous economic and environmental consequences, but Zhang's later experience also shows it was implemented through brutal political persecution of those who held a different view of how to build socialism. Zhang was struck down in 1970 as a "democratic factionist 民主派" who "walked the capitalist road." He was publicly purged in the high-profile Agricultural Conference of North China.[36] Violent struggles and political purges were crucial tools for altering the production regime, forcibly removing obstructions against shifting priorities and the adoption of new technologies and new labor organization. The history of Dazhai will show that political struggles were not only an integral component of the Maoist technological system. They were, in Bruno Latour's words, the "loaded statements" that became increasingly heavier as the desired outcome became harder to achieve.[37]

The fall from grace of the "the animal enthusiast" and others like him, meant that the livestock population in Xiyang decreased and their quality degraded. The average height of calves at birth shrank from 3.54 chi in early 1950s to 3.08 chi in the late 1960s.[38] Interestingly, the height of corn plants tripled in the same period in Dazhai, which was seen as strong evidence for the validity of the Dazhai model.[39] The rise of Dazhai and Chen Yonggui and the demise of Knife Handle Pass and Zhang Laotai reflected a broad shift in the structure of the rural economy, particularly the destruction of animal husbandry to expand grain production that prevailed

---

[36] "Notice on Zhang Laotai and Zhang Chengshan's capitalist-roaders' mistakes 关于张老太、张成山犯走资派错误的通报 1971-12-28," XCA 3-1-514.
[37] Bruno Latour, "Technology Is Society Made Durable," *The Sociological Review* 38, no. 1_suppl (May 1, 1990): 103–31.
[38] " 'Why have draft animals been degenerating?' An investigation report by the Bureau of Husbandry 大牲畜为什么退化？印发畜牧局的调查报告," XCA 3-1-385.
[39] Zhao Yu 赵瑜, "No mystery in Chen Yonggui's Mysterious Background 陈永贵疑案不疑" http://hx.cnd.org/2019/10/15/, access on May 22, 2023.

throughout North China, especially on the loess plateau. However, in many areas, this resulted in perpetuating starvation and environmental devastation rather than in more grain for peasants.[40] By the end the Cultural Revolution, Xiyang, once a "Base for Husbandry" county, had only 1.8 percent of its rural income from husbandry, with forestry falling to a similar negligible 2.8 percent. "Grain as the key link" drastically changed the forms of life living within China's territory, further reducing the organic energy provided by livestock and heightening the already exacting demands for human muscle power.

3. The Dazhai Model

The Dazhai model was promoted throughout the country with the slogan "Learn from Dazhai!" But what exactly was the country meant to learn from it? This section focuses on the widely promoted "Dazhai Experience" in both agricultural production and rural politics. Dazhai proved to be the paragon in providing learning materials for the nation. With the assistance of the state's apparatus of knowledge production, particularly a corps of propaganda cadres and journalists based in Dazhai all year long, every aspect of work and life in Dazhai had been turned into numerous reports, articles, pamphlets, books, poems, and songs. It could be said that during the Cultural Revolution, Dazhai had become the "total model," and everything about it was studied with rigor and enthusiasm. The cult effect aside, Dazhai achieved such status mainly for it provided a system of solutions rather than isolated "experience" on one thing or another. This system included three major parts. The first was its contributions to "scientific farming," a

[40] "Grass planting and husbandry development are the keys to change the backward conditions in the middle Yellow-River region 改变黄河中游地区落后面貌 大力种草发展畜牧业是关键," *People's Daily*, 1978-11-26, page 2. Also see Vaclav Smil, *The Bad Earth: Environmental Degradation in China*, London: M.E. Sharpe; Zed Press, 1984.

category that covered every aspect established in the Eight Character Constitution of Agriculture but was particularly relevant to soil and water management. If Dazhai had provided only experience in scientific farming, they would probably only be one of many models du jour. What made Dazhai special was that Chen Yonggui and his colleagues understood that "scientific farming" was not just about the land (tu), the fertilizer (fei), the irrigation (shui), the seeds (zhong), closing planting (mi), pest control (bao), field practice (guan), and machines and tools (gong). It was about all these things must be done under collective labor organization led by strong party cadres. Farming was nothing new, but collective farming as practiced in Maoist China was nothing but new and desperately in need of an exemplar to teach best practices. As such, the second and the third pillar of Dazhai model were to tackle the leadership problem, i.e., what cadres should do, and the labor management problem, i.e., how to keep the peasants in the field and motivated, while giving them minimal material rewards.

This section uses archival sources from Xiyang County and Dazhai Commune to reconstruct Dazhai practices and highlight the new ways by which coordinated application of muscle-power transportation was brought to unprecedented scale. The Dazhai model was, above all, committed to demonstrating productivity gains in agricultural output with minimal recourse to "capitalist" devices such as wage labor, market exchange, or private ownership. This put the cadres at the center of Dazhai's political economy. It was the cadres who surveilled, inspired, rewarded, coerced, and at times terrified the peasants into supplying the sheer brawn necessary for its ambitious investments in hydraulic infrastructure, agricultural technology, and farmland reclamation or improvement. In revealing the management of MPT, we thus also gain new insight into the Dazhai model's impact on Xiyang's agricultural production and everyday life.

In the numerous reports and meeting records in these archives, Dazhai the model brigade

was always portrayed as either free of problems or as having already solved its problems. The reality of the Dazhai brigade is thus increasingly opaque. In the 1970s, Dazhai brigade numbers are often left blank on statistical forms. Nevertheless, Chen Yonggui and his colleagues peppered their public speeches with dazzling statistics about Dazhai's productivity. The point here is not whether Dazhai was fake or real, but that Dazhai as a model for the county, province, and nation to learn from was a shifting target that, in theory, could never be caught. This created a dilemma because Dazhai also exported concrete practices. Political pressure to emulate Dazhai's methods led to a de facto standardization of agricultural production. The conflation of model making and standard making, two distinct processes, made "learning from Dazhai" forever unfulfillable and counterproductive task. When following Dazhai practices did not yield the same level of (purported) success, Dazhai's permanent "advanced-ness" had to be more firmly rooted in the sphere of consciousness. A model originally intended to explore concrete solutions to technical challenges transformed into a myth, an embodiment of socialist idealism.

Dazhai practices were in part composed of modernized, mass application of agricultural technologies that had long existed in northern China to combat drought, flood, and increase soil fertility. Other practices derived from technologies promoted nationally or globally in early and mid-twentieth century, but which were incorporated into the Dazhai experience and promoted as such. In principle, the Maoist model allowed for a wide scope of technological indigeneity, as recognized in the rhetoric of "adapting measures to local conditions (yindizhiyi)." But this ideal was increasingly overpowered by the veneration of mass's ownership of the knowledge and by the political risk of insufficient emulation and application of Dazhai practices. The history of Xiyang shows that, at the practical level, the repeated emphasis on "adapting measures to local conditions" and the importance of consulting "the old peasants" in the Maoist era were attempts

to rein in the inevitable arbitrariness of the cadre-coordinated production. These attempts reflected the difficulty in attaining and retaining traditional knowledge accumulated over centuries of private farming under the collective economy, rather than an insistence on locally calibrated strategies and methods. Unfortunately, the motto of "adapting measures to local conditions" was often used reductively to criticize localities that followed Dazhai's examples but failed to increase productivity.

This section begins with a reconstruction of the technological system of Xiyang's agriculture from which the Dazhai practice emerged, and which in turn it greatly impacted. It then examines the issue of labor management, particularly the major Dazhai initiative: "horses and carts return to the farm (chemaguitian 车马归田)" for labor re-allocation. With its "advanced experience" in scientific farming, cadre leadership, and labor management, Dazhai intended to provide the nation with a roadmap to systematically securing agricultural labor input and fully exploiting the productive potential of peasants' muscle power.

Scientific Farming under Dazhai Model

The "Eight Character Constitution" was the ultimate, authoritative framework for agricultural knowledge production in Maoist China. Each character in the constitution define a field of knowledge that cadres were expected to master and to expand upon. Among these eight branches, Dazhai made more prominent contributions in some, such as soil improvement, than in others, like pest control. My reconstruction of Dazhai practices largely corresponds to the eight-character framework and focuses on the soil improvement and water management.

Soil

The slogan "Construction of Dazhai-style Farmland 建设大寨田" echoed across the country in the 1960s and 1970s. It spoke to Dazhai's foremost contribution to farming, namely, a

set of practices and procedures for managing soil. Construction of Dazhai-style farmland included applying these practices to soil conservation, land reclamation, and soil improvement. Dazhai adopted many traditional land reclaiming technologies, which originally were also conducive to soil conservation. But under political pressure to raise agricultural output, these practices became increasingly labor intensive and ecologically intrusive, therefore often jeopardized their stated purpose of conservation.[41] Furthermore, farmland, whether old or newly reclaimed, required "soil improvement." This meant re-composing the topsoil to increase fertility. All these undertakings required scraping off soil and rocks from one location and moving them, with push carts and baskets, to another. The scrape-off-and-move was so wide and thorough and went on years, leaving little of the settled land untouched.

A. Terracing

From the 1950s to 70s, land reclamation and improvement projects in Xiyang expanded from terracing to gully damming to creating "man-made plains 人造平原." Although terraces were found in various places in North China, the technical knowledge for building and maintaining high-quality terrace land was rare and unevenly distributed. Collectivization saw a remarkable growth in this branch of knowledge through focused studies and active exchange among different localities.[42] Building stable and productive terraces involved achieving balance among a set of constraints. For the land to be easy to work on, the wider the terrace the better. Yet wider terraces require higher walls, which in turn takes more material, labor, and time to

[41] Micah Muscolino discusses water and soil conservation in Maoist China. See Micah S. Muscolino, "The Contradictions of Conservation: Fighting Erosion in Mao- Era China, 1953–66," *Environmental History* 25 (2020): 237–262.
[42] Sigrid Schmalzer, "Layer upon Layer: Mao-Era History and the Construction of China's Agricultural Heritage," *East Asian Science, Technology and Society: An International Journal* 13, no. 3 (September 1, 2019): 413–41.

build and maintain. To make the wall stable, a certain degree of slope is necessary, but this comes at the cost of farming area. These factors must be considered in conjunction with the mountain's other features, such as soil, rock, temperature, and sunlight. When the walls are made with stone, a skilled mason's expertise might be needed. It is not surprising, then, that terrace walls often collapsed in the rainy season, as terracing is indeed a difficult engineering technology to master.

Terracing technology is highly situated and embodied, so attempts to formalize it had been infrequent even in the Mao era. Such attempts as there were generally had limited applicability outside of their places of origin. For example, an article that appeared in *Shaanxi Agricultural Science and Technology* in 1958 proposed a set of terrace design standards. The article aimed to solve an imminent challenge: The Yulin District in Shaanxi intended to promote standards calling for wider terraces and higher walls. These would be significantly more labor-intensive than common practices, and the plan was met with resistance from peasants. The author of the report claimed to have built experimental terraces in five areas with different topographic features and, through trial and error, proposed new standards that fell between the District's plan and received practice. Their choices were made based on the labor input and grain output of each experimental field. In other words, they were not derived from a formula in which physical properties of the land were used as variables, nor was such formula established from the experiment. The specifications were therefore not meant to be instructive to areas outside of northern Shaanxi.[43]

When Dazhai's terracing experience was first introduced to other Xiyang brigades, it was

[43] Lin Guanshi 林矣石, "Several problems in building horizontal terrace land at once on Northern-Shaanxi loess hills 陕北黄土丘陵区一次修成水平梯田中的几个问题," *Shaanxi Agricultural Science and Technology 陕西农业科技,*(1959) no.8. 333-339.

more general. The brigade reported, "On earth mounds where the soil can be compacted into hard and smooth ridges we can build earth-ridge terraces. The height of each terrace is from 1 to 1.5 meter and the width 8 to 12 meters…On the mountain slope with accessible rocks we build stone-walled terraces. The height is 1.5 to 2 meters and width 2 to 6 meters."[44] Regions that attempted to follow Dazhai's lead, often found it difficult to replicate Dazhai's success based on such a simple formula. Some brigades admitted that they relied on only a few "old peasants" to lead the design and construction of terraces. The mason Li Yuzhen in Golden Stone Slope (Jinshipo) brigade was a specialist that the brigade heavily depended on. When he was away in 1965, the stone walls built during his absence had to be reconstructed, despite years of teaching the young men about terracing.[45]

Dazhai leaders recognized the contradiction between the situated nature of terracing knowledge and the need to build more, better, and faster. On one hand, Dazhai prized itself for building terraces that accommodated local topography. "We do not go after uniformity or tidiness. Dazhai's terraces wander and extend along the curves of the mountains (随弯就势). This helps to save a lot of labor."[46] Indeed, Dazhai in the mid-1960s positioned itself as the antithesis of arbitrary imposition, uniform standards such as those implemented in Yulin District. As introduced in 1965, Dazhai terraces' target height and width were close to what Yulin peasants traditionally practiced. This made them more practical and more easily accepted by the peasants than the grandiose, massive terraces that Yulin government had attempted during the Great Leap Forward. Nevertheless, Chen Yonggui knew that to convert mountains into

[44] "Dazhai Brigade's experience in agricultural infrastructural building 大寨大队农田基本建设经验, 1965-4-27," XCA 3-1-385.
[45] "Investigation report on land-improving infrastructural building, 关于土地基本建设调查的报告 1965-4-18," XCA 76-1-34.
[46] "Dazhai Brigade's experience in agricultural infrastructural building," XCA 3-1-385.

productive terraces required a constant supply of expertise and labor. His solution was to build dedicated "Agricultural Infrastructure Construction Teams 农田基建专业队," which retained a select group of local artisans including ironsmiths, carpenters, masons, and crack male laborers. Members of infrastructure construction teams were exempted from farm work and devoted themselves to construction work all year long. Dazhai Brigade started their Agricultural Infrastructure Construction Team after a devastating flood in 1963. Two years later, Dazhai Commune established a larger team that drew seven percent of the commune's labor power. In 1968, Xiyang formed a county-level team of 1400 men. These teams, and many others following their examples, became a hub for aggregating agricultural infrastructure know-how. Their efficiency increased remarkably over the years. These specialized teams also allowed the rest of the rural labor force to focus on taking care of crops during the farming season and participate in construction mainly in the winter and spring.[47] With dedicated manpower, infrastructural projects soon expanded from terracing to include a broader variety of construction.

B. Gully Damming

"Gully Damming (zhagou, 闸沟)" refers to the practice of building silt storage dams, also known as "yudiba" (淤地坝), in dry gullies that only turn into flood channels during the rainy season. These dams, often several meters tall and dozens of meters wide, reduce the velocity of flood waters and trap sediment, helping with soil conservation and land reclamation. Silt storage dams have a long history on the Loess Plateau. One of the earliest documented cases of gully

[47] Xiyang County Party Committee, "Investigation report on organizing specialized construction teams for agricultural infrastructure 关于组织农田基本建设专业队的调查报告, 1965-4-15," XCA 3-1-385. "Building a revolutionized special construction team for agricultural infrastructure amidst the Learning from Dazhai Campaign 在农业学大寨运动中建设一支革命化的农田基本建设专业队, 1976," XCA 3-1-798.

damming comes from Fenxi County in southwest Shanxi. According to the *Fenxi County Gazetteer*, during the Ming Dynasty Wanli reign (1573-1619), the local magistrate encouraged the construction of silt-arresting dams downstream of rivers to create high-yield farmland. "Diligent people had been building these dams." the Gazetteer says, but the magistrate found it imperative to encourage more land reclamation. He granted "…those who know how to design and build stone walls to form land" tax exemptions and license to be professional builders.[48] In the centuries that followed, Fenxi reclaimed several thousand mu of "dam land."

Figure 12. Dazhai satelite image showing the gully land.
Source: http://gd.jqgcs123.com/map-m-3299.html

[48] According to *Fenxi Gazetteer*, during the Wanli reign of Ming Dynasty, Fenxi magistrate Mao Jiong encouraged local peasants to dam the gullies to make fertile land. 据《汾西县志》记载：明代万历年间, "涧河沟渠下湿处,淤漫成地易于收获高田,值旱可以抵租,向有勤民修筑." 当时的汾西县知县毛炯曾布告鼓励农民打坝淤地,提出"以能相度砌棱成地者为良民,不入升合租粮,给以印帖为永业." Jiang Minglong 蒋鸣龙, *汾西县志 Fenxi Gazetteer* (compiled during Kangxi Reign of Qing Dynasty), vol.5. 14. Accessed through Erudition Chinese Gazetteer Database 爱如生中国方志库.

In the mid-1960s, Dazhai introduced their experience building gully dams to the rest of Xiyang. After many attempts, they had successfully constructed more than 230 dams in gullies around their brigade. According to a Dazhai report, "In each gully we built a set of dams. They stood closer together in the upper section and were spaced farther apart in the lower section. The bottom of the higher dam is roughly level with the top of the next lower dam. This arrangement of dams was able to better resist and distribute the impact of floodwater, making them less prone to collapse."[49] Once they captured enough silt, the landscape began to look less like a gully and more like wider, slower terraces. A visitor might easily mistake them for terraces, but they are superior to hillside terraces because the silt is much more fertile than thin mountain topsoil.

Dazhai's account did not reveal how they arrived at their dam-set design technically. Gully damming is an intricate business. Typically, a brigade's labor force could only build one dam a time, which could easily be destroyed by the next flood. The location of the first dam was thus crucial. Usually, the lower section of the gully, where the gradient was lower and the silt accumulated faster, was preferable. But the gully is also wider in the lower section, which means the dam requires more material and labor to build, and the extra width itself comes with increased vulnerability to water pressure. Sometimes, it might be more effective to build a dam in a branch gully than the trunk gully. In a booklet edited by the Department of Water Conservation at Tsinghua University in 1973, the authors listed many different approaches to building a set of gully dams that they observed in northern Shaanxi. They concluded that the basic architectural structure of gully dams was similar to that of reservoirs, but the difference in their purpose entailed certain modifications in their design. For example, a gully dam does not

[49] "Dazhai Brigade's experience in agricultural infrastructural building," XCA 3-1-385.

need to meet a fixed height. Instead, it can be gradually raised every year with the addition of silt. The authors mentioned a few issues where different interests may conflict. For example, the conservation of the hillside may undermine the reclamation of gully land. Serious erosion of hillsides would overload the floodwaters with mud and put the gully dams in danger. But too little mud, a result of successful conservation, would delay the formation of dam land. This might make it harder for brigades to meet their state grain quota or feed their people. This conflict of long-term and short-term interests also presented itself in other forms. For example, should a brigade start with smaller dams to increase their land quickly? Or should they follow a plan that makes the most sense in terms of engineering design? Moreover, there was the coordination problem common to all hydraulic projects. From an engineering perspective, the design and construction of dams should be done systematically at the proper scope, which required inter-brigade and even inter-commune coordination. But after the GLF, the government policy became very cautious about multi-brigade projects in which the commune freely extract labor and other resources from brigades. Building projects became largely local brigade initiatives, limited by the brigade's resource and capacity of decision making. The authors raised these issues but could not provide any solutions.[50]

Between long-term and short-term interests, Dazhai did not hesitate to choose the latter. Dazhai's method did not even wait for the silt to fill up the dammed gullies. In the 1960s, they "combined padding and silting 垫淤结合." This meant Dazhao used great amounts of soil transported from other locations as base soil, relying on the silt only for topsoil. According to one account, the Dazhai teams, "…took soil [from other locations] by hacking cliffs and

[50] Department of Hydraulic Engineering, Tsinghua University 清华大学水利系, *Land Making through Gully Damming 打坝淤地,"* (Beijing, China Water and Power Press 水利电力出版社, 1973.)

hollowing slopes (piyataopo 劈崖掏坡). Soil would be put behind the newly built dam and new land was created this way. This greatly increased the speed of land reclamation. Most of these lands could be put to use in the first year [after it was built]."[51] When other communes and brigades followed Dazhai's example in building their gully dams, many had to blow up nearby mountains to acquire sufficient rocks and soil. To a large extent, gully damming as practiced in Dazhai and Xiyang was very different from the traditional technology, which relied on time and the gravity of flood and sediment to do most of the work. It had become a much more aggressive, labor-intensive, and ecologically destructive way of land-making. Chen Yonggui was, however, was very keen to solve the coordination problem. Decades of agricultural infrastructure building convinced him that a larger ownership unit was imperative to the success of these projects. We will return to this point later in this chapter.

C. "Man-made plains"

Apart from mountain terraces and gully damming, Dazhai created new farmland that it called "man-made plains." With thousands of gullies already dammed by the late 1960s, by the early 1970s, creating "man-made plains" became the new focus of Xiyang land reclamation projects. This new endeavor involved "moving the mountains, filling the gullies, and changing the rivers." Much of the gully filling followed the method of gully damming, but it was done on such a large scale that silt barely played a role in making the land. In the Dazhai Commune alone, it was reported that 85 mounds were carved up to fill the space behind 196,000 meters of dams in 140 gullies between 1971 to 1975.[52] In addition to filling gullies, Xiyang also strove to alter the course of rivers in order to convert the original riverbed into fertile land. Depending on

[51] "Dazhai Brigade's experience in agricultural infrastructural building," XCA 3-1-385
[52] Zhao Huairui, 赵怀瑞, "Speech keynotes at the National Conference for Agricultural Infrastructural Construction 在全国农田基本建设会上的汇报提纲 1977," XCA 76-1-213.

the surrounding terrain, the rivers were either narrowed or redirected. Some communes dug long culverts, letting the river run underground so crops could be planted on the ground above. Others blocked the riverbed and guided the river into nearby gullies to reclaim the old riverbed and beaches.[53] One can only imagine how hundreds of thousands of people and their push carts shuttled incessantly for years among mounds, gullies, and beaches to flatten, fill, and pound every potential patch of soil into farmland for grain.

When soil had to be transported from a location unsuitable for push carts, such as the top of a steep mound, other methods had to be employed. The village of West Hard Cliff (Xigubi) faced just such a challenge when they decided to create new land with soil powdered by explosives placed in the cliffs. The roads leading up the high bluffs were too steep and narrow for push carts. The cadres thus mobilized the entire village to carry buckets of water to the peak. The gathered water was then dumped out to wash the loosened soil down the cliffs.[54] A peasant named Li Zaiyuan was said to have contributed the idea. Although using water to transport soil was not new (indeed, Californian gold miners were known to have used this method) by the mid twentieth century, hydraulic filling was widely used in dam building around the world.[55] But whereas the developed world used pumps to send water to its mountaintops, in China buckets were carried two at a time on the shoulders of Chinese peasants. One could credit Li Zaiyuan with making a remarkable innovation. The real breakthrough was, indeed, the idea: anything they could do with machines, we can do with our muscle. However, marshalling this muscle power

---

[53] "Learning from Dazhai, improving production conditions, ensuring steady and high productivity 认真学习大寨 改善生产条件 保证稳产高产 1973-4," XCA 3-1-610.
[54] "Featured report on the current agricultural infrastructural construction 关于当前农田水利基本建设的专题报告," XCA 3-1-385.
[55] Wanghu Zhen 汪胡桢, "Earth and stone transportation and the spatial arrangement of the worksite 土石之运输与工场布置," *Handbook for Chinese Civil Engineers 中国工程师手册*, (Commercial Press, 1944). B9-59.

was, as we will see later in the chapter, no easy task.

Water

Water had always been a life-and-death issue for traditional farming in North China. The weather tends to be dry and windy in the late spring, when crops urgently need water to grow. During these months, much of the rural labor is dedicated to transporting water. The situation is more dire in hilly areas where water needs to be lifted to the farm. Even with relatively good access to water, the labor input for irrigation can easily surpass that for harvest.[56] Collectivization exacerbated water shortages since the replacement of drought-resistant millet with high-yield corn increased the need for irrigation. Furthermore, intense land creation by moving soil from one place to another also caused the soil to lose its moisture. As a result, newly claimed and newly leveled lands required a tremendous amount of water. At last, there was no longer the option to let go of one bad season at home and make it up by short-term employment elsewhere. The corn had to be watered at all means.

Like other mountainous areas in North China, Xiyang was poorly endowed with water. The streams were tiny, the floods were muddy, and the groundwater difficult to access. The county's hydraulic projects began in the GLF, when hundreds of small reservoirs were added to the jagged landscape. Lacking sufficient anti-seepage treatment and ancillary irrigation channels, these reservoirs failed to improve the irrigation rate. By the early 1970s, most of them had silted up and had limited if any use for irrigation. Indeed, not one of the Dazhai Commune's five reservoirs were connected to irrigation channels. Their combined storage capacity hardly met a

[56] Vaclav Smil, *Energy and Civilization: A History*, (The MIT Press, 2017). "A worker could cut a hectare of wheat with a cradle scythe in eight hours, but he would need three months to lift half of its water requirement just 1m from an adjoining canal or stream." 79.

quarter of the irrigation demanded by the commune's 17,000 mu of dry farmlands.[57]

Yet, with abundant labor power at their disposal, cadres were resolved to overcome these natural limitations by building more irrigation infrastructure. Throughout the 1970s, rural collectives built ponds and reservoirs, pump stations and channels, and wells that reached deeper and deeper into the ground, on the perhaps idealistic assumption that more wells and more ponds would naturally bring more water. Ambitious grain production plans were drawn up based on the numbers of pump stations. In 1974, Dazhai Commune was planning to expand its acreage of rice plots, which would consume 10,000 cubic meters of water per day—close to the entire commune's human and draft animals annual drinking water consumption.[58]

Although this dream of a thousand mu of rice plots was too fanciful and never realized, the evident appetite for water was nothing unique. Like Tantalus, the more the people pursued water, the faster it retreated from their reach. The means to acquire water became increasingly more demanding in terms of energy and capital input. The trajectory of hydraulic construction in Xishiping (West Stone Plain) Gully in Lijiazhuang Commune illustrates how rapidly the natural water supply dwindled as human attempts to capture it intensified. Lijiazhuang, which sits on the watershed of Pine Creek and Ning'ai River, is about two hundred meters above the riverbeds. There was a spring at the upper section of the gully. A pond was built beneath it during the Great Leap Forward. However, the spring soon disappeared. In an attempt to accumulate runoff and rainwater, people then built a reservoir in the lower section of the gully. But it remained dry for years. By the early 1970s, upper-stream reservoirs had stopped the regular flow of the Pine

[57] "Surveys conducted by the Bureau of Water Resources for Dazhai Commune 水利局给大寨公社做的调查 1974-5-8," XCA 76-1-170.
[58] "Meeting records of Dazhai Commune Party Committee 大寨公社常委会议记录 1974-9-13," XCA 76-11-155.

Creek and Ning'ai Rivers. Lijiazhuang, like many other communes sitting next to dry riverbeds, began to tap into the aquifer beneath the riverbed. They dug a deep ditch in the middle of the riverbed and at the end of it erected a stone structure much like the local cave dwellings (yaodong 窑洞). This served as an intercepting wall and a water cellar. This undercurrent interception (jieqianliu 截潜流) technology became, in a number of variations, common throughout North China. The undercurrent interceptor was relatively easy to build because the water beneath riverbeds is closer to the surface. Not surprisingly, they proliferated in Xiyang wherever rivers used to run. In 1972 alone, 46 intercepting wells were built, including the one in Lijiazhuang. However, within two years, this water source also dried up. In 1974, Lijiangzhuang Commune finally drilled five machine wells at the bottom of the gullies, one to two hundred meters deep, and built a series of connected ponds to send the water up for irrigation. The project required investment of three hundred thousand labor days and six hundred thousand yuan.[59] In a market economy, such costs have made their corn prohibitively expensive.

While the water resources were rapidly diminishing, Xiyang also experienced a serious drought in the early 1970s. What then happened was intense construction of hydraulic projects on one hand, and intense labor input in manually transporting water for long distance on the other. Drought started in 1972 and the following year saw a snowless winter. When it was time to sow, soil moisture content (土壤含水量) was only ten percent. Communes suffering the most severe drought put nearly half of their population, children included, and all their draft animals into water transportation for several weeks.[60] Even the Dazhai Brigade, possessing five deep

[59] "Adhere to the socialist direction, strengthen the commune economy 坚持社会主义方向 壮大人民公社经济 1975-12-23," XCA 3-1-681.
[60] "Investigation report on anti-draught sowing 抗旱播种调查报告 1973-5-5," XCA 3-1-610.

machine wells thanks to the Province's direct investment, had to mobilize people to carry water from lowlands brigades to finish sowing. Dazhai quickly turned this into another propaganda coup, praising the stirring scene of men and women "shouldering the water for dripping to sow 担水点种." It described their tireless spirit in a new phrase, as, "Hundreds of buckets carried thousands of miles for one mu of seedlings 千里百担一亩苗." They summarized their watering techniques in special reports that were shared with the entire county. Dazhai's famous "Iron Girl" team carried out the watering job under the leadership of Jia Chengrang. "They first open a shallow dent with a digging hoe 镢头 and pour a little water into it. After the water sinks in, they loosen the wet soil with first the digging hoe then the flat hoe 镢铲. After putting five or six seeds into each dent, they cover them with a thin layer of soil, add fine fertilizer followed by crude fertilizer, and use *lao* (耢 a square tool made with twigs) to flatten the surface."[61] Furthermore, it is important that the dent be shaped shallow and flat—like the footprint of a cow—instead of narrow and pointy—like that dug by a badger. These techniques could hardly be seen as exclusive. The emphasis was indeed on the meticulousness and perseverance against natural adversity, on upholding the standard and not giving in to pessimism.[62]

But the severest adversity was still to come. The year of 1974 began with spring gales blowing fiercely across the land. It maintained a speed of 60 km/h, reaching 100km/h at times. The precipitation during the growing season was less than a third of the historical average. By

[61] "Make real effort and exert great strength to ensure the total seedling emergence: Dazhai Brigade put quality control at the first place in the anti-draught sowing work 下硬功夫 花大力气保捉全苗 大寨大队抗旱播种强调质量第一 1973-4-26," XCA 3-1-612.
[62] On cultural representation of the Dazhai Iron Girls, see Zheng, Wang. "The Iron Girls: GENDER AND CLASS IN CULTURAL REPRESENTATIONS." In *Finding Women in the State: A Socialist Feminist Revolution in the People's Republic of China, 1949-1964*, 1st ed., 221–41. University of California Press, 2017.

June, almost all crops planted in newly created land were lost to drought or uprooted by wind. Extreme drought, as usual, was followed by rampant pests. No option was left but to replant another round of crops. The County mobilized more than 90,000 people, surpassing the size of its labor force. The County's special report on the campaign proudly wrote, "Carrying with their shoulders and lifting with their hands, on the ridges, in the gullies, these men and women, elders and children, carts and horses, shuttled incessantly back and forth. They are re-enacting the touching scene of 'shouldering the water for dripping to sow' of 1973!"[63]

Xiyang responded to the persistent drought with even more ambitious hydraulic projects. In 1975, Chen Yonggui launched a "West to East Water Diversion" program that would cut deep into Shanxi's infrastructure budget and take five years before being eventually aborted. The program was designed to alter the course of Xiao River, a tributary of Yellow River, at its upper stream. The Xiao River runs through the west tip of Xiyang and flows into the Middle Shanxi Plains, irrigating this major grain production center. The longest part of Xiyang belongs to the Hai River Region, which covers all northern Hebei. The "West to East Water Diversion" was in effect taking water from the Yellow River Region to irrigate the Hai River Region. The project was technologically impractical but administratively plausible, as Chen Yonggui was able to dominate political decision-making his own Shanxi, but not in Hebei. The project involved building two large reservoirs, drilling 20km through a mountain to create a tunnel, and constructing numerous aqueducts, culverts, and inversed siphon culverts. From 1975 to 1980, five million peasants and workers labored on the project. The expense in its final two years, approaching 20 million yuan each year, accounted for one tenth of the province's entire

[63] "Report on grasping the Criticize Lin Biao and Criticize Confucius Campaign to push forward the anti-draught seedling protection work 关于抓批林批孔 促抗旱保苗情况的报告 1974-6-24," XCA 3-1-651.

investment in hydraulic infrastructure. If the project were to finish at its initial budget, the irrigation cost per mu would be over one thousand yuan, five times the provincial average of 200 yuan, which was already a drastic elevation from 93 yuan in the early 1960s. When Dazhai and Chen Yonggui fell from grace in 1980, media such as the People's Daily began to publicly attack the project, only a third of which was completed, along with the many reservoirs scattered throughout Xiyang that were still awaiting irrigation channels.

Three Deeps

In place of "mi (close planting)" in the Eight-Character Agricultural Constitution, I will instead talk about Dazhai's "Three deeps 三深." These refer to deep plowing, deep sowing, and deep hoeing. Dazhai, like any other place in China, embraced close planting to increase agricultural output. However, the deep-root corn Jinza No.1 that Dazhai planted for over a decade was not suitable for close planting. Not being able to showcase an impressive and successful result of close planting, Dazhai therefore promoted "appropriately close planting 合理密植" and pursued all the more vigorously "three-deeps" as their unique contribution to scientific farming. "Three deeps" was a set of practices that Dazhai established after years of exploration to secure good harvests in drought. Deep plowing in the fall aimed to improve the thickness and structure of the topsoil. Deep sowing in the spring helped increase the seedlings' chance of emergence in dry weather. Deep hoeing in the summer allowed the soil to be more absorbent in the rainy season. I will focus on the first two here as they were more forcefully promoted and more controversial. Like other Dazhai experiences that originated from practical wisdom, it was the *techné*, or situated knowledge, that made it valuable.[64] However, as Dazhai's authority became unquestionable, the rule of thumb was turned into the rule of iron and used to

[64] James Scott, *Seeing like a State.*

measure whether a brigade or commune was truly "learning from Dazhai." Instead of cultivating attentiveness and inventiveness in the fulfillment of farming tasks, it penalized autonomous decision making and oftentimes defeated its own productivist purpose.

Plowing is the most strenuous task in traditional farming. Across Europe and Asia, it was primarily for this task that farmers kept draft animals. Deep plowing, as promoted by Dazhai, doubled the depth requirement from 2 or 3 cun to 4 or even 5 cun. It was thus far more taxing than what people were used to. Dazhai conducted mass "persuasion" efforts, to explain to the peasants why deep plowing was necessary. Such persuasion often began with an anecdote from Chen Yonggui. When Chen was a young tenant farmer for a landlord, he was asked to plow the land 4 cun deep after the autumnal harvest. Out of resentment, he and other tenants did not plow that deep. The harvest the next year, as it turned out, was worse than usual. He learned from this experience that deep plowing in the fall was essential for a good output the following year. Now in the new society, peasants owned their own labor and produced for the country. Therefore, the persuasion went, they would strive to give all their power to plow deep for successful harvests.

Deep plowing was an effective way to create a thick layer of topsoil and to speed up its maturation, which was particularly important for newly reclaimed land. However, it also demanded so much labor input that rural collectives with insufficient draft animals could hardly afford it. In some communes, each ox had to plow 73 mu of land, three times the standard set by the state. People had to perform the animals' job by pushing stone rollers and transporting harvested grains, in order to put mules and donkeys to work plowing. Even so, it was not

uncommon to rely entirely on manpower to plow some land.[65] Still, it was a persistent concern that the standard of depth was not universally met. Whenever a brigade was found to have failed to meet the standard, "study sessions" were held to push for better performance. As a result, some brigades even used mountain plows on their plain land, sacrificing stability for lightness of the tool, in order to meet the requirement. We will discuss the role of activities such as "study sessions" in Maoist collective farming in the later section. Once deep plowing became a requirement, it was sometimes enforced regardless of conditions. Some collectives "blindly" conducted deep plowing in spring, wheareas it only made sense in the Autumn. In 1972, at the beginning of an extended drought, some communes used tractors for spring plowing. Li Hansuo, a leading cadre of Xiyang, asked them to immediately stop this "messing around," as deep plowing in spring only overly exposed the soil and exacerbated the loss of moisture. This is another example of how a politically enforced mandate in socialist China tends to spill over its originally defined boundary, resulting in unintended negative consequences.

If the difficulty of deep plowing came from its demand on labor, the challenge facing the mandate of deep sowing came from wide skepticism of its effectiveness. Deep sowing was the key component of Dazhai's experience in battling drought from the early stage of the farming season. In the extended drought of the early 1970s, Dazhai periodically shared their sowing techniques with the entire county. They promoted early sowing, deep sowing, and stamping as the winning maneuvers to ensure the sowed seeds get enough moisture to germinate. Dazhai asked the entire county to follow their example to sow ten to fifteen days earlier, so that the soil was not yet dried out by spring wind and crops with a long growing period could ripen before

[65] "Featured report on the autumn plowing work 关于秋耕工作的专题报告 1965-10-24," XCA 3-1-385.

frost. There were important preconditions for early sowing such as well-prepared land, sufficient fertilizer, and appropriate soil temperature, which were not always met. In addition to starting early, the sowing also had to be deep since the soil gets wetter as it gets deeper. According to Dazhai, corn seeds should be sowed four cun beneath the surface, while millet seeds should be sowed two cun beneath the surface. To prepare for this, a thicker layer of well-structured topsoil was needed. This was achieved through deep plowing, soil mixing, and other labor-intensive preparations mentioned earlier. After the seeds were planted and covered, they could be pressed down (or "stamped on") to ensure that they are in firm contact with moist soil. This prevented the seeds from drying out by "floating" in the loose soil. Whether the pressing should be firm (死踩) or light (活踩) depended on how moist the soil was. There were important variations of these techniques for droughts of different severity. In dryer years, they used a technique called "chasing the moisture to sow 撵墒下种." This involved using a plow to move the dry top dirt to the sides of furrows, using a hoe to dig small dents at the bottom of the furrow, pounding the soil in the dent, and then planting the seeds. In case of extreme drought when there was no moisture to "chase," they would use the most labor-intensive technique, the so-called "shouldering water for dripping to sow." Furthermore, the moisture often varied even within the same plot. The person leading the work had to decide which technique was appropriate to local conditions.[66]

Therefore, these anti-drought sowing techniques required not only excellent soil preparation before planting and *in situ* judgements, but even, at times, accurate prediction of drought development based on experience. However, this situated complexity was simplified as deep sowing became a victorious Dazhai experience and was quickly reduced to another single-

[66] "Make real effort and exert great strength to ensure the total seedling emergence: Dazhai Brigade put quality control at the first place in the anti-draught sowing work," XCA 3-1-610.

minded doctrine. There were occasional disagreements about early sowing and deep sowing, but Dazhai insisted on the correctness of its techniques. In one spring, the soil within the Dazhai commune seemed to be moister than usual. Many peasants argued for a shallower sowing depth. Chen Yonggui telephoned from the provincial capital Taiyuan to quash such arguments, demanding deep plowing as usual.[67] While we have no real data to support or refute Chen's decision, the mechanism at play is such that it removed variety and the ability to adapt to uncertain, heterogenious conditions. In household farming, peasants may make different judgements and adopt a variety of strategies that helped to reduce the risk of losing everything at a larger scale. Under collective farming, in which cadres made decision for the collective, losses occurred across the board by one bad decision by the cadre.

Despite actively promoting deep-sowing techniques, Xiyang's agricultural output suffered greatly due to the long drought. Deep plowing, particularly its inflexible and mandatory application, was probably partially at fault. In May 1973, a leading cadre of Xiyang county, Wang Jinzi, visited four communes to inspect the seedlings. He found that failure of emergence was rampant, with some places reaching a failure rate of fifty percent. Wang summoned local cadres and experienced peasants to investigate the cause. They concluded that improper deep sowing was the main cause. Some places did not consider the varying levels of moisture in the same plot and sowed all seeds four cun deep, resulting in many of which being unable to germinate. In other places, the "chasing moisture" method was used even though the soil was too dry for it. There were brigades that sowed seeds five cun deep, but the seedlings were unable to break through the heavy crust. Lack of labor to finish hoeing after watering and lack of attentiveness to correctly placing the seeds were also contributing factors for the failures. The

[67] Jia Chengrang 贾承让, "Field management during summer 谈夏季田间管理," XCA 3-1-651.

county Party Committee asked Dazhai cadres including Jia Chengrang and Guo Fenglian to help provide some solutions. Jia and Guo stated that Dazhai had modified its seed density and hoeing techniques to adapt to the changing weather conditions.[68] In other words, Dazhai did not do exactly what it had asked others to do. Guo Fenglian then extended the invitation to cadres of other communes to come to Dazhai and learn their current practice. These exchanges reveal the strange position that non-Dazhai collectives were in. The Maoist mass line ideology encouraged them to be adaptive and to have agency in making productive decisions. However, the same ideology also provided models with unquestionable authority, effectively making adaptability a privilege that no other Xiyang collectives could enjoy.

Other communes and brigades did not willingly give up their own agency in making farming-related decisions. In fact, the deep-sowing dictate had to be vigorously enforced through surveillance and censure of deviant practices. In 1974, peasants across Xiyang were asked to finish the sowing with the firm stamp 死踩, and were forbidden from using the half-firm stamp 活踩. Stamping after covering seeds is a common technique in dry northern China. The level of firmness should be based on the feel of the soil and the weather prospect. As previously explained by Dazhai, this could vary from one dent to another. However, the county's party committee sent commune-level cadres to stay at lower-level units to ensure thorough implementation of the "firm stamping" principle. This resulted in seeds sinking too deep and being covered by hard soil, preventing seedlings from emerging. Opposition was silenced by the party committee's harsh criticism. A notification warned, "Some communes and brigades are not devoted to promoting Dazhai experience; they keep spinning their wheels 胡思乱想. Instead of

[68] "Survey on the progress of seedling inspection and complementary planting 查苗补缺情况调查 May 1973," XCA 3-1-610.

following Dazhai's practice, they are trying to reinstate what we have previously criticized."[69] Those who followed the deep-sowing dictate and suffered the consequences were only criticized for not being sufficiently diligent; those who had been "spinning their wheels" faced more severe censures. We will further discuss this subject in the later sections.

End notes on Dazhai's "Scientific Farming"

Scientific farming is, of course, about more than muscle-power transportation. It was the apotheosis of the Maoist commune, in which great feats of science and industry could be accomplished by the masses, under party leadership, without the socially corrosion of capitalism or private ownership. But as this section shows, this great social experiment depended on a material reality in which its only resources were often MPT. Erecting terraces, plugging gullies, and altering the course of rivers required unprecedent party control over Dazhai draft animals and the very bodies of its peasant laborers.

4. "Which road should the horse carts go on?"

In 1971, Xiyang launched a sweeping campaign to persecute transportation sidelines of all brigades. This campaign reverberated across the country and many localities followed suit. Unlike the early 1960s state-led initiative to send urban animal-drawn carts to the countryside, this campaign, led by Dazhai, had a seemingly bottom-up characteristic in keeping with the spirit of the Cultural Revolution. Never sanctioned by state policy, its wide emulation speaks to Dazhai's political stature as the avatar of Maoist praxis. The campaign targeted horse- and mule-drawn carts, throwing MPT's critical position in the Maoist political economy into sharp relief.

[69] "Telephone meeting records of the County Party Committee 县委电话会议记录 1974," XCA 3-1-657.

In the course of half a year, all Xiyang brigades went through several rounds of inspection, interrogation, and persecution of those engaged in transportation sidelines. These efforts were successful, as eventually "all the horses and carts returned to the farm."

The MPT forces were caught between the state's ideological commitment to rural self-sufficiency and the economy's real needs for the deployment of MPT in urban industry. The Communist Party instated an urban-rural division to keep the countryside self-sufficient. This was to industrialize the nation with limited capital resource. But the division ended up limiting the urban sector's access to cheap labor, in this case, the more affordable MPT. It also deprived rural collectives of the ability to support themselves through exchange with the urban market. To be sure, agricultural cooperatives continued to hire out their draft animals and strong male laborers to factories and mines, as the previous chapter has shown. But this was done at a very controlled scale and through strict process of authorization.

In the wake of the GLF, concerns over food security elevated "Grain First" to the key governing principle of rural production. As a result, sideline production came under more frequent scrutiny and assault. The Party believed only a self-sufficient countryside that devoted itself to grain could serve as the foundation for modernization. However, the climbing investment in infrastructure and machinery raised agricultural cooperatives' cost of grain production, which could not be recouped from grain sales to the state. The "Grain First" policy thereby impoverished the rural collectives. Even as the collectives desperately needed additional income from MPT, transportation sidelines came under particularly furious attack. Dazhai led this assault, confident that it was carrying out Mao's desire to reserve MPTs for grain production and to deal a blow to the growing black market. The crackdown on transportation sidelines has serious implications for the allocation of MPTs, and for the rural livelihood more broadly.

By the early 1970s, transportation sidelines had become a critical source of income for Xiyang's agricultural cooperatives to balance their increasingly precarious budgets. Infrastructural investment took 20 to 40% of the collectives' gross output.[70] In 1971, the 400 brigades of the county owed banks and credit cooperatives eight million yuan, and owed another half million to peasants.[71] The decrease of grain income resulted in lowering of labor point values, and many households had to live on loans. Both brigades and individuals suffered from a dearth of cash. Under pressure to pay back loans and increase reserves for future infrastructure projects, the brigades paid their members partially in kind. In some cases, peasants received less than half of their income in cash—an amount of 40 to 50 yuan after a year of labor.[72] For the brigades, transportation sidelines were a godsend. They required little investment and provided considerable income, which was particularly indispensable for poorer villages. A small brigade in Dazhai Commune called Withe Valley (shutiaoyu) earned 45% of their annual income (14000 out of 31340 yuan) in transportation in 1966.[73] Larger brigades, such as North Jiedu, also expanded their transportation force in late 1960s to fend off expenses on agricultural machinery and pay back bank loans. In three years before 1970 the number of mules they had grew from eight to nineteen.[74] Most of these were contracted to coal mines in Yangquan.

The campaign started as a crackdown on the outflow of labor. Reportedly, before March 1971, the transportation force hired out to Yangquan alone included 541 horses and mules, 515

---

[70] "Investigation report on income distribution in Shishan and Beizhangcheng Brigades 关于对石山、北掌城两个大队收益分配情况的调查报告 1975-1-3," XCA 3-1-736.
[71] "On holding the Party Secretary meeting by zones 关于分片召开党委书记会议的情况 1971-9-10," XCA 3-1-553.
[72] "Investigation report on the income distribution in Beijiedu Brigade, Jiedu Commune, in 1970 界都公社北界都大队 1970 年收益分配调查报告 1971-9-10," XCA 3-1-553.
[73] "Financial situation of Shutiaoyu Brigade 树条峪生产大队财务情况," XCA 76-1-75.
[74] "Investigation report on the income distribution in Beijiedu Brigade, Jiedu Commune, in 1970," XCA 3-1-553.

men, 99 animal-drawn carts, and 188 push carts.[75] While these numbers might not seem significant on their own, they were substantial when considering the massive labor input in infrastructure and farming under the Dazhai model. In a county of 200,000, even 500 men could not be overlooked, let alone the valuable animal muscle power. From 1966 to 1971, labor put into agricultural infrastructure grew from 6.8% of all agricultural labor to 42%.[76] This trend continued after the campaign, proving its lasting success. By 1976, Xiyang's Agricultural Infrastructure Construction Teams had grown to 15,000—20% of the county's entire labor force.[77] Almost all strong-bodied men were in construction and not farming, which was left to women, elders, and school students. By the latter years of the Cultural Revolution, some brigades even hired people from Hebei to build village's housing because they had no men to spare for "non-productive" work.[78]

The County Party Committee launched its attack in March 1971, at the Four-Level Cadres Meeting (county, commune, brigade and production team) attended by all county agricultural cadres. The campaign faced considerable resistance. Transportation sidelines were mainly a brigade-level business as ownership of large draft animals was held at this level. The brigade leaders defended this important source of income. Some questioned how else they could pay back loans and provide promised cash to co-op members. Others argued that transportation sidelines were a legitimate exchange between rural collectives and state enterprises, and that no state policy prohibited it. Still others complained that the cost of being the model county had

[75] "Materials for the Four-level Cadres Meeting 四干会材料 March 1971," XCA 3-1-538.
[76] Chen Yonggui 陈永贵, "Report at the Three-level Cadres Meeting in Xiyang 在昔阳县三级干部会议上的报告 1973-2-9," XCA 3-1-613.
[77] "Build a revolutionized agricultural infrastructure construction team in Learning from Dazhai Campaign," XCA 3-1-798.
[78] "On the investigation in Hexi Brigade 河西大队调查情况 1976," XCA 3-1-800.

become too high. Xiyang had banned household small plots, which were allowed in many other places. Now it was targeting transportation sidelines. These opinions were seriously criticized, as they "only concerned the economic balance sheet, not the political balance sheet."[79]

After the March meeting, some brigades began to withdraw their MPT forces from Yangquan, but progress was slow; only about half returned in three months. The County Committee sent investigators to the most stubborn communes, one of which was Anping. Anping commune had 33 horse-drawn carts, 29 of which were engaged in transportation sidelines. 120 men, or 6% of its male labor, were involved in MPT in Yangqun. Some of these men returned temporarily under pressure after the March meeting, only to quietly slip back soon after. Chen Yonggui emphasized the issue as a problem of political line during another meeting in July. Communes promptly held "study sessions" to discuss "which road should the horse carts run on?" These sessions, with their elaborate group criticisms, personal threats, interrogations, confessions, and finger-pointing, identified culprits and produced detailed "materials of wrong doings." The study sessions and the written reports increased the costs of disobedience. The return of horse carts sped up. To prevent them from leaving again, the County began several reservoir projects ahead of schedule to keep the carts busy hauling dirt under supervision.[80]

As the campaign proceeded, its focus shifted from preventing labor outflow to cracking down on the black market run by those in transportation. This effectively silenced the protest arguing that the transportation sideline was beneficial for the collectives. Each commune was then asked to select a "bad example" so that criticism and struggle could be clearly targeted. The

[79] "Materials for Four-level Cadres Meeting 四干会材料, 1971-3-18," XCA 3-1-538.
[80] "Investigation report on the return of labor and animal-drawn carts from sideline production back to the brigades in Anping Commune 关于安坪公社劳畜车辆外出搞副业返队情况调查报告 1971-9-6," XCA 3-1-553.

selected “bad examples” were subjected to repeated interrogations until a case was built against the brigade’s top leaders for their involvement in black market dealings. Multiple reports on the Peak Ditch (fengwa) Brigade of Yanzhuang Commune illustrated the process of indicting the personnel involved. The Peak Ditch Brigade had four carts drawn by sixteen draft animals that had remained in Yangquan for four years without being used in local infrastructural construction. The man in charge of the transportation sideline in Yangquan, Zhang Jinhe, had a history of being caught by the Bureau of Industry and Commerce for selling horse feed on the black market. At the March meeting, all 78 cadres from Yanzhuang Commune targeted the Party Secretary of Peak Ditch, Hao Fuyi. Although there was no evidence that Hao was personally involved in Zhang’s actions, the meeting labeled him a “bona fide Capitalist Roader” who “intentionally undermines the Cultural Revolution, tries to restore Liu Shaoqi, and damages Dazhai.” The persecution did not stop at Hao. Under prolonged pressure in study sessions, Zhang Jinhe admitted to selling more than 4,000 jin of grain for 40 Peak Ditch households, using the brigade’s horse carts for shipment without contract and embezzling the money as well as selling stolen construction materials to the brigade. In September, he implicated Brigade leader Chen Benshan and accountant Liu De, claiming that he had sold feed and grain for the two men. Chen and Liu denied the accusation. Other party members of Peak Ditch resisted corroborating Zhang’s story. However, Zhang had to continue providing more details of his wrongdoings, expanding the list of stolen items, and the cash and merchandise used for bribery, ultimately blaming the black-market activity on Chen Benshan. Chen was eventually labeled a “Capitalist agent within the Party.”[81]

Reports on another brigade, Pu Gully of Lijiazhuang Commune, exposed a cross-county

[81] “Materials for Three-level Cadres Meeting 三干会材料 1971-9-20,” XCA 3-1-550.

and cross-provincial network for exchanging grain and supplies. The three men at the center of this network were the Brigade accountant Zhang Lanjiang, head of transportation Zhang Bangxiao, and Wang Fuhai, the son of a landlord. Zhang Bangxiao had been trading grains for the brigade in the early 1960s, when the state allowed more market activity. During this time, he built a network that he continued to use after becoming the head of transportation. Wang Fuhai came from a disadvantaged background in rural Maoist China due to bad class status. His grandfather was beaten to death during Land Reform. His uncle was also beaten to death by the villagers after being expelled from a factory for "making a fake grenade." His involvement was enough to make the trio vulnerable to attacks. The three men primarily helped the brigade leader manage the grain reserve. When the reserve grain became old, the brigade used it to make foodstuff such as glass noodles, which were sold to the supply and market cooperative to purchase new grain to replenish the reserve. The brigade also exchanged extra corn seeds for wheat seeds to adjust the crop ratio. These exchanges, although necessary, were only legal if done through the state-run granaries or with special authorization. Compliance was burdensome and the terms were unfavorable, so grain exchange between agricultural cooperatives operated in a grey zone: everyone did it, but one could still get into trouble. Zhang Bangxiao and Wang Fuhai knew many people in the neighboring county of Shouyang and in Hebei, and were reliable and competent traders who always met the brigade's needs. The brigade also relied on them to acquire more difficult to access materials such as timber and rubber tires. The Brigade Chief tried to defend his men and was "seriously criticized and dealt with" along with them.[82]

As those defending the transportation sideline received punishment, new leaders were promoted to rein in the MPT forces. The South Gully Palm (nangouzhang) Brigade replaced

[82] Ibid.

their entire cadre with new blood, the average age of whom was only 23. Once appointed, the young cadres launched two-week long intense struggle sessions until "the enemies lowered their heads," crushing any resistance from the previous leadership. They then promptly called back the brigade's horse carts from Yangquan and, with undeterred ambition, embarked on a new reservoir project based on their own research and design, using the horse carts for construction. "There was no water or sand [for construction], so we mobilized horse carts and wheelbarrows to haul them from twenty li away to the village, then had people carry them up to the reservoir," they reported proudly, "To solve the problem of labor shortage, we combined [the labor of] the construction team and the mass. During the day, the construction team prepares materials and builds the dam, and during night the entire village is out for an assault to fill the ditches. We made the record with a 20-hour workday." By "forcefully digging into the reserve of female labor," they made the women to carry out all the farm work in late spring and early summer.[83] Experienced cadres knew that coercive mobilization would eventually spark backlash and that people's contempt could make them the target of the next political campaign. However, new cadres were eager to exercise their power and prove their ability.

By striking down the transportation sideline, Dazhai forced rural collectives to pursue extreme self-sufficiency. In the process, it branded almost all exchanges not officially sanctioned by the state as "capitalist tails" that must be cut off. For example, seed swaps between two brigades were labeled as "grain sales in disguise 变相卖粮." Even mechanization, the state's top priority for agricultural development in the early 1970s and an area in which Dazhai claimed to be a committed pioneer, was not to be achieved at the cost of extreme self-sufficiency. Several

[83] "Materials for the Conference of Marching Towards Agricultural Mechanization 向农业机械化进军大会材料," XCA 3-1-553.

brigades were publicly criticized at "Marching towards Agricultural Mechanization Meeting" in September 1971 for exchanging foodstuff for electronic motors with state enterprises. The same meeting declared that transportation sidelines, which caused the outflow of human and animal labor, were "the greatest obstacle" to the movement of learning from Dazhai.[84]

Chen Yonggui continued to forbid Xiyang agricultural cooperatives from engaging in transportation sidelines, even when they suffered from a severe drought in the following years. Instead of allowing wheelbarrows and horse carts to go to Yangquan to earn much-needed cash income, he put them to work on hydraulic projects and local mines to earn labor points. The principles of the Grain First policy and self-sufficiency became themselves goals in and of themselves, and adherence to these principles reached the level of self-defeat. In 1974, Chen Yonggui criticized the Chengguan Commune for selling stones to other collectives, saying, "Other collectives built farmland on rocks, yet you guys sold stones for money." He condemned the Chengguan cadres for making easy money instead of enduring hardship. Chengguan was the least mountainous commune in the county and did not need a lot of stones for terracing. Although their selling stones could obviously help other collectives to meet their needs, Chen would not tolerate Chengguan for "abandoning agriculture for commerce." To show their obedience, Chengguan cadres stopped quarry production and disbanded other sidelines, redirecting more labor into agriculture.[85]

---

[84] "Materials for the Conference of Marching Towards Agricultural Mechanization, no.10: About holding Commune Party Secretaries Meeting by zones 向农业机械化进军大会材料之十 关于分片召开公社党委书记会议的基本情况," XCA 3-1-559.

[85] Chengguan Commune Party Committee 中共城关公社党委, "Report on implementing Comerade Chen Yonggui's two instructions 关于贯彻陈永贵同志两点指示的报告, 1974-3-26," XCA 3-1-651.

5. Revolution And Production

The Cultural Revolution was originally a revolution of both the spiritual and the material, as its banner slogan "Grasp the Revolution, Boost the Production 抓革命促生产" intended to convey. The fact that it ran the national economy into ruin, devastating industry and commerce, have contributed to a historical amnesia in which few people today can believe or remember the Cultural Revolution's strong productivist orientation. But this orientation was clear in party pronouncements at the onset of the Cultural Revolution. On September 6, 1966, People's Daily published an editorial opinion piece that began with the statement "The Sixteen Lines issued directly under Chairman Mao's leadership correctly pointed out, the Proletariat Cultural Revolution is a great force to drive our country's social productivity forward." For Mao, Cultural Revolution was the combination of the two critical campaigns in Yan'an, the Rectification Campaign and the Production Campaign, on a massive, national scale. "These two links, if not grasped at the proper moment, would make us fail to grasp the entire chain of the revolution," the article stressed. "By reforming the human soul with Mao Zedong thoughts, promoting the revolutionization of human thoughts, and winning the battle on the frontline of the spirit, we will be able to galvanize humankind's self-motivating agency and to win even bigger victories on the battle line of the material."[86] The lofty idea that reforming thoughts could unlock the full scope of human agency and release more power for innovation and production took shape in millions of lives as various forms of everyday political rituals and particularly violent struggles. It both inspired and terrified them into devoting their muscle power to the socialist system.

Dazhai asserted that it was never merely a "production model" that "harvested several more pounds of grain." That would be a depreciation of Dazhai, Chen Yonggui opined. Instead,

[86] "Opinion Editorial," *People's Daily*, 1976-9-6.

the primary production experience from Dazhai was, Chen insisted, its experience in political struggles.[87] In fact, every time Dazhai shared its farming practices, it also shared how it conducted study and struggle sessions as a means of ensuring that the correct practice would be carefully implemented by the masses. Dazhai well understood the inseparability of revolution and production. It was therefore wrong to only conduct struggle sessions during the slack season, like many other places were doing. According to Chen, "the busier the farm work is, the more intense the struggle should be."[88] To "grasp revolution" in the busiest sowing season, Dazhai implemented flexible formats for struggle sessions. Chen explained, "We hold primarily small, short sessions in the field, which are supplemented with large sessions in the evenings. We turn the field, the canteen, and the side of the *kang* all into a battlefield of the Criticizing Lin Biao and Confucius Campaign."[89] By turning all spaces of work and life into stages for political struggle, Dazhai diligently rooted out and attacked socialism's enemies and naysayers.

To socialism's stalwarts, it seemed a specter was haunting Chinese village—the specter of capitalism. Dazhai's celebrity cadre Guo Fenglian, said in a meeting: "Capitalism dies hard. We drive it out of the free market, and it sneaks into the gullies to open small household plots. We drives it out of the gullies, and it finds its place around people's houses; we drives it from the house surroundings, and it slips into the houses and still tries to turn collectivism into individualism."[90] Dazhai forbade this grey zone where cooperatives or individuals could engage

[87] "Comrade Chen Yonggui's opinions on the current affairs 陈永贵同志对当前工作的一些意见 1973-5-9," XCA 3-1-628.
[88] "Firmly grasp the Criticize Li Biao and Criticize Confucius Campaign, get scientific farming into full swing, and win the first battle of spring sowing 狠抓批林批孔 大搞科学种田 打胜春播第一仗" 1974-4-7," XCA 3-1-651.
[89] Ibid.
[90] Guo Fenglian 郭凤莲, "Speech at the Shanxi Provincial Conference of Learning from Dazhai 在全省农业学大寨会议上的讲话 1974," XCA 3-1-666.

in a degree of free exchange to meet their basic needs. It reasoned that such activities, even at the smallest scale, are like cracks in a dam that will eventually turn into huge chasms and destroy the whole system.

Xiyang had long banned the household small plots and market fairs. It then went so far as to ban all free exchange of grain and foodstuff. Under the system of agricultural cooperatives, brigades distributed grain to their members after they met the state's quota and put some aside as seeds and reserves. In addition, because they often could not pay members' labor points entirely in cash, grain was also used as payment. Peasants had no choice in the kinds of grain they received. Shortages of cash or food, or the need for a different kind of grain, led to exchanges. However, in Xiyang this basic need of exchange was punished as "speculation." From 1971 to 1973, Xiyang brutally punished "grain dealers," who were regular peasants who sold grain or helped others to buy or sell grains. The long-lasting persecution showed how desperately the peasants needed such exchange. Sometimes grain selling became like guerrilla warfare. In January 1970, all but two of Gonghe Brigade's leading cadres left the village for the county seat to attend a meeting. Peasants took the opportunity to act. "They carried their corn to Pingding (a neighboring county) over starry nights. Fifty households, which accounts for fifty percent of all households of the brigade, went to Pingding over a period of three nights. Even one of the two cadres who stayed behind joined them, carrying thirty jin of corn to Pingding and selling them for 0.3 yuan per jin."[91]

The extreme hostility towards exchange even extended to seeds preparation. In 1973 many Xiyang cooperatives bartered corn for wheat seeds with some cooperatives in Hebei.

[91] "Materials for Four-level Cadres Meeting, no.8: Discussion record of Team One in Zhanshang Commune 四干会材料之八 沾尚公社第一组讨论情况 1971-3-18," XCA 3-1-538.

Xiyang's wheat harvest was poor in 1972 due to the severe drought, which explained the seed shortage. The amount of wheat they acquired did not seem to significantly exceed the amount required for sowing their wheat land.[92] However, Chen Yonggui harshly censured these communes and brigades for their lack of self-sufficient spirit. He particularly resented the fact that the brigade exchanged corn, a coarse grain, for wheat, a fine grain. This gave the appearance of satisfying a picky palette, as if Xiyang peasants could no longer "eat bitter."[93] Interestingly, these exchanges were called "grain outflow." Even in naming an allegedly illicit activity, the Xiyang cadres pretended that peasants in their county did not need grain. There was no shortage, no starvation, only impure, selfish thoughts that needed correction.

The persecution of individualism (si 私) intensified over the course of the Cultural Revolution. In 1973, Xiyang devoted the entire month of November to the mass campaign "Correcting the 'turning of collectivism into individualism' 纠正化公为私." In numerous study sessions, endless "individualistic" behaviors of cadres, government staff, and peasants were reported. Bribery, stealing, causing loss to the collective due to neglect, engaging in "speculative" activities, and doing sidelines to enrich oneself were all labeled as "individualistic" behaviors that called for severe punishment. Even brigades that provided scant material incentives were criticized. Some served youtiao (a fried food resembling churros) to their laborers when the construction project was at its most onerous. Others sold pork "at cost price" to members holding weddings. Still others extracted lower rate of collective reserve fund in order

[92] "Record of exchanges with other localities for wheat seeds in 1973 七三年到外地调换麦种的统计," XCA 3-1-613.
[93] "Record of the County Party Committee expanded meeting 县委常委扩大会议记录 Oct to Dec, 1973," XCA 3-1-626.

to distribute more to their members.[94] After a month of intense struggle, a new labor input record was promptly made. According to a meeting record, "more than eighty percent of the labor force was put into the winter infrastructure building projects" immediately after the "Correcting 'turning collectivism into individualism'" campaign.[95]

The most faithful followers of Dazhai and Chen Yonggui were also the most vehement attackers of "capitalist" activities, and they also defined "capitalism" most indiscriminately. Gaolao Brigade was one such collective. Its leading cadres were determined to make the brigade an impregnable fortress of socialism. The Gaolao party committee issued a list of capitalist activities to be persecuted, including, "carrying one's own basket to the field (for suspicion of stealing), raising sows (that may give birth to piglets), gathering hay, tree branches, straws, dry leaves for oneself; purchasing grain from outside the village, purchasing items from person outside the village."[96] In other words, any addition to individual belongings that was not received from the brigade was considered capitalist in nature. Even people from outside Gaolao could fall prey to its ferocious punishment. A cadre from West Gully Brigade came to Gaolao to sell some spring onions. His goods were confiscated, and he himself was sent to Gaolao's construction team for "labor reform." After that, he was locked up and struggled for seven days in a row until all his cloths were shredded into rags. "Study sessions" were constantly held for those seen as not working hard enough, in which a whole repertoire of humiliations and abuses were freely applied. According to a government report issued in 1980, 141 people died directly from these

[94] "Record of Commune Party Secretaries Meeting on Correcting the 'turning what's public into private' behaviors 公社党委书记纠正化公为私会议记录 1973-11-29," XCA 3-1-629.
[95] Ibid.
[96] "Dissecting Gaolao Brigade Party Branch's 'rectifying the Party year after year and fighting revisionism day after day' pheonomenon 对皋落大队党总支年年整党建党 天天反修防修的剖析 1980-7-10," XCA 3-1.1.2-51.

brutal struggles during the Cultural Revolution in Xiyang, and approximately one hundred were permanently disabled.[97]

6. The End Of Dazhai

The death of Mao on September 9, 1976 shocked and disoriented the country. When the nationwide memorial service was held on September 18, fifty thousand people gathered in a square at the Xiang County seat. They witnessed the commemoration turned into a "serious political accident" when the loudspeaker played the wrong song. Instead of "The Dirge," which had been the assigned piece for the CCP's public memorial services, people stood in shock as they heard "The East is red, the sun is rising!" The immense grief was momentarily overcome by panic, as the song blew a hint of absurdity into what was supposed to be the most somber moment.[98]

Mao's death did not immediately impact Dazhai's status. At first, Chen Yonggui believed it was time to take a step further towards realizing socialism. In 1977, Xiyang held a County Congress to pass a decision to transition to commune-level ownership, a system of ownership tried nationwide during the Great Leap Forward and never been attempted again since the catastrophic famine. Xiyang had been experimenting with moving the basic accounting unit from the brigade level up to the commune level. For Chen, the primary appeal of the commune ownership system was that it would remove many barriers hindering large-scale infrastructural building. Brigades often disagreed upon whether or how to claim the land in-between them. If

[97] Liu Shugang 刘树岗, "Speech at the County's propaganda work meeting 在全县宣传工作会议上的讲话 1980-11-6," XCA 3-1.1.2-57.
[98] "Speech on the County employees meeting about dealing with the broadcast station's severe political incident on September 19 在处理广播站 9 月 18 日发生的严重政治事故召开的全县职工大会上的讲话 1976-9-26," XCA 3-1-772.

decisions were made at the commune level, the reasoning is, it would be more rational and conducive to the larger good. Many brigades also found that their closest source of irrigation was inconveniently located in a neighboring brigade that refused to cooperate on a well-drilling project. Under commune ownership, cooperation would be obligatory. While some brigades, much to Chen's chagrin, were never sufficiently devoted to infrastructure projects, there were also other hotheads constantly launching new, unpromising projects. Chen believed that by breaking the brigade unit, these two tendencies would somehow balance each other out. Most importantly, brigades would no longer be able to resist the commune's request for labor, which would make larger projects much easier. Chen envisioned an endless expansion of farmland with a massive labor force under the larger ownership system. He proclaimed, "[We will] dig the beaches and dig the mountains, after the mountains we open more terraces…When we are done [reclaiming land] within the commune, we will launch an expedition to other places, fighting there for a few months, and opening several thousand mu of land. The potential is indeed endless…"[99] Apparently, for Chen at this moment, socialism came to mean primarily the collective force to conquer nature.[100] In his mind, the most important task of the peasant labor force had become less about farming, for which smaller ownership unit was more suitable, and more about construction, which demanded that rural labor be released from farming and organized into mobile construction teams.

Dazhai continued to share its experience in infrastructure building on national platforms, openly promoting its transition to commune ownership. At the National Conference for Agricultural Infrastructure Building in July 1977, the then Party Secretary of Dazhai Commune,

[99] "The situation and measures of implementing unified accounting in Dazhai Commune 大寨公社实行统一核算的情况和做法 1977-10-19," XCA 3-1-845.
[100] Shapiro, *Mao's War Against Nature.*

Zhao Huairui, described the advantages of commune-level labor organization. “By breaking the boundary between brigades, we are able to centralize labor, machinery and capital to fight all-out battles in short time.” More importantly, the infrastructure construction teams at commune or even county levels “carried the historical mission to change the relation of production.” Every project accomplished by them “weakens the brigade as an accounting unit and lays the path to commune ownership or even public ownership.” By being part of the construction team, individual peasants “become a link in the process of mass production.” Their horizon of thinking was now no longer “constrained by the limit of brigade affairs but concerning the commune and even the county.”[101] As such, they would come closer to thinking like true communists.

The wind changed after the Third Plenary Session of the Eleventh Central Committee of the Party. The government began to allow tentative, grassroots experiments with different models of agricultural production management. It rehabilitated many who had been politically ousted during the Cultural Revolution. The slogan of the time was “to carry out Chinese-style modernization 搞中国式的现代化,” without specifying what Chinese style should entail. Jinzhong Municipality chose four localities for pilot trials. Although it still paid homage to Dazhai by making the Liuzhuang brigade in Dazhai Commune one of the four pilot sites, the initiative was clearly headed away from the Dazhai model. The experiments in the other three localities were all what Dazhai had long been trying to banish. Yangyi in Taigu tried a small-scale contract responsibility system. Wangcun in Qixian put 60% of their people into industrial sidelines. Haocun in Yuci devoted more land to vegetables growing and timber forest. Liuzhuang in Dazhai was the site for agricultural mechanization. The experiment in Liuzhuang could hardly

[101] Zho Huairui, “Speech at the National Conference for Agricultural Infrastructural Construction.”

be called a success. The main conclusion drawn there was that the machinery then most available to Shanxi villages was largely unsuitable for local use. To make mechanization worth doing, investment in new types and models was a must. The experiment's conclusion dismissed in a stroke Dazhai's claims as a successful path to mechanization.[102]

Late 1979 saw the launch of the Truth Criterion Debate, which put top Xiyang cadres in a difficult situation. As the Party Central clearly steered away from Hua Guofeng's pledged loyalty to Maoism, Xiyang cadres had to, no matter how unwillingly, provide their response to this political debate in reflection of Dazhai's role in the Cultural Revolution. The County Party Committee held a series of meetings, first in Chen's presence and later in his absence, trying to reach a consensus on the statement they must make. The Cultural Revolution was over, but seasoned cadres had long learned that swiftly switching line could backfire badly. Besides, it had been so long that the label of "anti-Dazhai" meant one's end of political life. The cadres stated their agreement with the Third Plenary, while coming up short of formally renouncing the Dazhai experience. The cadres agreed that they should wait and watch, until the upper authority made it clear their attitude towards Dazhai.[103]

The hammer dropped before the end of 1979. The Party Committee of Shanxi Province distributed a draft titled "Completely Eliminate the Pernicious Influence of the Left Extremism in the Learning from Dazhai Campaign" for Shanxi counties to adapt to write their own report on the terrible costs the campaign had incurred. The choice of words made it clear that Dazhai's demise was then unambiguous and irreversible. Xiyang issued its statement twenty days later.

---

[102] "Report on the experiments of mechanized production of corn 玉米生产机械化实验报告 1979-11-20," XCA 3-1.1.2-6.
[103] "Meeting record of County Party Committee 县委常委会议记录 Nov-Dec, 1979," XCA 3-1.1.2-2.

The document recounted Dazhai's attacks on sidelines—particularly those on transportation during the "horses and carts returning to the farm" campaign, on household small plots, on market fairs, and on family handicrafts. It admitted that many of the infrastructural projects were over ambitious and unprofitable, while devastating forestry and husbandry production and exacerbating environmental degradation. It reflected on Dazhai's egalitarianism and how it hurt peasants' production motivation. It acknowledged how the incessant struggles had damaged the relation among cadres and between cadres and the masses. It professed that lessons must be learned. Specifically, knowledge from specific environments and historical conditions should not be taken as universal and transcending. "Dazhai constantly manufactured 'experience' and eventually made 'Dazhai experience' synonymous to Mao Zedong Thoughts.," the report said. "It thus lost its original value and turned into something mysterious and untouchable." The report also lamented that: "We not only excluded the advanced science, technology and managerial practices from capitalist countries, but also attacked certain socialist things such as distribution according to labor as being capitalist."[104] In a quick and thorough manner, Mao Zedong Thoughts, socialism, capitalism—heavy ideas of life and death significance—all changed their meanings from three years ago.

Household sidelines rapidly returned to Xiyang. By the end of 1979, some Xiyang households already earned 20 to 45 percent of their income from sidelines, demonstrating the decisive importance of sidelines to the peasant economy.[105] In October 1980, during a one week period, 160,000 people in Xiyang learned of the Party Central's Document No. 75 formally

---

[104] "Report on thoroughly exterminating the pernicious influence of the Learning-from-Dazhai extreme leftism in our county 关于彻底肃清我县学大寨运动中极左流毒和影响的报告 1979-12-27," XCA 3-1.1.2-9.

[105] " 'Seven examples in which commune members get rich through their own labor 社员通过自己劳动富起来七例," *Internal Communication 内部情况* 1979-12-15," XCA 3-1.1.2-16.

instituting the Agricultural Production Responsibility System. This transformed the Chinese countryside overnight. By year end, wheelbarrows and horse drawn carts were being operated by teams and individuals who signed contracts with brigades and communes. A report introducing the ongoing changes in the local economy wrote: "It is up to the teams and individuals [who signed the contract] to decide what they will do. They just need to pay the collectives the promised amount by the end of the year. They keep any extra."[106] The silly old man stopped trying to move the mountain while horse carts drove away from the farm. A new era had begun.

The Final Note

For over a decade, Dazhai was exalted as a national model for its reported success in overcoming poor natural endowments and achieving high agricultural output under strong party leadership. The "Dazhai model" relied on intensive labor input for infrastructure building and collective farming. This chapter examines how this model emerged as the state designated grain production the primary task of the rural population. Furthermore, the Maoist state's insistence on grain autarky for individual rural communities suppressed local development reliant on non-agricultural income, such as husbandry and transportation sideline. During the Cultural Revolution, such suppression was implemented through mass campaigns that persecuted those engaged in non-agricultural activities rather than through formal state policies. Models like Dazhai played a critical role in reshaping the rural political economy through making their local initiatives such as "Horses and Carts Return to the Farm" exemplary to the whole country. Mobile MPT forces challenged Dazhai's model making, threatening to undermine its control of

[106] "How did Dongguan Brigade in Chengguan Commune establish production responsibility system 城关公社东关大队是如何建立生产责任制的 1980-11-16," XCA 3-1.1.2-56.

labor and goal of rural self-sufficiency. Where and how communities used their MPT power became a litmus test of their correct application of Mao Zedong thought. By focusing on the struggle over muscle power allocation, this chapter re-examines the economic and social system of rural collectives. It argues that collective agriculture imposed absolute cadre authority and created a system of knowledge production in which labor mobilization through political means was the primary concern of cadres. Despite the Maoist valorization of indigenous knowledge, work in the countryside remained fundamentally distinct from traditional rural production in that peasants could no longer decide when, where, and how to use their own labor.

Epilogue

In January 2023, the Development and Reform Committee, the Chinese government's epicenter for economic policy, issued a new "Measures for the Administration of work-for-relief program 国家以工代赈管理办法 ["Measures 2023" hereafter]." The "Measures 2023" is based on a policy with the same title issued in 2014 ["Measures 2014"], which itself is an update from the earlier "Measures for Administration of work-for-relief program" issued in 2005 ["Measures 2005"].[1] The continuation and expansion of the "Measures" shows that "work-for-relief," once a post-disaster strategy for emergency relief dating to imperial times, has become an institutionalized, much-broader program for poverty relief in twentieth-first century China. "Work-for-relief" is defined as an "aid policy" by which relief recipients receive payment for their labor in small-scale rural infrastructural projects directly invested in by the government. From 2005 to 2014 to 2023, the Measures became more and more elaborate, extending from 33 to 52 clauses, with more regulatory specifics and more normative requirements on the management and monitoring of the projects. The regions the policy prioritizes expanded from "old revolutionary base areas 革命老区, ethnic minority areas 少数民族地区 and areas of extreme poverty 特困地区" in 2005 to "under-developed areas 欠发达地区" including "areas of extreme poverty, revolutionary base areas, new settlements of 'poverty-relief' initiative that continued to rely on aids 易地扶贫搬迁后续扶持任务较重地区, and areas suffering from severe natural disasters" in 2023. The funding source of these projects also became more

[1] Develop and Reform Committee began to implement Work-for Relief programs in economically backward areas since 1984. Pre-2000 work-for-relief often distributed grain, cotton cloth, low-end industrial goods instead of cash wages. See https://wiki.mbalib.com/wiki/以工代赈. "Measures 2005" appears to be the first statute to make Work-for-Relief a formal, ongoing state initiative.

formally designated. From being an unspecified responsibility of the State Poverty-Relief Fund 国家扶贫资金 and Fiscal Poverty-Relief Fund 财政扶贫资金 in 2005, it received its own designated allotment in the Within Budget Central Government Fiscal Plan 中央财政预算内计划 and Within Budget Central Government Investment Plan 中央预算内投资计划 in 2014, and finally turned into a specific fund under the names of Within Budget Central Government Investment Plan Work-for-Relief Fund 以工代赈中央预算内投资 and Central Government Fiscal Plan Work-for-Relief Task Fund 中央财政以工代赈任务资金 in 2023. The formalization of Work-for-Relief shows the Party's increasing exertions to uplift its poorest population. At the same time, it reflects the increasing severity of the poverty problem and the difficulty to address it under the current political economy.

The approaches taken by the government in the Measures echo the country's Maoist past, and in many ways are part of the Maoist legacy. But before entering a discussion on the change and continuity between Maoist and Post-Mao China, I should first illustrate how the Measures are particularly relevant to this dissertation about muscle-powered transportation. A "controversy" provoked by a new clause in "Measures 2023" illuminates the connection. When the Measures was announced in January, a newly added Clause 28 caught the attention of both Chinese official media and social media, generating concerns that the policy might be taking an "anachronistic" direction. Clause 28 states: Development and Reform Department at county level should instruct the projects to "avoid using machinery whenever manual labor suffices and avoid using professional construction teams whenever local mass labor suffices."[2] For a policy designed to relieve poverty, such technological choice is justifiable and indeed necessary. Other

[2] "能用人工尽量不用机械, 能组织当地群众务工尽量不用专业施工队伍."

clauses repeatedly emphasize that the Work-for-Relief programs should be a platform serving the "ultimate goal of increasing employment and labor income." And the tendency of local government to go "heavy on construction and light on relief" amounts to abuse of relief fund and must be corrected. However, the media and their urban audience's concern should not be simply discarded for their failing to fully understand the context of the policy and unable to grasp the rural reality. The concern speaks, in a muffled way, to the fear that despite the extraordinary economic achievement of the last few decades, more of Maoist China's features would make a comeback and the public would have no way to prevent it from happening.

The real question is, why, after China has become one of the biggest economies in the world, and after decades of continued effort to eliminate poverty, the program of Work-for-Relief did not diminish but became more normalized and prominent in the Party's agenda? How should we reconcile the picture, in which on one hand China is impressing the world with its capability of constructing massive infrastructure with superb efficiency, not only in China but also in southeast Asia, Middle East, and Africa, and on the other hand the central government is trying to reduce the use of high-power machines in small, rural infrastructural building in order to enroll more muscle power? The Measures 2023's emphasis on using manual labor addresses a different problem than what Maoist China's mass labor mobilization was meant to solve. The state no longer needs tremendous labor input in grain production to support its inchoate industrial sector. Today's China, if not sufficiently urbanized as some may argue, is thoroughly industrialized. If anything, it suffers from a glut rather than a shortage of industrial capital. Nor is Xi Jinping government trying to glorify manual labor like Mao did in the old days. What connects the two is the same structural preference that maximizes the state's economic power at the cost of rural households and, in the long run, rural prosperity.

Barry Naughton points out that the Maoist economic system, with its prominent features such as collectivization of agriculture, industry, and commerce, as well as unified purchase of grain, was set up to "maximize the potential to leap," that is, to give the central government discretionary power to throw resources at whatever their priorities were.[3] To keep this power, the Party cleaved deep divisions within the economy and within the society. A massive muscle-powered sphere at the bottom supported the top of the pyramid—the industrialized state sector. This structure created its own hurdle by restricting the system's ability to productively employ its abundant labor. Yet the underemployment of rural labor in the macroeconomic sense did not mean idleness of the peasants. On the contrary, as this dissertation shows, rural muscle power was intensely exploited, albeit often to unprofitable and, indeed, contradictory ends. Labor was the mode of existence of peasants in socialist China.

During the Reform and Opening Era, China grew to be the world's factory. Its economic success is built on the partial maintenance of the urban-rural divide inherited from the socialist era. Through the persistence of the *hukou* system, Chinese government created a migrant labor force whose production and social reproduction are spatially and institutionally separated. By keeping the peasants' rural *hukou* and their ties to the land in the home village, the state evaded the cost to sustain their reproduction in the city where they contributed their labor. This strategy, described by Giovanni Arrighi as "accumulation without dispossession," succeeded in suppressing wages along with social welfare costs, and for decades has made Chinese manufactures exceptionally competitive on the global market.[4]

However, since the late 2000s, several economic trends began to undermine the efficacy

[3] Barry Naughton, *The Chinese Economy,* 79.
[4] Giovanni Arrighi, *Adam Smith in Beijing: Lineages of the Twenty-First Century* (London; New York: Verso, 2007)

of this developmental strategy and threaten the livelihood prospect of those from Chinese countryside. First, rural land expropriation has become a crucial mechanism for state capital accumulation. With more and more farmland turning to industrial, urban residential, and commercial use, governments at various levels resettled villagers into new townships and set in motion a massive urbanization of Chinese countryside.[5] As the population of "peasants dispossessed of land 失地农民" grew above 100 million in 2020,[6] the "accumulation without dispossession" model is eroded by both the state's dependence on "accumulation by dispossession" and the peasants' proletarianizing that in effect made their labor less cheap. At the same time, a set of other factors further exacerbated Chinese peasant workers' employment crisis: the global supply chain of consumer goods branched out to countries with lower labor cost; the so-called "advancement of the state sector at the cost of the private sector 国进民退" worsened the business environment for private sector where most of migrant workers were employed; and geopolitical changes increasingly threatens the growth of China's high-tech manufacturing industries. As a result, more and more migrant workers found it impossible to maintain employment in the city and were forced to return to the countryside. Yet this time, unlike in the Mao era, they became largely idle for the lack of land or the capital and skills in agrobusiness.[7]

---

[5] For a great ethnography of dispossessed peasants, see Julia Chuang, "Urbanization through Dispossession: Survival and Stratification in China's New Townships," *The Journal of Peasant Studies* 42, no. 2 (March 4, 2015): 275–94.

[6] Yang Tao 杨涛 and Shi Guoqing 施国庆, "A Summary of Studies on Dispossessed Peasants 我国失地农民问题研究综述," *Social Sciences in Nanjing 南京社会科学* (2006) no.7: 102-109. More updated studies on dispossessed peasants can be found in *Rural Studies Database 乡村研究数据库* https://www.ruralchina.cn/xcyj/sublibrary?SiteID=18&ID=89.

[7] Scott Rozelle and Natalie Hell, *Invisible China: How the Urban-Rural Divide Threatens China's Rise* (Chicago: The University of Chicago Press, 2020).

Economist Sun Liping argues that Chinese economy has morphed into a new dual structure in which the part "for state's plans 国计" and the part "for people's livelihood 民生" became increasingly disengaged.[8] He uses "for state's plans" to refer to "the big things" on the top such as "critical resources, important infrastructure, high-tech manufacturing and military industries, and the government's financing platform." This sphere, including state enterprises and some of the top private enterprises, is now where the state capital and resources are poured into. "For people's livelihood" occupies the bottom half of the economic dual structure. The majority of middle and small sized private enterprises belong here and most of Chinese workers are employed in this sphere. The ongoing trend, Sun points out, is that the top "for state plan" sphere will employ less and less labor yet enjoy more and more capital and resources, while the "for people's livelihood" bottom will have to support increasingly larger portion of Chinese population with dwindling resources.

What Sun's observation illustrates is that a "heavy bottom" of the new era is coming into being decades after the end of Mao era. A great portion of labor force unable to be profitably employed will once again be reduced to reserve muscle power, posing both economic and political challenges to the regime. The Work-for-Relief program, by trying to build infrastructure with muscle power instead of machines, aims to provide minimal subsistence to as many as possible. However, a problem of such gravity could not be solved by relief program, even if an expansive one. The Communist Party may have changed tremendously from Mao era, but current leadership shares with his socialist predecessor the same aspiration to achieve "the great things." But now the Party could convert much of the wealth created by the society into its

[8] Sun Liping 孙立平, "Three Opinions on the Current Economic Situation 对当前形势的三点看法," https://news.ifeng.com/c/8Q01Xfg7IW3.

political and military power. However, if the pursuit on the top for “great things” at the cost of people’s livelihood at the bottom continues, the economic deterioration of Chinese countryside would only lead to further social deterioration. What previous experience could the Party draw on to address new problems? At this post-pandemic moment of great uncertainty, it seems to be a particularly pressing question.

Works Cited

Archives:

Beijing Municipal Archives (BMA) 北京市档案

Pingyao County Archives (PCA) 平遥县档案

Xiyang County Archives (XCA) 昔阳县档案

Archival Collection of Chinese Social History Research Center, Shanxi University 山西大学中国社会史研究中心档案

Primary Sources:

Huai River Control Committee 淮河水利委员会. *Zhi Huai 治淮.* 1952-1953.

People's Daily 人民日报

Bulletin of Shanxi Administration 山西政报

Bulletin of Shaanxi Administration 陕西政报

Shi, Wenshou 史文寿, Lin Sangou 凌三苟. *Xiyang Gazetteer 昔阳县志.* Zhonghua Book Company 中华书局. 1999.

Lü, Rongming 吕荣民, Liu Guanghan 刘光汉, et al. *History of Road Transportation in Shanxi 山西公路交通史*. Vol.1, 第一卷. People's Transportation Press 人民交通出版社. 1988.

Zhao, Long 赵龙, Shi Guoliang 师国梁, et al. *History of Road Transportation in Shanxi 山西公路交通史*. Vol.2, 第二卷. People's Transportation Press 人民交通出版社. 1988.

Chinese Academy of Social Sciences 中国社会科学院, Central Archives 中央档案馆. *A Collection of Selected Archives on National Economy (CSANE), 经济档案资料选编.* Vol.6, *Wage and Welfare Volume* 第六卷, *工资福利卷 1949-1952.* China Urban Economic and Social Publishing House 中国城市经济社会出版社. 1989.

Chinese Academy of Social Sciences 中国社会科学院, Central Archives 中央档案馆. *A Collection of Selected Archives on National Economy (CSANE), 经济档案资料选编.* Vol.10, *Transportation and Communication Volume (TCV)* 第十卷, *交通通讯卷 1953-1957.* China Urban Economic and Social Publishing House 中国城市经济社会出版社. 1989.

Chinese Academy of Social Sciences 中国社会科学院, Central Archives 中央档案馆. *A Collection of Selected Archives on National Economy (CSANE), 经济档案资料选编.* Vol.3, *Agriculture Volume* 第三卷, *农业卷 1953-1957.* China Urban Economic and Social Publishing House 中国城市经济社会出版社. 1989.

Chinese Academy of Social Sciences 中国社会科学院, Central Archives 中央档案馆. *A Collection of Selected Archives on National Economy (CSANE), 经济档案资料选编.* Vol.7, *Transportation and Communication Volume (TCV)* 第七卷, *交通通讯卷 1958-1965.* China Financial and Economic Publishing House 中国财政经济出版社. 2011.

Chinese Academy of Social Sciences 中国社会科学院, Central Archives 中央档案馆. *A Collection of Selected Archives on National Economy (CSANE), 经济档案资料选编.* Vol.1, *Agriculture Volume* 第一卷, *农业卷 1958-1965.* China Financial and Economic Publishing House 中国财政经济出版社. 2011.

Huai River Control Committee of Republican of China 中华民国导淮委员会. *The Plan of the Huai River Control Project 导淮工程计划.* 1931.

Zheng, Dapeng 郑大鹏, Xu Yingsan 徐英三, Tang Tao 唐涛, Miao Jianzhong 苗建中, Zhu Huaikang 朱华康, Li Yuqiang 李玉强. *Gazetteer of Huai River Water Conservation.淮河水利志.* Vol.6, *On Management.* 第六卷, *管理卷.* China Science Publishing and Media 科学出版社. 2007.

Tang, Yuanhai 唐元海 et al. *Gazetteer of Huai River Water Conservation.淮河水利志.* Vol.2 *The Overview* 第二卷, *综述志.* China Science Publishing and Media 科学出版社. 2007.

Zhang, Zhaofeng 张兆峰. *Inside the Chinese Communist Party's Huai Control Project 中共治淮内幕.* Hongkong: Liberty Press. 1953.

Center of Zhang Jian Studies 张謇研究中心 and Nantong Municipal Library. *Complete Works of Zhang Jian 张謇全集.* Jiangsu Classic Books Publishing House 江苏古籍出版社. 1994.

Wanghu, Zhen 汪胡桢. *A Record of the Huai River Control Work-Relief Project in Anhui 皖淮工赈纪实.* Department of Engineering of Anhui Committee of Huai River Control 皖淮工程局. 1932

Wanghu, Zhen 汪胡桢. *Handbook for Chinese Civil Engineers 中国工程师手册.* Commercial Press 商务印书馆. 1944.

Huai River Control Committee 治淮委员会. *The Great Huai River Control Project 伟大的治淮工程*. East China People's Press 华东人民出版社. 1952.

Wang, Yongjiu 王永久. *Essays in Memory of Wu Jue 吴觉纪念文集*. Southeast University Press 东南大学出版社. 1989.

Bureau of Propaganda at Political Division of Huai River Contorl Committee 治淮委员会政治部宣教处. *Photographs from the First Year of Huai River Control Project 治淮第一年工程图片集*. East China People's Press 华东人民出版社. 1952.

Sun, Shizheng 孙世铮. "Basic Knowledge: Transportation Volume and Circulation Volume 基本知识:货运量和货物周转量." *Statistical Work Communication 统计工作通讯* (1955) no.7:
33-35.

Han, Tuofu 韩托夫. *Transportations in the Transitional Period 过渡时期的交通运输*. People's Publishing House 人民出版社. 1955.

Xue, Muqiao 薛暮桥. *Papers on Statistics 薛暮桥统计论文集*. China Statistics Press 中国统计出版社. 1986.

Editorial Committee, *Handbook for the Statistical Work in Transportation and Postal Service 运输邮电统计工作手册*. Beijing: Statistics Press. 1956.

Anon. "Analysis on the Balance Between Transportation Means and Transportation Volume Based on Actual Examples 公路运输运力运量平衡分析实例." *Statistical Work 统计工作* (1957) no.9. 23-24.

Gao, Guangli 高广礼. "On Further Rationalization of Goods Transportation 关于进一步合理地组织商品运输的问题." *Education and Research 教学与研究* (1955) no.1: 27-31.

Editorial Committee. *Annuals of Water Conservation of People's Republic of China 中国水利年鉴*. Shuili dianli chubanshe 水利电力出版社. 1990.

Bo, Yibo 薄一波. *Reflections on some crucial political decisions and events 若干重大决策与事件的回顾*. Party School of the Central Committee of the Communist Party of China Press 中共中央党校出版社. 1991.

CCP Gansu Province Tao River Project Committee 中共甘肃省引洮上山水利工程局委员会. *Selected Collection of Archival Materials from Gansu Tao River Project 甘肃省引洮上山水利工程档案史料选编*. Gansu People's Press 甘肃人民出版社. 1997.

Huang, Jiajia 黄加佳. “Watering the Capital: The Construction of Miyun Reservoir 水润京华—密云水库修建记.” *Beijing Daily* 2018-4-10.

Dong, Fureng 董辅礽. “How to understand the essence of ‘Agriculture is the foundation of national economic development 怎样从本质上理解农业是国民经济发展的基础.” *Economic Research Journal 经济研究* (1963) no.7: 22-29

Lei, Ting 雷汀, Zhu Xingxi 朱醒西. “The characteristics of short-distance transportation and its role in urban-rural exchange 短途运输的特点及其在城乡交流中的作用.” *Economic Research Journal* (1963) no.06: 33-38.

Guo, Baowang 郭宝旺 eds. *Dongquan Village Gazetteer 东泉村志.* Shanxi jingji chubanshe 山西经济出版社. 2015.

Lin, Guanshi 林矣石. “Several problems in building horizontal terrace land at once on Northern-Shaanxi loess hills 陕北黄土丘陵区一次修成水平梯田中的几个问题.” *Shaanxi Agricultural Science and Technology 陕西农业科技* (1959) no.8: 333-339

Jiang, Minglong 蒋鸣龙. *汾西县志 Fenxi Gazetteer* (compiled during Kangxi Reign of Qing Dynasty), vol.5: 14.

Department of Hydraulic Engineering, Tsinghua University 清华大学水利系. *Land Making through Gully Damming 打坝淤地.”* China Water and Power Press 水利电力出版社. 1973.

Secondary Sources:

Alekna, John Norman. “Reunified through Radio: Media, Technology, and Politics in Modern China 1923–1958.” Ph.D. Diss., Princeton University, 2020.

Altehenger, Jennifer, and Denise Y. Ho, eds. *Material Contradictions in Mao’s China*. Seattle: University of Washington Press, 2022.

Andreas, Joel. *Rise of the Red Engineers: The Cultural Revolution and the Origins of China’s New Class*. Stanford, Calif: Stanford University Press, 2009.

Arendt, Hannah. *The Origins of Totalitarianism*. First edition. New York: Schocken Books, 2004.

Arrighi, Giovanni. *Adam Smith in Beijing: Lineages of the Twenty-First Century*. London; New York: Verso, 2007.

Barker, Randolph, Radha Sinha, and Beth Rose, eds. *The Chinese Agricultural Economy*. Colo.: London: Westview Press; Croom Helm, 1982.

Barnett, A. Doak. *Communist China: The Early Years, 1949-55*. New York: F. A. Praeger, 1964.

Bennett, Gordon A. *Yundong: Mass Campaigns in Chinese Communist Leadership*. Berkeley: Center for Chinese Studies, University of California, 1976.

Bernstein, Thomas P., and Hua-Yu Li, eds. *China Learns from the Soviet Union, 1949-Present*. Lanham: Lexington Books, 2010.

Bian, Morris L. *The Making of the State Enterprise System in Modern China: The Dynamics of Institutional Change*. Cambridge, MA: Harvard University Press, 2005.

Bijker, Wiebe E., Thomas Parke Hughes, and T. J. Pinch, eds. *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*. Cambridge, Mass: MIT Press, 1987.

Blecher, Marc, and Wang Shaoguang. "The Political Economy of Cropping in Maoist and Dengist China: Hebei Province and Shulu County, 1949-90." *The China Quarterly*, no. 137 (1994): 63–98.

Bourdieu, Pierre, and Randal Johnson. *The Field of Cultural Production: Essays on Art and Literature*. New York: Columbia University Press, 1993.

Braden, Peter Watson. "Serve the People: Bovine Experiences in China's Civil War and Revolution, 1935-1961." Ph.D., University of California, San Diego, 2020.

Brazelton, Mary Augusta. *Mass Vaccination: Citizens' Bodies and State Power in Modern China*. Studies of the Weatherhead East Asian Institute, Columbia University. Ithaca: Cornell University Press, 2019.

Brown, Jeremy. *City versus Countryside in Mao's China: Negotiating the Divide*. New York: Cambridge University Press, 2012.

Brown, Jeremy, and Matthew D. Johnson, eds. *Maoism at the Grassroots: Everyday Life in China's Era of High Socialism*. Cambridge, Massachusetts: Harvard University Press, 2015.

Cai, Xiang, Rebecca E. Karl, and Xueping Zhong. *Revolution and Its Narratives: China's Socialist Literary and Cultural Imaginaries, 1949-1966*. Durham, NC: Duke University Press, 2016.

Carrillo, Beatriz, and David S. G. Goodman, eds. *China's Peasants and Workers: Changing Class Identities*. Cheltenham, UK; Northampton, MA: Edward Elgar, 2012.

Cartier-Bresson, Henri, Michel Frizot, and Yin-lung Su. *Henri Cartier-Bresson: Chine 1948-1949, 1958*. Paris: Foundation HCB: Delpire, 2019.

Chabrowski, Igor Iwo. *Singing on the River: Sichuan Boatmen and Their Work Songs, 1880s - 1930s*. Leiden; Boston: Brill, 2015.

Chan, Kam Wing. *Cities with Invisible Walls: Reinterpreting Urbanization in Post-1949 China*. Hong Kong; New York: Oxford University Press, 1994.

Chan, Kam Wing, and Xeuqiang Xu. "Urban Population Growth and Urbanization in China since 1949: Reconstructing a Baseline." *The China Quarterly*, no. 104 (1985): 583–613.

Chang, Eileen. *The Rice Sprout Song*. Berkeley: The University of California Press, 1998.

Cheek, Timothy. "The Chinese Crucible of 1957." *Twentieth-Century China* 45, no. 2 (2020): 121–26.

Chen, Janet Y. *Guilty of Indigence: The Urban Poor in China, 1900-1953*. Princeton: Princeton University Press, 2012.

Chuang, Julia. "Urbanization through Dispossession: Survival and Stratification in China's New Townships." *The Journal of Peasant Studies* 42, no. 2 (March 4, 2015): 275–94.

CSCPRC Animal Sciences Delegation, Jacob Andrew Hoefer, Patricia Jones Tsuchitani, and Committee on Scholarly Communication with the People's Republic of China (U.S.), eds. *Animal Agriculture in China: A Report of the Visit of the CSCPRC Animal Sciences Delegation*. Washington, D.C: National Academy Press, 1980.

Davis, Deborah. "Chinese Social Welfare: Policies and Outcomes." *The China Quarterly*, no. 119 (1989): 577–97.

Davis, Deborah S. "Social Class Transformation in Urban China: Training, Hiring, and Promoting Urban Professionals and Managers after 1949." *Modern China* 26, no. 3 (2000): 251–75.

Domes, Jürgen. *Socialism in the Chinese Countryside: Rural Societal Policies in the People's Republic of China, 1949-1979*. Montreal: McGill-Queen's University Press, 1980.

Eckstein, Alexander. *China's Economic Revolution*. Cambridge; New York: Cambridge University Press, 1977.

Edgerton, David. *The Shock of the Old: Technology and Global History since 1900*. Oxford: New York: Oxford University Press, 2007.

Elvin, Mark, and Cuirong Liu, eds. *Sediments of Time: Environment and Society in Chinese History*. New York: Cambridge University Press, 2009.

Engman, Puck. "Shanghai's Dispossessed. The Capitalist Problem in Socialist Transition, 1956-1981," PhD Diss., Albert-Ludwigs-Universität Freiburg im Breisgau, 2020.

Entwisle, Barbara, and Gail Henderson, eds. *Re-Drawing Boundaries: Work, Households, and Gender in China*. Berkeley: University of California Press, 2000.

Eyferth, Jan Jacob Karl. “Eating Rice from Bamboo Roots: The Social History of a Community of Handicraft Papermakers in Rural Sichuan, 1920-2000.” Harvard University Asia Center, 2009.

———————. “Less for More: Rural Women’s Overwork and Underconsumption in Mao’s China.” *Clio. Women, Gender, History*, no. 41 (2015): 65–84.

Foucault, Michel. “The Subject and Power.” *Critical Inquiry* 8, no. 4 (1982): 777–95.

Frazier, Mark W. *The Making of the Chinese Industrial Workplace: State, Revolution, and Labor Management*. Cambridge University Press, 2002.

Friedman, Edward, Paul Pickowicz, and Mark Selden. *Chinese Village, Socialist State*. New Haven: Yale University Press, 1991.

Gell, Alfred. “Technology and Magic.” *Anthropology Today* 4, no. 2 (1988): 6–9.

Gerschenkron, Alexander. *Economic Backwardness in Historical Perspective:* Cambridge, MA: Belknap Press, 1962.

Gerth, Karl. *Unending Capitalism: How Consumerism Negated China’s Communist Revolution*. Cambridge University Press, 2020.

Ghosh, Arunabh. *Making It Count: Statistics and Statecraft in the Early People’s Republic of China*. Princeton University Press, 2020.

Guo, Fang 郭芳 Li Fengtao 李凤桃 Wang Xiaozong 汪孝宗 Hou Jun 侯隽. “The Threat from forty thousand impaired dams 病坝之患, 四万病险水库的威胁.” *China Economic Weekly 中国经济周刊*. 2011-8-24. https://www.yicai.com/news/1036818.html.

Heilmann, Sebastian, and Elizabeth J. Perry, eds. *Mao’s Invisible Hand: The Political Foundations of Adaptive Governance in China*. Harvard University Asia Center: Distributed by Harvard University Press, 2011.

Hershatter, Gail. *The Gender of Memory: Rural Women and China’s Collective Past.* Berkeley: University of California Press, 2011.

———. *The Workers of Tianjin, 1900-1949*. Stanford, Calif: Stanford University Press, 1986.

Hinton, William. *Fanshen: A Documentary of Revolution in a Chinese Village*. Berkeley: University of California Press, 1997.

Ho, Denise. *Curating Revolution: Politics on Display in Mao’s China*. Cambridge: Cambridge University Press, 2017.

Ho, Peter. “Mao’s War against Nature? The Environmental Impact of the Grain-First Campaign in China.” *The China Journal*, no. 50 (2003): 37–59.

Honig, Emily. *Sisters and Strangers: Women in the Shanghai Cotton Mills, 1919-1949 = [Shang-Hai Sha Ch'ang Nü Kung]*. Stanford, Calif: Stanford University Press, 1986.

Honig, Emily, and Xiaojian Zhao. *Across the Great Divide: The Sent-down Youth Movement in Mao's China, 1968-1980*. United Kingdom: Cambridge University Press, 2019.

Howard, Joshua H. *Workers at War: Labor in China's Arsenals, 1937-1953*. Stanford, Calif: Stanford Univ. Press, 2004.

Hsu, Robert C. "Agricultural Mechanization in China: Policies, Problems, and Prospects." *Asian Survey* 19, no. 5 (March 8, 1950): 436–49.

Hu, Huifang. *Environmental Changes and Social Control in the Middle and Downstream of Huai Region 淮河中下游地区环境变动与社会控制, 1912-1949*. Anhui People's Press. 2008.

Huang, Lisheng. Hydraulic Projects in *Huai Region, 1912-1937: Case Studies on the Social Change through the Lens of Civil Engineering Projects 淮河流域的水利事業, 1912-1937：從公共工程看民初社會變遷之個案研究*. National Taiwan Normal University Press.1986.

Huang, Jianhui 黄鉴晖. *Study on Shanxi Merchants in Ming and Qing 明清山西商人研究*. Shanxi Economics Press. 2002.

Huang, Philip C. C. "Misleading Chinese Legal and Statistical Categories: Labor, Individual Entities, and Private Enterprises." *Modern China* 39, no. 4 (July 1, 2013): 347–79.

Iovene, Paola. *Tales of Futures Past: Anticipation and the Ends of Literature in Contemporary China*. Stanford, California: Stanford University Press, 2014.

Javed, Jeffrey A. *Righteous Revolutionaries: Morality, Mobilization, and Violence in the Making of the Chinese State*. Ann Arbor, MI: University of Michigan Press, 2022.

Jersild, Austin. *The Sino-Soviet Alliance: An International History*. Chapel Hill: The University of North Carolina Press, 2014.

Jiang, Chengyang 姜成洋. "The 'Bandit' and His Children: Reminiscence and History of an Eastern Shandong Family '土匪'和儿女们：一个胶东家族的历史追忆," PhD diss., Chinese Academy of Social Sciences (CASS). 2021.

Jiang Yongjun, *A Study on the Work-Relief Programs under the Nationalist Government, 1927-1949 国民政府时期的工赈研究, 1927-1949*. Hunan Normal University Press. 2018.

Keating, Pauline B. *Two Revolutions: Village Reconstruction and the Cooperative Movement in Northern Shaanxi, 1934-1945*. Stanford, Calif: Stanford University Press, 1997.

Kirby, William. *Becoming Chinese*. Berkeley: University of California Press, 2000.

Kirby, William C. “Continuity and Change in Modern China: Economic Planning on the Mainland and on Taiwan, 1943-1958.” *The Australian Journal of Chinese Affairs* 24 (July 1990): 121–41.

———. “Engineering China: The Origins of the Chinese Developmental State.” In *Becoming Chinese*, edited by Wen-hsin Yeh, 137–60. Berkeley: University of California Press, 2000.

Knight, John. “Price Scissors and Intersectoral Resource Transfers: Who Paid for Industrialization in China?” *Oxford Economic Papers* 47, no. 1 (1995): 117–35.

Köll, Elisabeth. *From Cotton Mill to Business Empire: The Emergence of Regional Enterprises in Modern China*. Cambridge, Mass: Harvard University Asia Center, 2003.

Kong, Hanbing 孔寒冰. *Leaving the Soviet Union: Sino-Soviet Relations and Its Impact on China’s Development 走出苏联: 中苏关系及其对中国发展的影响*. Xin Hua Bookstore Press. 2011.

Kornai, János. *The Socialist System: The Political Economy of Communism*. Princeton, N.J: Princeton University Press, 1992.

Koselleck, Reinhart. *Futures Past: On the Semantics of Historical Time*. New York: Columbia University Press, 2004.

Kuo, Leslie T. C. *The Technical Transformation of Agriculture in Communist China*. New York: Praeger, 1972.

Landdeck, Kevin Paul. “Under the Gun: Nationalist Military Service and Society in Wartime Sichuan, 1938-1945.” Ph.D., University of California, Berkeley, 2011.

Lander, Brian, and Thomas David DuBois. “A History of Soy in China: From Weedy Bean to Global Commodity.” In *The Age of the Soybean*, *An Environmental History of Soy During the Great Acceleration*. Edited by Claiton Marcio da Silva and Claudio de Majo. White Horse Press, 2022: 29–47.

Latour, Bruno. “Technology Is Society Made Durable.” *The Sociological Review* 38, no. 1_suppl (May 1, 1990): 103–31.

Lee, Ching Kwan. *Against the Law: Labor Protests in China’s Rustbelt and Sunbelt*. Berkeley: University of California Press, 2007.

Lefebvre, Henri. *The production of space*. Oxford, OX, UK; Cambridge, Mass., USA: Blackwell, 1991.

Li, Jie. “Revolutionary Echoes: Radios and Loudspeakers in the Mao Era.” *Twentieth-Century China* 45, no. 1 (2020): 25–45.

———. *Utopian Ruins: A Memorial Museum of the Mao Era*. Sinotheory. Durham: Duke University Press, 2020.

Li, Lillian M. *Fighting Famine in North China: State, Market, and Environmental Decline, 1690s-1990s*. Stanford: Stanford University Press, 2007.

Li, Ruojian 李若建. *Between Fiction and Reality: The Analysis of Rumors in Mainland China during the 1950s 虚实之间: 20 世纪 50 年代中国大陆谣言研究.* Social Sciences Academic Press, 2011.

———. "Boundary of Power: A Study on the Transformation of Urban Transportation in the early 1950s 权力的边界: 20 世纪 50 年代初期市内运输业变迁研究." *Open Era 开放时代* (2012) no.1.

Li, Yujie. "Birth of the Phoenix: Petty Capitalists in the Socialist Transformation of the Shanghai Bicycle Industry." *Twentieth-Century China* 47, no. 3 (2022): 266–86.

Lifton, Robert Jay. *Thought Reform and the Psychology of Totalism; a Study of "Brainwashing" in China*. New York: Norton, 1961.

Lowenstein, Matthew. "Return to the Cage: Monetary Policy in China's First Five-Year Plan." *Twentieth-Century China* 44, no. 1 (2019): 53–74.

Luo, Pinghan 罗平汉. "Several problems on grain production and marketing from 1958 to 1962 一九五八年至一九六二年粮食产销的几个问题." *CPC History Studies 中共党史研究* (2006) no.1: 27-36.

Lü, Xiaobo, and Elizabeth J. Perry, eds. *Danwei: The Changing Chinese Workplace in Historical and Comparative Perspective*. Armonk, N.Y: M. E. Sharpe, 1997.

Ma, Junya, and Tim Wright. "Sacrificing Local Interests: Water Control Policies of the Ming and Qing Governments and the Local Economy of Huaibei, 1495– 1949." *Modern Asian Studies* 47, no. 4 (2013): 1348–76.

MacKinnon, Stephen R., Diana Lary, and Ezra F. Vogel, eds. *China at War: Regions of China, 1937-1945*. Stanford, Calif: Stanford University Press, 2007.

Manning, Kimberley Ens, and Felix Wemheuer. *Eating Bitterness New Perspectives on China's Great Leap Forward and Famine*. Vancouver: UBC Press, 2011.

Mao, Zedong, Roderick MacFarquhar, Timothy Cheek, Eugene Wu, Merle Goldman, and Benjamin I. Schwartz. *The Secret Speeches of Chairman Mao: From the Hundred Flowers to the Great Leap Forward*. Cambridge, Mass: Council on East Asian Studies/Harvard University: Distributed by the Harvard University Press, 1989.

Matten, Marc André, and Rui Kunze. *Knowledge Production in Mao-Era China: Learning from the Masses*. Lanham, Maryland: Lexington Books, an imprint of The Rowman & Littlefield Publishing Group, Inc, 2021.

Mellors, Sarah. "Less Reproduction, More Production: Birth Control in the Early People's Republic of China, 1949–1958." *East Asian Science, Technology and Society: An International Journal* 13, no. 3 (September 1, 2019): 367–89.

Merkel-Hess, Kate. *The Rural Modern: Reconstructing the Self and State in Republican China*. Chicago; London: The University of Chicago Press, 2016.

Meyskens, Covell F. *Mao's Third Front: The Militarization of Cold War China*. New York, NY: Cambridge University Press, 2020.

Mostern, Ruth. "Sediment and State in Imperial China: The Yellow River Watershed as an Earth System and a World System." *Nature and Culture* 11, no. 2 (2016): 121–47.

Mostern, Ruth, and Ryan M. Horne. *The Yellow River: A Natural and Unnatural History*. New Haven; London: Yale University Press, 2021.

Muscolino, Micah S. "The Contradictions of Conservation: Fighting Erosion in Mao-Era China, 1953–66." *Environmental History* 25, no. 2 (April 1, 2020): 237–62.

———. *The Ecology of War in China: Henan Province, the Yellow River, and beyond, 1938-1950*. New York, NY, USA: Cambridge University Press, 2015.

Naughton, Barry. *The Chinese Economy: Transitions and Growth*. Cambridge, Mass: MIT Press, 2007.

Nickum, James E. "Labour Accumulation in Rural China and Its Role since the Cultural Revolution." *Cambridge Journal of Economics* 2, no. 3 (1978): 273–86.

Nye, David E. *Consuming Power: A Social History of American Energies*. Cambridge, Massachusetts: The MIT Press, 1998.

Oi, Jean C. *State and Peasant in Contemporary China: The Political Economy of Village Government*. Oxford: University of California Press, 1991.

Perry, Elizabeth J. *Rebels and Revolutionaries in North China, 1845-1945*. Stanford, Calif: Stanford University Press, 1980.

———. *Shanghai on Strike: The Politics of Chinese Labor*. Stanford, Calif: Stanford University Press, 1993.

Pietz, David Allen. *Engineering the State: The Huai River and Reconstruction in Nationalist China, 1927-1937*. East Asia. New York: Routledge, 2002.

———. *The Yellow River: The Problem of Water in Modern China*. Cambridge, Massachusetts: Harvard University Press, 2015.

Pomeranz, Kenneth. *The Making of a Hinterland: State, Society, and Economy in Inland North China, 1853-1937*. Berkeley: University of California Press, 1993.

Pun, Ngai. *Made in China: Women Factory Workers in a Global Workplace*. Durham: Hong Kong: Hong Kong University Press: Duke University Press, 2005.

Qian, Ying. "When Taylorism Met Revolutionary Romanticism: Documentary Cinema in China's Great Leap Forward." *Critical Inquiry* 46, no. 3 (March 1, 2020): 578–604.

Rabinbach, Anson. *The Human Motor: Energy, Fatigue, and the Origins of Modernity*. New York: Basic Books, 1990.

Riskin, Carl. *China's Political Economy: The Quest for Development since 1949*. Oxford; New York: Oxford University Press, 1987.

Robinson, E. A. G., and International Economic Association, eds. *Appropriate Technologies for Third World Development: Proceedings of a Conference Held by the International Economic Association at Teheran, Iran*. New York: St. Martin's Press, 1979.

Rozelle, Scott, and Natalie Hell. *Invisible China: How the Urban-Rural Divide Threatens China's Rise*. Chicago: The University of Chicago Press, 2020.

Saich, Tony. "Introduction: The Chinese Communist Party and the Anti-Japanese War Base Areas." *The China Quarterly*, no. 140 (1994): 1000–1006.

Schmalzer, Sigrid. "Layer upon Layer: Mao-Era History and the Construction of China's Agricultural Heritage." *East Asian Science, Technology and Society: An International Journal* 13, no. 3 (September 1, 2019): 413–41.

———. *Red Revolution, Green Revolution: Scientific Farming in Socialist China*. Chicago; London: University of Chicago Press, 2016.

———. *The People's Peking Man: Popular Science and Human Identity in Twentieth-Century China*. Chicago: The University of Chicago Press, 2008.

Schumacher, E. F. *Small Is Beautiful: Economics as If People Mattered*. New York: Harper & Row, 1975.

Scott, James C. *Seeing like a State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven: Yale University Press, 1998.

Seckington, Ian Mark. "Policy-Making in the PRC: A Study of the Variations in Decision-Making across Three Issue Areas; 1969-1978." Ph.D. Diss., SOAS University of London, 2001.

Selden, Mark. *The Yenan Way in Revolutionary China*. Cambridge: Harvard University Press, 1971.

Seow, Victor. *Carbon Technocracy: Energy Regimes in Modern East Asia*. Studies of the Weatherhead East Asian Institute, Columbia University. Chicago; London: The University of Chicago Press, 2021.

Shaffer, Lynda. "Modern Chinese Labor History, 1895-1949." *International Labor and Working-Class History*, no. 20 (1981): 31–37.

Shapiro, Judith. *Mao's War against Nature: Politics and the Environment in Revolutionary China*. Cambridge; New York: Cambridge University Press, 2001.

Shen, Zhihua 沈志华. *Soviet Experts in China 苏联专家在中国 1948-1960*. China International Radio Press 中国国际广播出版社. 2008.

Shue, Vivienne. *Peasant China in Transition: The Dynamics of Development toward Socialism, 1949-1956*. Berkeley: University of California Press, 1980.

Siegelbaum, Lewis H. *Stakhanovism and the Politics of Productivity in the USSR, 1935-1941*. Cambridge; New York: Cambridge University Press, 1988.

Smil, Vaclav. *Energy and Civilization: A History*. Cambridge, Massachusetts: The MIT Press, 2017.

———. *The Bad Earth: Environmental Degradation in China*. Armonk, N.Y.: London: M.E. Sharpe; Zed Press, 1984.

Smith, Aminda M. *Thought Reform and China's Dangerous Classes: Reeducation, Resistance, and the People*. Lanham, Md: Rowman & Littlefield, 2013.

Smith, S. A. *Like Cattle and Horses: Nationalism and Labor in Shanghai, 1895-1927*. Durham, NC: Duke University Press, 2002.

Solinger, Dorothy J. *Chinese Business under Socialism: The Politics of Domestic Commerce, 1949-1980*. Berkeley: University of California Press, 1984.

Strand, David. *Rickshaw Beijing: City People and Politics in the 1920s*. Berkeley: University of California Press, 1989.

Strauss, Julia. "Morality, Coercion and State Building by Campaign in the Early PRC: Regime Consolidation and after, 1949-1956." *The China Quarterly*, no. 188 (2006): 891–912.

Strauss, Julia C. *Strong Institutions in Weak Polities: State Building in Republican China, 1927-1940*. Oxford: New York: Clarendon Press; Oxford University Press, 1998.

Suttmeier, Richard P. *Science, Technology, and China's Drive for Modernization*. Stanford, Calif: Hoover Institution Press, 1980.

Swyngedouw, E. *Liquid Power: Water and Contested Modernities in Spain, 1898-2010*. Cambridge, Massachusetts; London, England: The MIT Press, 2015.

Thaxton, Ralph. *Catastrophe and Contention in Rural China: Mao's Great Leap Famine and the Origins of Righteous Resistance in Da Fo Village*. Cambridge; New York: Cambridge University Press, 2008.

Toth, James. "Manufacturing Consent and Resistance in Peripheral Production: The Labor Process Among Egyptian Migrant Workers and Egyptian National Development." *Dialectical Anthropology* 18, no. 3/4 (1993): 291–335.

Tsin, Michael Tsang-Woon. *Nation, Governance, and Modernity in China: Canton, 1900-1927*. Studies of the East Asian Institute, Columbia University. Stanford, Calif: Stanford University Press, 1999.

Tsou, Tang, Marc Blecher, and Mitch Meisner. "Organization, Growth, and Equality in Xiyang County: A Survey of Fourteen Brigades in Seven Communes (Part I)." *Modern China* 5, no. 1 (1979): 3–39.

———. "Organization, Growth, and Equality in Xiyang County: A Survey of Fourteen Brigades in Seven Communes (Part II)." *Modern China* 5, no. 2 (1979): 139–85.

"Tsou, Tang. Papers." Accessed May 26, 2023.

U, Eddy. "What Was the Petty Bourgeoisie? Cultural Positioning and Reification of Marxist Classes in Early PRC Discourse." *Modern China* 41, no. 6 (2015): 575–602.

Unger, Jonathan. "Status Groups and Classes in a Chinese Village: From the Mao Era through Post-Mao Industrialization." In *China's Peasants and Workers: Changing Class Identities*, 15–39. Edward Elgar Publishing, 2012.

Walder, Andrew G. *Communist Neo-Traditionalism: Work and Authority in Chinese Industry*. Berkeley: University of California Press, 1988.

Wang, Guoan 王国安, Zhang Zhihong 张志红, Li Rongrong 李荣容, and Li Baoguo 李保国. "Evaluation on the Flood Prevention Criteria Based on the Numbers of Reservoir Collapsing Incidents 从水库垮坝数量看我国的防洪标准." *People's Yellow River 人民黄河* 31 (2009) no.7.

Wang, Luman. *Chinese Hinterland Capitalism and Shanxi Piaohao: Banking, State, and Family, 1720-1910*. Abingdon, Oxon; New York, NY: Routledge, 2021.

Zheng, Wang. *Finding Women in the State: A Socialist Feminist Revolution in the People's Republic of China, 1949-1964*. 1st ed. University of California Press, 2017.

Weber, Isabella. *How China Escaped Shock Therapy: The Market Reform Debate*. Abingdon, Oxon; New York, NY: Routledge, 2021.

Werner, Jake. "The Making of Mass Society in Shanghai: The Socialist Transformation of Everyday Life, 1949-1958." Ph.D. Diss., The University of Chicago, 2015.

White, Luise. "Speaking with Vampires: Rumor and History in Colonial Africa." *ACLS Humanities E-Book*, Studies on the history of society and culture, 2008.

White, Luise. *Speaking with Vampires: Rumor and History in Colonial Africa*. Studies on the History of Society and Culture. Berkeley, Calif: University of California Press, 2000.

Wu, Yiching. *The Cultural Revolution at the Margins: Chinese Socialism in Crisis*. Cambridge, Mass: Harvard University Press, 2014.

Xie, Chuntao. *Eagre of the Great Leap Forward 大跃进狂澜*. Henan People's Press. 1990.

Yang, Dali L. *Calamity and Reform in China: State. Rural Society, and Institutional Change since the Great Leap Famine*. Stanford, Calif: Stanford University Press, 1996.

Yang, Jisheng 杨继绳. *Tombstone: Records of the Great Famine 1958-1952 墓碑: 一九五八至一九六二年中国大饥荒纪实*. Hongkong Cosmo Books Ltd.. 2008.

Yang, Tao 杨涛, Shi Guoqing 施国庆. "A Summary of Studies on Dispossessed Peasants 我国失地农民问题研究综述." *Social Sciences in Nanjing 南京社会科学* (2006) no.7: 102-109.

Yang, Xianhui 杨显惠. *Records from Jiabiangou 夹边沟记事*. Tianjin Classic Books Publishing House 天津古籍出版社. 2002.

Yi, Jongsik Christian. "More-Than-People's Communes: Veterinary Workers, Nonhuman Animals, and One Health in Mao-Era China." Ph.D Diss., Harvard University, 2022.

Zhang, Chongwang 张崇旺. *The Ecological Changes and Water Disputes in the Huai Region 淮河流域水生态环境变迁与水事纠纷研究 1127-1949*. Tianjin Classic Books Publishing House 天津古籍出版社. 2015.

Zheng, Yougui, Kuang Chanjuan, and Jiao Hongpo 郑有贵 邝婵娟 焦红坡,"Evolvement from 'north-bound transportation of southern grain' to 'south-bound transportation of norther grain: Its causes and a comparison of each region's advantages in grain production and consumption 南粮北调向北粮南运演变成因的探讨—兼南北方两个区域粮食生产发展优势和消费比较." *Researches in Chinese Economic History 中国经济史研究* (1999) no.1: 97-104.