

“PROFITS OF NATURE”:
THE POLITICAL ECOLOGY OF AGRARIAN EXPANSION
IN A NINETEENTH-CENTURY CHINESE BORDERLAND

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This dissertation reinterprets the history of the relationship between late Qing China and its Central Asian frontiers by examining the politics of the environment in the nineteenth century. Following the Muslim uprisings of the 1860s and 1870s in northwest China, officials of the Qing empire promoted the recovery and expansion of agricultural production. Their policies were framed by notions of natural profit, by their knowledge of agrarian technology, and by their concerns over the demographic and ecological crises of China proper. Scholar-officials sought to reap what they called the “profits of nature”—profits they believed to be intrinsic to specific arrangements of land, organisms, and labor—by deploying their knowledge of agriculture and by implementing policies of agrarian development. In arid landscapes inhabited largely by Turkic and Chinese Muslims, they replicated patterns of agricultural production from southern provinces of China, promoted the cultivation of crops imported from beyond local ecological boundaries, and facilitated Han colonization. These efforts were attempts to forge new, if sometimes subtle, environmental and demographic connections between China proper and the northwest frontiers.

Based upon a wide range of published sources and archival documents from Beijing and Urumqi, this dissertation examines the intellectual background and agrarian practices of Zuo

Zongtang (1812-1885), the leading agent of Qing agrarian expansion in the northwest in the late nineteenth century. It shows how ideologies of nature were at the heart of schemes to transform arid lands in Gansu and Xinjiang into highly productive landscapes. Zuo's considerations for the "profits of nature" arose from his intellectual engagement with Qing-era scholarship about topics like geography and agricultural technology, as well as from the exigencies of motivating farmers to reclaim land and grow crops. Although sometimes stymied by environmental conditions or uncooperative farmers, the efforts of Zuo and other Qing officials nonetheless sought to render the northwest into a region where Han migrants could settle and farm the land, and thereby ease the ecological and social contradictions of population growth in China proper.

Biographical Sketch

Born and raised in Seattle, Washington, Peter Bernard Lavelle began his collegiate-level study of history at Grinnell College, where he earned a B.A. in history in 2002. After spending one year as a non-matriculated student at the University of Washington, where he completed coursework in modern languages and graduate coursework in Chinese history, he commenced full-time graduate studies at Cornell University in 2004. From 2006 to 2007, he served as a teaching assistant in Cornell's Department of History. With his major field in modern Chinese history and his minor fields in modern Japanese history and environmental history, he earned an M.A. in history in the summer of 2007. From 2007 to 2009, he continued language studies and conducted research in the People's Republic of China, where he had affiliations with two universities in Beijing, Tsinghua University and Renmin University. Upon completing his fieldwork in the spring of 2009, he returned to Cornell, where, as an instructor in the Department of History, he taught two first-year writing seminars in modern Chinese environmental history. He defended this dissertation in December 2011 and completed the doctoral degree in the spring of 2012.

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As I conducted field research for this dissertation, many scholars and friends in East Asia offered helpful guidance and generous hospitality. I could not have asked for a better roommate than Michael Martina as I began my study and research stint in Beijing. Zhang Shiming gave me important advice about archives and pointed me in the right direction for letters of introduction. Bao Maohong provided additional support and a warm hotpot dinner on a cold winter night. Zhao Zhen invited me into her classroom and encouraged me in my pursuit of Chinese environmental history. In Lanzhou, Wang Jin invited me over for a home-cooked meal, introduced me to Lanzhou University's Department of History, and took me on a tour of several historical sites. In Urumqi, a number of scholars at Xinjiang University kindly talked with me about my project and invited me over to their homes for meals. Zhou Yuan introduced me to new sources, became a good friend during my research stint in Beijing, and enabled me to get a few days away from research by hosting me in his hometown and taking me on a magnificent hike in his local bamboo forest. I also benefited from meetings in Taipei and Beijing with Man-houng Lin, Hsiung Ping-chen, Lawrence Yim, Litip Tohti, Mao Haijian, Xu Wanmin, Xia Mingfang, and Ren Zhiyong.

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Table of Contents

Biographical Sketch / iii
Acknowledgments / iv
Table of Contents / x
List of Figures / xi
List of Abbreviations / xii
Conventions / xiii
Introduction: Connections in the Nineteenth Century / 1
1. Learning about Land: Imperial Geography and Local Knowledge / 32
2. Learning about Agriculture: Treatises and Test Planting / 70
3. “Evil Grasses” and the Profits of Cotton in Postwar Gansu / 116
4. “Spreading the Profits of Zhejiang”: Sericulture in Xinjiang / 144
5. Horticulture and the Politics of Connecting / 180
6. Populating the Land: Regulations for Resettlement across the Empire / 211
7. Growth, Population, and the Discourse of Colonizing Xinjiang / 235
Conclusion: Environmental Interventions and Lines of Connection / 272
Figures / 294
Note on Sources / 299
Bibliography / 302

List of Figures

- Figure 1. Zuo Zongtang in late age / 294
- Figure 2. “A depiction of *qutian*” / 295
- Figure 3. Instructions and illustrations for Huzhou mulberry trees / 296
- Figure 4. “Along the old Silk Road to Europe” / 297
- Figure 5. “The Remaining Benevolence of Sweet Pear Trees” / 298

List of Abbreviations

Sources

ECCP	Arthur Hummel, ed., <i>Eminent Chinese of the Ch'ing Period (1644-1912)</i>
GZZ	<i>Gongzhong zhupi zouzhe</i> (archival source)
HJWB	He Changling, ed., <i>Huangchao jingshi wenbian</i>
HJWX	Sheng Kang, ed., <i>Huangchao jingshi wenbian xubian</i>
LFZZ	<i>Lufu zouzhe</i> (archival source)
XJDQ	<i>Xinjiang dang'an Qingdai quanrong</i> (archival source)
XXSK	<i>Xuxiu Siku quanshu</i>
ZZN	Luo Zhengjun, ed., <i>Zuo wenxiang gong nianpu</i>
ZZQ	Zuo Zongtang, <i>Zuo Zongtang quanji</i>
ZZYS	Qin Hancai, ed., <i>Zuo Zongtang yishi huibian</i>

Reign periods

DG	Daoguang 道光 emperor (1821-1850)
GX	Guangxu 光緒 emperor (1875-1908)
TX	Tongzhi 同治 emperor (1862-1875)
XF	Xianfeng 咸豐 emperor (1850-1861)

Conventions

Chinese words and names have been Romanized according to the Pinyin system, unless they appear in passages quoted directly from sources which use other Romanization systems.

Dates of selected Chinese documents are given according to the imperial reign name and year, followed by the month and date. For example, T'Z13/3/22 indicates the 22nd day of the 3rd month of the 13th year of the Tongzhi emperor's reign (7 May 1874). A zero in the year, month, or day position indicates that that portion of the date is unknown.

All translations are my own unless otherwise noted. In most cases, whenever longer passages have been translated, the original text has been provided below the translation for the benefit of readers.

Introduction

Connections in the Nineteenth Century

In the early days of autumn in 1878, an army officer erected a stele in China's northwestern Gansu province to commemorate the growth of trees. The stone memorial recorded half a dozen years of tree-planting campaigns following warfare between armies loyal to the Qing empire and groups of Muslims hostile to imperial authority. Few trees and people had remained after warfare, but as refugees returned to open up land for cultivation, soldiers under the officer's command hauled tree saplings across mountains and valleys to plant them by roadsides. The idea was to create sources of timber, to shade roadways for travelers, and to add color to devastated landscapes. Among the difficulties they encountered, none was more daunting than inhospitable terrain. The water was saline, flat land tended to be up in the hills, high above river valleys, and much of the soil was simply “not suited for trees” (*bu yi shu* 不宜樹). Patches of vegetation emerged from the land only intermittently. Having trees flourish in such a landscape was thus a sign that ecological limitations had been overcome by human effort. The stele recorded that soldiers had planted no fewer than 200,000 trees to the northwest and southeast of the city of Pingliang in eastern Gansu in an effort to replace postwar barrenness with fits of greenery. What now marked the land was, according to the stele, “vigorously verdant and flourishing, motley and profuse with vegetation.”¹

The arboreal campaigns of the stele's author, Wei Guangtao 魏光燾 (1837-1915), took place under the leadership of one of the nineteenth century's most famous officials, Zuo Zongtang 左宗

¹ 郁青青以鬱茂，紛卉卉而陸離。Wei Guangtao, “Wuwei jun ge ying pin nian zhong shu ji” 武威軍各營頻年種樹記 [Record of all battalions of the Wuwei army planting trees over several consecutive years], GX4/8/0, in *Pingliang shi zhi* 平涼市志 [Gazetteer of Pingliang city], ed. Pingliang shi zhi bianzuan weiyuanhui (Beijing: Zhonghua shuju, 1996), 831.

棠 (1812-1885). Best known as a military general, Zuo led armies to defeat the Muslim rebellions in Gansu and neighboring Shaanxi province in the 1860s and early 1870s, and he oversaw the reconquest of the empire's Central Asian territory, Xinjiang, a process which was complete by early 1878. But Zuo's leadership in warfare and his military victories are only one side of a more complex story involving material relationships between the central regions of the Qing empire and the empire's northwest borderlands. In the wake of warfare from the 1860s to the 1880s, Zuo Zongtang and other high-ranking Qing officials enacted a series of policies in Shaanxi, Gansu, and Xinjiang to promote and expand agrarian production. These agrarian campaigns were sometimes couched in the rhetorics of environmental transformation, just as Wei's stone memorial had done for newly planted rows of trees in Gansu, which he lauded for their potential to “add luster to the state and territory.”² Yet however truthful or fallacious the claims about verdant vegetation may have been, such rhetorics of imperial victory were merely part of much larger efforts to render northwestern lands into productive environments and integrate them more closely with the center of the empire in the late nineteenth century.

At the heart of these agrarian campaigns were quotidian notions about how to create wealth from the combination of labor, land, and technology. Like other scholar-officials in late imperial times, Zuo Zongtang talked repeatedly about ways to obtain the material rewards of agriculture, which he phrased as the “profits of nature” (*ziran zhi li* 自然之利), the “profits of the land” (*dili* 地利), or just “profit” (*li* 利). If his agrarian campaigns were indicative of a late Qing colonial move to expand agrarian production along the frontiers by transferring settlers and technology to those regions, the material practices of that colonialism had intellectual roots. For it was in geographical and agricultural learning that Zuo grappled with the idea of the “profits of the land” and the

² 社稷河山皆為之生色. Wei Guangtao, “Wuwei jun ge ying pin nian zhong shu ji,” 831.

question of how best to obtain them through technological and social means.

Histories of the Qing empire's tumultuous nineteenth century have often been narrated as stories of imperial declension centering on military and political crises born of rebellion and foreign imperialism.³ This dissertation presents a different story, one that refocuses our attention on the intellectual and environmental history of the century. Qing officials had to confront the challenges posed by demographic growth and ecological crisis, and they sought solutions in the intensification and geographical expansion of agrarian production, which, in turn, had their own environmental and social consequences. Zuo Zongtang's thought and his continual attention to the problem of “profits” in agrarian production were never removed from these crises, and they formed the intellectual background for his agrarian campaigns, which employed technology, labor, and organisms from the heartlands of the empire in the northwest borderlands. If Zuo's agrarian campaigns did not always yield abundant landscapes, they are significant for another reason: they reveal a network of relations between people, environments, technology, and ideology typically absent in considerations of the late nineteenth century, the era preceding the downfall of the Qing state in 1911.

Nineteenth-Century Crises

The empire of the Great Qing 大清 (1644-1911) was a product of territorial expansion through military conquest. When the leaders of the Qing state, the Manchus, conquered the

³ For a broad assessment of earlier historiographic treatment of nineteenth-century Chinese history, quite useful is the work by Paul Cohen, *Discovering History in China: American Historical Writing on the Recent Chinese Past* (New York: Columbia University Press, 1984). Older treatments of the nineteenth century have considered it a period of imperial decline. For examples, see Mary Clabaugh Wright, *The Last Stand of Chinese Conservatism: The T'ung-Chih Restoration, 1862-1874* (Stanford: Stanford University Press, 1957); Susan Mann Jones and Philip A. Kuhn, “Dynastic Decline and the Roots of Rebellion,” in *The Cambridge History of China*, vol. 10, pt. 1, *Late Ch'ing 1800–1911*, ed. John K. Fairbank (Cambridge: Cambridge University Press, 1978), 107-162.

territory under the control of the previous Ming 明 dynasty (1368-1644) in the middle of the seventeenth century, they appropriated the heartlands of what was to become the Chinese nation-state in the twentieth century. Scholars writing in the Qing period often called this region the “land inside” (*neidi* 内地), a term which English-speakers have tended to translate as “China proper.”⁴ The imperial reach of the Manchus eventually extended well beyond China proper, especially along the northern and western frontiers. By the height of its power in the middle of the eighteenth century, the Qing included all of present-day Mongolia. In the northeast, it reached to where the Amur River empties into the Pacific Ocean, and to northwest, it stretched to the shores of Lake Balkhash in present-day Kazakhstan. It had also taken control of the island that became known as Taiwan, and had extended its influence to the southwest and across the Tibetan plateau. Among the most famous of Qing military campaigns to be commemorated in laudatory accounts was the conquest of the territory that became known as Xinjiang 新疆—literally, the “new borderland” or “new domain.”⁵ The creation of Xinjiang through conquest in the 1750s marked the pinnacle of Qing military power across its vast territories, which comprised one of the largest landed empires in the early modern world.

⁴ In this dissertation, I use the term “China proper” to denote the geographical region south of the Great Wall and east of the Tibetan Plateau. The term *neidi* was in use long before the Qing period, but in that period it came to refer primarily to the geographical unit commonly referred to as “China” in contradistinction to its peripheral territories that had not belonged to the Ming. The term’s literal meaning of “land inside” referred to the territory’s geographical location within the checkpoint passes at either end of the Great Wall: the Shanhaiguan, where the wall meets the Bohai Sea northeast of Beijing, and the Jiayuguan, the landlocked western terminus of the wall in northwestern Gansu. For traces of the history of the term “China proper,” see Zhihong Chen, “Stretching the Skin of the Nation: Chinese Intellectuals, the State, and the Frontiers in the Nanjing Decade (1927-1937),” (Ph.D. dissertation, University of Oregon, 2008), 9-10.

⁵ For the most complete English-language account of the conquest, see Peter C. Perdue, *China Marches West: The Qing Conquest of Central Eurasia* (Cambridge, MA: The Belknap Press of Harvard University Press, 2005). On official historical chronicles of the campaigns, see Peter Perdue, “Embracing Victory, Embracing Defeat: Rewriting the Qing Frontier Campaigns,” in *The Chinese State at the Borders*, ed. Diana Lary (Vancouver: UBC Press, 2007), 105-125.

Qing military conquests brought a bewildering array of peoples and terrains into the empire, all of which were under the imperial authority of the Manchu ruling house in Beijing. Recent histories of the Qing have argued that the empire and its forms of governance made it similar to other early modern colonial empires.⁶ These forms of governance included the discursive construction of knowledge about imperial subjects and lands through various forms of representation more often associated with European Orientalism. Manchu emperors and Han officials alike created gazetteers, compendia, maps, ethnographic drawings and descriptions, and travel writings as they extended their power over people and places on the peripheries of China proper.⁷ These imperial productions were especially numerous in the second half of the eighteenth century under the Qianlong 乾隆 emperor (r. 1736-95), who styled himself a universal emperor and who relied upon a vast array of information to govern the Qing territories.⁸

Yet the interpretation of the Qing as an early modern colonial empire has received much less attention in the nineteenth century. For this century, historians have largely focused on the crises of

⁶ For a seminal collection of essays arguing that the Qing was an early modern colonial power that should be comparable to other worldwide colonial powers in the same period, see the essays in a special journal issue on “Manchu Colonialism” in *The International History Review* 20.2 (June 1998), including Peter C. Perdue, “Comparing Empires: Manchu Colonialism,” 255-262, and Michael Adas, “Imperialism and Colonialism in Comparative Perspective,” 371-388.

⁷ For example, Laura Hostetler, *Qing Colonial Enterprise: Ethnography and Cartography in Early Modern China* (Chicago: The University of Chicago Press, 2001); David Michael Deal and Laura Hostetler, *The Art of Ethnography: A Chinese “Miao Album”* (Seattle: University of Washington Press, 2006); James Milward, “Coming onto the Map: ‘Western Regions’ Geography and Cartographic Nomenclature in the Making of Chinese Empire in Xinjiang,” *Late Imperial China* 20.2 (December 1999): 61-98; Peter Perdue, “Boundaries, Maps, and Movement: Chinese, Russian, and Mongolian Empires in Early Modern Central Eurasia,” *The International History Review* 20.2 (1998): 263-286; Emma Jinhua Teng, *Taiwan’s Imagined Geography: Chinese Colonial Travel Writing and Pictures, 1683-1895* (Cambridge, MA: Harvard University Asia Center, 2004); Laura Newby, “Lines of Vision: Qing Representations of the Turkic Muslim Peoples of Xinjiang,” in *Looking at the Coloniser: Cross-Cultural Perceptions in Central Asia and the Caucasus, Bengal, and Related Areas*, ed. Beate Eschment and Hans Harder (Würzburg: Ergon, 2004), 339-355; Laura Newby, “The Chinese Literary Conquest of Xinjiang,” *Modern China* 25.4 (1999): 451-474.

⁸ Pamela Kyle Crossley, *A Translucent Mirror: History and Identity in Qing Imperial Ideology* (Berkeley: University of California Press, 1999).

the Qing state rather than its colonial pretensions along its own borderlands—peripheral and liminal spaces of imperial authority often on the ecological and ethnic fringes of the empire.⁹ These crises were manifold, but two have appeared repeatedly in histories of the nineteenth century.¹⁰ First, a series of large, internal rebellions beginning in the middle of the century devastated local communities in many regions of China proper and laid waste to agrarian landscapes. The largest of these was the Taiping Rebellion (1851-64), in which anti-Qing armies led by Christian converts marched across a wide swath of southern China and attempted to set up an alternative state with its capital at Nanjing. The rebellion took more than a decade to suppress and ultimately cost the lives of roughly 20 million people.¹¹ Second, the violence of foreign imperialism along the seacoasts and landed frontiers challenged the power of the Qing state to defend its territory. The quintessential example of nineteenth-century imperialism in Qing China was the Opium War (1839-42), started by the British after the Qing state attempted to prohibit imports of opium. The war ended with the Treaty of Nanjing (1842), which granted to the British war indemnities, extraterritorial privileges, treaty ports, and the right to continue the opium trade. These were challenges that the Qing state never faced in the eighteenth century, when its military might was much greater and when challenges to its security tended to come from its vast landed frontiers to the north and west.

Historical accounts of Zuo Zongtang's life have paralleled longstanding views of the nineteenth century as a period of historical rupture and crisis marked by foreign imperialism and

⁹ For the application of recent theories of the frontier to the Qing case, see James A. Millward, “New Perspectives of the Qing Frontier,” in *Remapping China: Fissures in Historical Terrain*, ed. Gail Hershatter, Emily Honig, Jonathan N. Lipman, and Randall Stross (Stanford: Stanford University Press, 1996), 97-129.

¹⁰ For an example of the range of crises and problems faced by the Qing, see the essays in *Dragons, Tigers, and Dogs: Qing Crisis Management and the Boundaries of State Power in Late Imperial China*, ed. Robert J. Antony and Jane Kate Leonard (Ithaca, NY: Cornell University East Asia Program, 2002). See also the chapter entitled “Crises” in William T. Rowe, *China's Last Empire: The Great Qing* (Cambridge, MA: The Belknap Press of Harvard University Press, 2009), 149-174.

¹¹ Thomas Reilly, *The Taiping Heavenly Kingdom: Rebellion and the Blasphemy of Empire* (Seattle: University of Washington Press, 2004), 3.

internal rebellion. But while the Qing state as a whole may have fared rather poorly, studies focusing on Zuo have often emphasized his success in dealing with the military challenges to the authority of the Qing state.¹² In confronting these dual sets of crises, Zuo began his career as a military advisor to several governors in his native Hunan province in the 1850s, led armies to campaign against the Taiping Rebellion in the early 1860s, was dispatched to defeat the Muslim rebellions in northwest China in the late 1860s and early 1870s, and then went on to conquer Xinjiang in the late 1870s. The reconquest of Xinjiang occurred at a time when Qing authority had been cut off from much of the territory by Muslim rebellions,¹³ when a Muslim military leader from the neighboring polity of Khoqand, Ya'qub Beg, had taken advantage of the crisis to establish his own independent state in southern Xinjiang,¹⁴ and when military leaders in imperial Russia's Central Asian territory had opportunistically decided to occupy land in the fertile Ili Valley, in the northwest of Xinjiang. Brokering the return of most of the Ili Valley from the Russians would have to wait until a series of

¹² The literature on Zuo Zongtang in English is relatively small and tends to focus on how Zuo confronted the military challenges to the Qing state, especially in the northwest. W. L. Bales, *Tso Tsung-t'ang: Soldier and Statesman of Old China* (Shanghai: Kelly and Walsh, 1937); Chu Wen-Djang, *The Moslem Rebellion in Northwest China, 1862-1878: A Study of Government Minority Policy* (The Hague: Mouton & Co., 1966); Lanny B. Fields, *Tso Tsung-t'ang and the Muslims: Statecraft in Northwest China, 1868-1880* (Kingston, ON: Limestone Press, 1978). It is possible that the Qing tradition of chronicling military victories over its enemies and the official accounts that it produced of the suppression of nineteenth-century rebellions has had an inordinate amount of influence on writings about Zuo Zongtang. The Qing account of Zuo's suppression of the Muslim rebellions is *Ping ding Shaan Gan Xinjiang hui fei fang lue* 平定陝甘新疆回匪方略 [Account of the pacification of Muslim rebels in Shaanxi, Gansu, and Xinjiang], ed. Yi Xin 奕訢 et al., 320 vols. (1896). Chinese accounts of Zuo Zongtang's life have been much more broadly focused on other facets of his life, including his economic thought, but narratives of his military work still tend to predominate. For example, see Qin Hancui 秦翰才, *Zuo Wenxiang gong zai xi bei* 左文襄公在西北 [Duke Zuo Zongtang in the northwest], (Changsha: Yuelu shu she, 1984).

¹³ On the Muslim rebellions, see Jonathan N. Lipman, *Familiar Strangers: A History of Muslims in Northwest China* (Seattle: University of Washington Press, 1997), 115-138; Chu Wen-Djang, *The Moslem Rebellion in Northwest China, 1862-1878: A Study of Government Minority Policy* (The Hague: Mouton & Co., 1966); Bai Shouyi 白壽彝, ed., *Hui min qi yi* 回民起義 [The Muslim uprising], vols. 3-4 (Shanghai: Shenzhou guo guang she, 1953).

¹⁴ On the emirate of Ya'qub Beg, see Hodong Kim, *Holy War in China: The Muslim Rebellion and State in Chinese Central Asia, 1864-1877* (Stanford: Stanford University Press, 2004); James A. Millward, *Eurasian Crossroads: A History of Xinjiang* (New York: Columbia University Press, 2007), 118-123.

diplomatic meetings after Zuo's reconquest.¹⁵ But the reconquest was enough to demonstrate Zuo's strategic military acumen to the Qing court, which granted him several honorary positions and titles for his successes late in life (see Figure 1). It marked the pinnacle of his official career for the Qing state and signified the tenacity of the Qing in the face of two major threats to its security along the northwestern frontiers.¹⁶

Despite Zuo's success in saving Xinjiang, the security crises of the Qing state in the nineteenth century were underscored by deeper, destabilizing changes in political economy that have framed the historical trajectory of modern Chinese history. What was a colonial power in the eighteenth century became a fragile, semi-colonized state in the nineteenth century, historians have argued, with the arrival of capitalism and Western technology. Historians in mainland China and elsewhere marked the crucial turning point for the beginning of China's modern history (*jindaishi* 近代史) around 1840 and the Opium War. The middle of the nineteenth century witnessed a departure from the previous history of the Qing empire insofar as capitalism connected Chinese society to new networks of material exchange, put pressure on traditional handicraft industries, and initiated novel patterns of technological transformation.¹⁷

¹⁵ Immanuel C. Y. Hsu, *The Ili Crisis: A Study of Sino-Russian Diplomacy, 1871-1881* (Oxford: Clarendon Press, 1965).

¹⁶ For his military accomplishments and his commitment to supporting the empire in its phase of crisis, Zuo has often been grouped alongside other prominent generals of the century, including fellow Hunan native Zeng Guofan 曾國藩 (1811-1872) and Zuo's opponent in the debate about reconquering Xinjiang, Li Hongzhang 李鴻章 (1823-1901). On Zeng Guofan, see Andrew Cheng-kuang Hsieh, *Tseng Kuo-fan, A Nineteenth-Century Confucian General* (Ph.D. diss, Yale University, 1975); Jonathan Porter, *Tseng Kuo-fan's Private Bureaucracy* (Berkeley: Center for Chinese Studies, University of California, 1972). On Li Hongzhang, see Stanley Spector, *Li Hung-chang and the Huai Army: A Study in Nineteenth-Century Chinese Regionalism* (Seattle: University of Washington Press, 1964); Samuel Chu and Kwang-Ching Liu, eds., *Li Hung-chang and China's Early Modernization* (Armonk, NY: M. E. Sharpe, 1994).

¹⁷ One set of historical interpretations has sought to understand what influence imperialism had on China's economic development in the nineteenth century. On the level of the forces of production, Mark Elvin argued that, with the nineteenth-century arrival of European imperialism, China was jolted out of what he called the "high-level equilibrium trap" whereby technologies were extremely productive yet technological innovation stagnated. See Mark Elvin, *The Pattern of the Chinese Past* (Stanford: Stanford University Press,

Thinking about European capitalism in China calls attention to the need to understand material connections in nineteenth-century history. By material connections, I mean the flows of people, commodities, and other material goods from one place to another, and the way in which relationships between groups of people have been mediated by them. European merchants had long been interested in China as an endpoint on their journeys around the world precisely because it produced material goods like silks, porcelains, teas, and luxury items that could fetch high prices on European markets. In the nineteenth century, it was British opium grown in India that sat at the heart of the connection—and the dispute—between the British and the Qing. The growing consumption of this stimulating commodity by Chinese consumers resulted in silver flowing out of the empire at increasingly high rates, creating a windfall for British merchant capitalists and hardship for Chinese peasants who faced increasingly costly rates of exchange between copper cash and silver, the monetary medium for remitting land taxes.¹⁸ The material connections of opium pitted British and other European merchants, Indian producers, and Chinese consumers into a hierarchy of new relations in which China increasingly became the locus of the market.¹⁹

Another view of the material connections between Europe and China in the nineteenth century has focused on the transfer of technology. Here, too, Zuo Zongtang's story has relevance. In the history of China's nineteenth-century adoption of Western technology, Zuo gained the reputation of a modernizer for his promotion of machine technology. Insofar as he urged the Qing

1973). Others have suggested that European imperialism did not introduce capitalism to China but rather added new pressure and incentives for innovation in industries that may have shown signs of “embryonic capitalism” prior to 1840. See Xu Dixin and Wu Chengming, eds., *Chinese Capitalism, 1522-1840*, trans. Li Zhengde, Liang Miaoru, and Li Siping (New York: St. Martin's Press, 2000). The original is Xu Dixin 許滌新 and Wu Chengming 吳承明, eds., *Zhongguo zibenzhuyi de mengya* 中國資本主義的萌芽 [The sprouts of Chinese capitalism], (Beijing: Renmin chubanshe, 1985).

¹⁸ On the rising costs of silver in the nineteenth century, see Man-houng Lin, *China Upside Down: Currency, Society, and Ideologies, 1808-1856* (Cambridge, MA: Harvard University Asia Center, 2006).

¹⁹ Carl A. Trocki, *Opium, Empire and the Global Political Economy: A study of the Asian opium trade, 1750-1950* (New York: Routledge, 1999).

government to purchase machinery from European specialists to increase the state's military prowess and to bolster its economic production in the late nineteenth century, he was one among a group of proponents of the “foreign affairs” (*yangwu* 洋務) or “self-strengthening” (*zhiqiang* 自強) movements. In 1866, he founded the Fuzhou Shipyard on China's southeast coast as a site where British and French technicians trained Chinese workers in naval technology and shipbuilding. Zuo was also interested in machine technologies for commercial production, and he established a short-lived woolen factory using German spinning and weaving machines in Lanzhou in the 1870s.²⁰ If the process by which Chinese officials like Zuo adopted and promoted European machine technology was never as straightforward as it may have seemed, the movement of materials and knowledge nonetheless seemed to have a definite geographical trajectory: from Europe to China.

Material Connections as Environmental Crisis

Material connections drawn by flows of commodities and people in the relationship between Europe and China were crucial in the course of the Qing empire's nineteenth century. Yet if we focus solely on the scope of geographical relationships that were important to capitalism and nineteenth-century European colonialism, we miss a range of other material connections between China proper and the territories peripheral to it, including the imperial borderlands of the Qing state. If we make China proper the geographical center of an analysis of material relations in the nineteenth century, rather than merely a peripheral zone in a world system dominated by Europeans, a new range of relationships emerges. These relationships involved the exchange of material goods

²⁰ For official documents about late Qing naval affairs, see *Chuan zheng zou yi hui bian* 船政奏議彙編 [Compilation of memorials about naval administration], 51 *juan* (1888), esp. *juan* 1-2 for memorials by Zuo Zongtang. On the naval movement as exemplifying the urge for modernization, see David Pong, *Shen Paochen and China's Modernization in the Nineteenth Century* (Cambridge: Cambridge University Press, 1994); Chen Qitian, *Tso Tsung T'ang: Pioneer Promoter of the Modern Dockyard and the Woolen Mill in China* (Peiping: Department of Economics, Yenching University, 1938).

between the imperial center or the wealthiest parts of China proper and regions beyond the ambit of Qing imperialism. Imperial dynasties long before the Qing had conducted trade in a panoply of commercial and strategic items, like horses, silver, silks, and tea.²¹ Extensive networks of trade also formed around the tribute system, in which tributary states around China sent emissaries and gifts to the imperial capitals and received commodities and further trading privileges in exchange. Other connections between China proper and its peripheries in the Qing period included trade in luxury items like tortoiseshell from the Indonesian archipelago and sandalwood from the Hawaiian islands.²²

In the relationship between China proper and its geographic peripheries, people were central to making material connections not only because they were the agents of exchange in organic and inorganic materials. They were also important because of their numbers and their movement in search of resources for survival. What Fernand Braudel has called the “weight of numbers”²³ is particularly relevant for assessing connections between China proper and its peripheries and for understanding the crisis of the nineteenth century, for it was through population growth in the previous century that pressure on land and other resources in China proper pushed farmers and traders to seek new opportunities in the geographic and ecological peripheries. During the eighteenth century, relative peace and prosperity combined with a functioning famine-relief system

²¹ For a sense of the vast range of goods exchanged between China and neighboring or distant polities in the Song period, see Shiba Yoshinobu, “Sung Foreign Trade: Its Scope and Organization,” in *China among Equals: The Middle Kingdom and Its Neighbors, 10th-14th Centuries*, ed. Morris Rossabi (Berkeley: University of California Press, 1983), 89-115.

²² Heather Sutherland, “A Sino-Indonesian Commodity Chain: The Trade in Tortoiseshell in the Late Seventeenth and Eighteenth Centuries,” in *Chinese Circulations: Capital, Commodities, and Networks in Southeast Asia*, ed. Eric Tagliacozzo and Wen-Chin Chang (Durham: Duke University Press, 2011), 179; Gregory Rosenthal, “Boki’s Predicament: The Material Culture and Environmental History of Hawaiian Sandalwood, 1811-1830,” *World History Bulletin* 27.1 (Spring 2011), 49, 53-55.

²³ Fernand Braudel, *Capitalism and Material Life, 1400-1800*, trans. Miriam Kochan (New York: Harper & Row, 1973), 1.

provided the foundations for unprecedented population growth.²⁴ Between 1700 and 1800, the population of the empire more than doubled from 160 million to 350 million, and shot up again to around 430 million by the middle of the nineteenth century.²⁵

People were an important force in forging material connections between Qing hinterlands and frontiers insofar as they moved to the margins of the empire where their patterns of livelihood altered local environments. As population density and the intensity of agrarian production increased in core areas like the lower Yangzi delta region, farmers migrated to the ecological margins—riparian, lacustrine, and piedmont—of those areas as well as to the geographical margins of China proper.²⁶ New World crops, like maize, potatoes, and peanuts, enabled them to extend cultivation to less fertile and sandier soils on the margins of arable land and up hillsides.²⁷ While the growth of the population in China proper had been a centuries-long trend, environmental changes from agrarian expansion accelerated during the late Ming and Qing periods. In the south and southwest, perhaps the most basic change was the clearing of forests and the transformation of river valleys into arable land suited for settled agriculture. Land clearance proceeded initially for the purpose of subsistence

²⁴ Susan Naquin and Evelyn S. Rawski, *Chinese Society in the Eighteenth Century* (New Haven: Yale University Press, 1987), 24-25. On the granary system, see Pierre-Etienne Will and R. Bin Wong et al., *Nourish the People: The State Civilian Granary System in China, 1650-1850* (Ann Arbor: The University of Michigan Center for Chinese Studies, 1991); Pierre-Etienne Will, *Bureaucracy and Famine in Eighteenth-Century China* (Stanford: Stanford University Press, 1990); Lillian M. Li, *Fighting Famine in North China: State, Market, and Environmental Decline, 1690s-1990s* (Stanford: Stanford University Press, 2007).

²⁵ The first two figures come from James Z. Lee and Wang Feng, *One Quarter of Humanity: Malthusian Mythology and Chinese Realities* (Cambridge, MA: Harvard University Press, 1999), 27. The latter figure comes from Ping-ti Ho, *Studies on the Population of China, 1368-1953* (Cambridge, MA: Harvard University Press, 1959), 64.

²⁶ Anne Osborne, "Highlands and Lowlands: Economic and Ecological Interactions in the Lower Yangzi Region under the Qing," in *Sediments of Time: Environment and Society in Chinese History*, ed. Mark Elvin and Liu Ts'ui-jung (Cambridge: Cambridge University Press, 1998), 203-234; Eduard B. Vermeer, "Population and Ecology along the Frontier in Qing China," in *Sediments of Time*, 235-279.

²⁷ On new food crops, see Ping-ti Ho, "The Introduction of American Food Plants into China," *American Anthropologist* 57.2, pt. 1 (April 1955), 191-201; Ping-ti Ho, "American Food Plants in China," *Plant Science Bulletin* 2.1 (1956), 1-3. These two articles are reprinted in *Agriculture and Rural Connections in the Pacific, 1500-1900*, ed. James Gerber and Lei Guang (Burlington, VT: Ashgate Publishing, 2006), 1-16.

production, but commercialization increased land appropriation by Han cultivators, who altered patterns of land use to profit from market connections. In the eighteenth and nineteenth centuries, distant markets in cotton, silk, sugarcane, and even mushrooms attracted new profit-seekers to provinces like Guangxi, Guizhou, and Yunnan and compelled older settlers to switch out of rice production. At the very least, the pressure of commercialization and the growing scope of market connections pushed farmers to intensify rice production where it existed and to expand it to other areas where it did not.²⁸

Agrarian expansion and intensification did not occur at the same pace along the frontiers of the empire, for the Qing maintained—but did not uniformly or consistently enforce—prohibitions against migration to many of its northern and western frontiers, especially in the first two centuries of its rule. At least in principle, the Manchu rulers imposed these prohibitions to preserve local ways of life and to preclude any disruption arising from permanent settlement by agrarians and traders from China proper. This was nowhere more so the case than in their northeast homeland, Manchuria. By the start of the dynasty, Qing rulers seemed to recognize the complex relationship between geography and identity, and for most of the period between the mid-seventeenth-century conquest and the early twentieth century, they restricted or prohibited migration from China proper.²⁹ The attempt to preserve the ecological conditions for hunting and foraging in Manchuria was perhaps one of many reasons for blocking Han migration.³⁰ Although the exclusion of settlers from Manchuria was clearly a special case, such policies existed for other imperial regions well into

²⁸ Robert B. Marks, *Tigers, Rice, Silk, and Silt: Environment and Economy in Late Imperial South China* (Cambridge: Cambridge University Press, 1998), 249.

²⁹ Mark C. Elliott, “The Limits of Tartary: Manchuria in Imperial and National Geographies,” *Journal of Asian Studies* 59.3 (August 2000), 608, 617-618.

³⁰ David Bello, “The Cultured Nature of Imperial Foraging in Manchuria,” *Late Imperial China* 31.2 (December 2010), 1-33.

the nineteenth century, including Mongolia and southern Xinjiang.

Despite the prohibitions, the decline of environmental conditions in China proper and in frontier zones continued and accelerated in the nineteenth century. Indeed, the extent of environmental degradation caused by population growth and by the intensification and expansion of agriculture reveals that nineteenth-century Chinese society was facing an environmental crisis.³¹ The emerging crisis had many manifestations. The resiliency of local ecologies in the face of floods diminished in places like the lower Yangzi delta region as population expanded and encroached upon waterways and forests, causing deforestation and erosion.³² The empire's northern Zhili province “experienced China's highest rate of natural disasters in the nineteenth century” despite the extensive efforts of hydrological and disaster relief planners.³³ Pressure on the environment was also manifest in contentions over common resources, including disputes over the illegal construction of dikes around lake shores in Hunan and Zhejiang provinces and the sometimes violent confrontations over fisheries off the eastern coast of Zhejiang.³⁴ In provinces like Yunnan, Guizhou, and Guangxi, the expansion of cultivation sometimes led to the destruction of forests and hillsides long used by non-Han upland peoples for their subsistence practices of swidden cultivation,

³¹ Robert Marks has concluded that “To these social, political, and intellectual crises that wracked China in the second half of the nineteenth century and helped to define what modern China was to become, I think we must now add an environmental crisis.” Robert B. Marks, *Tigers, Rice, Silk, and Silt: Environment and Economy in Late Imperial South China* (Cambridge: Cambridge University Press, 1998), 333. Lillian M. Li has also made a case for “environmental decline” and has referred to an “ecological crisis of the nineteenth century” despite—and partially because of—the successes of hydrological engineering in the preceding century. See Li, *Fighting Famine in North China*, 3-4, 73.

³² Anne Osborne, “Highlands and Lowlands: Economic and Ecological Interactions in the Lower Yangzi Region under the Qing,” in *Sediments of Time*, 203-224.

³³ Li, *Fighting Famine in North China*, 282.

³⁴ For examples of these cases of contention over environmental resources, see Peter C. Perdue, *Exhausting the Earth: State and Peasant in Hunan, 1500-1850* (Cambridge, MA: Harvard University Council on East Asian Studies, 1987); R. Keith Schoppa, *Song Full of Tears: Nine Centuries of Chinese Life at Xiang Lake* (Boulder: Westview Press, 2002); Micah S. Muscolino, *Fishing Wars and Environmental Change in Late Imperial and Modern China* (Cambridge, MA: Harvard University Asia Center, 2009).

hunting, and gathering.³⁵ In regions that had already come to specialize in cash crops, energy-intensive regimes of multi-cropping required fertilizer inputs from locales near and far. Lower Yangzi delta farmers purchased night soil in local cities, but they also imported soybean cake fertilizer all the way from Manchuria, halfway across the empire.³⁶ And by the early nineteenth century in parts of Guangdong province, deforestation and land clearance had forced some farmers to use fertilizer materials like straw and dung instead of wood as fuel, an indication of dwindling energy supplies and of the emerging contradictions between the need for fertilizer to support highly productive regimes of agriculture and for fuel to cook food.³⁷

Chinese scholars in the nineteenth century recognized the impact that demographic growth had on environmental decline. They noted with great regularity that “the population is daily increasing” (*sheng chi ri fan* 生齒日繁) and they expressed deep apprehensions over the landlessness among a growing number of farmers, the social delinquency resulting from urban opulence, and the exhaustion of environmental resources. Attempting to come to terms with the mounting contradictions of demographic and geographic expansion, contemporary observers used phrases like the “peril of overpopulation” (*renman zhi huan* 人滿之患) and the “disturbance of growth” (*zhi zhi rao* 滋之擾).³⁸ In the middle of the century, a scholar from Jiangsu province, Wang Shiduo 汪士鐸

³⁵ Christian Daniels, “Environmental Degradation, Forest Protection and Ethno-History in Yunnan: (I) The Uprising by Swidden Agriculturalists in 1821,” *Chinese Environmental History Newsletter* 1.2 (November 1994), 8-10; Mark Elvin, *The Retreat of the Elephants: An Environmental History of China* (New Haven: Yale University Press, 2004), especially the chapter on “Chinese Colonization: Guizhou and the Miao,” 216-272.

³⁶ Yong Xue, ““Treasure Nightsoil As If It Were Gold:” Economic and Ecological Links between Urban and Rural Areas in Late Imperial Jiangnan,” *Late Imperial China* 26.1 (June 2005): 41-71; Li Bozhong, *Agricultural Development in Jiangnan, 1620-1850* (New York: St. Martin's Press, 1998), 113-114.

³⁷ Marks, *Tigers, Rice, Silk, and Silt*, 320.

³⁸ Frank Dikotter, *Sex, Culture and Modernity in China: Medical Science and the Construction of Sexual Identities in the Early Republican Period* (Honolulu: University of Hawaii Press, 1995), 104; Lu Fu'en 陸馮恩, “Mu min tun bian yi” 募民屯邊議 [Discourse on recruiting people to garrison the frontier], in HJWX, 39:88a.

(1802-1889), described the connection between population growth and land use:

The harm of having so many people is that mountaintops have already been planted with grain. Along the [Yangzi] River, there are already islets serving as fields. In Sichuan, old forests have already been cleared. In the dells of the Miao [people], the deep bamboo forests have already been opened up. Still, it is not sufficient to provide for [everyone], and the strength of Heaven and Earth is exhausted.³⁹

人多之害，山頂已殖黍稷，江中已有洲田，川中已闢老林，苗洞已開深箐，猶不足養，天地之力窮矣。

Wang recognized that demographic pressure could easily lead to social disturbances, and he blamed the chaos of his own era on the fact that there were simply too many people in the empire.⁴⁰

Perhaps just as alarming, population growth and expansion had also caused what he called the “strength of Heaven and Earth” (*tiandi zhi li* 天地之力) to be completely used up. This observation, which he wrote in 1856, is just one example of how nineteenth-century Qing scholars had come to see the material relationships between demographic change and environmental decline in peripheral zones within China proper and closer to the frontiers of the empire.

The Intellectual History of Environmental Change

Although historians have begun to analyze the diverse manifestations of ecological crisis in the Qing period, there remains confusion about the intellectual or cultural basis for this crisis.

³⁹ Wang Shiduo 汪士鐸, *Wang Huimen yibing riji* 汪梅翁乙丙日記 [The diary of Wang Shiduo, 1855-56], (Beijing: Liulichang wenyunge, 1936), 3:26b. Translations of this passage are quoted in Dikotter, *Sex, Culture and Modernity in China*, 106; Frank Dikotter, “The Limits of Benevolence: Wang Shiduo (1802-1889) and Population Control,” *Bulletin of the School of Oriental and African Studies* 55.1 (Feb. 1992), 112; and Eduard B. Vermeer, “Population and Ecology along the Frontier in Qing China,” in *Sediments of Time*, 276.

⁴⁰ Wang Shiduo, *Wang Huimen yibing riji*, 3:28b.

Indeed, if there is one way to describe the historic relationship in China between intellectual considerations of the environment and the material practices of using the resources of the natural world, consensus may very well lie with the word “contradiction.” In his wide-ranging study of environmental change in Chinese history, for example, Mark Elvin has asserted that philosophies and ideas had little influence upon what he shows was a secular trend of environmental degradation. He writes: “the dominant ideas and ideologies, which were often to some degree in contradiction with each other, appear to have little explanatory power in determining why what seems actually to have happened to the Chinese environment happened the way it did.”⁴¹ He does acknowledge that religious beliefs sometimes served as a basis for the preservation of specific landscapes, flora, or fauna. For instance, sacred trees in the yards of Buddhist monasteries may have been spared from felling because of their religious value. But most of the time, Elvin claims, the conceptual worlds of Chinese people had no relation to their destructive uses of the natural world. Another example of this stark division between culture and materialism is found in the writing of Robert Weller and Peter Bol, who have argued that the “contrast between popular practice and intellectual prescription” has yawned in the modern era but had always existed to a certain degree. They suggest that “one has only to compare Taoist prescriptions about doing nothing against the natural Way with the widespread deforestation and dramatic geographic transformations through terracing and water control that have always accompanied Chinese agriculture” to perceive the dichotomy of environmental thought and practice.⁴²

⁴¹ Mark Elvin, *The Retreat of the Elephants: An Environmental History of China* (New Haven: Yale University Press, 2004), 470. On the next page he goes on to say: “There seems no case for thinking that, some details apart, the Chinese anthropogenic environment was developed and maintained in the way it was over the long run of more than three millennia because of particular characteristically Chinese beliefs or perceptions.”

⁴² Robert P. Weller and Peter K. Bol, “From Heaven-and-Earth to Nature: Chinese Conceptions of the Environment and their Influence on Policy Implementation,” in *Confucianism and Ecology: The Interrelation of Heaven, Earth, and Humans*, ed. Mary Evelyn Tucker and John Berthrong (Cambridge, MA: Harvard

In part, the perception of a division between thought and practice may arise precisely for reasons geographer Yi-fu Tuan pointed out over forty years ago: that European and American scholars have tended to pay attention to Chinese philosophies that prescribed harmony between people and nature and highlighted people's ability or willingness to adapt to the cycles of the natural world. "As to China," Tuan wrote, "Western humanists commonly show bias in favour of that country's Taoist and Buddhist traditions. They like to point out the virtues of the Oriental's quiescent and adaptive approach towards nature in contrast to the aggressive masculinity of Western man."⁴³ Recent accounts have generally dispensed with the notion that Chinese philosophy ever placed humans into a singularly harmonious relationship with the natural world.⁴⁴ Yet there remains a sense that, if historians want to search for conceptions of "nature" in Chinese history, they ought to look to major philosophical traditions like Daoism or to practices like *fengshui* 風水, which harbor the intellectual resources for living in the natural world without destroying it. Perhaps attending to such philosophies or practices has become all the more significant in the modern world, given the perceived failure of western philosophy to overcome the division between nature and culture and to forestall the destruction of the global environment. From this perspective, to search for patterns within Chinese thinking that pay attention only to a supposed harmony between nature and humanity, and to think of environmental degradation as erring from or contradictory to this harmony, suggests that, in orientalist fashion, historians have been using the East as a foil for the

University Center for the Study of World Religions, 1998), 327.

⁴³ Yi-fu Tuan, "Discrepancies between Environmental Attitude and Behavior: Examples from Europe and China," *Canadian Geographer* 12.3 (1968), 181.

⁴⁴ Heiner Roetz, "On Nature and Culture in Zhou China," in *Concepts of Nature: A Chinese-European Cross-Cultural Perspective*, ed. Hans Ulrich Vogel and Gunter Dux (Leiden: Brill, 2010), 200-203, 217; also Mark Elvin, "Introductions," in *Concepts of Nature*, 66-67.

environmental mistakes of the West.⁴⁵

In this framework, moreover, Chinese philosophy has been abstracted from history, from patterns of work, from the material uses of the environment, and from its social contexts.⁴⁶ Historians of Chinese thought have not adequately addressed the conceptual worlds that arise dialectically alongside productive practices, which are dismissed as little more than progenitors of ecological destruction. Elvin seems to dichotomize conceptions and actions when he notes that Chinese “beliefs and perceptions” were relatively unimportant “in comparison with the massive effects of the pursuit of power and profit in the arena provided by the possibilities and limitations of the Chinese natural world, and the technologies that grew from interactions with them.”⁴⁷ In other words, the pursuit of power and profit and the technologies with which people have engaged the natural world lie squarely in the realm of material practices, and the philosophical framework of that materialism requires little explication. For, from the perspective of Elvin, as well as of Weller and Bol, laboring for profit appears to be little more than a path toward environmental degradation—an interpretation that neglects the significance of work as a meaningful site of social and, one could say, natural relations.⁴⁸

I do not want to suggest that nineteenth-century endeavors to maximize production and

⁴⁵ For an example of this orientalism, see Hou Wenhui, “Reflections on Chinese Traditional Ideas of Nature,” *Environmental History* 2.4 (October 1997), 482-493.

⁴⁶ This is the complaint that Benjamin Elman has leveled against customary treatments of Chinese philosophy and intellectual history. Benjamin A. Elman, “The Failures of Contemporary Chinese Intellectual History,” *Eighteenth-Century Studies* 43.3 (Spring 2010): 371-391.

⁴⁷ Elvin, *The Retreat of the Elephants*, 471.

⁴⁸ Richard White, “Are You an Environmentalist or Do You Work for a Living?: Work and Nature,” in *Uncommon Ground: Rethinking the Human Place in Nature*, ed. William Cronon (New York: W.W. Norton, 1996), 171. By calling work a site of social and natural relations, I am not trying to suggest that relations with the natural world somehow stand outside of or beyond social relationships. Rather, my intention is to highlight two different aspects of the same complex network of relationships, that human and non-human agents are both connected to the process of work.

profit did not lead to environmental degradation. Historical evidence from the eighteenth and nineteenth centuries clearly shows how policies to extend and intensify agrarian production exhausted many of the environmental resources on which people had relied for their sustenance. Yet judging the degree of environmental destruction need not be the primary paradigm for assessing the notion of the “profits of nature,” the techniques of agriculture, the processes of frontier settlement, or the outcomes of peasant labor. Another way to analyze the relationship between humans and environment and the conceptual considerations that inhere in that relationship is to take technology as an axial point in the constellation of connections among humans, nature, and ideology.⁴⁹

Technology may be an ideal jumping off point insofar as it embodies the ability and logic of humans to appropriate and make use of the materials of the natural world, because it manifests material and ideological commitments to living on earth, and because it is a core component in the “co-production” of society and nature.⁵⁰ Technology and the processes of production are not, in other words, devoid of significant ideological or philosophical commitments. Rather, *pace* Elvin and other scholars who have seemingly overlooked the ideological nature of production, the ways in

⁴⁹ In an oft-quoted passage that seems to belie a straightforward materialism, Karl Marx wrote that “Technology reveals the active relation of man to nature, the direct process of the production of his life, and thereby it also lays bare the process of the production of the social relations of his life, and of the mental conceptions that flow from those relations.” Karl Marx, *Capital: A Critique of Political Economy*, vol. 1, trans. Ben Fowkes (New York: Penguin Books, 1990), 493n4. Quoted in Jack Ralph Kloppenborg, Jr., *First the Seed: The Political Economy of Plant Biotechnology, 1492-2000*, second ed. (Madison: The University of Wisconsin Press, 2004), 1. Far from being a statement of technological determinism, argues David Harvey, Marx was describing an unending negotiation between all parts of the material and ideological nexus. He interprets Marx as arguing not that technology determines social relations or the relations to nature, but that “technologies and organizational forms *internalize* a certain relation to nature as well as to mental conceptions and social relations, daily life and labor processes.” Harvey, *A Companion to Marx's Capital* (New York: Verso, 2010), 193.

⁵⁰ From the field of science and technology studies, Sheila Jasanoff has written about “co-production” as “shorthand for the proposition that the ways in which we know and represent the world (both nature and society) are inseparable from the ways in which we choose to live in it.” Jasanoff, “The idiom of co-production,” in *States of Knowledge: The Co-production of Science and Social Order*, ed. Sheila Jasanoff (New York: Routledge, 2004), 2.

which Chinese people attempted to draw what they called “profit” (*li* 利) from lands, plants, animals, and their labor were integral to their implicit understandings of the natural world and how they have historically lived within it, regardless of whether their actions happened to preserve or destroy their local environments at any given point in history.⁵¹

Zuo's Intellectual Background

The enthusiasm with which Zuo Zongtang attempted to mobilize peasants and disseminate productive technologies during his agrarian campaigns reflected his strong desire to find profit in certain forms of land use, especially irrigated or dryland agriculture. To be sure, many Qing scholars and officials talked about urging farmers to reap the “profits of the land” (*dili* 地利) as a way to ensure society's sustenance through the material and moral fruits of agriculture. Officials in earlier Chinese and conquest dynasties had also had the responsibility to promote agriculture. What sets apart Zuo's agrarian campaigns in the northwest was not only the nineteenth-century context of demographic growth and environmental crisis, as well as the urgency of finding ways to boost production immediately following warfare in environments completely different from that of his home. What makes Zuo's campaigns unique was also his background as a scholar-farmer who approached the “profits of the land” as an intellectual problem.

Zuo's understanding of the value of land, production, and profit were heavily influenced by

⁵¹ The problem of environmental history aside, this is essentially Francesca Bray's point about writing histories of technology in late imperial China: that the material practices of employing technology were extremely significant for the construction of social ideology, for the creation and maintenance of social order over long periods of time. She writes: “To think more creatively about the meaning of technical choices, rather than reducing them to purely pragmatic considerations, let alone to capitalist rationality, we should re-embed technologies in their social and cultural context to see what agendas they served, or what conceptions of society they made possible.” Bray, “Towards a critical history of non-Western technology,” in *China and Historical Capitalism: Genealogies of Sinological Knowledge*, ed. Timothy Brook and Gregory Blue (Cambridge: Cambridge University Press, 1999), 207. Her book, *Technology and Gender: Fabrics of Power in Late Imperial China*, explains in greater detail the social ideology embedded in work in late imperial China.

Qing-era scholarship about geography and agriculture. In both of these fields of learning he pondered questions related to the advantageous use of land, and part of the intellectual puzzle was to determine the best sources of knowledge for understanding how to derive profit from the technological and social constitutions of agriculture. In Zuo's studies of historical geography, the concept of *dili* (“profits of the land”) was tied to strategic concerns about topographical positions and the utility of geography for military maneuvers. When Zuo turned his attention to agricultural learning, *dili* became a question of agrarian technology and technique. Despite their different readings of functions of land, both geography and agriculture belonged to the realm “practical studies” (*shixue* 實學) that occupied Zuo's attention in his twenties and thirties, during the 1830s and 1840s, as his prospects for passing the highest level of the imperial examinations dimmed. Geography and agriculture as fields of learning were also central concerns for scholars in Hunan involved in the vogue for learning about “statecraft” (*jingshi* 經世) just as Zuo was coming of age as a scholar. He and other Hunanese scholars took interest in statecraft subjects in part to solve daunting problems facing the empire, including the growing array of dilemmas related to demographic expansion.

Styles of learning also demonstrated Zuo's great debt to intellectual trends in the Qing period. Zuo took many of his intellectual cues and his language of study from an earlier generation of scholars, seventeenth-century loyalists of the Ming dynasty who had seen their society crumble in the face of the Manchu conquest. Motivated by political crisis to make their scholarship meaningful to society, many of these scholars were forerunners in the movement of so-called “evidential learning” (*kaozheng xue* 考證學) who critically examined sources of knowledge and who carefully located and presented evidence to support their analyses of social and natural phenomena. In dealing with the concept and value of *dili*, for example, Zuo grappled with the usefulness of

experiential, tacit, and localized knowledge on the one hand, and codified, mobile, and printed knowledge on the other hand. This problematic shaped his ideas for how to balance sources of knowledge when determining how to use land profitably and how to entice farmers to adopt agrarian technologies. In this sense, Zuo's search for profit was framed by an underlying concern to ascertain how best to know land and its productive capacities, and in the 1830s and 1840s, he turned toward research and experimental practice in Hunan to resolve these questions.

In the same period, Zuo began to learn about a body of scholarship collectively called “northwest studies” (*xibei zhi xue* 西北之學) and, for the first time, he acquired knowledge about distant lands along the northern and western imperial frontiers that the Qing had conquered in the previous two centuries. He read sources that introduced him to information about Xinjiang, including the mid-eighteenth-century *Illustrated Gazetteer of the Western Regions* (*Xiyu tuzhi* 西域圖志) commissioned by the Qianlong emperor as well as guidebooks and travelogues penned by scholars who had gone to Xinjiang in the late eighteenth and early nineteenth centuries.⁵² In the mid-1840s, as a young man in his thirties, Zuo even met with Lin Zexu 林澤徐 (1785-1850), the high-ranking Qing official who had been exiled to Xinjiang for his supposed bungling of the Opium War and who had tried to promote agrarian production and to develop irrigation systems in several of Xinjiang's oases during his three-year exile. Another vein of scholarship about Xinjiang in the 1830s came from scholars who had begun to see the imperial borderlands as an open space ready for colonization by landless farmers from China proper. Zuo read their proposals and even appropriated

⁵² ZZN, 1:16a. On “northwest studies,” see several articles by Zhao Lisheng, “Lun wan Qing xibei zhi xue de xingqi” 論晚清西北之學的興起 [On the rise of northwest studies in the late Qing]; “Xibei xue de tuohuang zhe zhi yi—Xu Song” 西北學的拓荒者之一—徐松 [A pioneer of northwestern studies—Xu Song]; and “Xibei xue de tuohuang zhe zhi yi—Zhang Mu” 西北學的拓荒者之一—張穆 [A pioneer of northwestern studies—Zhang Mu]; all three essays are in Zhao Lisheng 趙儷生, *Zhao Lisheng shixue lunzhu zhi xuanji* 趙儷生史學論著自選集 [Collection of self-selected historiographical essays by Zhao Lisheng], (Jinan: Shandong daxue chubanshe, 1996), 461-491.

their language to describe the far northwest as an “outlet” for demographic pressure within China proper. In this sense, Zuo's intellectual background did not just enable him to find technical solutions for northwest agriculture. It also prepared him to envision northwest lands as a geographic solution to the “weight of numbers” in China proper, to turn the task of solving environmental crises into an issue of spatial relations.

If there was one more intellectual consideration relevant to Zuo's agrarian campaigns, it may have been the hierarchical view of the agents of worldly phenomena in which humans had the decisive role in bringing to fruition what the natural world had initiated. Behind his campaigns was a logic about the relationship between human work and the natural environment in which labor enabled crops to flourish out of conditions that had existed prior to human activity. As Wei Guangtao had inscribed in the stele about tree-planting campaigns in 1878, “The myriad creatures are fundamentally nurtured by the natural environment of Heaven and Earth, but their fruition lies with people.”⁵³ Sentiments like this that made human actions the counterpart of the workings of Heaven and Earth had precedents in classical political philosophy. Yet when Qing scholars repeated this type of claim, they more often rendered the agents that appeared in classical philosophy—Heaven (*tian* 天), Earth (*di* 地), and humans (*ren* 人)—as factors of production in agriculture. In pursuing his agrarian campaigns, Zuo Zongtang attempted to balance the relationship between these factors, to make the most of human labor and agrarian knowledge, and thereby overcome the obstacles presented by ecological conditions in the northwest.

Agrarian Campaigns, Material Connections, and Ecological Resemblance

The material connections between China proper and the northwest frontiers wrought by

⁵³ 萬物本乾坤鍾毓而成之在人。Wei, “Wuwei jun ge ying pin nian zhong shu ji,” 831.

Zuo Zongtang's agrarian campaigns began with his travel to the region. In the wake of devastation caused by his own armies, he witnessed the ruins of destroyed villages and abandoned landscapes, first in Shaanxi and then in Gansu. He reported seeing and hearing the victims of starvation in communities largely absent of people but increasingly inhabited by wolves.⁵⁴ He gradually moved his military headquarters westward across these provinces after his army had quelled signs of rebellion. He planted himself for nearly four years each in the capital of Gansu, Lanzhou, and later in a smaller city some 700 kilometers to the northwest and close to the end of the Great Wall, Suzhou 肅州.⁵⁵ In the summer and fall of 1880, he spent some five months stationed in Hami, an oasis city in the east of Xinjiang which marked the westernmost point of his journey. It was from these various locations that he oversaw the agrarian campaigns.

These campaigns were part of wider efforts for reconstruction (*shanhou* 善後) throughout the Qing empire following the military crises of the mid-nineteenth century.⁵⁶ They involved provisioning food aid to refugees as a measure of disaster relief, resettling farmers, promoting agriculture, repairing irrigation systems, planting trees, and rebuilding roadways and city infrastructure. Yet in promoting agriculture and settlement, Zuo and others did not hope merely to rebuild what had previously existed. Zuo's agrarian campaigns were aimed, in some measure, at transforming the productiveness of northwest lands through the application of specialist knowledge, technology, and labor. For example, Zuo initiated a program to develop Xinjiang's sericulture industry by importing specialists, mulberry trees, and silkworms from Zhejiang province, a project in which he claimed to be “spreading the profits of Zhejiang” into the northwest. As he

⁵⁴ Letter of TZ8/12/16 (1870), ZZQ, 13:145.

⁵⁵ Not to be confused with the famous Jiangnan city named Suzhou 蘇州.

⁵⁶ For a perspective on reconstruction in post-Taiping Nanjing and on the meaning of *shanhou*, see William Charles Woodbridge, “Transformations of Ritual and State in Nineteenth-Century Nanjing” (Ph.D. diss, Princeton University, 2007), 199.

disseminated agrarian know-how to farmers by consulting with them or by circulating texts, and as he brought tools and organisms from other regions of the empire, Zuo strove to make Xinjiang's sericulture resemble Zhejiang's sericulture, an endeavor that proved much more difficult than he imagined.

Other aspects of Zuo's agrarian campaigns were demographic. Abandoned or unused land required human labor to become productive and Zuo's fellow officials devised policies to promote resettlement. Here was an underriding irony of late nineteenth-century settlement policy. The violence of rebellion and its suppression had greatly reduced the population in some of the core regions of China proper, including the region south of the lower reaches of the Yangzi River, Jiangnan, where the Taiping Rebellion had wreaked havoc on local communities.⁵⁷ This depopulation temporarily eased the demographic pressure on land and the consequent environmental degradation in these regions. But one major thrust of population policy into the last decades of the nineteenth century remained sending people to the frontiers. As he planned for the colonization of the northwest, Zuo relied foremost on his soldiers to take up farming tools and cultivate land. But civilians, too, would be required, and he intended them to come from China proper. It was this combination of military and civilian labor that began to enable the expansion of agricultural production in Xinjiang in the 1880s.

This, then, was Zuo's colonial project in the northwest. Thousands of kilometers from his home, he attempted to create productive landscapes along the ecological margins of the empire and to make those territories more integrated into the Qing state. These had the potential to be “transplanted landscapes”—the “familiar and useful landscapes” that arose as Chinese moved

⁵⁷ On the destruction and depopulation in Zhejiang, see Mary Backus Rankin, *Elite Activism and Political Transformation in China: Zhejiang Province, 1865-1911* (Stanford: Stanford University Press, 1986), 55-56.

overseas or far afield and put land to the same patterns of use that they had back at home.⁵⁸

Bringing people and plants into the northwest held open the prospect of drawing new, tenuous lines of demographic and ecological connection and resemblance between far flung regions of the empire. Replication—of agrarian technologies, patterns of landholding, organisms, seeds—became a fundamental motif in Zuo's campaigns to promote agriculture and remake devastated lands into fecund landscape.

Insofar as it was Zuo and other people from southern and eastern China leading the quest for replication, it put the southeast and the northwest, and the people of both of the those locations, into new relations. Zuo strove to promote colonization and to reproduce technologies and plants from China proper in its northwest provinces and in the oases of Xinjiang. While stipulations sometimes enabled Muslim war refugees to return to their land or migrate to claim open land, resettlement policies typically identified migrants from China proper as the best laborers for new farm lands. Zuo took this one step further. In a debate with another scholar about how to handle masses of landless Manchus in Beijing, Zuo asserted that the farmers to be settled in Xinjiang should be Han farmers, to whom he ascribed a level of technical knowledge about and experience with agriculture unsurpassed by other groups. In this sense, productive agriculture in the northwest would be replicated alongside a particular identity that had been objectified in the ethnonym “Han” 漢. Zuo then articulated the technological aptitude of people subsumed within this unified Han identity vis-a-vis the knowledge and skills of other groups of people whom he identified using other ethnonyms.⁵⁹ The first group, who primarily inhabited cities and countrysides in Shaanxi and Gansu

⁵⁸ J.R. McNeill borrowed the term from Edgar Anderson, *Plants, Man and Animals* (Boston: Little, Brown, 1952). See J.R. McNeill, “China's Environmental History in World Perspective,” in *Sediments of Time: Environment and Society in Chinese History*, ed. Mark Elvin and Liu Ts'ui-jung (Cambridge: Cambridge University Press, 1998), 45.

⁵⁹ The postwar agrarian campaigns were carried out in regions populated (or previously populated) by peoples who Zuo recognized as unlike himself and many of his own troops. On ethnicity in Zuo's army,

provinces as well as some oasis cities in northern Xinjiang, were those whom Qing scholars identified as Hui Muslims (*hui* 回).⁶⁰ The second group, who resided almost exclusively in the oasis cities and surrounding countrysides of Xinjiang and whose modern ethnonym would likely be Uyghur, were Turkic Muslims to whom nineteenth-century Chinese referred by noting the “wrap” or “binding” (*chan* 纏) worn around their heads.⁶¹ As Zuo encountered these people and the lands on which they had resided, he took the agrarian technologies and cultivation practices of China proper—and even the central part of China proper, what he called the “central lands” (*zhongtu* 中土)⁶²—as the benchmark for appraising local production and for promoting its transformation. Documents about northwest China from the late nineteenth century rarely provide descriptions of agrarian practices in these regions. Yet a few sources reveal Zuo's scorn for local practices and his desire to replicate technical knowledge, plants, and labor from China proper.

The idea of transforming inferior and uncivilized people on the peripheries of a cultured and governed Chinese polity through moral instruction and education, the so-called “Confucian civilizing project,”⁶³ had long been central to literati identity and had shaped the way cultured people

see Lanny Bruce Fields, “Ethnicity in Tso Tsung-t'ang's Armies: The Campaigns in Northwest China, 1867-1880,” in *Ethnicity and the Military in Asia*, ed. Dewitt C. Ellinwood and Cynthia H. Enloe (New Brunswick: Transaction, 1981), 53-88.

⁶⁰ On the problems of ethnic terminology and for the history of the category now called “Hui” in the contemporary People's Republic, see Jonathan N. Lipman, *Familiar Strangers: A History of Muslims in Northwest China* (Seattle: University of Washington, 1997), xxii-xxv.

⁶¹ There is no one single Chinese term that late Qing officials like used to describe Turkic Muslims in Xinjiang. Common referents included *chanmin* 纏民 (“wrapped [headed] people”), *chantou* 纏頭 (“wrapped heads”), or *chanhui* 纏回 (“wrapped [headed] Muslim”). A Uyghur mentor commented that such referents are considered derogatory nowadays (April 2009), but from nineteenth-century Chinese documents alone it is hard to determine the tone of these referents at the time. A less common term also used in nineteenth-century documents is *huamen* 花門 (lit. “flower door”).

⁶² The term “central lands” *zhongtu* has no single definition in historical sources prior to the nineteenth century. It seems likely that Zuo used the term to refer broadly to the historical centers of Chinese population along the lower and middle reaches of the Yellow and Yangzi rivers and the land in between them.

⁶³ Stevan Harrell, “Introduction: Civilizing Projects and the Reaction to Them,” in *Cultural Encounters on China's Ethnic Frontiers*, ed. Stevan Harrell (Seattle: University of Washington Press, 1995), 18-20.

articulated their own identities vis-a-vis people on the frontiers. But Han travelers to the peripheries and officials serving in those regions also sometimes expressed transformative rhetoric about the lands, vegetation, and natural environments they encountered. Indeed, there was precedent for the idea of environmental transformation in the northwest prior to Zuo Zongtang's intervention. The poetry of Ji Yun 紀昀 (1724-1805), for example, imagined that spontaneous environmental transformations had followed the Qing conquest of Xinjiang. Exiled to the borderland for several years owing to malfeasance while in office, Ji wrote many poems about his experience, and in a note accompanying one poem, he claimed that climate change had coincided with the transformation of the territory's political status. According to the note, temperatures in the largest northern city, Urumqi, had risen since the arrival of Qing power in the region, such that the climate had “gradually become similar to China proper” (*jian tong neidi* 漸同內地).⁶⁴

Scholars like this harbored aesthetic interests in transforming northwest environments on the basis of their knowledge of natural environments in China proper. Such desires were not fully explained by regular references to agrarian production and profit. For Zuo Zongtang, the aesthetic commitment to transformation could be as simple as his personal desire to import vegetable seeds from the southeast to be grown in gardens that he established in the northwest, including gardens at his military outpost in Hami. These gardens reportedly provided him with vegetables unavailable

⁶⁴ Ji Yun 紀昀, *Wulumiqi zhashi* 烏魯木齊雜詩 [Assorted poetry from Urumqi], *fengtu* 3, reproduced in Wu Aichen 吳靄宸, ed., *Lidai xiyu shicao* 歷代西域詩鈔 [Copies of poetry of the western regions from past eras], (Urumchi: Xinjiang renmin chubanshe, 2001), 79. The poem and its accompanying note are quoted in James A. Millward, “Towards a Xinjiang Environmental History: Evidence from Space, the Ground, and in Between,” in *Studies on Xinjiang Historical Sources in 17-20th Centuries*, ed. James A. Millward, Shinmen Yasushi, and Sugawara Jun (Tokyo: Toyo Bunko, 2010), 292. On Ji Yun, see also Peter C. Perdue, *China Marches West: The Qing Conquest of Central Eurasia* (Cambridge, MA: The Belknap Press of Harvard University Press, 2005), 428; Peter C. Perdue, “Sustainable Development on China's Frontiers,” in *Natures Past: The Environment and Human History*, ed. Paolo Squatriti (Ann Arbor: University of Michigan Press, 2007), 187. Other examples of the aesthetic appropriation of Qing landscapes through travel writing can be found in Emma Jinhua Teng, *Taiwan's Imagined Geography*.

locally, allowing him to replicate and to savor the flavors of home. This was transformation-via-replication on a small but noticeable scale. But the rhetoric of transformation always seemed to tend toward grandiose visions. In reports back to Beijing, Zuo described how postwar dearth had been changed into verdant fields through the labor of his army. A similar tone pervaded Wei Guangtao's stele: the greenery provided by rows of trees had given color to a landscape previously barren and had made Gansu a more integral part of the empire.

To be sure, the rhetoric of successful environmental transformation was often overblown. Officials along the frontier papered over the frustrations and reversals of their attempts to promote agriculture with terse fabrications about green, bountiful landscapes or hospitable climes. They had an incentive to report the success of their policies, which sometimes meant reveling in the environmental transformation caused by them regardless of their effectiveness. In this regard, Qing officials may not have been different from their counterparts in other early modern empires, whose reporting made imperial power seem more efficacious and more coherent than it was in reality. Zuo Zongtang and other officials around him may have had special incentive. His military ventures into the northwest were extremely costly and required massive foreign loans from colonial British banks backed by customs duties in the treaty ports.⁶⁵ This fact alone suggests that the venture to remake agriculture along the colonial peripheries was much less unitary than nationalist historians have suggested. Nor was the environmental transformation ever as complete as official documents sometimes claimed. The discourse of transformation was at once laudatory and imaginary, and in these ways it served imperial officials like Zuo, for whom success in agriculture was a significant part

⁶⁵ For Zuo's reconquest of Xinjiang, Beijing authorized a loan of five million taels from the Hong Kong and Shanghai Bank, with an equal amount coming from other sources. See C. John Stanley, *Late Ch'ing Finance: Hu Kuang-yung as an Innovator* (Cambridge, MA: East Asian Research Center, Harvard University, 1961), 48-54; Chu Wen-djang [Zhu Wenzhang], *The Moslem Rebellion in Northwest China, 1862-1878: A Study of Government Minority Policy* (The Hague: Mouton, 1966).

of claiming and appropriating territory.

Yet to suggest that the rhetoric of environmental transformation along the frontiers was sometimes hyperbolic is not to dismiss the significance of material relationships created by Zuo's interventions in northwest agriculture in the late nineteenth century. In a century best known for imperial disintegration, perhaps even the report of some trees growing green in the soils of Gansu is an indication that we should look more closely for connections between intellectual life and colonial practice, between humans, land, and organisms, and between far-flung regions of the empire.

Chapter 1

Learning about Land: Imperial Geography and Local Knowledge

“When I was eighteen or nineteen years of age,” Zuo Zongtang said years later, “I bought books with abandon.”¹ Like many aspiring scholars in their youth, Zuo spent hours reading and memorizing classical texts and their commentaries. Studying such books was the established route to scoring well on the examinations for degrees at the local (*shengyuan* 生員), provincial (*juren* 舉任), and metropolitan (*jinsbi* 進士) levels within the Qing bureaucracy. Although exams at the provincial and metropolitan levels included policy questions, the majority of exam questions in the nineteenth century focused upon the textual exegesis of eight different passages from classic works of philosophy, history, and poetry.² At the age of six Zuo had begun to read standard canonical works like the *Analects* (Lunyu 論語) and the *Mencius* (Mengzi 孟子).³ Works like this were *not* the kind of books he so enthusiastically purchased in 1829. The texts that he bought, which were all treatises about historical geography, elicited skepticism and scorn among many others preparing to climb their way up through the hierarchy of examinations and into coveted bureaucratic posts. “Scholars only know that there are works for the imperial examinations,” Zuo complained. “They saw me taking a liking to *these* books, and all of them snickered and thought it useless.”⁴

Zuo never succeeded in winning a high-ranking position in the Qing bureaucracy by means

¹ This age refers to his *sui* 歲. Zuo Xiaotong 左孝同, *Xiankao shilue* 先考事略 [Biographical sketch of my deceased father], quoted in ZZN, 1:7a. Zuo Xiaotong's work appears to be no longer extant.

² On the composition of questions on bureaucratic examinations in late imperial times, see Benjamin A. Elman, *A Cultural History of Civil Examinations in Late Imperial China* (Berkeley: University of California Press, 2000), 736-737.

³ ZZN, 1:4a.

⁴ 士人但知有舉業，見吾好此等書，莫不竊笑，以為無所用之。Zuo Xiaotong, *Xiankao shilue*, quoted in ZZN, 1:7a, emphasis added.

of the examination system. In the 1830s, he thrice failed to pass the metropolitan exam, held in the imperial capital at Beijing roughly every three years. For several decades, Zuo's career options were limited to small-time teaching jobs in his home province, Hunan. And so it may seem that the criticism leveled against Zuo was vindicated by his failure to achieve a bureaucratic post. Yet the books about geography that Zuo purchased in 1829 propelled his studies well beyond the normal subject matter of the examinations. They gave him grounding in so-called “practical studies” (*shixue* 實學) that enabled his indirect route into the bureaucracy beginning in the early 1850s, when he was recruited to be a private advisor to the provincial governor of Hunan.

Zuo Zongtang's intellectual upbringing on texts other than those central to the imperial examinations influenced his vision of the natural and social worlds of the Qing empire in the nineteenth century. It was his studies of geography and agriculture that shaped his notions of how to use land strategically in two ways, for security and for production. His research into historical geography and his practices of map-making enabled him to learn about military strategy as a function of topography. Significantly, they also led him to appropriate the geographical scholarship of Ming loyalists for his own political concerns, namely to support the social and territorial integrity of the Qing empire during the nineteenth-century decades of its deepest crises. In this chapter, I examine how Zuo's studies of geography manifested his commitment to “practical studies” and to the ethos of empiricism that ran through much of Qing scholarship. I also demonstrate that, in his search for geographical knowledge, Zuo faced the question of how best to learn about topographies that were beyond his personal knowledge. What could he learn from maps and texts about lands distant from Hunan? What was the place of local knowledge in his studies of geography?

Despite the scorn heaped upon him by other scholars, Zuo's excitement about geography, agriculture, and other subjects was not out of the ordinary in early nineteenth-century Hunan. The

province was a hotbed of late imperial scholarship that refocused scholars' attention away from esoteric intellectual concerns to the practical affairs of governance, one of the important scholastic trends that is often grouped together with other Qing-era trends under the name “statecraft” (*jingshi* 經世).⁵ Schools in the provincial capital, Changsha, were particularly well-known for their promotion of studies of practical matters pertaining to governance. The city's Yuelu Academy (*Yuelu shuyuan* 岳麓書院) was at the forefront of statecraft scholasticism and practical studies under the leadership of Luo Dian 羅典 (1717-1808). It was this emphasis on practical studies that made the school a site of intellectual dynamism in the 1820s, right as Zuo Zongtang was moving quickly to acquire accessory knowledge for a successful career.⁶ In 1830, Zuo became acquainted with one of the Yuelu Academy's top early nineteenth-century alumni, He Changling 賀長齡 (1785-1848), whom he repeatedly sought for conversation and for the chance to borrow books. The following year, Zuo enrolled in a school closely related to Yuelu and also in Changsha, the Chengnan Academy (*Chengnan shuyuan* 城南書院).⁷ It was at Chengnan that Zuo studied with He Changling's younger brother, He Xiling 賀熙齡 (1788-1846), who later become one of Zuo's regular correspondents in the years before Xiling's death.⁸ Through his studies in Changsha, his connection to the He brothers, and his own penchant for books dealing with the geography and other practical subjects, Zuo tapped into the early nineteenth-century Hunan vogue for statecraft.

Researching imperial geography also connected Zuo to longstanding scholarly trends in the Qing period. He was deeply influenced by the spirit of the widely variegated movement of

⁵ Peng Minghui 彭明輝, *Wan Qing de jingshi shixue* 晚清的經世史學 [Historiography of late Qing statecraft], (Taipei: Maitian chuban, 2002).

⁶ Daniel McMahon, “The Yuelu Academy and Hunan's Nineteenth-Century Turn Toward Statecraft,” *Late Imperial China* 26.1 (June 2005): 72-109.

⁷ ZZN, 1:8a.

⁸ On the biographies of He Changling and He Xiling, see ECCP, 281-282.

“evidential learning” (*kaozheng xue* 考證學).⁹ Evidential learning had arisen in the seventeenth century in wake of the Manchu conquest of China and the downfall of the Ming dynasty (1368-1644). Its early proponents reacted strongly to what they saw as the abstract or superficial concerns of Neo-Confucian philosophy that had occupied scholars during the Song (960-1276) and Ming eras. Instead, they embraced scholarship grounded in textual empiricism, and they turned their attention to new topics of study. For instance, in his *Record of Daily Knowledge* (*Ri zhi lu* 日知錄), one of evidential learning's early practitioners, Gu Yanwu 顧炎武 (1613-1682), “would scrutinize every fact and thoroughly confirm it with supporting evidence; only then would he write it down in his book.”¹⁰ This method of research set Gu and other proponents of evidential learning apart from scholars of previous eras who had relied on deductive logic or speculative reasoning. Moreover, many Qing scholars favored evidence found in ancient texts rather than more recent ones and they criticized the mistakes of republished texts burdened by textual errors and misleading interpretations. In other words, they placed a high value on thorough textual research that would lead them back to original sources as a means to correct the errors of scholars in the intervening centuries.¹¹ Finally, evidential scholars shifted their focus away from what they considered useless subjects of study—especially the idealist concerns of Neo-Confucianism—toward subjects that were purportedly more grounded and relevant to governance, including history, geography, linguistics, hydrology, astronomy, and mathematics. Research in these subjects was a means to

⁹ On Qing intellectual trends, see Benjamin Elman, *From Philosophy to Philology: Intellectual and Social Aspects of Change in Late Imperial China* (Cambridge, MA: Council on East Asian Studies, Harvard University, 1984); Liang Qichao 梁啟超, *Qingdai xueshu gailun* 清代學術概論 [Survey of Qing dynasty learning], (Shanghai: Shangwu yinshuguan, 1934); and for an English translation, see Liang Ch'i-ch'ao, *Intellectual Trends in the Ch'ing Period*, trans. Immanuel C. Y. Hsu (Cambridge, MA: Harvard University Press, 1959).

¹⁰ From the *Siku quanshu* passage on Gu's book, cited in Liang Ch'i-ch'ao, *Intellectual Trends in the Ch'ing Period*, 31. On Gu's biography, see ECCP, 421-426.

¹¹ Liang Qichao called this “liberation through a return to the ancients” (*yi fugu wei jiefang* 以復古為解放). Liang Qichao, *Qingdai xueshu gailun* (Taipei: Taiwan shangwu yinshuguan, 1994 [1921]), 13, quoted in Peng, *Wan Qing de jingshi shixue*, 5.

transcend the perceived irrelevance of earlier scholarship and fashion their scholarship as politically meaningful and useful. In no small way did many early Qing scholars blame frivolous and disengaged scholarship for the decay of Ming society and for the subsequent conquest of China by the Manchus.

Although historians have traced the main threads of the evidential learning movement in textual scholarship, the movement as pursued by Qing scholars was neither unified nor restricted to textual research. The empiricism of the era went beyond extensive evaluation of evidence in textual sources as the path to knowledge. Experiential methods of learning, including personal observation and practice, also animated evidential studies. Several early Qing scholars, including Yan Yuan 顏元 (1635-1704) and his student Li Gong 李塨 (1659-1733), were reputedly averse to overly bookish learning and advocated experiential learning and physical activity as the means to accrue useful knowledge about the world: “Knowledge should not be sought by introspection, nor from books, but from daily activities.”¹² Yan had lost all faith in Song scholarship in 1668, when the death of his foster grandmother prompted him to examine closely Song texts about mourning practices, especially the book of *Family Rituals* (*Jia li* 家禮). He discovered discrepancies between this text and the original classics on which it was based, prompting him to disavow Song and Ming studies in preference for practical studies. For him, “practice” (*xi* 習) became the fundamental route to knowledge, and the year after his abrupt intellectual transformation, he changed the name of his own studio to the “Studio of Practice” (*Xi zhai* 習齋) to reflect his new intellectual orientation.¹³

By the early nineteenth century, the city of Changsha and its two academies, Yuelu and

¹² Cited in Liang, *Intellectual Trends in the Ch'ing Period*, 22.

¹³ On Yan's biography, including his intellectual transformation, see ECCP, 913-915. The idea of “practice” was extremely important for both Yan and his student Li Gong. After Yan's death, Li established the “Schoolhouse of the Studio of Practice” (*Xi zhai xueshe* 習齋學舍) in Boye, Zhili province, in honor of his late teacher. See ECCP, 477.

Chengnan, had become important sites for the propagation of diverse scholarly trends comprising evidential learning, including personal experience as a means to knowledge. Yuelu's headmaster, Luo Dian, devoted time to training his students in experiential learning and he organized field trips that pulled his students away from textual analysis, at least temporarily. According to Daniel McMahon, Luo guided students on outings into the hills behind their school, a space which served as a “hands-on venue for the study of flora and folk customs” and a place to debate “classics and contemporary affairs.”¹⁴ What motivated these outings was Liu's desire to train students in inductive logic, to use observation as the stepping stone to knowledge; the trips amounted to a “fusion of empirical observation of nature with a Yuelu faith in a cultivated mind’s capacity to grasp socially relevant truth.”¹⁵ Hallmarks of Yuelu training in the late eighteenth and early nineteenth centuries, observation and experience were the keys to understanding both the natural and social worlds of one's surroundings.

Learning about the world through observation and experience was an important characteristic of Zuo's own intellectual development, especially in the 1830s and 1840s when he tried his hand at agriculture and conducted experiments with various cultivars on his farm, as I show in the next chapter. Yet Zuo's intellectual investigations of the world began with books, and perhaps no text provided him such a broad introduction to statecraft and to the trends of evidential learning as the 1827 publication of the *Statecraft Compilation of the Dynasty* (*Huangchao jingshi wenbian* 皇朝經世文編). Zuo's interest in and close reading of this text was no mere coincidence. Its two editors were both Yuelu Academy alumni. The man who spearheaded the compilation project, He Changling, became one of Zuo's mentors, and the man who was its primary editor, Wei Yuan 魏源 (1794-1856),

¹⁴ McMahon, “The Yuelu Academy and Hunan's Nineteenth-Century Turn Toward Statecraft,” 84.

¹⁵ *Ibid.*, 85.

was a native of Hunan who later authored several important works on history and geography.¹⁶ The compilation extended to 120 volumes, which contained reprinted and newly printed essays by Qing scholars about a wide range of topics dealing with statecraft, from taxes, revenues, and bureaucratic personnel to hydrology and agriculture, to military strategy and geography.¹⁷ One of the most famous and influential publications of the nineteenth century, the *Statecraft Compilation* was a bellwether of the high tide of interest in statecraft and a vehicle for exposing scholars like Zuo to a wide range of evidential scholarship from the previous two centuries.

The Politics of Geography in Zuo Zongtang's World

Zuo's first significant exposure to geographical studies began in 1829, when he purchased several treatises and compilations dealing with historical geography. Despite the criticism he received, Zuo remained enthralled by the topographic and strategic knowledge contained in such works, and he spent entire days filling blank volumes with notes on information he found useful. This was particularly true of one voluminous treatise, the *Essentials of Historical Geography* (*Dushi fangyu jiyao* 讀史方輿紀要), written by early Qing scholar Gu Zuyu 顧祖禹 (1631-1692).¹⁸ Referring to Gu's treatise, Zuo claimed that he “pondered it with great concentration” and “delighted in its recording of mountains and rivers, strategic and remote locations, and guidelines for attacking and

¹⁶ Susan Mann Jones and Philip A. Kuhn, “Dynastic Decline and the Roots of Rebellion,” in *The Cambridge History of China*, vol. 10, pt. 1, *Late Ch'ing 1800–1911*, ed. John K. Fairbank (Cambridge: Cambridge University Press, 1978), 149.

¹⁷ The compilation's 120 volumes were divided up into eight different primary topics: academics (*xueshu* 學術, 6 vols.), systems of governance (*zhiti* 治體, 8 vols.), personnel administration (*lizheng* 吏政, 11 vols.), revenue administration (*huzheng* 戶政, 28 vols.), rites administration (*lizheng* 禮政, 16 vols.), military administration (*bingzheng* 兵政, 20 vols.), punishment administration (*xingzheng* 刑政, 5 vols.), and works administration (*gongzheng* 工政, 26 vols.). The latter six corresponded to the Six Ministries (*liubu* 六部), which were administrative organs of the central government.

¹⁸ On Gu Zuyu's biography, see ECCP, 419-20. Zuo Xiaotong, *Xiankao shilue*, quoted in ZZN, 1:7a

defending, which [Gu] knows like the back of his hand.”¹⁹ Zuo also obtained copies of an enormous work of geography by a pioneer of evidential learning, Gu Yanwu, entitled *Advantages and Weaknesses of Prefectures and Kingdoms in the Realm* (*Tianxia junguo libing shu* 天下郡國利病書).²⁰

Zuo's interest in these treatises represented an important but little recognized shift in the way geographical knowledge came to serve the interests of the Qing empire. As a young scholar and a hopeful future member of the Qing bureaucracy, Zuo was preparing to serve the state. Yet the texts that he read in the 1830s were not written several centuries earlier for the benefit of the Qing state. In fact, both Gu Zuyu and Gu Yanwu—as well as other early proponents and practitioners of evidential learning—were inspired to blaze new paths in scholarship in part because their own society had been conquered by the Manchus in the 1640s. They reacted to what they saw as the decrepitude of late Ming intellectual and political life that had allowed Ming society to crumble and the Qing to become ascendant, a process that had been physically devastating for the cities and countrysides of China proper.²¹ Scholars chose different ways of dealing with the transition crisis in the mid-seventeenth century. Gu Yanwu, who was in his 30s during the Manchu invasion, refused to serve in the new Manchu-ruled Qing bureaucracy for the remainder of his life—nearly forty years. He had organized armed resistance to their invasion in his hometown of Kunshan, Jiangsu, in 1645. Thereafter he refused to serve as an official in the new dynasty despite suggestions from friends to sit for the examinations or join scholarly initiatives sponsored by the Qing government.²² Gu Zuyu, by contrast, seems to have served the Qing state insofar as he participated in the compilation of a

¹⁹ 潛心玩索。喜其所載山川險要，戰守機宜，瞭如指掌。Zuo Xiaotong, *Xiankao shilue*, quoted in ZZN, 1:7a.

²⁰ On Gu Yanwu's biography, see ECCP, 421-25.

²¹ On the Manchu takeover of China, see Frederic Wakeman, *The Great Enterprise: The Manchu Reconstruction of Imperial Order in Seventeenth-Century China*, 2 vols. (Berkeley: University of California Press, 1985); Lynn A. Struve, *Voices from the Ming-Qing Cataclysm: China in Tigers' Jaws* (New Haven: Yale University Press, 1993).

²² ECCP, 422.

new geographical gazetteer of the empire, the *Comprehensive Gazetteer of the Great Qing* (*Da Qing yitong zhi* 大清一統志), in 1689.²³ But he, too, had tried to resist the Qing. He had fled southward in 1674 to join the forces of Geng Jingzhong 耿精忠 (d. 1682) in Fujian province during the anti-Qing rebellion of the Three Feudatories (*San fan* 三藩) until its defeat in 1676.²⁴

The political disposition of these two scholars toward the Qing did not relegate them to the sidelines of scholarship, as is evident from their work on massive geographies. To a large extent, their scholarship became the avenue for their political sentiments. Gu Zuyu's reason for writing the *Essentials of Historical Geography* was connected directly to the downfall of Ming society and to his desire to provide fellow scholars with the geographical knowledge to defend their society against intellectual and political decay. In the preface to his magnum opus, he obliquely referred to his disappointment about the lack of knowledge among Ming scholars and officials and their helplessness in the face of crisis to explain his desire to compile the work:

I have done this book with strong hopes that the world will have foreknowledge of [its contents]. Those without foreknowledge who felt frustrated and did not know which course to take were in charge of the affairs of the world and handled the weighty [matters] of the state. Once their hands were tied, they gave up [the state] to other people. It is for this reason that my deceased father wailed in fury and grief, and wrung his wrists until his death.²⁵

凡吾所以為此書者，亦重望夫世之先知之也。不先知之，而以惘然無所適從者，任天下之事，舉宗廟社稷之重，一旦束手而畀之他人，此先君子所為憤痛呼號，扼腕以至於死

²³ ECCP, 420.

²⁴ ECCP, 420.

²⁵ Gu Zuyu, “Dushi fangyu jiyao xu” 讀史方輿紀要序 [Preface to *Essentials of Historical Geography*], in HJWB, 78:2a; Gu Zuyu, “Zong xu er” 總敘二 [Second general preface], in *Dushi fangyu jiyao* [Essentials of historical geography], (1811; repr. Shanghai: Zhonghua shuju, 1955), 14.

也。

Although Gu did not mention the Manchu conquest of Ming society, his statements obliquely suggest that he viewed Ming scholars as fundamentally incapable of effective action because they lacked the requisite knowledge. His father's dour presentiments about society before the collapse of the Ming were particularly influential in motivating Gu to pursue politically useful geographical research. He recorded that his father's last words convinced him to undertake such a project.²⁶ The result was a compendium of geographic information that Gu expanded from five to 130 volumes covering topography, history, and toponyms for hundreds of different locations within the empire.

Gu Yanwu's scholarly initiative was likewise motivated by the downfall of the Ming. The introductions to his work contained references to the shortcomings of officials of the Ming more oblique than the other Gu's work. He wrote that, after failing the provincial examination in 1639, he “retreated [from the world] and studied. I perceived that the world had many anxieties, and I was ashamed that scholars had few skills.”²⁷ It was for this reason that Gu began to research the twenty-one dynastic histories, prefectural and district gazetteers, and collections of scholars' essays and memorials. Over twenty years later, he wrote a preface to his *Advantages and Weaknesses of Prefectures and Kingdoms in the Realm*, in which he focused on geography in relationship to three issues of

²⁶ Gu Zuyu, “Zong xu er” 總敘二 [Second general preface], in *Dushi fangyu jiyao*, 14. See also Gu Zuyu, “Zong xu yi” 總敘一 [First general preface], *Dushi fangyu jiyao*, 8. The memory of his father during the Manchu invasion also stood out in his mind when he introduced the project. He wrote of his father: “When he reached the age of forty, there came roving bandits and chaos. We fled into the mountains, and [my father] burnt his writing brush and buried his inkstone, and led his son Zuyu himself to till the open wilds of Mt. Yu [Yushan, near Changzhou]. Over the course of time, he became increasingly destitute, indignant, and senseless. He acquired a strange illness and then died.” Gu Zuyu, “Zong xu yi” 總敘一 [First general preface], *Dushi fangyu jiyao*, 8.

²⁷ Gu Yanwu, “Tianxia jun guo li bing shu xu” 天下郡國利病書序 [Preface to the *Advantages and Weaknesses of Prefectures and Kingdoms in the Realm*], in Tan Qixiang 譚其驤, ed., *Qingren wenji dili lei huibian* 清人文集地理類匯編 [Collected works of people in the Qing dynasty, geography compilation], (Hangzhou: Zhejiang renmin chubanshe, 1986), 1:222.

statecraft: military strategy and defense, taxation, and water conservancy.²⁸ At the same time, over several decades in the middle of the seventeenth century, Gu compiled another work on geography that was less concerned with solving particular problems of statecraft than with compiling information about the empire as a whole. This work, the *Gazetteer of Borderlands* (*Zhao yu zhi* 肇域志), amounted to a “comprehensive gazetteer of geography in the Ming dynasty.”²⁹

Given the political stance of Gu Yanwu and Gu Zuyu vis-a-vis the Manchu takeover of China, it is perhaps not surprising that their works were not widely circulated in the empire, at least initially. Indeed, it seems that it was not until the early nineteenth century that their primary geographical works made it into widespread circulation. Gu Zuyu's *Essentials of Historical Geography* was first published in a mere five volumes following the death of his father in 1666. But the full 130-volume edition was not published until 1811, when Long Wanyu 龍萬育 published the *Essentials* together with a version of Gu Yanwu's *Advantages and Weaknesses*.³⁰ Although the preface of Gu Yanwu's geographical treatise dates to 1662, there is little evidence that his work was published on a wide scale before this printing in the early nineteenth century.

Zuo's interest in books about imperial and historical geography written by Gu Yanwu, Gu Zuyu, and other Qing scholars may thus have reflected a commonplace trend in the reproduction and consumption of geographical treatises in the early nineteenth century. Zuo was not unaware of the politics involved in reappropriating the works of opponents of the dynasty for learning about effective statecraft, and particularly about matters pertaining to strategic uses of geographical knowledge. Indeed, he was cautious to defend the authors he read from charges of being

²⁸ Zhao Rong 趙榮 and Yang Zhengtai 楊正泰, *Zhongguo dili xue shi* [History of Chinese geography], (Beijing: Shangwu yinshuguan, 1998), 25.

²⁹ *Ibid.*, 25.

³⁰ ECCP, 420, 424. Long Wanyu's reprinting (1811) was subsequently reprinted by Zhonghua shuju (1955).

“conspirators” (*ceshi* 策士). For example, in marginal notes to himself following several of Gu Zuyu's reprinted essays in his own copy of the *Statecraft Compilation of the Dynasty*, Zuo defended Gu's work from criticism by older scholar and fellow Hunan provincial Wei Yuan.³¹ According to Zuo, Wei had evaluated Gu's intentions based on the focus of his writing about historical geography:

Mr. Wei Yuan said that [Gu's book] talked a lot about capturing and talked little about guarding; that it talked about attacking but did not talk about defending. Thus it was the talk of attackers and conspirators. This discourse is terribly erroneous. In most cases, as for the forms and features of mountains and rivers, the features will change over time. As for capturing, guarding, attacking, and defending, [these actions] are applicable regardless of location.³²

魏氏源謂，其多言取而罕言守，言攻而不言防。迺搶攘策士之談。此論甚謬。大凡山川形勢，隨時勢為轉遷。至於取守攻防則易地可通也。

Zuo shrewdly challenged Wei's assumption that Gu Zuyu's emphasis on offensive maneuvers at various geographical locations meant that he was a conspirator. Instead, he turned the question of Gu's political stance and his purported conspiratorial strategy into a question of temporality. For Zuo, the passing of time changed the “appearance” or “feature” (*shi* 勢) of particular geographic locations even if the topographical “form” or “body” (*xing* 形) of the terrain did not change. In this way, Gu's talk of military strategy was not a question of attacking specific locations, for the specific characteristics of those locations would change over time. Rather, Gu was describing how military strategy relied on geography in general terms. It seemed, therefore, that the young Hunan scholar

³¹ See also Qian Jibo 錢基博, *Jin bai nian Hunan xuefeng (ban Jingxue tongzhi)* 近百年湖南學風 (含《經學通志》) [Academic trends in Hunan in the past 100 years (including the “Comprehensive gazetteer of classical studies)], (Beijing: Zhongguo renmin daxue chubanshe, 2004), 72.

³² ZZN, 1:7a.

was trying to rationalize his own interest in Gu's work and to rehabilitate Gu Zuyu's geographical knowledge for his own interest in the Qing one and a half centuries later. In other words, he considered Gu's work an important text for learning how to defend the empire against internal and external enemies, even though it was precisely Gu's lament over the ascendancy of the Manchus that had prompted him to write the book in the first place.

Zuo also justified his own deep interest in studying geography and strategy. Perhaps he felt that his political stance or his use of geographical knowledge might be questioned. In 1839, as he continued his geographical studies, he wrote to He Xiling to admit his inability to determine everything about places that were strategic in the past. He made a case for the contingency of military tactics in relationship to specific locations. As he wrote,

places are not always strategic, and strategic [places] are not always reliable. As for the [land] forms for attacking and defending, they cannot be predetermined. It is not merely that I do not want to have the reputation of a conspirator.³³

蓋以地無常險, 險無常恃, 攻守之形, 不可前定, 非僅不欲居策士之名已也。

The variability of the strategic value of specific landscapes and topographical features meant that military maneuvers would be very difficult to plan in advance. This inability to determine how land should be used for strategic purposes afforded Zuo the chance to make clear to his mentor that it was essentially a problem of knowledge, not an issue of trying to hide intentions that would be suspect in the eyes of Qing officials.

Zuo's Study of Geography and Mapping

For Zuo, researching geography meant conceptualizing the geographic spaces of the empire

³³ DG19/0/0 (1839), ZZQ, 10:11.

and learning how to use land and terrain in strategic ways. Drawing maps, perusing historical gazetteers, and reading works like Gu's grounded Zuo's spatial conception of the empire in the practice of defining places that belonged to the Qing and projecting them backward into history. Confronting questions about the contingent and changing nature of geography, Zuo tried to articulate responses that pointed to the incomplete and sometimes inconclusive nature of information contained in books and maps. Nonetheless, books and maps provided important facts about history and strategy, and Zuo pursued his study of geography using some of the practices of evidential learning, which included employing different sources to corroborate information and never being fully satisfied with his knowledge of the subject. It was a process of sorting through information of varying degrees of verisimilitude to determine which could be trusted and which had to be abandoned.

When Zuo read statecraft and geographical essays, he initiated a dialog between himself and the texts. He not only took notes on Gu's work, he also marked up his personal copy of *Statecraft Compilation of the Dynasty* such that there were marks of “cinnabar and orpiment almost everywhere” (*dan huang dai bian* 丹黃殆徧).³⁴ In the margins of his copy of the text, he appraised the value and veracity of Gu Zuyu's work using the language of evidential learning:

As for Mr. Gu's writing, the textual research has rather many inaccuracies and omissions, and remarks also are occasionally deficient in consideration. Yet [his work] is familiar with the vestiges of ancient and recent successes and failures and the features of various places.³⁵

顧氏之書，攷據頗多疏略，議論亦間欠酌。然熟於古今成敗之迹、彼此之勢。

³⁴ Zuo Xiaotong, *Xiankao shilue*, quoted in ZZN, 1:7a

³⁵ ZZN, 1:7a.

Zuo's study of geography also grew up around his conversations with the brothers He Changling and He Xiling in the 1830s. Whereas the former played largely the role of a book-lender and interlocutor, the latter served as a correspondent to whom Zuo wrote about his frustrations in learning about geography. From He Changling, Zuo borrowed a great many “official and unofficial illustrated histories” (*guan si tu shi* 官私圖史) because he lacked the money to purchase them himself. According to his recollection, each time he returned the books, his mentor would inquire what he had learned and they would work “together examining and appraising, studiously debating, without being tired of it even a little bit.”³⁶ To He Xiling, Zuo wrote seeking advice about how to improve his studies of geography. He also communicated with other Hunan scholars about geographical research.³⁷

Before Zuo sat for the metropolitan examination for the first time in 1833, he had begun research into geography through his connection with the He brothers. But it was really his successive failure in that examination—three times, in 1833, 1835, and 1838—that encouraged him to devote more of his time to statecraft and subjects relevant to governance. After his first failure, he wrote to Xu Faji 徐法績 (1790-1837), who served as the Hunan provincial examiner (*xiangshi zheng kao guan* 鄉試正考官), expressing his desire to devote more of his energy to “timely matters” (*shiwu* 時務), especially famine relief and the administration of the salt trade, Yellow River maintenance work, and Grand Canal transport.³⁸ There is little evidence to suggest that he studied or wrote much about

³⁶ ZZN, 1:7b-8a.

³⁷ Zuo exchanged letters with Hunan scholar Zou Hanxun 鄒漢勛 (1805-1854) about his research of geography. Stephen R. Platt, *Provincial Patriots: The Hunanese and Modern China* (Cambridge, MA: Harvard University Press, 2007), 15. Zuo's grandson, Zou Daijun 鄒代鈞 (1854-1908), who became an accomplished scholar of geography, traveled out to see Zuo Zongtang in 1880 when Zuo was in Suzhou, Gansu, to request Zuo's support for the printing of his grandfather's posthumous works, *Zou Shuzi yishu* 鄒叔子遺書 [Posthumous writings of Zou Shuzi], for which Zuo also wrote a preface. See ZZQ, 13:271; ZZQ, 13:366-367; Qian, *Jin bai nian Hunan xuefeng*, 73; ECCP, 768.

³⁸ ZZQ, 10:1-2; ZZN, 1:11a.

these topics in the few following years. But after his second failure several years later, he spent more effort studying imperial geography and map-making. Right around the time of his third and final failure in the metropolitan examinations, He Xiling attested to Zuo's rejection of effete scholarship in preference for what he considered to be more timely and useful subjects. Referring to Zuo by his style name (zi 字), He wrote,

Jigao has recently abandoned ornamental phrases, and works on studies that are useful; he speaks of the conditions of the world, which he understands like the back of his hand.³⁹

季高近棄詞章，為有用之學，談天下形勢，瞭如指掌。

As Zuo turned his attention away from exam learning in the 1830s, he paid greater attention to studies of geography as a centerpiece of his “practical learning.” Zuo undertook long-term research in geography in which his method of acquiring knowledge entailed textual studies and map-making. Both functioned as measures of corroborating evidence and weeding out incorrect information. Yet he also recognized the incompleteness of knowledge about topography and historical change. Neither book learning nor mapping enabled the transmission of knowledge about the world with complete fidelity.

One problem Zuo faced was the rarity and unreliability of historical geographies. “The ancient books [about geography] that have circulated have been very few,” he wrote in 1836. “As for Jia's map and Li's record, they have not typically been seen very much.” Zuo seems to have been referring to two scholars of the Tang dynasty (618-907) and their works: Jia Dan 賈耽 (730-805) and the giant *Map of China and Foreign Regions* (*Huayi tu* 華夷圖) which is typically attributed to him,⁴⁰ and

³⁹ He Xiling 賀熙齡, *Han xiang guan shi chao* 寒香館詩鈔 [Poetry from the hall of cool fragrance], (N.p, preface 1848), 4:3b; see also ZZQ, 15:986.

⁴⁰ Benjamin A. Elman, “Ming-Qing Border Defense, the Inward Turn of Chinese Cartography, and Qing

Li Jifu 李吉甫 (758-814) and his *Illustrated Gazetteer of Administrative Regions in the Yuanhe Reign* (*Yuanhe junxian tuzhi* 元和郡縣圖志). Zuo also cited three Song dynasty scholars—Cai Shen 蔡沈 (1167-1230), Wang Yinglin 王應麟 (1223-1296), and Hu Sanxing 胡三省 (1230-1302)—whose work he seemed to trust. Beyond them, however, he found scholars' conclusions “far-fetched” (*qianzao* 牽鑿). On still other maps, certain positions were “contrary to reason” (*guaichuan* 乖舛) and so not worth examining.⁴¹

Zuo found that textual sources and visual representations each had their flaws, which meant that information contained in these sources had to be corroborated by other sources. Using maps alone or solely consulting histories did not adequately yield a truthful version of geographical knowledge. According to Zuo's way of thinking about the history of Chinese geography,

Those in the past and present who discuss geography search for images in maps and search for principles in books. In short, this exhausts [what they do].⁴²

古今談地理者，索象於圖，索理於書，兩言盡之矣。

The greatest shortcoming of this segregated model of geographical research was its inability to attend to the historically contingent nature of landscape, topography, and political geography. A wide range of topographical and geo-political formations, including hills and valleys, waterways and borderlands, cities and patterns of control, all changed with the passing of time. Canals silted up, borders shifted, strongholds were abandoned. “In this case,” Zuo concluded, “maps are unable to record everything.”⁴³

Expansion in Central Asia in the Eighteenth Century,” 31; Elman, “Geographical Research in the Ming-Ch'ing Period,” 3; Richard J. Smith, *Chinese Maps* (Hong Kong: Oxford University Press, 1996), 26.

⁴¹ ZZQ, 10:4.

⁴² ZZQ, 10:3.

⁴³ 如此則圖不能盡紀也。ZZQ, 10:3.

If maps did not have the capacity to record and transmit to viewers the historical contingency of changes in land and political boundaries, Zuo also found reasons to be skeptical of the authority of books to convey a full range of information about imperial geography. Some geographical information simply could not be properly recorded in books. Orientations and the relationships between topographical features were particularly difficult to clarify in non-pictorial texts. This was especially so given the fact that, for Zuo, plotting mountains and rivers in relationship to one another in two dimensions formed the basis for conceptualizing geographical space as comprised of specific distances and shapes:

The units of length and breadth [of the land] are manifest by mountains and rivers. Mountains and rivers as arteries and veins are produced by visual estimation. Thus, squareness and irregularities, crookedness or straightness, tallness or shortness, all therefore rely upon [these things].⁴⁴

廣輪之度，山川所著也。山川脈絡，準望所生也。於是方邪、迂直、高下均於是乎憑之。

Yet textual descriptions of mountains and rivers hardly created a clear sense of geographical relationships. Zuo posed a hypothetical case. Suppose you were reading a book about geography, and the book described district *a* laying to the east of district *b*. How would you determine whether *a* was directly east of *b*, or southeast or southwest? Having determined it to be southeast, how

⁴⁴ ZZQ, 10:3-4. What I have translated as “visual estimation” (*zhunwang* 準望) was one of six cartographic principles pioneered by early Chinese geographer Pei Xiu. Richard Smith has translated this as “regulated view,” which he defines as the “depiction of the correct relationship between the different parts of a given map.” See Richard J. Smith, *Chinese Maps* (Hong Kong: Oxford University Press, 1996), 25-26. The notion of mountains and rivers forming the skeleton of geography, and of the earth, was a concept that emerged in one of the texts Zuo purchased some years earlier. Qi Shaonan 齊召南 (1706-1768), author of a book about the empire's waterways entitled *Summary of Waterways* (*Shuidao tigang* 水道提綱), articulated the earth as a body with structure and form composed of mountains and rivers. According to Qi's rendering, “the earth combines water and land into a body. It resides in the exact center of heaven. It is also like the body of a human, yet the mountains are its muscles and bones, and the waters are its arteries and veins.” Qi Shaonan 齊召南, “*Shuidao tigang yuan xu*” 水道提綱原序 [Original preface of the *Summary of Waterways*], *Shuidao tigang* (Wenjin ge, ca. 1781), *yuanxu*:1a. For Qi Shaonan's biography, see ECCP, 129-130.

would you be able to choose an orientation that was even more precise, one whose lines of plotment on the map would result in huge differences on the ground? And even if you were able to determine the precise direction from *b* to *a*, how would you estimate the distance between them and between other features? Frustrated by the complexity of conceptualizing geographical relationships from the written text, Zuo wrote to He Xiling:

With inconsistencies undetermined, how indeed is one to find a middle ground and reach the truth? In this case, books are unable to be thoroughly informative, and also cannot be completely trusted.⁴⁵

歧出不定，果何從而折衷至是乎。如此則書亦不能盡告也，亦不能盡信也。

To overcome the problem of reliability posed by using maps (*tu* 圖) and texts (*shu* 書) as individual sources of geographical knowledge, Zuo proposed his method, which had two particular characteristics. First, Zuo stressed that he used sources against one another to corroborate evidence, to draw facts out of a mish-mash of sometimes contradictory information. This would be a process of rectifying and standardizing information in order to reach a better understanding of the geographical layout of a region. He wrote of determining the “reality of a position” (*fangwei zhi shi* 方位之實) by calculating distances between points and examining the countryside through which roads and waterways passed, and of “interrogating” (*shen* 審) and “standardizing” (*zhun* 準) the indeterminacies, contradictions, and complexities of the information about travel routes, toponyms, and topographies. Put in the simplest of terms, it meant using two types of writing to balance each other out: “employing gazetteers to rectify histories, and using histories to bring gazetteers into accordant.”⁴⁶ As he would write the following year in 1837, his hope was to pore over geographical

⁴⁵ ZZQ, 10:4.

⁴⁶ 以志繩史，以史印志。ZZQ, 10:4.

works to correct their errors. When not earning money as a teacher, he planned to spend his time on geography:

[I will] devote my mind to maps and histories, again unfurl the birds-eye maps, carefully sort out the gazetteers of the five regions, make mountains and waterways distinctly clear as if I had formerly visited them, and correct errors and excise mistakes, at least for one long day.⁴⁷

寓心圖史，重披飛鳥之圖，細繹五域之志，山川曆曆，恍若舊游，訂誤刊訛，聊以永日。

If using sources to corroborate evidence was the first characteristic of his geographical studies, the second was to fix geographical knowledge in time as well as in space. This meant relying upon sources to trace a geographical or topographical feature as far back into history as possible, through the string of dynasties that composed history, in the two dimensional space of a map. The map was his starting point, and the goal was to reach as far back into history as possible, to know the “formal resemblances” (*xingsi* 形似) of geographical and topographical features in ancient and later times. Zuo began by creating a map based upon “a current, reliable atlas”⁴⁸ and then he worked back through historical records for a given place. His method was to

determine that a given place in the present is a given place in past dynasties, and further trace it back all the way to the start of classics and histories mentioning the place.⁴⁹

辨今之某地，即先朝之某地，又溯而上之，以至經史言地之始。

Zuo noted that this method of “tracing back” was comparable to a method for estimating celestial phenomena called “deducing paces” (*tuibu* 推步) used by calendarists, who could determine the

⁴⁷ Letter of DG17/0/0, ZZQ, 10:8.

⁴⁸ 目前可據之圖籍。ZZQ, 10:4.

⁴⁹ ZZQ, 10:4.

solstices by tracing and calculating seasonal phenomena and climate far back into history. For geographical studies, maps provided a spatial logic to historical changes, and once Zuo had produced an initial map layered with contemporary spaces of provinces and prefectures, he would then trace them back into history, to their earliest known forms listed in the chapter about geography in the *Classic of History* (*Shujing* 書經). In Zuo's words, this process took him “from Ming to Yuan, to Song, and all the way back to the nine states of the *Tribute of Yu*.”⁵⁰

Map-making itself had a method, one that brought together the whole territory into a single glance of the “birds-eye maps” (*feiniaoyan zhi tu* 飛鳥之圖) and allowed the territory of previous dynasties to appear to fall within the boundaries of the existing empire. Zuo told of first drawing a map of the imperial territory (*huangyu* 皇輿) and then measuring out a grid of squares whose sides represented 100 *li* 里.⁵¹ He would also use colors to differentiate five topographical forms⁵² and sketch out the boundaries of administrative regions onto a map that eventually reached to roughly three meters squared.⁵³ With the borders of the country's territory marked on paper, Zuo worked through historical sources—his evidence (*zheng* 證)—in what must have been a tedious process of checking orientations, comparing sources, drawing something on the page and then revising the course of the lines when some other piece of information came up. This negotiation between visual representation and textual sources was, in his own words, like “chiseling the feet in order to fit their

⁵⁰ 由明而元而宋，上至禹貢九州。ZZQ, 10:4.

⁵¹ One *li* 里 is approximately equal to 500 meters or .3 of a mile.

⁵² Zuo referred to these as the *wuwu* 五物, but it is unclear exactly which forms these were. He may have been referencing the *Rites of Zhou* (*Zhouli* 周禮), which claimed that five different topographical forms—mountains and forests (*shanlin* 山林), rivers and marshes (*chuanze* 川澤), hills (*qiuling* 丘陵), embankments and flats (*fenyan* 墳衍), and lowland plains (*yuanxi* 原隰)—gave rise to distinct types of products and people. See *Hanyu da cidian*, X.

⁵³ Three meters, equivalent to about nine *chi* 尺. Letter of DG16/0/0, ZZQ, 10:4.

sandals.”⁵⁴

Researching geographies distant in both time and space may have been an isolating experience, but Zuo relied upon the support of his wife, Zhou Yiduan 周詒端 (1812-1870), to complete his studies. Zuo and Zhou, who married in 1832, were in financial straits owing to Zuo's unsuccessful attempt at the imperial examinations when, in 1834, they rented one portion of the Zhou family compound and moved there with their daughter.⁵⁵ As he worked on geography, Zhou helped her husband with cartography, tracing out (*yinghui* 影繪) the drafts he had made.⁵⁶ Years later, upon her death in 1870, he would record in her epitaph how she studied histories (*shushi* 書史) with a seriousness of purpose, and how, in their conversations about history, she could often upbraid him by going to books on the shelves and showing him facts that he did not know.⁵⁷

Despite acknowledging the problem of sources in studying imperial geography, Zuo seems to have paid special attention to several widely known maps to serve as the basis for his studies. As he mentioned in 1836, he always started with a trustworthy map. The imperial map published by Jiangnan scholar Li Zhaoluo 李兆洛 (1769-1841) in the 1830s may have been just such a map. Li's map, the *Comprehensive Atlas of the Dynasty* (*Huangchao yi tong yutu* 皇朝一統輿圖), used the grid pattern that had long been standard among Chinese cartographers dating back to third-century cartographer Pei Xiu 裴秀 (224-271), whereby the sides of each square in the grid represented a given distance,

⁵⁴ 鑿趾以適其屨。ZZQ, 10:4.

⁵⁵ Their eldest daughter, Zuo Xiaoyu 左孝瑜, became an accomplished poet whose work was published as *Xiao shi wu shi cao* 小石屋詩草 [Poetic works from the small stone house]. Yu Yueheng 喻岳衡, *Zuo Zongtang jiao zhi shu: shenjiao yu yanbian bingshong de shilu* 左宗棠教子書: 身教與言傳并重的實錄 [Zuo Zongtang's letters for instructing his sons: true records of the equal importance of teaching by example and by words], (Changsha: Yuelu shushe, 2002), 129.

⁵⁶ Zuo Xiaotong, *Xiankao shilue*, quoted in ZZN, 1:13b.

⁵⁷ ZZN, 1:13b; Zuo Zongtang, “Wang qi Zhou furen muzhiming,” ZZQ, 13:356.

often 100 *li* 里.⁵⁸ Although titled “comprehensive,” Li's collection of cartographic representations were of provinces within China proper and, aside from a map of Shengjing 盛京 (later, Liaoning province), it did not include any territories of the empire beyond China proper. The collection did contain one representation of the Qing empire situated next to other countries on a circular map that also depicted Africa, Europe, and two other land masses—perhaps Australia and Antarctica.⁵⁹ Li's atlas, which was published together with a philological study of toponyms, seems to have been popular enough among scholars that Zuo asked fellow scholar Hu Linyi 胡林翼 (1812-1861) to purchase a copy of Li's atlas in Jiangnan on his behalf in 1837.⁶⁰

Even more influential for his studies of geography were eighteenth-century maps of the empire produced under the authority of the Qing emperors with the help of Jesuit cartographers. It was after moving in 1840 to the household of another Hunan scholar, Tao Shu 陶澍 (1779-1839), and becoming the tutor of Tao's son, Tao Guang 陶杲, that Zuo gained access to Tao's private library. Teaching there and previously at the Lujiang Academy (*Lujiang shuyuan* 淶江書院) in Liling 醴陵, Hunan, had taken time away from his studies of geography,⁶¹ but gaining unfettered access to the books in Tao's library gave him another chance to revise his earlier sketches of geography based on imperial maps. He turned to two imperially commissioned maps from the eighteenth century, the *Kangxi Atlas* (*Kangxi yutu* 康熙輿圖), named for the reign period of the Kangxi 康熙 emperor (r.

⁵⁸ Benjamin A. Elman, “Geographical Research in the Ming-Ch'ing Period,” *Monumenta Serica* 35 (1981-83): 3.

⁵⁹ Li's map seems to have been published for the first time in 1831 under the title “Huangchao ge sheng diyu zhizhang tu” 皇朝各省地輿指掌圖 [Handy illustrations of geography for each province in the empire] contained within the published work *Huangchao yudi lue* 皇朝輿地畧 [Outline of imperial geography], (Bianzhi shu shu, 1831). What appears to be the same set of maps was reproduced later in the decade in Li Zhaoluo, ed., *Lidai dili zhi yunbian jin shi* 歷代地理志韻編今釋 [Current explanations of compiled rhyming words from the historical gazetteers of past dynasties], *fanlie* dated 1837 (Hefei, 1870).

⁶⁰ ZZQ, 10:8.

⁶¹ Letter of DG17/4/6, ZZQ, 15:18; Letter of DG17/0/0, ZZQ, 10:8.

1662-1722), and the revised version of the atlas produced four decades later and named for the emperor, the *Qianlong Palace Atlas* (*Qianlong neifu yutu* 乾隆內府輿圖). These atlases charted the entire empire using the technology of Jesuits to create a visual representation of the Qing realm that substantiated imperial control over borderland territories vis-a-vis an expanding Russian empire.⁶² The updated Qianlong version in the 1750s added the recently conquered Central Asian territory of Xinjiang to the map. Zuo apparently consulted these atlases in order to revise and correct the cartographic drawings that he had made, and in this way he seems to have treated these maps as impeccable sources against which to check the errors of his own work.⁶³ Zuo referred to the eighteenth-century atlases contained within the *Grand Compendium of Books Past and Present* (*Gujin tushu jicheng* 古今圖書集成), an encyclopedic collection printed in the 1720s.⁶⁴ But the versions printed there were less detailed and lacked the latitude and longitude lines of the versions kept inside the imperial palace for use by the emperors.⁶⁵ Zuo may have also consulted other copies of the atlases that circulated among scholars outside of Beijing. For instance, the Jiangnan scholar and mathematician Dong Youcheng 董祐誠 (1791-1823) copied the Kangxi and Qianlong atlases in a forty-eight panel collection of maps printed by Li Zhaoluo in 1832 as the *Comprehensive Atlas of the Empire* (*Huangchao yi tong yudi quantu* 皇朝一統輿地全圖). One panel of the forty-eight depicted the entire empire, stretching from the island in the North Pacific Ocean later incorporated into Russian

⁶² Elman, "Ming-Qing Border Defense," 48-50; Peter C. Perdue, "Boundaries, Maps, and Movement: Chinese, Russian, and Mongolian Empires in Early Modern Central Eurasia," *The International History Review* 20.2 (June 1998): 274-279; Laura Hostetler, *Qing Colonial Enterprise*, 77-78.

⁶³ Zuo Xiaotong, *Xiankao shilue*, quoted in ZZN, 1:19a.

⁶⁴ This claim is from Zuo Xiaotong, *Xiankao shilue*, in ZZN, 1:19a.

⁶⁵ Perdue, "Boundaries, Maps, and Movement," 279.

territory as Sakhalin to distant territories in the western Himalayas.⁶⁶ This type of map enabled Zuo to correct what he and his wife had drawn and it presented him with a picture of the empire as a whole, one that incorporated all of the territories conquered by the Qing in the eighteenth century. In other words, it provided a Qing geographic vision to Zuo, whereas the pioneers of evidential learning who wrote extensively about geography—Gu Yanwu and Gu Zuyu—had compiled their works of geography based on their knowledge of the Ming.

Geography, Local Knowledge, and Strategies for Using Land

Cartographic representations of the Qing empire commissioned by the most illustrious emperors of the eighteenth century allowed Zuo the chance to revise his own maps. But the most advanced and accurate maps of the day, which the Kangxi and Qianlong atlases were purported to be, were unable to transmit to their viewers information about how to use specific landscapes in strategic ways. As many of evidential learning's participants understood, first-hand experience beyond book-bound learning was also an important pathway to knowledge. How could experience deepen one's knowledge of land and geography that had been built solely through reading texts and maps? How did one negotiate between experiential knowledge and information gained from books?

Zuo never wrote extensively about this issue, but the preface to Gu Zuyu's massive work on geography, which Zuo so assiduously studied, entertained these questions. For Gu, researching geography and topography was inherently related to the acquisition of military skill; one of the foremost reasons for studying the lay of the land was to understand how armies might attack or defend it. But neither maps nor texts could completely explain a particular region's strategic value,

⁶⁶ See Dong Fangli, *Huang chao yi tong yudi quantu* 皇朝一統輿地全圖 [Comprehensive atlas of the empire], (Bian zhi shu shu, 1832), National Library of Australia, MAP LMS 640, digital collections, <http://nla.gov.au/nla.map-lms640>.

and Gu rationalized the accumulation of geographical knowledge as a dialectic between textual sources and experiential know-how.⁶⁷

As the author of the *Essentials*, Gu eagerly promoted the value of his book. But he also emphasized that other sources of knowledge and other ways of thinking about geography were crucial to knowing land strategically. Questioned by a hypothetical interlocutor about the usefulness of his book, Gu touted his extensive research into textual sources and his own travels and occasional discussions with merchants, travelers, and military men. He was also adamant to explain that strategic geographical knowledge should be derived from one other type of indispensable source, native guides (*xiangdao* 鄉導). These native guides—literally the “guides to the countryside”—served as conduits of information about features of terrains of which they had extensive personal experience. As natives of a given region, they could provide nuanced perspectives on using the land which outside strategists could hardly derive from textual sources. Such native guides were so important for gaining knowledge of the land and its features that Gu described their function as akin to one's own visual and aural senses:

If you trust in my book yet do not have faith in native guides, it would be like
covering your ears yet attempting to hear and closing your eyes yet attempting to see.
You would surely make many mistakes.⁶⁸

⁶⁷ Zuo appears to have had access to at least two versions of the preface to Gu Zuyu's *Essentials of Historical Geography*. The 1897 chronological biography of Zuo's life notes that he purchased Gu's text around the 18th year of the Daoguang reign (1829). The most recently published version of Gu's text at that time seems to have been a typescript edition (*juzhenban* 聚珍版), with a prefatory note by Long Wanyu 龍萬育 dated 1811. Zuo also had access to the version of Gu's preface that was in the original publication of the *Huangchao jingshi wenbian*. This preface is an abbreviated and edited version of the longer, original form in the 1811 version. I have therefore chosen to use the 1811 version for my reading of Gu's ideas. See Gu Zuyu, *Dushi fangyu jiyao* [Essentials of historical geography], (1811; repr. Shanghai: Zhonghua shuju, 1955). Compare Gu Zuyu, “Dushi fangyu jiyao xu” [Preface to the Essentials of historical geography], in HJBW, 78:1a-2a.

⁶⁸ Gu Zuyu, “Zong xu er” 總敘二 [Second general preface], *Dushi fangyu jiyao*, 11.

使信余之書而不取信於鄉導，譬之掩耳而求聞，閉目而求見，所誤必多矣。

He assumed that the scholar who seeks knowledge about a place would be an outsider without experiential knowledge of the land. The role of the local guide was thus to provide enough first-hand information to help the outsider gain his orientation in the land and be able to decide how to use the terrain most strategically.

Experiential knowledge of the land provided by native guides would enable the outsider to utilize an identifiable yet evasive characteristic of land which Gu called the “benefits of the land” (*dili* 地利). His articulation of the strategic value of learning about geography came directly from Sunzi’s *Art of War* (*Sunzi bingfa* 孫子兵法), typically dated to the Spring and Autumn period (770-476 BCE). He copied a passage from Sunzi to describe the value of native guides for controlling the “benefits of the land”:

Those who do not know the forms of mountains and forests, treacherous and difficult [terrain], and impassable marshland will be unable to march with armies.

Those who do not employ local guides will be unable to obtain the benefits of the land.⁶⁹

不知山林、險阻、沮澤之形者，不能行軍。不用鄉導者，不能得地利。

As I describe in subsequent chapters, scholars like Zuo used the same terminology of the “benefits of the land” or “profits of the land”—*dili*—to name the result of productive agricultural uses of land. Yet for Gu and, indeed, for many other evidential scholars, the *dili* of a place was something to be acquired even though it remained immanent in the landscape and was both a factor and product of successful military strategy.⁷⁰ An intimate knowledge of the local environment would be

⁶⁹ Gu Zuyü, “Zong xu er,” *Dushi fangyu jiyao*, 11. For a slightly different translation, see Sunzi, *The Art of War: Sun Zi's Military Methods*, trans. Victor H. Mair (New York: Columbia University Press, 2007), 123.

⁷⁰ It was also the term chosen as the heading for two volumes within the section on military administration

necessary to use the land in the most strategic way possible—to gain all of its “benefits.” As local informants, native guides would provide information about the land to outsiders, who would then choose appropriate strategies with these “benefits” in mind.

Despite the indispensable value of information from native guides, Gu cautioned his readers that guides should never become the primary sources of geographical or topographical knowledge for strategists. Strategists needed to sort through, to judge, and to balance information given to them by native guides—perhaps just as evidential scholars did with textual sources. Gu suggested that his readers acquire background information about geography before they employed native guides, and he was eager to promote his book as just the right starting place. He imagined that the *Essentials* would serve as the primer for adeptly utilizing information from local guides. And when it came down to the dialectic between the experiential knowledge of the guides and the bookish knowledge of the scholars, he deemed the latter ultimately more reliable.

Gu wrote that strategists should rely upon information from native guides only when necessary and only for temporary periods of time. Given this stipulation, Gu urged scholars to understand the principles, if not the specific details, of how to use topography most advantageously, and he admonished his readers to “use native guides temporarily” when a problem arose but to “know the benefits of the land in the day-to-day.”⁷¹ Strategists ought not to try to assess the advantages of the land merely on the spur of the moment, when their main source of information would be native guides. While this kind of impromptu action was sometimes necessary, Gu acknowledged, the most sensible thing to do would be to think about how to strategize for the “benefits of the land” at all times. This meant extensively researching textual and cartographic

in the 1827 *Statecraft Compilation of the Dynasty*; these volumes contained essays concerning the strategic value of imperial lands. See *juan* 78-79 of HJWB.

⁷¹ 鄉導用之於臨時者也。地利知之於平日者也。Gu, “Zong xu san,” 13.

sources about the geography of a particular location before arriving there.

A further problem with native guides was their questionable reliability. According to Gu, they should be used only so long as they might be necessary for providing guidance. If one relied upon them all of the time without having foreknowledge of the landscape, then one would open oneself to the possibility of being misled or duped by the enemy. He reiterated that geographical knowledge must be accrued on an “everyday” (*pingri* 平日) basis, which meant research. If you do not do this “yet place your trust in a temporary native guide,” Gu asked, “how would you not be fooled by the enemy?”⁷²

If local guides were not working for the enemy, their geographical advice nonetheless might just be worthless. Despite repeating Sunzi's admonitions about the native guide being indispensable, Gu seemed to treat them as merely another source of information to be balanced with and corroborated by others. Indeed, he assessed them skeptically and condescendingly as social inferiors who were not always worthy of an outsider's trust. As he counseled his readers,

broadly seek [information] from native guides, following what is trustworthy, and omitting what is dubious, in order to improve [your] use of the benefits of the land.

Why futilely entrust [your] eyes and ears to a servant?⁷³

博求之於鄉導，從其可信，缺其可疑，以善吾地利之用，豈徒寄耳目於僕夫云爾哉。

This process of weeding out useless information from what native guides provided would enable one to figure out exactly how best to use the land. In other words, the outsider-*cum*-strategist would ultimately decide upon how specific topographic features like mountains, forests, marshes, and passes would influence strategic plans.

⁷² 欲取信於臨時之鄉導，安在不為敵所愚也。Gu, “Zong xu san,” 13.

⁷³ Gu, “Zong xu san,” 14.

Even in the best of cases, then, native guides could only be one source of knowledge, and the outsider—Gu's reader—was ultimately responsible for “making judgments in accordance with the locations of the benefits of the land.”⁷⁴ For Gu, the epistemological superiority of the outsider for knowing how to use the land was even more striking when one considered the changing nature of the land's benefits. Although native guides might be necessary, Gu proposed that the “benefits of the land” were hard to determine because they changed constantly. He noted that military strategist Zhuge Liang 諸葛亮 (181-234) had gone out from Sichuan through the Pavilion of Swords (*Jian'ge* 劍閣), a strategic pass in northern Sichuan, to conquer Shaanxi and Gansu, whereas the less capable ruler Liu Shan 劉禪 (207-271) could not even defend the capital of Sichuan when he held the Pavilion. Gu used this historical instance to suggest that, even if one were knowledgeable about geography, the strategic value of the land could change with one's skill. Knowing how to use landscape to one's advantage was in some measure intuitive, and it depended upon a mixture of geographical knowledge, experience, and wisdom. According to Gu,

If one knows to seek the benefits of the land in lofty mountains and deep valleys, famous cities and the capital, yet does not know that the benefits of the land are right between one's fingers and palm, then there is no reason to speak with [him] about the benefits of the land!⁷⁵

知求地利於崇山深谷、名城大都，而不知地利即在指掌之際，烏足與言地利哉。

Insofar as the strategic value of land changed with time and with one's own knowledge and experience, measuring or explaining the benefits of the land in a particular location would be difficult. Gu gave the example of past Mongol military tactics: they were highly successful,

⁷⁴ 因地利之所在而為權衡焉。Gu, “Zong xu san,” 13.

⁷⁵ Gu, “Zong xu er,” 12.

“independently led by their own minds,” and not found on any map nor recorded in detail in any gazetteer.⁷⁶ Indeed, Gu described the “benefits of the land” as “that which changes without end.”⁷⁷ The protean nature of the potential value of the landscape meant that a place's *dili* would be nearly impossible to objectify in visual representations or in words:

As for the profundity of *dili*, maps cannot record it, and discussions cannot thoroughly [explain] it, for it changes with the numinous and indeterminate mind.

It is what is said to be intuitable but inexpressible in words.⁷⁸

地利之微，圖不能載，論不能詳，而變化於神明不測之心。所謂可以意會，不可以言傳者乎。

It was impossible to predetermine completely a landscape's “benefits,” its advantageous use by the strategist, and it would be foolhardy to attempt to estimate the potential benefits of the land by any typical measurements.⁷⁹ Insofar as the “benefits” were in constant flux—just like other phenomena such as *yin* and *yang* and the seasons—aspiring strategists like Gu's readers needed to learn to intuit their potential existence, location, and fruition. Only when they had built their skills of strategic intuition and had comprehended the changing nature of the forces at work in a landscape would they be able, in Gu's estimation, to discuss the “earth” (*fangyu* 方輿).⁸⁰

Even if strategists could ascertain a land's benefits only fully through intuition, however, there were other aspects of geographical knowledge that were unchanging and crucial for successful strategy. Gu recognized that even as *dili* changed, other phenomena stayed constant, including

⁷⁶ 師心獨往。Gu, “Zong xu er,” 12.

⁷⁷ 變化無窮者。Gu, “Zong xu er,” 12.

⁷⁸ Gu, “Zong xu er,” 12.

⁷⁹ Gu noted that if one were to “estimate it *zhu* by *zhu* and compare it *cun* by *cun*, one would surely lose much.” 使銖銖而度之，寸寸而比之，所失必多矣。Gu, “Zong xu er,” 12.

⁸⁰ Gu, “Zong xu er,” 12.

opposite pairs (“squares and circles, odds and evens” 方圓奇偶), the organization of military units (“squad, platoon, company, and battalion” 伍兩卒旅), and features of the landscape (“inner and outer city walls, mountains, and rivers” 城郭山川). It was within these unchanging parameters that strategists were to determine how best to obtain the benefits of the land. Human action would engage stable landforms within a larger system in flux. Strategists were to take the “unchanging body” (不變之體) of the land to “enact constantly changing functions” (為至變之用), and to rely on the “fixed forms” (一定之形) of the landscape to “enact unfixed guidelines” (為無定之準).⁸¹

Providing strategic geographic knowledge was Gu's primary reason for compiling the *Essentials of Historical Geography* and for explaining his rationale for determining the “benefits of the land” based on a combination of intuition, textual information, and experiential knowledge. But perhaps to attract an even wider audience, he also suggested that the geographical knowledge contained within his work would be applicable to all levels of officialdom, from the emperor on down to local prefects. His research could enlighten officials who, on a day-to-day basis, managed lands and civilian livelihoods. It could give them insight into

the complexities of the borderlands; the haunts of evil in the mountains and marshes; the benefits of agriculture, sericulture, waterways, and springs; and the patterns of public sentiment and customs.⁸²

疆域之槃錯，山澤之藪慝，與夫畊桑水泉之利，民情風俗之理。

In other words, geographical knowledge compiled primarily for strategic reasons could be relevant to everyday forms of governance. Even if military maneuvers remained the main application, and if determining how to make the most of the benefits of the land was primarily a strategic question,

⁸¹ In talking about topographical forms and land as a fixed body, Gu was echoed by Qi Shaonan in the preface to his eighteenth-century work *Summary of Waterways*. See note 44 above.

⁸² Gu, “Zong xu san,” 14.

those skills would nonetheless be useful for other purposes, including commonplace activities like agrarian production.

Map-Making in the Field

Decades after he read Gu Zuyu's work and began his research in geography, Zuo was serving the Qing government in his capacity as the governor-general of Fujian and Zhejiang provinces, and he faced precisely the issue that Gu had raised. As a scholar in his home province, Zuo was accustomed to relying on written sources to learn about the world. By comparing various sources, he had attempted to sort through histories and gazetteers, keeping only verifiable evidence to draw maps of the empire and its provinces. Yet when he left his home province, he was faced with the dialectic of geographical learning: how should one reconcile personal experience with textual sources?

In 1864, he presented a seemingly stark response to the question posed by Gu Zuyu's geographical treatise, and in a sense, by the evidential learning movement as a whole. In a line copied from Tang geographer Jia Dan, Zuo asserted that personal experience within a landscape would be far more useful than other sources of second-hand evidence: “In studies of geography, it is better to see for oneself than to hear a hundred times.”⁸³ In a letter to the Zongli Yamen 總理衙門, the Qing government bureau established in 1861 to handle diplomatic and foreign affairs, Zuo expressed doubt about the ability of older maps to accurately represent topographic formations. Old maps were problematic because they served as models for geographic diagrams recently submitted by officials in many places. Zuo complained that officials who submitted such maps had no “experiential knowledge” (*tibui* 體會) of various geographic relationships and formations, including

⁸³ 地理之學，百聞不如一見。Letter of TZ3/0/0, ZZQ, 14:504-505. Zuo may have gotten this line from an essay in the *Statecraft Compilation*. See Zhu Yunjin 朱雲錦, “Ditu shuo” 地圖說 [On maps], in HJWB, 78:11b.

mileage, orientation, linearity, area, incline, and water depth. He further criticized them for marking mountains and waterways with dyestuff merely for the sake of “beauty” (*meiguan* 美觀) even though the “real forms of the land do not at all match.”⁸⁴ In Zuo's eyes, this made the new maps no different from “vulgar paintings of landscape.”⁸⁵

Zuo did not reserve his scorn for new maps. He also directed gentler criticism toward some maps contained within geographical treatises that circulated widely in the nineteenth century. In particular, he named two works: Gu Zuyu's *Essentials of Historical Geography* and the *Small Insights into the “Tribute of Yu”* (*Yugong zhuizhi* 禹貢錐指), a work by Hu Wei 胡渭 (1633-1714). Zuo credited them with employing the grid method for drawing maps, with the sides of each square representing 100 *li* 里, but he also took them to task for not paying adequate attention to the details. For one thing, their books did not contain many maps, and Zuo chided them for allowing the names of locations like ports, prefectures, and districts to “occupy and get rid of the true land forms.”⁸⁶ In other words, their maps did not depict topographical formations aside from delineating the boundaries between land and water. This left contemporary mapmakers without much clue about how to fill in the blank spaces. By contrast, Zuo praised the Kangxi and Qianlong atlases just as he had done several decades earlier. He regarded them as relatively accurate for their depictions of landscape, orientations, and distances. Yet, lamented Zuo, they were not widely accessible because they had not been much circulated beyond the court, and were therefore of less use in creating new maps of provinces and prefectures.

To rectify the problem of new maps relying on old and untrustworthy sources, Zuo proposed giving officials in each region ten sheets of special paper with red grids whose squares

⁸⁴ 究竟地之真形全不相。ZZQ, 14:504.

⁸⁵ 俗畫山水。ZZQ, 14:504.

⁸⁶ 占去實在地形。ZZQ, 14:504.

were scaled to 50 *li* 里 per side. He then wanted to have them plot out distances and relationships between topographical formations using calculations of roads and waterways based upon “normal paths in the terrain.”⁸⁷ They were also to use a compass to determine precise orientations and thereby avoid drawing distorted cartographic representations, which could “make the land lose its real form [and thus render the map] hard to examine carefully.”⁸⁸ After undertaking what seems to have amounted to a cursory land survey, officials were to send their maps up through the administrative hierarchy of the province, a process in which general maps of prefectures (*fu* 府) and circuits (*dao* 道) were to be drawn up. In addition, despite his mockery of coloring maps for beauty, Zuo clearly had multi-colored maps in mind, and he spelled out which colors he wanted used for a variety of topographical formations.⁸⁹ Although he requested that only the names of government offices, temples, villages, or ferry crossings be written on the maps, he suggested that the basic shapes of the following places be drawn with explanations added underneath: wharves where commercial trawlers docked, garrisons of government soldiers, and islands and reefs in the ocean. By adding these details, he hoped that novice cartographers from among the local government bureaus would produce maps “a little more refined and truthful” than copies of older maps.⁹⁰

Zuo delegated the tasks of collecting cartographic information to Qing officials in the prefectures and districts. But since these officials—the prefects, the magistrates, and others—had originally come from elsewhere, Zuo assumed that they were not familiar with local landscapes. As

⁸⁷ 地形平徑。ZZQ, 14:504. This seems to have been the system of “road measurement” (*daoli* 道里) in which distances were determined using triangulation between given distance markers. Smith, *Chinese Maps*, 26.

⁸⁸ 令地失真形，難於省覽。ZZQ, 14:505.

⁸⁹ Mountains (yellow with green shading), high peaks (black dots), streams and tributaries (blue 青), broad sections of waterways (light blue), deep sections of waterways (dark blue), ocean (yellow), tidewater (reddish-brown). ZZQ, 14:505.

⁹⁰ 稍為精核。ZZQ, 14:505.

he noted plainly, “Local officials cannot understand everything upon their arrival.”⁹¹ What Zuo seemed to need were native guides, similar to those whom Gu Zuyu had described in the preface to his book. Local officials literally needed to get down off their horses and include locals in the process of cartographic surveying:

[Local officials] must select gentry in each location, take along compasses, and go with them to survey. But they must [also] remove their horse and carriage accompaniment to avoid frightening people.⁹²

須擇各處紳士攜帶羅槃同往相度，但須屏去輿從，免駭聽聞。

Zuo recognized that sending out prefects and magistrates with local elites to survey the land was not a customary practice of cartography, but he wanted them to be diligent about it, and, as the acting governor-general, he threatened that any careless cartographic work would be returned for correction and revision. As he had indicated before, what he was most interested in was accurate representations of the landscape: “Give priority to the real topography. Do not aim for beauty.”⁹³

Conclusion

Zuo's pursuit of the “real topography” by dispatching local officials to act as cartographers in 1864 may have been an expedient way to bring the provinces of Fujian and Zhejiang under his control as governor-general just as the Taiping Rebellion was coming to a violent close. Set against the background of Zuo's earlier studies of geography, it appears that his proposal about local map-making turned upon misgivings about the information contained in the majority of textual and graphical sources. In the 1830s and 1840s, he had learned that forcing one type of source to

⁹¹ 地方官不能一到了然。ZZQ, 14:505.

⁹² ZZQ, 14:505.

⁹³ 總以確實地形為主，不取美觀也。ZZQ, 14:505.

corroborate the information of another revealed contradictions and aporia in existing knowledge. And he found that these holes in the geographic knowledge of the empire were not always easily resolved by close textual analysis or by painstaking cartographic practice at home.

Perhaps even larger questions loomed for Zuo and other scholars caught up in the diverse streams of evidential learning in the Qing: would learning about geography and other practical matters through texts be adequate? What was the value of personal experience? Gu Zuyu's citation of Sunzi suggests that, even if texts were key sources for learning about geography, local informants were also indispensable to using landscapes strategically. Their knowledge of terrain could inform important decisions made by outsiders. And those decisions were based, at least in principle, on assessments of the benefits of the land, or *dili*. This seems to be precisely one of the reasons why Zuo called upon prefects and magistrates in Zhejiang and Fujian to take local gentry out into the field when they surveyed the land. These village elites were to act as local informants for a mapping project whose goal was to surpass the quality and precision of most previous maps. At least in principle, they were to contribute to new graphic sources of knowledge about geography in the nineteenth century. And they may have also legitimized Qing surveying projects in their local communities by their presence.

The question of how Zuo viewed local and experiential knowledge as a source for understanding the advantages of the land is apropos of his reconstruction projects decades after beginning his studies of geography. As a military general, he may have taken seriously Gu's (and Sunzi's) maxims about improving one's military strategy by learning about terrain from local people. But his knowledge of geography and landscape may have also informed how he sought to obtain another kind of *dili*, the material benefits of agrarian production—the “profits of the land.” Before beginning his service for the Qing state in the 1850s, he had ample opportunity to study profitable

agriculture through texts and through personal experience. As the next chapter will show, evidential learning also framed his studies of agrarian production. Personal experience and even experimentation became the means to gain insight about technologies and techniques as they related to land and climate. Zuo's studies of geography seemed to lay the groundwork for his assessment of how landscapes and their productive potential might be harnessed to provide for people's livelihoods. If it is true that "Ch'ing [Qing] geographical studies were overly inclined to antiquarian research and so turned a living subject into a dead one," as late Qing scholar Liang Qichao once claimed, it might be possible to say that Zuo Zongtang turned this dead subject back into a living one.⁹⁴

⁹⁴ Liang Ch'i-ch'ao, *Intellectual Trends in the Ch'ing Period*, xxviii.

Chapter 2

Learning about Agriculture: Treatises and Test Planting

The environment of the capital city in the spring of 1838 only exacerbated Zuo Zongtang's disappointment over learning about his third failure in the metropolitan examinations. When he reported the news to his wife, he indicated that he had had enough of the city; he would “not again walk through the vanity fair and compete with a group of juveniles for bitter pears by the roadside”—the alluring but ultimately corrupted fruits of commerce that attracted crowds of urban philistines.¹ The crass hubbub of Beijing may have made Zuo's mind wander back to the countryside of Hunan, but he did not leave the capital without stopping by its bookstalls. Vowing never again to attempt the exams, the thirty-six-year-old purchased a large number of agricultural treatises (*nongshu* 農書).² These treatises broadened the dimensions of his scholarly activities and focused much of his mental energy on agriculture. Unlike his research in historical geography, however, delving into agriculture took him beyond the enclosed walls of his study and out into the fields. Investigating agriculture meant juggling textual sources and actual practices. In the years to follow, Zuo moved between reading treatises replete with agronomic principles and technical information, and going outside to observe the natural conditions and partake in farming. In the spirit of evidential learning, Zuo remarked to his wife that he planned to read the treatises and submit their contents to trials in the fields, to carry out “on-the-ground testing” (*shidi kaoyan* 實地考驗).³

¹ 不復再踏軟紅，與群兒爭道旁苦李矣。Letter of DG18/0/0 (1838), ZZQ, 15:247-48.

² Letter of DG18/0/0 (1838), ZZQ, 15:248; ZZN, 1:16a.

³ Letter of DG18/0/0 (1838), ZZQ, 15:248.

Zuo returned to Hunan that spring, and for roughly eight years until 1846, agriculture became one of his primary intellectual interests. His research in agricultural treatises and his observations of plants and production techniques in the fields exemplify how evidential learning as a set of scholarly practices molded approaches to agriculture among scholars in the Qing period. On a basic level, agriculture was a “practical” subject like historical geography and a focal point for students of the Qing statecraft movement.⁴ Zuo's seemingly paradoxical decision to engage with worldly affairs by retreating to the countryside mimicked the decision of some of evidential learning's forerunners, who retreated from society to escape the Manchu conquest and found themselves deeply engaged in intellectual pursuits. Even more significantly, agrarian scholarship in the Qing was also inflected with underlying concerns that characterized evidential research, like the positive valuation of evidence and personal observation. Perhaps the clearest sign of evidential learning's influence on agrarian studies was the desire among scholars like Zuo to “test out” (*shixing* 試行) agricultural techniques from textual sources and obtain visual evidence of the efficacy of techniques, cultivation patterns, and crops.

When Qing scholars passed judgment on the efficacy of agrarian technology, they employed a wide range of considerations. Sometimes they considered a technique or crop's capacity for production in adverse climatic or environmental conditions. More often, it came down to a quantifiable measure, particularly for grain crops, with the ratio of harvest volume to land area being the most common measure.⁵ Yet qualitative evaluations were more fundamental to scholarly

⁴ For example, see William Rowe, *Saving the World: Chen Hongmou and Elite Consciousness in Eighteenth-Century China* (Stanford: Stanford University Press, 2001); Peter C. Perdue, *Exhausting the Earth: State and Peasant in Hunan, 1500-1850* (Cambridge, MA: Harvard University Council on East Asian Studies, 1987).

⁵ In the Qing period, at least, this was often expressed as the ratio of *shi* 石 to *mu* 畝. A *shi* was a volume equivalent to roughly 103 liters in the Qing period. A *mu* was an area of land equivalent to about .15 acres in the Qing period. See Li Bozhong, *Agricultural Development in Jiangnan, 1620-1850* (New York: St. Martin's Press, 1998), xviii. The harvest was also evaluated by the ratio of grain harvested to seed sown, which was expressed as *fen* 分. See Francesca Bray, *Science and Civilisation in China*, vol. 6, pt. 2, *Agriculture* (Cambridge:

discourses about agriculture. Scholars often talked about maximizing the wealth that could result from agrarian production by referring to the “profits of the land” (*dili* 地利). This was the same term that Gu Zuyu had employed to describe the advantageousness of a geographical position as considered by the military strategist. In the case of agriculture, Qing scholars used the term to indicate “the productive potential of the physical earth, intended for man's benefit.”⁶ As Peter Perdue has shown, late imperial officials aimed to guide farmers in “exhausting the earth” (*jin dili* 盡地利), which entailed raising yields on standard crops and boosting the cultivation of cash crops.⁷ For Zuo, it was a combination of techniques and cash crops that seemed to help him attain the profits of the land when he lived in rural Hunan. In 1846, after eight years of researching agriculture, he wrote that some old methods he had been using were “extremely efficacious,”⁸ and that he had chosen to plant mulberry, tea, bamboo, and other trees to “exhaust the profits of the land” (*jin dili* 盡地利).⁹

Approaching questions about the efficacy of agrarian techniques meant confronting the same issue that Gu Zuyu had faced in his discussion of geographical *dili*. In the use of the environment, how would one balance local knowledge with knowledge from textual sources? In 1838, Zuo recognized that efficacy and profitability could not be disconnected from the conditions of local environments. Climate, vegetation, the nature of the soil, and local customs all shaped the

Cambridge University Press, 1984), 379-380. Another way scholars measured average production was by tallying the number of individual grains per stalk. For example, Qi Junzao estimated the number of sections (*ban* 瓣) and grains (*li* 粒) on each tassel (*sui* 穗) to calculate average grain production per tassel for a variety of different crops for the harvest in Shouyang 壽陽, Shanxi province, for the year 1834. Qi Junzao 祁寓藻, *Mashou nong yan* 馬首農言 [Words on farming from Mashou], (1855), 7a-7b, in XXSK 976.

⁶ Helen Dunstan, “Official Thinking on Environmental Issues and the State's Environmental Roles in Eighteenth-Century China,” in *Sediments of Time: Environment and Society in Chinese History*, ed. Mark Elvin and Liu Ts'ui-jung (Cambridge: Cambridge University Press, 1998), 587.

⁷ Perdue, *Exhausting the Earth*, 12.

⁸ 甚有效驗. Letter of DG26/0/0 (1846), ZZQ, 15:54.

⁹ Letter of DG26/0/0 (1846), ZZQ, 15:54.

parameters of possible production, which could differ radically from one region of the empire to the next. On the other hand, agricultural treatises formed an indispensable basis for agrarian knowledge. These texts purveyed techniques that could purportedly succeed in diverse landscapes and under divergent conditions, just as the texts themselves traveled large distances across the Qing empire. It was the attempts of Qing scholars to “try out” cultivation techniques and crops for the edification of themselves and area farmers, and then to write about their trials, that bridged the gap between these two sources of knowledge. They transformed written information into agrarian practice and then transformed experience back into written, mobile knowledge. Indeed, Zuo's experimental cultivations, which allowed him to assay the efficacy of agrarian techniques drawn from texts, had a larger purpose. He told his wife in 1838 that he would take the results of his experiments and “compose them into a book in order to instruct [farmers] in agriculture and gardening.”¹⁰ Having been verified in the field, the techniques drawn from textual sources would flow back to the written page to be circulated more widely, to move beyond the bounds of local environments. This is what Zuo had in mind as he returned to Hunan a failed exam candidate.

Spring, 1838

For Zuo, learning about agrarian production began as an academic question. It may have been the fourth policy question in the metropolitan examination of 1838 that really prompted his reconsideration of agriculture as a topic worthy of investigation and practice. To be sure, agriculture was not merely a collection of productive technologies but also a normative system of social relationships that had long been enshrined in the political philosophy of imperial dynasties. Francesca Bray argues that “correct agriculture” became a fetish of the rulers of the Qing dynasty

¹⁰ 著為一書，以詔農圃。Letter of DG18/0/0 (1838), ZZQ, 15:248.

for a variety of reasons, including their “fears that the population had begun to outstrip natural resources,” and so they adamantly promoted frugality and productivity among peasants.¹¹ We do not know the phrasing of the examination question to which Zuo responded, but his writing indicates a commitment to the fetish of agriculture as a system for producing wealth. In the opening of his essay, he wrote:

Agriculture and sericulture are the tools that support life and the origin of great profit in the world, whereas for the state they are an inexhaustible storehouse.¹²

農桑者天下托命之具，大利之原，而國家無盡之藏也。

Here, Zuo invoked the two productive activities at the core of statecraft rhetoric. Agriculture and sericulture were not significant merely because grain and silk output were economically vital to the most highly productive agricultural zones of the empire, like the lower Yangzi River delta region. Their pairing reflected an idealized, gendered division of labor within the household economy in which men worked in fields while women stayed within the household to tend silkworms and reel silk.¹³ It was because of the character of agriculture and sericulture as productive activities tapping into the “origin of great profit” that people and the state could create wealth almost autonomously: the “people will naturally profit” (*min zì yì* 民自益) without detracting from the wealth of others, while the “state will naturally become rich” (*guó zì fù* 國自富) without impoverishing the people. In the most ideal sense, the forward-thinking architects of a prosperous agrarian society would always

¹¹ Francesca Bray, *Technology and Gender: Fabrics of Power in Late Imperial China* (Berkeley: University of California Press, 1997), 31-32.

¹² DG18/0/0 (1838), ZZQ, 13:446.

¹³ According to Susan Mann, the reiteration of this gendered division of labor by officials and scholars in eighteenth-century Qing China served to promote four goals: to increase peasant household productivity; to increase a peasant family's disposable wealth in order to guard against financial troubles brought on by disasters; to mold family and female morality; and to shape household production schemes. Susan Mann, *Precious Records: Women in China's Long Eighteenth Century* (Stanford: Stanford University Press, 2007), 148. See also Bray, *Technology and Gender*.

be prepared for dearth and, as Zuo put it, “open up a source of profit for all generations.”¹⁴

Notwithstanding these terse iterations of standard Qing statecraft rhetoric, Zuo's essay was largely unconcerned with the political and moral philosophy of agriculture. Instead, it focused on two different categories of knowledge about the technical aspects of agriculture: agricultural treatises on one hand, and observations of local conditions on the other. This juxtaposition of sources of information for those interested in “agricultural policy” (*nongzheng* 農政) subtly revealed Zuo's desire to sort through information about techniques to determine how to arrange agriculture in the most productive way possible. We might call this his agrarian strategy. While textual knowledge from the treatises provided a foundation, he proposed that the knowledge gleaned by observations of landscape and communication with local people—agrarian versions of Gu Zuyu's “local guides”—would be indispensable.

Perhaps to convince exam readers of his erudition in agricultural scholarship, Zuo briefly reviewed eleven texts dating back to the pre-imperial period in chronological order. He began this rough genealogy of agrarian knowledge with several chapters of larger works from before the Han era (206 BCE-220 CE) that he considered to be among the earliest sources of agrarian knowledge. He cited a calendrical record of celestial, phenological, and agricultural phenomena, the *Minor Annuary of the Xia* (*Xia xiao zheng* 夏小正),¹⁵ as well as a chapter from the *Book of Poetry* (*Shijing* 詩經) that described agriculture of the Shaanxi region in verse, the *Airs of Bin* (*Bin feng* 邠風).¹⁶ Perhaps

¹⁴ 開百世之利源. DG18/0/0, ZZQ, 13:446.

¹⁵ Bray notes that there is no consensus on the dating of this work, but she estimates that it is “probably pre-Han at the latest.” See Bray, *Agriculture*, 53. In his volume on agricultural treatises, Wang Yuhu suggests that this work originated prior to the Qin era (221-206 BCE). See Wang Yuhu 王毓瑚, *Zhongguo nongxue shulu* 中國農學書錄 [Record of Chinese agricultural treatises], (Beijing: Zhonghua shuju, 2006), 2.

¹⁶ In the middle of the eighteenth century, a scholar by the name of Yang Cao 楊艸 wrote a guidebook to Shaanxi agriculture and sericulture entitled *Broad Meanings of the Airs of Bin* [*Bin feng guangyi* 邠風廣義]. This book was based on his analysis of the *Airs of Bin*, which he used as evidence for his claim that Shaanxi was suited to sericulture in the present, just as it had been in the ancient past. Yang personally tested the techniques and tools for sericulture, and his findings were written into the work. Wang, *Zhongguo nongxue*

more than these early texts, what had been crucial for the emergence of agriculture as a distinct field of learning was the creation of a separate school, the agronomists (*nongjia* 農家). Zuo attributed this invention to the work of Han dynasty imperial librarian Liu Xiang 劉向 (79-8 BCE), who worked with his son to organize and categorize diverse fields of learning from among ancient sources written on bamboo strips held in the imperial library.¹⁷ This differentiation laid the groundwork for a field of scholarship with a distinct identity. Quite impressed with Liu's range of knowledge, Zuo described him as a “student of the classics yet [one who] knew the urgency of agriculture,”¹⁸ which to Zuo's mind set him quite apart from most scholars in the Qing.

Agrarian texts containing technical information about plants and methods of cultivation were even more significant for his purposes as a potential promoter of agrarian practice. He layered praise on the masterpiece of scholar Jia Sixie 賈思勰 (6th century CE), *Essential Techniques for the Peasantry* (*Qimin yaoshu* 齊民要術), for its broad use of sources and its insightful investigation (*kaobe* 考核) of information. He also thought highly of Song scholar Chen Fu 陳旉 (b. 1076), whose *Agricultural Treatise* (*Nongshu* 農書) contained “much that is appropriate for current use,” and for this reason, Zuo considered him to be quite unlike “flowery scholars” (*huashi* 華士) whose impracticality and vacuity made them useless for tackling the affairs of statecraft.¹⁹

shulu, 221-222.

¹⁷ This work was *Qi lue* 七略 [Seven epitomes], by Liu Xin 劉歆 (46 BCE-23 CE). Note that Zuo incorrectly identified the author of *Qi lue* as Liu Xin's father, Liu Xiang. He also seems to have mistaken this text, for the “seven epitomes” contained no “agronomists” division. Serving as imperial librarians to one of the Han emperors, the two collaborated on a different work, the *Bie lu* 別錄 [Differentiated records], which became a basis for the son's completion of *Qi lue* after his father's death. The “agronomists” seems to have first appeared as one of nine categories for essays collected in the section on bibliography (*yiwenzhi* 藝文志) in the *History of the Han* (*Han shu* 漢書), which also attributed these divisions to Liu Xiang. On these two, see Edward L. Shaughnessy, *Rewriting Early Chinese Texts* (Albany: State University of New York Press, 2006), 2. On the Lius' project, see Mark Edward Lewis, *Writing and Authority in Early China* (Albany: State University of New York Press, 1999), 325-332.

¹⁸ 經生而知本務之急. ZZQ, 13:446.

¹⁹ 多切近時用. ZZQ, 13:446.

Despite their age, other old books had caught Zuo's attention for their technical information. One agrarian skill that he considered quite difficult to acquire was judging how specific soils were suited to the “nature of things” (*wuxing* 物性), including plants. Three texts from the Yuan period (1206-1368) earned his praise in this regard: the *Fundamentals of Agriculture and Sericulture* (*Nongsang jiyao* 農桑輯要) attributed to the Yuan dynasty's Agricultural Extension Bureau (*si nong si* 司農司);²⁰ *Selected Essentials of Agriculture, Sericulture, Clothing, and Food* (*Nongsang yishi cuoyao* 農桑衣食撮要), compiled by Turkic scholar Lu Mingshan 魯明善 around the year 1314; and the most famous of the three, the *Agricultural Treatise* (*Nongshu* 農書) of Wang Zhen 王禎 (1290-1333), whose work Zuo selected for extra praise. There were several other texts which Zuo found quite useful, although the information they related had more to do with famine relief than with the regular work of agricultural production. Zuo named two Ming scholars' works, the *Extensive Record of Wild Vegetables* (*Ye cai bo lu* 野菜博錄) by Bao Shan 鮑山 (17th century) and the *Materia Medica for Famine Relief* (*Jiu huang ben cao* 救荒本草) by Zhu Su 朱橚 (1361-1425).²¹ He was particularly impressed with Zhu Su's insights about natural disasters and the havoc they wreaked in the lives of common people. Moreover, he praised Zhu Su for his ability to differentiate famine relief materials according to their properties (*xing* 性), varieties (*zhong* 種), and flavors (*wei* 味), and sort through confusions over the names, appearances, and substances of different materials.

At the end of the list, Zuo reserved space for a relatively more recent text that served him quite frequently in the late 1830s and 1840s as a source of information about cultivation techniques. This text was the *Complete Treatise on Agricultural Administration* (*Nongzheng quanshu* 農政全書) by late Ming polymath Xu Guangqi 徐光啟 (1562-1633). Perhaps unlike other scholars in Zuo's genealogy

²⁰ Bray, *Agriculture*, 628.

²¹ Zuo identified the author as “Su, Prince of Zhou in the Ming” 明周王橚. ZZQ, 13:446.

of agronomists, Xu's orientation as a late imperial statecraft scholar placed him in line with Zuo's interest in practical studies, and, as we will see, Xu contributed to the precedent of testing agricultural techniques and new crops in soil as a means to promote them among farmers.²² Zuo revered Xu's text for its painstaking research and its comprehensive coverage of many topics including tools, strains (*pin* 品) of plants, times for planting, and “methods for adapting to the land” (*rentu zhi fa* 任土之法).²³ The exam essay of 1838 would not be the only time that Zuo referred to Xu's treatise.

This list of agronomic texts substantiated Zuo's broad background in agrarian scholarship and may have demonstrated his potential competency in agricultural governance as a future official *regardless* of location or local environmental conditions. Yet there was some information that treatises could not yield. Indeed, as Zuo recognized, some characteristics of location and the natural environment were “difficult to speak about” (*nan yan zhe* 難言者) and therefore difficult to record in any text or even communicate to another person. These characteristics had to be experienced, absorbed, and pondered. This created an obvious line of division between officials and local people:

Those who govern a locale are not the people accustomed to its soil. [As for] the fertility of the soil, the timing of the seasons, the location of water sources, the suitability of plants to soils, and the expedience of tools, they surely do not equal the people of the land who have pondered them for a long time and who know them with meticulousness.²⁴

官斯土者，非習斯土之人也，其地之肥磽，候之遲早，水泉之何出，土物之何宜，器具

²² On Xu Guangqi as a statecraft scholar, see Catherine Jami, Peter Engelfriet, and Gregory Blue, eds., *Statecraft and Intellectual Renewal in Late Ming China: The Cross-Cultural Synthesis of Xu Guangqi (1562-1633)* (Leiden: Brill, 2001).

²³ ZZQ, 13:446.

²⁴ ZZQ, 13:446.

之何便，必不及其地之民慮之早而知之審也。

In other words, governing officials from beyond the geographical boundaries of a specific locale would have knowledge inferior to people who had long lived there. For Zuo, the inability to talk about some aspects of agriculture was based upon the assumption that the person talking would be an outsider with little knowledge of local conditions.

The contradiction between knowledge and authority rises to the surface in Zuo's essay, for the people who have little knowledge of local land have the power to promote certain forms of production, while local subjects who know a great deal about the land have little power to determine agrarian policy. This contradiction was partially a function of the so-called “law of avoidance,” a bureaucratic regulation that prohibited magistrates and other high-ranking provincial officials from serving in their home provinces or within 500 *li* 里 of their homes.²⁵ In principle, this type of regulation precluded conflicts of interest between government affairs and hometown or family interests or loyalties, reduced opportunities for corruption, and forestalled provincialism among officials. The result was that magistrates and other outside officials were typically unfamiliar with many aspects of the local communities in which they served. As Zuo made clear in his essay, it was not only the social characteristics of local communities that outsider officials were prone not to understand. They were also outsiders when it came to agriculture, environment, and geography, regardless of how much textual research they had done. If they had few clues about the geographical arrangements of waterways or the types of plants that flourished in local soils, what good could they be in promoting agriculture? Could they merely turn to the information in their books and blindly suggest that peasants follow that information?

Zuo's solution to the quandary of official ignorance about local agrarian and environmental

²⁵ T'ung-tsu Ch'u, *Local Government in China Under the Ch'ing* (Stanford: Stanford University Press, 1969), 21-22, 320n28.

conditions pointed to the value of observation and inquiry. Personal presence was extremely important for finding out exactly which productive practices, organisms, and irrigation schemes were likely to be most successful in a specific locale. Zuo urged officials to become familiar with local conditions and to figure out what methods of production worked best on local lands. He asserted that officials should

accord with their seasons, traverse their wilderness, pass through their countryside,
inquire about what is profitable, and find out what is suitable.²⁶

以其時，行其野，曆其鄉，詢其利，訪其宜。

He suspected that observation and inquiry would overcome the inadequacy of textual sources and enable outsider officials to guide local people to seek profit in agriculture.

For Zuo, profit (*li* 利) was the premiere variable in the equation of local knowledge and production, and as officials sought what was most profitable, it would lead them to accord with customary practices. These were not mere questions of technical practice, for they determined the appearance of the landscape and the culinary patterns of the people. In principle, there were two categories of profit that officials needed to consider: what kind of profit the land ordinarily yielded and what people found most profitable. These were to be the guideposts for official action, which would be shaped according to local practice rather than official plans for transformation:

Accord with the profits of the land and profit from them. [One] need not force the
northwest to all be paddy fields or the southeast to all be a sea of dry land.

因地之利而利之，不必强西北皆水田，東南皆陸海。

As Zuo cautioned would-be officials against forcing the land to support agrarian regimes to which it was not suited, he also warned them not to force people to change their habits. Such coercion would

²⁶ ZZQ, 13:447.

be most apparent in the changing patterns of basic comestibles that had come to epitomize different geographical regions of the empire:

Accord with what is profitable for the people and make profit from it. [One] need not force the people of the southeast to eat wheat or the people of the northwest to eat rice.

因民之利而利之，不必强东南民食麥，西北民食稻。

In this reckoning, the primary factors shaping what people found profitable were the various organisms they chose to cultivate. For instance, Zuo recognized that jujubes (*zao* 棗) and chestnuts (*li* 栗) could be profitable in specific regions, and he cautioned against tearing those trees out to replace them with mulberry, despite sericulture's prominent position in the political philosophy of Chinese agrarian society. Likewise, cotton (*mian* 棉) and ramie (*zhu* 苧) should not automatically be abandoned for silk production.

Agrarian scholars had long employed geographical shorthand to refer to the divergent customs and production methods of different regions of their empires. Late Yuan scholar Wang Zhen, for example, had made a “systematic and conscientious effort to contrast northern and southern agricultural technology.”²⁷ Some five centuries later, Zuo pointed out that some land-use patterns were efficacious only within specific environments, and he used the geographical categories of northwest (*xibei* 西北) and southeast (*dongnan* 東南) to differentiate and essentialize land use and agrarian production. What determined these categories were not only the preferences and customs of local people but also the nature of soils and climates.²⁸ Agriculture-promoting officials needed to

²⁷ Bray, *Agriculture*, 61; see also William Y. Chen, *An Annotated Bibliography of Chinese Agriculture* (San Francisco: Chinese Materials Center Publications, 1993), 14-15.

²⁸ Zuo may have used the northwest-southeast division rather than the north-south division because of the significance and size of the northwest regions in the nineteenth century, some eighty years after the Qianlong emperor's conquest of Xinjiang and at a time when historical and geographical scholarship

recognize these essential divisions and shape their agrarian schemes to accord with local conditions.

By noting positive correspondences between land use on one hand and climate, landforms, and custom on the other hand, Zuo seemed to acknowledge the geographical limitations of agrarian technology. This is why he suggested that officials would need to understand the land before implementing agrarian projects. In his geographic dichotomy, the “northwest” represented zones of aridity and dry-land farming, while the “southeast” represented lands where water was abundant and paddy fields were common. Zuo offered hypothetical scenarios that relied upon the juxtaposition of the essentialist categories of northwest and southeast, arid and aqueous. If an official were attempting to work for water conservancy (*shuili* 水利, lit. “profits of water”) in the northwest, where there was a paucity of water, he might be inclined to reproduce highly productive hydrological infrastructure from the southeast, with irrigation channels, polders, embankments, and sluice gates. But he would discover that the quality of the soil would frustrate his plans. In the northwest, the “earth is loose” (*tu song* 土鬆) and thus prone to floating away (*fu* 浮) and causing obstructions (*yong* 壅). It would crumble easily when used to create embankments and sluices for irrigation, and would cause channels and polders to silt up.²⁹ Officials in the northwest would thus be foolhardy to simply import plans for waterworks from the southeast.

Zuo contrasted this example with a second hypothetical situation: working with southeastern people to avoid “water disasters” (*shuibai* 水害). Officials may have thought to transform the land by making it as dry as possible through actions like draining the ravines, dredging the waterways and marshes, reinforcing embankments, or pulling out aquatic grasses. Yet each of these would harm the interests of the people: they would lead to unemployment (*shiyè* 失業), injure people's financial

about the northwest circulated widely.

²⁹ 土浮沙壅，故善淤也。ZZQ, 13:447.

interests (*shang mincai* 傷民財), or even deprive the people of profit (*duo min li* 奪民利).³⁰ In short, officials would harm the livelihoods of southeastern people if they enacted hydrological plans without consulting them or finding out beforehand which types of waterworks were most useful and successful. It is important to note the divergent reasons why Zuo assumed irrigation schemes could not simply be replicated across vast geographic zones. In the case of the northwest, it was largely a question of soil quality—an environmental constraint—whereas in the case of the southeast, he was primarily concerned about the social interests of the people. Nonetheless, what tied these two cases together was the issue of how to ascertain which irrigation scheme to promote. When officials determined how to proceed, there seemed to be little place for agricultural texts in making such decisions.

Farming & Studying

And yet, for officials and scholars who circulated throughout the empire, learning about agriculture was often mediated by textual sources. Zuo had clearly studied agrarian texts prior to 1838 and had worked out a basic genealogy of agrarian knowledge leading back to ancient times. He had also had the chance to read the three chapters about “agricultural policy” (*nongzheng* 農政) and many other essays related to agrarian production in the *Statecraft Compilation* of 1827. If texts predominated in studies of agriculture, however, the fields served as alternative spaces for learning, ones that provided opportunities to observe soil, weather, cropping patterns, and the outcomes of production techniques. In the late 1830s and 1840s, Zuo sometimes opted for these alternative spaces, and so he moved between his studio and the fields as he investigated agriculture.

Scholarship and agriculture had long been recognized as an honorable combination of

³⁰ ZZQ, 13:447.

pursuits for rural scholars who, for a variety of reasons, were not engaged in bureaucratic service. This combination, known as “farming & studying” (*gengdu* 耕讀, lit., “plowing and reading”), was common in the Ming and Qing eras, and had been practiced as early as the Northern Song (960-1127). In its quintessential form, it entailed elite families purchasing land and managing it as a profitable enterprise to provide financial guarantees for a family's aspiring scholars.³¹ While agrarian production by tenant farmers—often some of whom were related to the landowners—would provide a stable income, the boys and young men of the landowning family would pursue studies in an attempt to achieve a position in the bureaucracy via the imperial examinations. Farming & studying was thus a method of social reproduction for rural scholastic elites whereby a family pursued two complementary avenues toward wealth and social status. Zuo recognized that farming & studying had been the main occupation of his own ancestors,³² and it was the desire to maintain his family's social status that influenced his decision to purchase a tract of land in northern Hunan in the 1840s.

The significance of farming & studying may very well have transcended its role as a method of social reproduction for elite families in late imperial times. For while many elite families relied upon it for this purpose, there was at least a small proportion who were genuinely interested in combining scholarship and fieldwork to increase their knowledge of agriculture as a set of productive techniques and technologies. To be sure, many scholars preparing for the exams threw themselves into their studies *without* paying attention to the technical scholarship about agriculture. But judging from Zuo's experience, there were others who treated the fields, as much as the library,

³¹ Hilary J. Beattie, *Land and Lineage in China: A Study of T'ung-ch'eng County, Anhwei, in the Ming and Ch'ing Dynasties* (Cambridge: Cambridge University Press, 1979).

³² Zuo Zongtang, “Qian Nanyuan xiansheng wencun xu” [Preface to Mister Qian Nanyuan's collection of writings], GX7/1/0 (1881), ZZQ, 13:266; ZZN, 1:1b.

as spaces for investigation.

It may have seemed that Zuo was retreating from matters relevant to contemporary politics, that a farmstead in rural Hunan was an escape from his own failure, from the world around him, and from the reports he had heard of British violence along the coasts. In the several years after going to Anhua 安化 in the spring of 1840 to begin serving as the private teacher to the son of Tao Shu, he thought about finding a place away from the world where he could farm the land. In 1841, Zuo wrote to He Xiling about his deepening depression over contemporary affairs and the potential respite to be found in the countryside.

Current events are gradually becoming worse. At night, I sit and think to myself, with a hundred sentiments all jumbled together, and to the extremes of idiocy. I then consider choosing a distant, secluded place where no human traces have reached, buying ten or so *mu* [of land], and personally cultivating [crops] within [that place].³³

時事浸以不佳。夜坐獨思，百感交集，愚痴之極。遂思擇一幽窅曠絕、人跡不到之處，買田十數畝，躬耕其中。

The current events of which he spoke were the violent episodes of the Opium War with the British. The war resulted in a shocking defeat for the Qing and in the empire's accession one year later, in 1842, to the Treaty of Nanjing, which gave the British legal footholds in five seaports. These were ports where Zuo already knew they and other foreigners would be “pursuing the profits of trade.”³⁴ The crimes of the British in Jiangnan certainly exacerbated Zuo's despair over the situation, and made him think even more strongly of a solution akin to how Gu Zuyu's father had chosen to avoid the catastrophes of the Manchu invasion of China in the mid-seventeenth century: by finding a

³³ Letter of DG21/0/0 (1841), ZZQ, 10:30.

³⁴ 求貿易之利. Letter of DG21/0/0 (1841), ZZQ, 10:29.

remote place with arable land to weather the cataclysm. In 1842, Zuo remarked in even stronger words that

since I cannot plunge into the sea to perish, the only thing to do is to purchase a mountain and go into hiding.³⁵

吾既不能蹈海而亡，則惟有買山而隱耳。

In the same year, he admitted to He Xiling that he had long harbored such a plan to live in seclusion, to survive by “purchasing a mountain” (*mai shan* 買山),³⁶ which meant finding a piece of land fortified by its strategic location in hills or mountains that could be a self-sufficient refuge from the chaos outside.

Despite the air of crisis in the early 1840s, Zuo's search for a countryside manor was a much more mundane process of locating a parcel of land that he could purchase and then renting out its farmland to ensure the long-term prosperity of the Zuo clan. Finding such a place necessitated his close attention to the shape and quality of the terrain. He made sure to analyze the fineness (*jia* 佳) of the hills and the linearity (*zhi* 直) of the farmlands.³⁷ As early as the winter of 1840, Zuo had received word about just such a remote but arable hideout between Changsha and his native place, Xiangyin 湘陰, called Qingshan 青山, where the land “is crisscrossed by a group of peaks and the mountain valleys are deep.”³⁸ He also heard about other options, including a place called Biyunfeng 碧雲峰, which had highly fertile farmland but which was very difficult to access and where people of the Ming had gone several centuries earlier to “hide from the world” (*bi shi* 避世).³⁹ In the end,

³⁵ Letter of DG22/0/0 (1842), ZZQ, 15:252.

³⁶ Letter of DG22/0/0 (1842), ZZQ, 10:34. See also letter of DG24/0/0 (1844), ZZQ, 10:46, for Zuo's allusion to a Ming poet's work about escaping to the mountains.

³⁷ Letter of DG22/0/0 (1842), ZZQ, 10:35.

³⁸ 群峰錯互，山谷深邃. Letter of DG21/0/0 (1841), ZZQ, 10:27.

³⁹ Letter of DG22/0/0 (1842), ZZQ, 10:35.

however, he decided to use the savings from his work as a teacher in Anhua to purchase 70 *mu* 畝 of land at a spot called Liujiachong 柳家冲, in the eastern countryside of Xiangyin.⁴⁰ In 1844, he moved his family to this homestead, which he labeled Liuzhuang 柳莊 (lit. “Willow Manor”).⁴¹

If the move to Liuzhuang represented a retreat from the world, its agriculture would hardly be disconnected from the thriving market in cash crops and other rural products that connected countrysides to cities. The way Zuo envisioned using the farmland tethered it to the possibilities for commodity trade that flowed through commercial centers like Changsha. This was a city, Zuo had commented in 1842, in which he could not reside for a long time. It bustled with the same kind of profane activity and hubbub that he had reviled in Beijing, and its commerce evinced the “mutual exchange between countryside and city” (*xiangcheng hu yi* 鄉城互易) that earlier Qing scholar Zhang Ying 張英 (1638-1708) had spoken about.⁴² But, as Hilary Beattie has shown, the long-term growth of commercialization is precisely what made farming & studying a viable and enticing option for elite families.⁴³ Zuo did not remark upon which goods linked the countryside and city together, but the way he imagined his own future farm suggests that he, too, was thinking of turning a profit from these connections. In 1841, he imagined the products of Qingshan to include those which could cover basic subsistence needs as well as those that could fetch cash as commodities:

Farmland can be made into plots, timber can be used for cooking, potatoes and yams
can ensure the year's [sustenance], the yard can grow mulberry trees, the hillsides can

⁴⁰ Letter of DG22/0/0 (1842), ZZQ, 15:252.

⁴¹ Letter of DG24/0/0 (1844), ZZQ, 15:41.

⁴² Letter of DG22/0/0 (1842), ZZQ, 10:34. Zhang Ying was a steadfast advocate for purchasing land as a guarantee for a family's elite status. Parts of his well-known essay about agriculture, “Heng chan suo yan” 恆產瑣言 [Remarks on real estate], appeared in the *Statecraft Compilation*. See HJWB, 36:15a-17a. For a translation of the text, see Beattie, *Land and Lineage in China*.

⁴³ Beattie, *Land and Lineage in China*, 12, 36.

grow bamboo, and sheep can be herded.⁴⁴

田可區，材可爨，薯蕷可保歲，園可桑，山可竹，羊可牧。

Zuo knew well about rural commodity networks in Hunan. His experience in Anhua had taught him that important cash crops included the palm tree (*zong* 棕), tung (or paulownia) tree (*tong* 桐), plum tree (*mei* 梅), bamboo (*zhu* 竹), and above all, tea (*cha* 茶). It was not only the cultivation of cash crops but the possibility of moving them along the thoroughfares that was key to the relationship between cities and countrysides. In cases where roads were obstructed, neither Shanxi salt merchants (*Shanxi yinshang* 山西引商) nor itinerant laborers (*dai gu zhi ren* 待雇之人)—labor was another significant commodity that flowed along the roadways—could circulate. Because commerce would be obstructed, families who owned land would not be able to “make business transactions in order to live.”⁴⁵

Zuo's was one of these families, and despite his insistence on retreating from the world, his farmland enabled him to partake in lucrative commodity markets. What did this mean for his search for “profits” from the land? Zuo's decision about what to grow on his farm and what techniques to use for cultivation came out of his readings about agriculture, his understanding of what the land could grow, and his ideas for what could be marketed profitably through the commercial networks in the Hunan countryside. Tea leaves in particular had shown him the profits to be made from the land. Anhua, where Zuo taught, had long been known for its tea output, and by the eighteenth century, Anhua tea was being exchanged locally with merchants from many different parts of the empire.⁴⁶ Zuo tried growing tea in Liujiachong, and he was delighted to report on two different occasions that the income from his tea yard just about equaled Qing taxes (*Qing guo ke* 清国課) for

⁴⁴ Letter of DG21/0/0 (1841), ZZQ, 10:27.

⁴⁵ 交易以為生. Letter of DG22/0/0 (1842), ZZQ, 10:35.

⁴⁶ Perdue, *Exhausting the Earth*, 100.

the year. Given the return on tea leaves, he was eager to increase their output and also bring the “profits of mulberry and bamboo to fruition.”⁴⁷ The profits of the tea garden were

sufficient to know the necessity of exhausting the profits of the land,
and so the necessity of repairing the human affairs [of the world].⁴⁸

足知地利之不可不盡，而人事之不可不修。

The financial return on one single crop gave him hope that more profits could be drawn from the land, which would in turn be an avenue toward enriching farmers and rectifying the current problems that society faced.

Articulating Farming as a Scholar's Practice

Zuo's interest in agricultural studies in the middle of the nineteenth century demonstrated his passion for scholarship that could not find its ultimate outlet in governmental affairs. Agriculture filled that gap, but not without Zuo feeling the need to defend his choice to fellow scholars. His justification for paying attention to agriculture was that it had long been an interest of true scholars, even if many of Zuo's contemporaries looked condescendingly upon agrarian knowledge. In fact, his invocation of the names of several scholars of ancient times to substantiate his own position seemed to put him at odds with the authors of classic texts. In letters to acquaintances in 1840 and 1846, Zuo mentioned one student of Confucius, Fan Chi 樊遲, who had gone to his teacher asking about agriculture.⁴⁹ Confucius had rebuffed his student, not only by claiming that experienced agrarians (*laonong* 老農) and experienced gardeners (*laopu* 老圃) would serve Fan Chi's inquiry better than he would. Behind Fan Chi's back, Confucius also criticized him as a “petty man” (*xiaoren* 小人)

⁴⁷ 桑竹之利成. Letter of DG26/0/0 (1846), ZZQ, 15:58.

⁴⁸ Letter of DG26/0/0 (1846), ZZQ, 15:54.

⁴⁹ Letter of 20/4/27 (1840), ZZQ, 15:33; Letter of DG26/0/0 (1846), ZZQ, 15:55.

for paying attention to agriculture when ritual (*li* 禮), righteousness (*yi* 義), and trust (*xin* 信) were the primary instruments for governing the people.⁵⁰ Zuo also alluded to Chen Xiang 陳相, who was reproved by Mencius for his interest in agriculture as a primary trope of politics.⁵¹ While he recognized that there were principles of governance higher than agriculture, “this is certainly not to say,” Zuo asserted, “that scholars should not personally do agriculture.”⁵²

Zuo also alluded to other historical figures who had highlighted the importance of agrarian learning and rural lifestyles. He chose allusions that spoke to the political significance of agriculture as a system for “governing life” (*zhibi* 治生) and to ones that affirmed his decision to be personally involved in crop cultivation. Perhaps the two were hard to separate; Zuo claimed that “among the ancients, there were none who did not farm and study.”⁵³ Among these figures was the Jin-era poet Tao Yuanming 陶淵明 (365-427), whose lines of verse, written while he lived at his countryside farm, seemed to reflect precisely the lifestyle that Zuo now found for himself. Zuo quoted these two lines:

When I've already plowed and already sowed, I return to read my books.⁵⁴

既耕亦已種，時還讀我書

⁵⁰ See Confucius 13.4, in Yang Bojun 楊伯峻, ed., *Lunyu yizhu* 論語譯注 [The annotated *Analects*], (Beijing: Zhonghua shuju, 2009), 133.

⁵¹ Letter of DG26/0/0 (1846), ZZQ, 10:55. For the case see Mencius 5.4, in Yang Bojun 楊伯峻, ed., *Mengzi yizhu* 孟子譯注 [The annotated *Mencius*], (Beijing: Zhonghua shuju, 1960), 123.

⁵² 并非謂士人不當工稼. Letter of DG26/0/0 (1846), ZZQ, 15:55.

⁵³ 古人無不耕且讀者. Letter of DG26/0/0 (1846), ZZQ, 15:54.

⁵⁴ This verse comes from Tao's series of poems “Du *Shanhaijing*” 讀山海經 [Reading the *Classic of Mountains and Seas*]. For a citation, see Tao Qian 陶潛, *Tao Yuanming ji* 陶淵明集 [Collection of Tao Yuanming], ed. Sun Fuqing 孫福清 (Guangzhou: Han mo yuan, 1879), 4:15a. See Xiaofei Tian, *Tao Yuanming & Manuscript Culture: The Record of a Dusty Table* (Seattle: University of Washington Press, 2005), 150.

Four limbs are truly exhausted, so that extraordinary perils shall not afflict.⁵⁵

四體誠乃疲，庶無異患干

By alluding to Tao Yuanming, Zuo was not merely asserting the propriety of focusing his efforts on agriculture, but also imbuing agriculture, rural life, and work in the fields with the aesthetic sense of emotional and physical fulfillment. “What joy is there in draping over one's shoulders the moonlight and carrying a hoe!” he proclaimed in 1846.⁵⁶

But just as the allusions to Tao's poetry legitimated his investments of time in agriculture, they were also meant to redeem agriculture for scholarship. What Zuo most disliked about contemporary scholars was their rootlessness and their inability to grasp practical affairs. It was in his assessments of scholars' relationship to agriculture and to farmland that Zuo really seems to have expressed the spirit of late imperial statecraft. Zuo complained that whereas the ancients had taken agriculture seriously, scholars of later generations (*houru* 后儒) had turned their backs on agronomic research, and he heaped a pile of aspersions on them:

The research and practice of scholars of later generations is not clear; they become broadly and profoundly [knowledgeable] in books of all sorts, but they are ignorant of the five grains [i.e. agriculture]. How is it possible that they run about in this unsettled society yet are indolent and useless when it comes to agriculture? They

⁵⁵ This verse comes from Tao's series of poems “Huan jiu ju” 還舊居 [Returning to my old residence]. For a citation, see Tao Qian 陶潛, *Tao Yuanming ji* 陶淵明集 [Collection of Tao Yuanming], ed. Sun Fuqing 孫福清 (Guangzhou: Han mo yuan, 1879), 3:8b. See Tian, *Tao Yuanming & Manuscript Culture*, 113.

⁵⁶ 何若帶月荷鋤之為樂乎. Letter of DG26/0/0 (1846), ZZQ, 15:55.

have the name “scholars,” but they really are equal to vagabonds.⁵⁷

后儒講貫不明，遂至博極群書，不知五穀。寧奔走於風塵，而怠荒於稼穡。名為學者，實等游民。

Given that scholars got caught up in the profane affairs of contemporary life and let the pace of their lives be set by them, their writings were also disappointing. Zuo considered much of what scholars produced to be vapid nonsense. Multiple times in the early 1840s, he shared a keen disappointment not only with scholarship in general, but also with the published works about agriculture.⁵⁸ In 1844 and 1845, he claimed that he had done extensive reading in new books, but that out of innumerable volumes, there were only a few that he could really appreciate.⁵⁹ Most authors wrote primarily to make a name for themselves, while their efforts contributed little to studies that would help society:

Among people of the recent era who write books, most choose to do something that is easy to complete and has a good title. There are extremely few practical studies.⁶⁰

近人著書，多簡擇易成而名美者為之，實學絕少。

Studies of agriculture were sidelined as scholars wrote books in pursuit of reputations for themselves, which meant that relatively few books from past or present took up the topic of

⁵⁷ Letter of DG26/0/0 (1846), ZZQ, 15:55. The word *houren* 後儒 means “scholars of later generations,” but it can refer in particular to several Song pioneers of the “study of principles” (*lixue* 理學) known as Neo-Confucianism, which was especially prominent in the Song and Ming dynasties. These pioneers were Zhu Xi 朱熹, Cheng Hao 程顥, and Cheng Yi 程頤. Zuo seems to have been using a much broader definition of *houren* in this passage, to include scholars beyond these three. Nonetheless, given Zuo's inclinations toward statecraft and evidential learning, it may have been a subtle attack on pre-*kaozheng* modes of learning as well. See Luo Zhufeng, ed., *Hanyu da cidian* 漢語大詞典 [The grand dictionary of Chinese], (Shanghai: Shanghai cishu chubanshe, 2007), 1853.

⁵⁸ For an example of his criticism of scholarship, see Letter of DG22/0/0 (1842), ZZQ, 15:252.

⁵⁹ See letter of DG24/0/0 (1844), ZZQ, 15:42; Letter of DG25/0/0 (1845), ZZQ, 10:49.

⁶⁰ Letter of DG25/0/0 (1845), ZZQ, 10:49. In another reiteration of this point, Zuo noted that “there are really no practical studies able to support later generations” 絕無實學可餉後人. See letter of DG24/0/0 (1844), ZZQ, 15:42.

agriculture. In Zuo's eyes, scholars had little regard for what he called the “most important affair for human life.”⁶¹

In the barrage of criticism, Zuo did not spare farmers. They, too, seemed to be caught up in the excitement for advancement, in the urge to profit, to the detriment of society.

[I] believe the maladies of today's agrarians and today's scholars are exactly equal.

Both are myopic out of their desire for quick [results]. Having misled themselves, they mislead others. Their bearing on the world is not insignificant.⁶²

以為今之農者與今之學者，弊正相等，皆以欲速見小。自誤而以誤人，其關係天下不小也。

In this simple diagnosis, both scholars and farmers had a vision problem. Insofar as they approached their tasks with this debility, they were bound to cause problems for society as a whole. It was the myopia (*jianxiao* 見小) of both groups that Zuo seemed to take to heart as he invested his time and efforts in practicing agriculture and writing about it. Visualizing the success of agricultural techniques became part of the solution.

Experimenting with Methods and Plants

Notwithstanding his claims about hiding away from the world, Zuo's purchase of land and his choice of cash crops connected him directly to the market for land and its products. Yet understanding the nexus between countrysides and urban markets, and how to profit from that connection, was an important but not adequate step in determining how to make the land (and the people farming the land) yield the most profitable crops and harvests possible. Merely choosing to

⁶¹ 人生第一要務。See letter of DG24/0/0 (1844), ZZQ, 15:42; Letter of DG25/0/0 (1845), ZZQ, 10:49.

⁶² Letter of DG25/0/0 (1845), ZZQ, 10:51; cf. letter of DG26/0/0 (1846), ZZQ, 15:54.

grow tea in the Xiangyin countryside seemed to produce enticing returns, but for Zuo, agricultural practice also meant trying things out and experimenting with crops and techniques, a process in which reading and cultivating were complementary activities.

After 1838, Zuo's reading of agrarian texts often entailed a counterpart in practice, an impetus to test out (*shi* 試) various methods and verify (*yan* 驗) their efficacy, which meant going out to the fields and dealing firsthand with plants and soils. Decades later, when he was in the empire's northwest, Zuo would recall how he practiced agriculture in Hunan. After citing his family's humble origins, he noted:

I carried on farming & studying (*gengdu*), and in my youth, engaged myself with the farmland. By my nature, I enjoyed studying and probing into all the various books about northern agriculture and southern agriculture. I personally verified [their contents] and assimilated [what they had to say].⁶³

耕讀相承，少小從事隴畝，於北農、南農諸書，性喜研求，躬驗而有得。

What connected his reading and agrarian practice was a spirit of investigation into agricultural knowledge. Zuo expressed the impulse to translate knowledge from texts into practices in the fields as wanting to “try out” or “put into effect on a trial basis” (*shixing* 試行) various methods and objects pertaining to agriculture, including techniques for arranging a pattern of cultivation on a plot of land.

From the start, Zuo recognized that his readings in agriculture, his experiments, and his writing of texts would come to fruition in their capacity to promote the best practices of production among farmers, even while his own family profited from the production of cash crops.⁶⁴ Consider

⁶³ Memorial of GX3/3/29 (1877), ZZQ, 6:637; ZZN, 1:16a.

⁶⁴ Letter of DG18/0/0 (1838), ZZQ, 15:248; Letter of DG21/0/0 (1841), ZZQ, 10:28.

his practice of sericulture. There was nothing original in his decision to have his family grow mulberry trees and reel silk in the several years after 1838. According to Luo Ruhuai 羅汝懷 (1804-1880), a fellow scholar who lived in the same town as his wife's family, it was during Zuo's studies of geography that he committed some effort to growing mulberry trees and producing silk.⁶⁵ Zuo had acquired roughly one thousand “young mulberry trees” (*zhi sang* 稚桑) for this purpose.⁶⁶ Yet his desire to try sericulture arose from ambitions that were larger than merely becoming proficient in cultivation at home. His goal was to propagate technical knowledge about sericulture and draw interest to its techniques among other farmers. In the spring of 1840, he claimed to be spending a lot of effort researching the methods for raising silkworms. Learning about sericulture was “not only for a single person or a single family to seek material sustenance.”⁶⁷ Researching mulberry trees and silkworms could yield wider benefits, assuming that he had the ability to demonstrate sericulture's feasibility to other farmers. This is where “trying out” became important. As Zuo noted for sericulture,

In the future, [when] I try out proper methods, those who spring to action upon hearing the news will naturally be many.⁶⁸

將來試行得法，聞風興起者自多。

⁶⁵ See Luo Ruhuai 羅汝懷, *Lu yi caotang shiji* 綠漪草堂詩集 [Collected poetry from the thatched cottage of green ripples], 20 vols. (Changsha, 1883), 12:10a. This work is cited in ZZN, 1:17b.

⁶⁶ In a poem, he paired the imagery of young mulberry trees supporting silkworms for the first time with the image of his seven-year-old daughter first learning Chinese characters. Zuo Zongtang, “Er shi jiu sui zi ti xiao xiang ba shou,” ZZQ, 13:458. This is cited in ZZN, 1:17b. After moving his household to Liujiachong several years later, he apparently continued to guide his family in the venture of sericulture, as he was planning to collect mulberry seeds (*sangshenzi* 桑葢子) in late spring of 1846, likely from Anhua, to send to Liujiachong to be planted by the farmers there. He had previously sent several cuttings of the “jade butterfly plum” (*yudiemei* 玉蝶梅)—a special variety of plum blossom—for cultivation at home. Letter of DG26/2/29 (1846), ZZQ, 15:48.

⁶⁷ 此不獨為一身一家圖溫飽也。Letter of DG20/4/27, ZZQ, 15:33.

⁶⁸ Letter of DG20/4/27, ZZQ, 15:33.

It is worth noting several points about the utility of this type of “test run.” Since the goal was to demonstrate the success of sericulture and attract interest among farmers, it was clear that Zuo needed to show them “proper methods” (*de fa* 得法), which were assumed to be the most productive ones. How had he come to know which ones were the best methods? Although he rarely mentioned it in his letters to family members and fellow scholars, his research in agricultural texts and his experimental runs of sericulture were the basis for deciding upon the proper methods. In 1840, he wrote to a brother of his wife.

Now [in late May] is precisely when mulberry tree saplings can be transplanted. I have exhaustively looked over and read in detail [Xu Guangqi's] *Complete Treatise on Agricultural Administration*,⁶⁹ searching for planting methods in it. I do not begrudge small expenditures for [the purpose of] enjoining [farmers].⁷⁰

桑秧樹此時正可移栽。萬望細看農政書，求其種法。勿惜小費，為囑。

Accruing technical information about farming and then putting it on display for farmers through trial runs: this is how he hoped to spread information about productive practices to enrich the community. Enabling whole villages, rather than merely his family, to achieve material sustenance would be “our great meritorious and virtuous deed.”⁷¹

⁶⁹ Note that in Zuo's text, he uses the title “Nongzheng shu” 農政書 rather than the standard title “Nongzheng quanshu” 農政全書 to refer to Xu Guangqi's early seventeenth-century agricultural treatise. For another usage like this, see Wang Xinjing, “Qutian putian shuo” [An explanation of *qutian* and horticulture fields], HJWB, 36:12a-13a. Despite their disagreement about whether there are various versions of Xu Guangqi's text, Hu Daojing and Wu Dedao agree that the shorter title refers to the standard text. See Hu Daojing 胡道靜, “Guanyu *Nongzheng quanshu* de 'bieben'” 關於《農政全書》的“別本” [On 'another edition' of the *Nongzheng quanshu*], *Zhongguo nongshi* 中國農史 [Agricultural History of China] (1983.01): 96; and Wu Dedao 吳德鐸, “Guanyu *Yangyu yueling* yu *Nongzheng quanshu* de 'bieben'” 關於《養余月令》與《農政全書》的“別本” [On 'other editions' of the *Yangyu yueling* and the *Nongzheng quanshu*], *Zhongguo nongshi* 中國農史 [Agricultural History of China] (1983.03): 55.

⁷⁰ Letter of DG20/4/27 (1840), ZZQ, 15:33.

⁷¹ 我輩一大功德. Letter of DG20/4/27 (1840), ZZQ, 15:33.

Promoting agricultural techniques was a commonplace goal of imperial officials in the Qing, as it had been for officials in previous dynasties stretching back to the beginning of the imperial era. Indeed, the mythical origin of Chinese farming in the works of Shennong 神農, legendary god of agriculture, was always related to the propagation of agrarian skills among the populace. Yet it is less clear to what extent non-officials spent time promoting agriculture. Despite having considered the purchase of a position as district magistrate (*zhixian* 知縣) and even having contributed some money for the post,⁷² Zuo never held a position related to government service until 1852. The time he spent working on agriculture, in his study as well as in the fields, was of a scholar with time to research and tinker. It was this extra-bureaucratic approach that perhaps allowed Zuo to dig more deeply into agrarian learning and focus more intently on the potential benefits of agricultural promotion than many other Qing scholars of the nineteenth century.

Zuo's interest in trying out techniques from texts seems to have begun not long after his return from Beijing in 1838, and it was exemplified by his concern to research and put into practice a particular method of cultivation. This was the *qutian* 區田 (“plot fields,” “area fields,” or “pit cultivation”) method of dividing up farmland into a patchwork of small square plots. Measuring roughly a quarter square meter in size and one-third meter deep according to one early Qing account,⁷³ the small plots would alternate with uncultivated plots in a modified checkerboard pattern and were designed to concentrate water, fertilizer, seed, and labor power (see Figure 2). In 1841, Zuo wrote to his mentor He Xiling expressing his intention to resign from his teaching job, move back to where his family was, and rent over 10 *mu* 畝 of farmland, where he would

personally cultivate it, test out the ancient method of *qutian*, and promote it to my

⁷² Letter of DG25/1/19 (1845), ZZQ, 15:53; *Zuo Zongtang weikan shudu*, 2.

⁷³ Sun Zhaikui 孫宅揆, *Jiao jia shu* 教稼書 [Book for instruction in agriculture], in *Qu zhong wu zhong* 區種五種 [Five titles on plot cultivation], ed. Zhao Mengling 趙夢齡 (1878), 2:2a.

farmers.⁷⁴

躬耕其間，試行區田古法，為吾農倡。

As we will see, no less important to his experience with *qutian* were his readings in the numerous texts about the method that had appeared in the Qing era, as well as his own writings about *qutian*.

Why did late imperial scholars like Zuo investigate farming's “ancient methods”? Peter Perdue has argued that interest in *qutian* in the Qing period signified not only “the enduring appeal of classical precedent,” but also “a transformation of radical Confucianism” in which agrarian scholars were activists who held faith “in the possibility of implementing models from the classic texts in their own time.”⁷⁵ By all accounts, *qutian* did have classical precedent. The earliest writings of *qutian* are commonly ascribed to Han dynasty scholar Fan Shengzhi 汜勝之,⁷⁶ who recorded the method's archaic origins as a measure to ensure agrarian production even in years of drought.⁷⁷ The scholars who investigated agriculture may have dealt with old texts, but they did so in the same way other evidential scholars approached non-agrarian topics like history, philology, or geography. They foregrounded the search for evidence and dug deeply into ancient texts precisely in order to search for the roots of knowledge. If Qing-era research in agriculture was not separate from trends in evidential learning, then Qing interest in *qutian* was not merely a continuation of Confucian scholars' age-old desires to use classical precedents to bolster social welfare. It was, rather, an indication of intellectual innovation in the very period in which they were studying.

⁷⁴ Letter of DG21/0/0 (1841), ZZQ, 10:29.

⁷⁵ Perdue, *Exhausting the Earth*, 13, 15. Perdue employs Thomas Metzger's schema of two poles—“radical” and “moderate”—to talk about Confucian thought in the late imperial period. See Thomas Metzger, *Escape from Predicament: Neo-Confucianism and China's Evolving Political Culture* (New York: Columbia University Press, 1977).

⁷⁶ Perdue, *Exhausting the Earth*, 13; Wang Yuhu, *Zhongguo nongxue shulu*, 13.

⁷⁷ Fan Shengzhi ascribed the invention of *qutian* to Governor Yi 伊尹, who served the first king of the Shang dynasty (16-11 c. BCE) and who was purported to have taught farmers how to fertilize fields. See “Fan Shengzhi yi shu” 汜勝之遺書 [Posthumous work of Fan Shengzhi], in *Qu zhong wu zhong*, 1:1a.

Research about *qutian* was hardly separate from other considerations of how to search for profit from the land. In the late seventeenth and early eighteenth centuries, not long after Gu Zuyu compiled the *Essentials of Historical Geography*, scholars were researching and writing about *qutian*. One prominent example is Lu Shiyi 陸世儀 (1611-1672),⁷⁸ whose essay “On *qutian*” (“Lun *qutian*” 論區田) discussed the origin of his interest in the method, other agrarian scholars' citations about *qutian*, and his exchanges with farmers about the use of techniques in the fields.⁷⁹ It is worth dwelling on the contents of Lu's essay, for Zuo Zongtang knew Lu's work and may have gleaned many insights from it. Lu's initial interest in agriculture seems to have paralleled Gu Zuyu's interest in geography insofar as it sprung from disasters arising in the wake of the Manchu takeover of the heartlands of the Ming dynasty. Lu identified 1644 and 1645 as a stark turning point in the lives of the people and community he knew; after these dates, “instruction” (*jiaoshou* 教授) and the “way of cultivating life” (*yangsheng zhi dao* 養生之道) had greatly deteriorated. But it was also the turning point around which Lu recognized the value of agriculture as a subject of study. He realized that, in times of calamity as he was then facing, scholars of the past went into seclusion and farmed the land. He, however, admitted his physical weakness as a denizen of the city who was unaccustomed to agricultural affairs and “unable to personally handle farm tools.”⁸⁰ Nonetheless, he made a point to

⁷⁸ ECCP, 548-49.

⁷⁹ Lu's essay appeared originally in his *Sibian lu* 思辨錄 [Record of intellectual inquiry], which was published after 1661. A shorter, edited version appeared in the 1827 *Statecraft Compilation* (HJWB, 36:13a-15a). An edited version of Lu Shiyi's longer work, the *Sibian lu jiyao* 思辨錄輯要 [Edited essentials of the record of intellectual inquiry] was made by Zhang Boxing 張伯行 (1652-1725) and printed in his *Zhengyi tang quan shu* 正誼堂全書 [Complete works of the hall of true meaning] early in the eighteenth century. Zhang's vast compilation was reprinted by Zuo Zongtang in 1866 at the “Academy of True Meaning” (*Zhengyi shuyuan* 正誼書院) in Fuzhou, Fujian. See ECCP, 549, 52; *Zhengyi tang quanshu zongmu* 正誼堂全書總目 [General catalog for the Complete works of the hall of true meaning], (Fuzhou: Zhengyi shuyuan, 1869), 15b.

⁸⁰ 不能親執耒耜. Lu Shiyi, *Lu Futing sibian lu jiyao* 陸桴亭思辨錄輯要 [Lu Shiyi's edited essentials of the record of intellectual inquiry], in *Zhengyi tang quan shu* 正誼堂全書 [Complete works of the hall of true meaning], (Fuzhou: Zhengyi shu yuan, 1866), 11:1a.

research agriculture by relying upon information from Jiang Shishao 江士韶, a friend who had had experience in the paddy fields he owned in the western outskirts of their Jiangnan hometown, Taicang 太倉. Lu, too, owned land, and even though he had never farmed, he decided in the straitened circumstances to contribute the costs of production (*gongben* 工本) for the purchase of plow oxen and tools and go through the fields to supervise cultivation. His decision appears to have been a move to boost production by raising the level of technology of his tenants, but there were other motives. Apropos of agrarian research, he said that his presence in paddy fields indicated how he

desired, in some small way, to engage in [the peasants'] affairs, in order to have some experience with the study of farming and water control.⁸¹

稍欲涉獵其事，以驗農田水利之學也。

His involvement in the agriculture of his tenants in Jiangnan—rather than hiding away to undertake agricultural production like Zuo did in the 1840s—afforded Lu Shiyi the opportunity to examine techniques of production.

It was during this phase of observation that Lu had the idea for trials of *qutian*. He was surprised to learn through his readings in history that such a “wonderful method” (*miao fa* 妙法) was neither taught to nor circulated among farmers. According to his knowledge, the bureaucracy of the Yuan dynasty had tried to promote the *qutian* method and had even dispatched special supervisors to oversee its propagation. Yet farmers had not responded positively to these efforts, which left Lu wondering why.⁸² Despite the lackluster results of past attempts to promote the method, Lu

⁸¹ Lu Shiyi, “Lun qutian,” in *Qu zhong shi zhong* 區種十種 [Ten titles on plot cultivation], ed. Wang Yuhu 王毓瑚 (Beijing: Caizheng jingji chubanshe, 1955), 23; Lu Shiyi, *Lu Futing sibirian lu jiyao*, in *Zheng yi tang quan shu*, 11:1a-1b.

⁸² He surmised that either farmers considered the Yuan promoters to be inhuman (*feiren* 非人) or the methods to be impractical.

committed himself to the task of spreading *qutian* among peasants. Speaking of the method, he wrote:

I previously wanted to personally test it out, yet I had no free time. This year, since I have personally attended to farm affairs, I will discuss this method everywhere with experienced farmers, and furthermore speak of it with Chen Hu, and have him test out these things, so that he can find out the truth of the matter.⁸³

予嘗欲親試之而未暇。今歲既親田事，將以此法徧商之老農，且以語陳子言夏，亦令試其事，庶可得其實也。

He relied upon several groups of people to facilitate the spread of *qutian*. Communicating with the experienced farmers may have allowed him to hear their perspectives on local conditions and customs, but it also gave him the opportunity to initiate a discussion of production methods. And he used his connections with a fellow scholar of Taicang, Chen Hu 陳瑚 (1613-1675), with whom he shared an interest in statecraft.⁸⁴ As we will see, Lu asked Chen to put the method into practice and see if it really could produce abundant harvests as earlier scholars had suggested. The importance of testing out the method, at least in principle, was paramount as he moved to convince others of its efficacy.

Lu's consideration of *qutian* as an agricultural technique raised concerns about the interplay of humans, land, and climate in a way that echoed older considerations of land use as a function of strategic geographical thinking. Lu himself had conducted research in strategic matters and had written a text about military strategy based upon diagrams of military positions purportedly created

⁸³ Lu Shiyi, "Lun qutian," in *Qu zhong shi zhong*, 24; Lu Shiyi, *Lu Futing sibirian lu jiyao*, 11:2a.

⁸⁴ On Chen Hu, see Yan Wenyu 嚴文郁, ed., *Qing ru zhuan lue* 清儒傳略 [Biographical sketches of Qing scholars], (Taipei: Taiwan shangwu yinshuguan, 1990), 210.

by Han dynasty general Zhuge Liang.⁸⁵ When speaking about *qutian*, he employed a hierarchy of three variables which had originally appeared in the *Mencius* in a passage about military strategy, but which he applied to the realm of quotidian production:⁸⁶

The timing of heaven, the profits of the land, and the accordance of people: it is not only in the use of soldiers that things are like this. All matters have them. In the case of farming, their relation is especially important.⁸⁷

天時、地利、人和，不特用兵為然。凡事皆有之，即農田一事，關係尤重。

Although these variables had relevance to classical conceptions of governance, Lu defined them in a secular way that made them stand for factors of production in agriculture. He described each in turn:

The presence or paucity of water defines the timing of heaven. The fertility or barrenness [of the soil] defines the profits of the land. Dredging [waterways] and reclaiming [land] for cultivation defines the accordance of people.⁸⁸

水旱，天時也。肥瘠，地利也。修治壅闢，人和也。

Although these three variables retained their allusions to the *Mencius*, the way Lu described them in the context of agriculture suggests that they might be better rendered as “climate and weather,” “soil fertility,” and “labor.”

Just as important for understanding Lu's notion of agriculture was the relationship between

⁸⁵ The text's title is *Ba zhen fa ming* 八陣發明 [Elaborations upon eight arrays] (1633). See ECCP, 548.

⁸⁶ For Mencius, these were the “timing of Heaven” (*tianshi* 天時), the “advantages of the land” (*dili* 地利), and the “unity of the people” (*renhe* 人和). See Mencius 4.1, in Yang Bojun 楊伯峻, ed., *Mengzi yizhu* 孟子譯注 [The annotated *Mencius*], (Beijing: Zhonghua shuju, 1960), 86. James Legge translated these into somewhat unwieldy phrases as the “opportunities of time vouchsafed by Heaven,” “advantages of situation afforded by the Earth,” and “the union arising from the accord of Men.” See James Legge, trans., *The Works of Mencius* (New York: Dover Publications, 1970 [1895]), 208.

⁸⁷ Lu Shiyi, *Lu Futing siban lu jiyao*, 11:1b; Lu Shiyi, “Lun qutian,” in *Qu zhong shi zhong*, 23.

⁸⁸ Lu Shiyi, *Lu Futing siban lu jiyao*, 11:1b; Lu Shiyi, “Lun qutian,” in *Qu zhong shi zhong*, 23.

the three factors, and here Lu preserved the hierarchical order of their relations from the *Mencius*. Labor (*renbe* 人和) was the most important (*zhong* 重) variable to making agriculture function properly, followed by soil fertility (*dili* 地利) and climate (*tianshi* 天時). Lu explained this hierarchy by raising several hypothetical scenarios. People could come to expect regular weather patterns, but when unforeseen weather arrived, poor soil would be harmed whereas fertile farmland would be fine. For Lu, this demonstrated that soil quality trumped climate and weather in the hierarchy of important factors of production. Yet Lu recognized that labor was the key factor, much more important than soil fertility. For if irrigation channels had not been built, or if planting was not done on time, then even good farmland would be unusable. Conversely, if the weather was favorable and the land of high quality, what distinguished the results would be the degree of hard work.⁸⁹ Indeed, despite recognizing that climate was the most essential (*yao* 要) factor of production, Lu asserted that labor ultimately determined the size of the harvest:

If the proper climate and soil fertility already obtain, and one is also able to supplement them with labor, then what one harvests would be even more different from [the harvests of] others. This is the reason one must place great value in human labor.⁹⁰

使既得天時，既得地利，而又能濟之以人和，則所獲更與他人不同。所以必貴於人和也。

Lu thus presented labor as the defining factor of production in agriculture to preface his discussion

⁸⁹ 勞逸頓殊故也。Lu quoted an aphorism to suggest that labor, too, was a factor of production with varying quality: “purchase farmland and purchase tenants” 買田買佃。Lu Shiyi, “Lun qutian,” in *Qu zhong shi zhong*, 23.

⁹⁰ Lu Shiyi, *Lu Futing siban lu jiyao*, 11:2a; Lu Shiyi, “Lun qutian,” in *Qu zhong shi zhong*, 23-24. For a fuller translation of the longer passage, see Li Bozhong, “Changes in Climate, Land, and Human Effort: The Production of Wet-Field Rice in Jiangnan during the Ming and Qing Dynasties,” in *Sediments of Time: Environment and Society in Chinese History*, ed. Mark Elvin and Liu Ts'ui-jung (Cambridge: Cambridge University Press, 1998), 448-449.

of *qutian* and its potential advantages to farmers.

Perhaps ironically, Lu and other scholars acknowledged that labor was also the main sticking point forestalling the widespread adoption of *qutian*. Simply put, *qutian* was labor-intensive, which peasants already knew or quickly found out when they attempted to employ *qutian* methods. One of the reasons that *qutian* was never widely adopted was that farmers complained of the great amount of labor it entailed. If they accorded with the technical specifications in the farming manuals, they had to divide their fields into small plots, calculated at 2650 plots for each *mu*.⁹¹ Lu had apparently canvassed farmers to understand why they did not use *qutian* on their farms, and he found that it was a combination of lack of knowledge, the laboriousness of the method, and the particular irrigation patterns of Jiangnan fields.⁹²

On the other hand, because labor was the single most important factor of production for agriculture in general and *qutian* in particular, humans could overcome the problems associated with land quality, climate, and weather, at least in principle. Labor would minimize the divergent qualities of the environment, making the *qutian* method capable of spreading almost anywhere there was labor. For one thing, Lu recognized that the method could be used to cultivate a wide variety of crops, including barley (*damai* 大麥), yams (*shanyao* 山藥), taro (*naiizi* 茺子), as well as soybeans and adzuki beans (*da xiao dou* 大小豆).⁹³ Perhaps more significant for the potential geographical scope in which *qutian* could spread, scholars had recorded that the method could be employed on nearly any type of land.

Qutian does not require good farmland. Hillsides, high land and steep slopes near

⁹¹ Sun Zhaikui 孫宅揆, “Qutian shuo” 區田說 [An explanation of *qutian*], in HJWB, 36:11b.

⁹² Lu Shiyi, *Lu Futing siban lu jiyao*, 11:10a; Perdue, *Exhausting the Earth*, 13-14.

⁹³ Lu Shiyi, “Lun qutian,” in *Qu zhong shi zhong*, 24.

towns, and even the inside slopes of city ramparts can all be used for *qutian*.⁹⁴

區田非必須良田也。諸山陵近邑高危傾阪及邱城上皆可為區田。

To be sure, fertilizer was crucial insofar as it amplified the efficacy of human labor. The “*qi* of manure” (*fengqi* 糞氣) enabled infertile fields to be made into highly productive plots. Indeed, the method seems to have been based on the notion that human labor—and manure as an extension of that labor—could generally transform land to make it suitable for production. Jia Sixie's sixth-century text noted that “*qu* [plot] cultivation does not prioritize land management; it just uses barren land.”⁹⁵ In other words, labor created the possibility for the extension of cultivation to new places, and it used the particular techniques of *qutian* to make this feasible.

When scholars put *qutian* into practice, however, the results did not always demonstrate the method's purported potential. At very end of his discussion of *qutian*, Lu Shiyi noted that when his friend Chen Hu had heard from him about the method, Chen dug seven plots in the empty soil next to his house and calculated that if each plot yielded one *dou* 斗 (roughly 10 liters) of grain, its output would be commensurate with what the land could produce under normal circumstances. Yet the experiment with *qutian* did not yield the desired results because, as Lu Shiyi mentioned, the “methods were not completely and thoroughly satisfactory.”⁹⁶ The test run faced a slew of problems: the bottoms of the plots were not flat; when planted, the seeds were not pressed firmly into the soil; when the sprouts appeared, they clumped together in the middle of the plot; and the sprouts were not weeded apart (*yunxi* 耘稀). In addition, four plots had been ruined by “evil outsider manure” (*e'ke fen* 惡客糞), while in the remaining three, the grain plants lacked sufficient water and

⁹⁴ Jia Sixie, *Qimin yaoshu*, quoted in Song Baochun 宋葆□, “Fan Shengzhi yishu” 汜勝之遺屬 [Posthumous writings of Fan Shengzhi] (1819), in *Qu zhong wu zhong*, 1a. Part of this translation is taken from the translation in Bray, *Agriculture*, 127.

⁹⁵ 蓋區種不先治地，即荒地為之也。Jia Sixie, quoted in Lu Shiyi, “Lun qutian,” in *Qu zhong shi zhong*, 25.

⁹⁶ 法不俱盡善。Lu Shiyi, *Lu Futing siban lu jiyao*, 11:14b; Lu Shiyi, “Lun qutian,” in *Qu zhong shi zhong*, 35.

did not ripen fully like “regular grain” (*changhe* 常禾).⁹⁷

Despite the disappointing outcome of this trial, Qing scholars in later periods were excited by the possibility that demonstrations of *qutian* could convince farmers to adopt it in their fields. In the nineteenth century, just as Zuo Zongtang was studying agriculture and conducting trials of production methods, there seems to have been a surge of interest in the method. The editors of the 1827 *Statecraft Compilation* chose an abridged version of Lu Shiyi's essay on *qutian*, along with two other early Qing scholars' essays, for inclusion in a volume about agriculture.⁹⁸ The main editor, He Changling, also wrote a slim volume entitled *Cultivation Methods of Qutian* (*Qutian zhong fa* 區田種法) when he served as the governor of Guizhou province in the late 1830s and early 1840s.⁹⁹ In fact, no fewer than seven new treatises about *qutian* appeared over the course of the nineteenth century, including several that were reprinted in a collection entitled *Five Titles on Plot Cultivation* (*Qu zhong wu zhong* 區種五種), produced by Zhao Mengling 趙夢齡, who began compiling the work at the turn of the nineteenth century and who wrote a preface for the text in 1842; it was not published until 1878.¹⁰⁰ Although the information contained in these treatises was typically rehashed from earlier sources, their composition indicated a renewed interest in a technical solution for agriculture.

Nineteenth-century interest in *qutian* was also reflected in the continued attempts to prove the method's effectiveness in boosting crop yields, and Zuo Zongtang was quite aware of these

⁹⁷ Lu mentioned, however, that the stalk and leaves of the plants were more lush than regular grain stalks. Lu Shiyi, *Lu Futing sibian lu jiyao*, 11:14b; Lu Shiyi, “Lun qutian,” in *Qu zhong shi zhong*, 35.

⁹⁸ Sun Zhaikui 孫宅揆, “Qutian shuo” 區田說 [An explanation of *qutian*], in HJWB, 36:11b-12a; Wang Xinjing 王心敬, “Qutian putian shuo” 區田圃田說 [An explanation of *qutian* and horticulture fields], in HJWB, 36:12a-13a; Lu Shiyi 陸世儀, “Lun qutian” 論區田 [On *qutian*], in HJWB, 36:13a-15a.

⁹⁹ This volume seems to be no longer extant, although a preface to the work still exists. See Tang Jian 唐鑑, “Qutian zhong fa xu” 區田種法序 [Preface to *Cultivation Methods of Qutian*], in *Tang Queshen gong ji* 唐確慎公集 [Collection of Duke Tang Jian], (1875), 2:32a-33a.

¹⁰⁰ Zhao Mengling, ed., *Qu zhong wu zhong* 區種五種 [Five titles on plot cultivation], (Lianhuachi, 1878 [preface 1842]).

attempts. In 1840, for instance, he requested that He Xiling send him a text about *qutian* written by Jiangnan scholar Pan Zengyi 潘曾沂 (1792-1853),¹⁰¹ a native of Suzhou who promoted the technique among farmers on the outskirts of the city. Beginning in 1828, Pan reported upon his attempts to “test out” (*shixing* 試行) *qutian* methods around the city in order to convince peasants of their efficacy. He grumbled that farmers in his area had a problem of vision, a diagnosis that seems likely to have influenced Zuo's complaints about the myopia of farmers and scholars several years later. Pan found that farmers were ravaging their farmland by extracting too much from the soil:

The farmers of Wu [county] are constrained by nearsightedness and are greedy to harvest small profits. They double-plant with winter wheat, and thereupon lay waste to springtime cultivation. They are either hoeing or piling up [the soil], always being careless. The more they cultivate, the more wasteland there is.¹⁰²

吳農狃于咫尺，貪獲小利，兼種宿麥，因廢春耕，或耘或耔，動輒鹵莽，多種多荒。

Like Lu Shiyi, Pan recognized the increasing deficiency of agrarian production—and the constant paucity of the harvest despite neither flood nor drought—as a sign that the proper combination of the three primary factors of production had become disrupted.¹⁰³

Not unlike other activist officials, Pan deemed the solution to be educating the farmers in new technology in order to boost output and “open up a source of profit” (*kai li zhi yuan* 開利之原). For this purpose, he used his own money to establish the Fengyu Community Fields 豐豫義田 to support impoverished farmers. He also attempted to introduce farmers to *qutian* methods and to

¹⁰¹ Zuo referred to the text as the *Book of Qutian* (*Qutian shu* 區田書). See letter of DG20/0/0 (1840), ZZQ, 10:19.

¹⁰² Pan Zengyi, “Fengyu zhuang ben shu” 豐豫莊本書 [Basic writings of Fengyu Manor], in *Qu zhong wu zhong*, 5:1a.

¹⁰³ Pan's terms were slightly different from those used by Lu Shiyi. For climate and weather, he used *tiandao* 天道 rather than *tianshi* 天時, and for human labor, he used *renli* 人力 rather than *renbe* 人和. For soil fertility, he used the same term, *dili* 地利. Pan Zengyi, “Fengyu zhuang ben shu,” in *Qu zhong wu zhong*, 5:1a.

entice them to imitate his demonstrations. In 1828, outside one of Suzhou's city gates, Loumen 婁門, he cultivated rice stalks (*daobe* 稻禾) using the *qutian* method. He claimed that this demonstration resulted in a large harvest, and it was this demonstration and the abundant harvest that “village farmers near and far all witnessed.” If we are to believe Pan, farmers thereupon began to adopt the method and even began vying for government awards for high productivity.¹⁰⁴ The following year, outside another city gate, Fengmen 葑門, Pan reported that he emulated *qutian* methods to “test it again, and again verify its efficacy” (*zai shi zai yan* 再試再驗), and he gauged its success by the fact that it “really had a harvest that increased by multiples relative to normal fields.”¹⁰⁵

In fact, the harvest was the only outcome of *qutian* cultivation that Pan seemed to care about demonstrating to farmers. Even with a plentiful harvest, however, they sometimes remained skeptical. In October 1829, he remarked that peasants held their doubts despite seeing the demonstration with their own eyes:

Nowadays, even though the farmers of each village have had the experience of seeing the effectiveness of the methods of plot cultivation that this manor has tested, in the end they do not thoroughly know its details, and thus seem to be half skeptical and half trusting.¹⁰⁶

現在各鄉農于本莊所試區種之法，雖經覩有成效，究未深悉其詳，故猶疑信參半。

Suzhou's peasants appeared unwilling to adopt *qutian* because they had no desire to abandon their cultivation of secondary winter crops (*chunhua* 春花), and they also remained skeptical of the inputs and labor required for the method. But Pan was insistent that “there really is profit” (*shi you liyi* 實有

¹⁰⁴ 遠近村農皆所目擊。Pan Zengyi, “Fengyu zhuang ben shu,” in *Qu zhong wu zhong*, 5:1b.

¹⁰⁵ 實較常田倍多收穫。Pan Zengyi, “Fengyu zhuang ben shu,” in *Qu zhong wu zhong*, 5:3a.

¹⁰⁶ Pan Zengyi, “Fengyu zhuang ben shu,” in *Qu zhong wu zhong*, 5:3a.

利益) in it, and in order to help farmers see this, he proposed a set of “handy guidelines” (*jianbian guitiao* 簡便條規), which the Suzhou prefect, surnamed Wang, approved for publication and circulation among area farmers.¹⁰⁷ Using the final harvest as a benchmark for success, Pan urged farmers themselves to try out the method and compare the “small plot” fields to their normal fields, which would serve as a kind of control:

Suppose that those who work ten *mu* of farmland plant half in *qutian* and half by transplanting as usual, and then double plant with secondary winter crops. In the coming year, when the rice grains are taken to the threshing ground, compare the two [harvests] with each other; the profitable [one] and lackluster [one] will naturally appear. If the grains of *qutian* are several times more than the normal fields, then [farmers] can thereafter all change their farming.¹⁰⁸

如業田十畝者，半種區田，半仍照常插蒔，兼種春花。來年稻穀登場，兩相比較，盈絀自見。如果區田之穀倍於常田，則此後即可一律改種。

Judging by Pan's writings, it appears that at least four tenant farmers were ambitious enough about the method to win official recognition for their efforts.¹⁰⁹ In fact, it was not only village farmers but a number of degree-holders and other social elites who had either successfully tried the method or were willing to do so.¹¹⁰

As a technology of agrarian production, *qutian* would also have the effect of overcoming the limitations of local landscapes. Pan's goal was not only to spread the knowledge of *qutian* to the

¹⁰⁷ For the stipulations, see Pan Zengyi in *Qu zhong shi zhong*, 115-123.

¹⁰⁸ Pan Zengyi, “Fengyu zhuang ben shu,” in *Qu zhong wu zhong*, 5:6a. For a similar passage, see Pan Zengyi, “Fengyu zhuang ben shu,” in *Qu zhong wu zhong*, 5:3b-4a.

¹⁰⁹ Pan Zengyi in *Qu zhong shi zhong*, 128.

¹¹⁰ Pan Zengyi in *Qu zhong shi zhong*, 129.

villages surrounding Suzhou, but also to make *qutian* do what other methods apparently could not: separate farmers and their agrarian fortunes ever slightly more from the vicissitudes of the land and the weather. Pan reiterated that *qutian* had no particular need for fertile soil, and that when farmers adopted the method, “infertile land will change into fertile soil.”¹¹¹ And insofar as the transformation of the land was possible in this way, some of the region's farmland that ran alongside hills and typically succumbed to excessive aridity could be made highly productive.¹¹²

Enthusiastic about the method just like other nineteenth-century scholars, Zuo reiterated the principles of *qutian* in his own writing. Sometime after his return to Hunan in 1838 and, perhaps, after extensive readings in agricultural scholarship, Zuo wrote a tract entitled *Illustrated Explanations for Expanding Qutian* (*Guang qutian tushuo* 廣區田圖說).¹¹³ Although the full text is no longer extant, the preface to his work remains. In light of the proliferation of texts about *qutian* in the nineteenth century, Zuo's was merely another voice in the chorus of statecraft scholars singing the praises of a technology purported to multiply the size of the harvest by improving production techniques. He asserted that the method would help farmers avoid hurting their grain plants, which resulted from excessive transplanting; help them minimize water usage; help plants avoid insect pests; yield full and plump grains; ensure that the land's fertility was not exhausted by overuse; and improve yields roughly tenfold.

On the other hand, *qutian* was not merely a technical solution to problems associated with agrarian production. Insofar as he imagined that *qutian* would transform how a family employed its

¹¹¹ 瘠土化為腴壤. Pan Zengyi in *Qu zhong shi zhong*, 132.

¹¹² Pan Zengyi, “Fengyu zhuang ben shu,” in *Qu zhong wu zhong*, 5:6a, 5:4a.

¹¹³ Zuo Zongtang's chronological biography records his writing of this treatise in 1838, just after his failure in the examinations, but there is no evidence that it was precisely in this year that he wrote the texts. See ZZN, 1:16a. Note that the name of the extant preface for this work is “Guang qutian zhi tushuo” 廣區田制圖說 [Illustrated explanations for expanding the *qutian* system]. See ZZQ, 13:244.

labor, it would also serve a social function. Where Lu Shiyi and Pan Zengyi had asserted the prime significance of labor (*renbe* 人和 or *renli* 人力) in making *qutian* successful, Zuo pointed to the way in which *qutian* enabled the full use of labor within a farming family. Since *qutian* was a labor-intensive method of production, it would allow for and require more than able-bodied adult males to work the land, and so it would initiate a certain congruence between labor and land. When *qutian* was put into practice, claimed Zuo, “there are no excess people and no useless labor.”¹¹⁴ This labor arrangement translated into a beneficial financial equation: with more people working the land, the need for and costs of secondary inputs like farm animals and fodder would decrease while output would increase, thus boosting the incomes of tenant farmers.

Given the proper technical and social conditions for *qutian*, Zuo argued that it would be able to spread across the empire. As past proponents of the method had argued, it could overcome the problems of weather, and Zuo noted that it would be able to support a family even in times of famine because it would have a transformative effect on land: it would be able to “change dearth into abundance, and transform barrenness into fertility.”¹¹⁵ So long as there was adequate labor power, it would face few barriers to its expansion across the land, for it was not circumscribed by social status. Zuo imagined that rich and poor families alike could adopt *qutian* to support themselves. This would be expressed geographically, as families, towns, and the “whole empire” (*tianxia* 天下) would become fertile ground for this method.¹¹⁶

Zuo's optimism about *qutian* was that of an agrarian promoter, one whose task was to make

¹¹⁴ 人無冗而力無虛。 “Guang qutian zhi tushuo xu” 廣區田制圖說序 [Preface to Illustrated explanations for expanding the *qutian* system], ZZQ, 13:246.

¹¹⁵ 易乏為饒，反瘠為沃。 ZZQ, 13:247.

¹¹⁶ Zuo noted that “scholars who read books and cultivate their minds, families that have been rich for generations and practice farming, people who do other things for a living, and those who are without work and bored can all manage [*qutian*] themselves and turn their work [toward it], exhausting their labor to eat.” 讀書養素之士，世富習耕之家，未作趁食之民，游手無俚之子，皆能自營轉雇，稱力而食。 See ZZQ, 13:247.

sure that farmers knew about the best methods available. “When I talk about the profits of *qutian*,” he had once claimed, “my farmers consider it anew.”¹¹⁷ Like other scholars, he recognized the potential points of frustration: the people were “surprised” by the divergence between the size of the harvest and the amount of land cultivated, and “fearful” of the complexity of the technique. But perhaps the most frustrating obstacle was people’s mentality, which was indisposed to change. “People have no sense of past and present,” Zuo lamented. “They carry on as before and are content with the usual.”¹¹⁸ He smarted at their complacency, but he recognized that this was partially a function of their inability to see *qutian* in practice. Despite its several-thousand-year history, people were still unable to “more fully see its efficacy” (*duo du qi yan* 多睹其驗).¹¹⁹ This was the reason for the pamphlets, the simplified lists of guidelines, and the demonstrations of the method in gardens where people could see it at work. Farmers needed to be convinced with evidence.

Zuo also needed his own evidence. He wanted to know that *qutian* could work, at least in the soils of his hilly, secluded homestead in northern Hunan. His farm became the testing ground for various agrarian techniques and crops, and his agrarian research—shuttling between reading and practice—became part of his self-image as a rural scholar. Although he held the teaching post at Anhua for several years after purchasing the homestead, he nonetheless paid attention to farming practices there. In 1844, he wrote:

Every time I return from Anhua, I oversee and work on cultivation, taking what I research on an everyday basis and testing it out. I spend my days going through the fields and call myself the Farmer on the Xiang River.¹²⁰

¹¹⁷ 吾言區田之利，吾農重思之。ZZQ, 13:247.

¹¹⁸ 人心無古今，習故安常。ZZQ, 13:247.

¹¹⁹ ZZQ, 13:247.

¹²⁰ Letter of DG24/0/0 (1844), ZZQ, 15:41.

每由安化歸即督工耕作，以平日所講求者試行之。日游隴畝，自號湘上農人。

Despite Zuo's enthusiastic inclination to conduct these trial runs of various agricultural techniques, he had learned how important labor was to getting things right. He may have had his own fields in the countryside near Xiangyin, but the majority of the land was rented out to tenant farmers or farmed by hired laborers. He had put some in charge of implementing specific cultivation methods, but he found that some of his tenants were unable to reproduce what he had done.¹²¹

Since agricultural scholarship seemed to strike Zuo as the most significant aspect of “practical studies” in the early and mid-1840s, it is perhaps not surprising that he set about composing his own treatise on the subject. Entitled the *Agricultural Treatise from the Pucun Pavilion* (*Pucun ge nongshu* 樸存閣農書), the text contained between ten and twenty chapters on various aspects of agrarian production.¹²² Although this book is no longer extant,¹²³ it seems to have been a culminating product of Zuo's studies of agriculture when he was still in Hunan. Zuo haughtily called it a “book that the world cannot lack,”¹²⁴ and its composition capped seven or eight years of interest, research, and testing. He hoped that it would serve a function that he had first imagined years earlier in Beijing, “to instruct [farmers] in agriculture and gardening.”¹²⁵

¹²¹ Zuo wrote, “On the land I myself cultivate, I generally implement that which is expedient for today's [use] from the ancient farming methods, and [people] have heard that it's quite good. I regret that the kind I carefully hired still cannot fully conform to their wishes.” 宗棠自耕之田，略以古農法之便于今者行之，闢甚良。惜細雇輩尚未盡如其意。Letter of DG26/0/0 (1846), ZZQ, 10:58.

¹²² For mention of this text, see ZZN, 1:22b; Letter of DG26/0/0 (1846), ZZQ, 15:55; Letter of DG25/0/0 (1845), ZZQ, 10:49-50. The title of the text borrows one of Zuo Zongtang's style names, *Pucun* 樸存. If *pucun* is read literally, an alternate translation of the title would be *Agricultural Treatise from the Pavilion of Simple Existence*.

¹²³ Zuo's chronological biographer remarked in 1897 that the draft version of the text remained at the homestead of Zuo, but it was only a partial version. ZZN, 1:22b.

¹²⁴ 人世不可少之書。Letter of DG25/0/0 (1845), ZZQ, 10:50.

¹²⁵ 以詔農圃。Letter of DG25/0/0 (1845), ZZQ, 10:49-50.

Conclusion

To the extent that Zuo attempted to tie together bookish and experiential knowledge through field testing of methods like *qutian* during his investigations of agriculture, his efforts exemplified the activist spirit of Qing scholars who became interested in agriculture. Influenced by evidential learning, scholars placed a high value on visual evidence. Moreover, this evidence was meant to have a persuasive effect. When Pan Zengyi orchestrated trials of *qutian* methods near Suzhou, he wanted to demonstrate their efficacy to onlookers to convince them to replicate the pattern of production in their own fields.

This type of visual evidence to persuade farmers was by no means exclusive to Qing agriculture. As Nick Cullather has argued, technology is “a type of rhetoric, an argument in the form of an object,” and during the Cold War, the sight of scientifically bred high-yield rice from the United States growing tall in the paddy fields of Vietnam and the Philippines became a politically charged claim to the superiority of modern biotechnology.¹²⁶ Even if the rhetoric of Qing scholars about agricultural technologies was somewhat more reserved, those scholars were no less reliant on the process of rendering the success of technology in visual form for the consumption of peasants. In comparison to Pan Zengyi's trials of *qutian*, Zuo's agrarian experiments almost surely attracted fewer observers, given the remote location of his farm. Had it been published and circulated, his agricultural treatise may have garnered a wider audience. Yet, even for him, evidence in practice remained the baseline for judging the efficacy of crops and agrarian techniques as means toward gaining the “profits of the land.”

In principle, successful trials posited the applicability and efficacy of agrarian technology in the local environment and convinced area farmers that adopting it on their own land would produce

¹²⁶ Nick Cullather, “Miracles of Modernization: The Green Revolution and the Apotheosis of Technology,” *Diplomatic History* 28.2 (April 2004): 229.

the same results. But evidence could also be used to legitimize claims about the efficacy of techniques in spite of local conditions like topography, rainfall, soil fertility, climate, or established cropping patterns. As Francesca Bray has argued, late imperial agronomists strove “to produce mobile forms of authoritative natural knowledge that could be applied anywhere in the empire.” It was these codified, mobile forms of technical knowledge—not wholly unlike modern science—that were supposed to diminish the importance of local conditions and be persuasive in doing so.¹²⁷ Qing scholars claimed that *qutian* could profitably serve agrarian production in almost any landscape and for any crop, so long as there was human labor and fertilizer to support it. To be sure, the practice of *qutian* did not always yield the proper results, but the claims nonetheless stood: despite vicissitudes of seasons, weather, topography, soil quality, and crop variety, *qutian* could greatly boost yields.

This engagement with agricultural technology and arguments for persuading farmers to harness the “profits of the land” in specific ways amounted to an agrarian strategy. Although Zuo had recognized the importance of talking to local farmers—not unlike how Gu Zuyu had proposed talking to local guides when formulating military strategy—the source of agrarian knowledge for him really came down to the texts he read. As I show in the next chapter, Zuo enthusiastically deployed technical knowledge about crop cultivation and agriculture to train local people how best to obtain the “profits of the land” when he began serving in the northwest as a military general two decades after researching agriculture in Hunan. Whereas his Hunan homestead had been a site for his extensive examinations of agriculture, Shaanxi and Gansu provinces in the 1860s and 1870s became field sites for promoting production strategies that served the interests of finding “profits” while overcoming the environmental particularities of those regions.

¹²⁷ Francesca Bray, “Science, technique, knowledge: passages between matter and knowledge in imperial Chinese agriculture,” *The British Journal for the History of Science* 41.3 (September 2008): 343.

Chapter 3

“Evil Grasses” and the Profits of Cotton in Postwar Gansu

Ripe bolls of cotton appeared in roadside fields in the towns of Shandan, Fuyi, and Dongle right when Zuo Zongtang passed through northwestern Gansu province with his army in August 1873.¹ Seeing flourishing fields awaiting harvest must have been a relief for the sixty-one-year-old Zuo, for the sights and sounds of Gansu after years of warfare had been discouraging, even unnerving. In devastated hamlets where he saw and heard victims of starvation, he was eagerly attentive to any harbingers of agricultural renewal. Cotton bolls maturing in the late summer sun seemed to be visual evidence of an initial recovery, and Zuo recorded the sight in a missive to Beijing the following year.

Yet ripe cotton signified more than the tenuous success of agrarian reconstruction in one small corner of the empire following the Muslim uprisings and their suppression by Zuo's army. Cotton's appearance in the landscape also affirmed Zuo's way of harnessing the “profit” (*li* 利) that he and other scholar-officials believed to be inherent to the process of agriculture—of uniting human labor with land and plants in productive activity. Like other statecraft scholars, Zuo did not conceive of this profit as an always-existing cache of wealth beyond the realm of human society. As William Rowe has explained, Qing scholar-officials maintained a “quasi-religious respect for the glorious bounty provided by Heaven-and-earth,” but they believed that “this bounty is only fully realized through the process of human exploitation.”² Although ripe bolls of cotton were fruits of

¹ TZ13/0/0 (1874), ZZQ, 11:444. Zuo passed through these towns on his way to a new military base camp in Suzhou 肅州, Gansu.

² Rowe, *Saving the World*, 217. For another assessment of extracting nature's bounty via agriculture in late imperial China, see Perdue, *Exhausting the Earth*.

the labor of local farmers, they were also the end result of the larger process of harvesting the bounty already coming to fruition in the natural world. As this chapter demonstrates, obtaining “profit” was hardly a straightforward process in the late Qing era, particularly in the liminal spaces between warfare and peace and in the borderland regions of the empire. In the process of attempting to harness these profits, the aging general assessed the climate and natural conditions of Gansu, sought to demonstrate the feasibility of specific crops through trial cultivation, communicated with local elites and farmers directly and via printed booklets, and supervised the countryside with military patrols.

Zuo had chosen cotton as one of the primary organic mechanisms by which Gansu's civilians could readily access the so-called “profits of nature.” But it was not a foregone conclusion that they, too, would choose cotton. In his efforts to help farmers obtain profit, Zuo assumed that they operated according to a specific set of principles by which they were motivated to pursue what they deemed most profitable. In late Qing Gansu, as in many other parts of the empire, farmers often elected to grow opium poppies which could bring high returns on the domestic opium market. Ripe cotton in the fields was thus also living evidence of a strategic moral victory for Zuo inasmuch as it competed with, and may very well have replaced, what officials called the “evil grasses” (*e'huì* 惡卉, *yaohuì* 妖卉), the opium poppy. If cotton, one of the “good seedlings” (*jiāmiao* 嘉苗),³ signified the righteous pursuit of prosperity aligned with Zuo's goals, by the late Qing opium poppies had become a visual marker of the moral decadence of society, of domestic opium consumption and addiction, of the unabashed profit motive, of the loss of the empire's wealth, and of foreign imperialism. In the postwar battle against opium poppy and for cotton, agriculture became a highly

³ TZ13/3/22 (1874), ZZQ, 6:28.

politicized field of contestation framed by Qing officials like Zuo in terms of profit and sheathed in a polarized discourse of good and evil.

Land and Climate in Late Qing Gansu

Nowadays it may be hard to imagine northwest China being a region ecologically unsuited to large-scale cotton production, given the massive output of raw cotton from the Xinjiang Uyghur Autonomous Region, currently the largest provincial-level producer in the country.⁴ But 140 years ago, there seemed to be no consensus about whether the plant could be highly productive in northwest soils and whether it should be promoted among farmers in Gansu and Shaanxi. Some officials were skeptical that cotton could thrive in these regions. In early 1871, when Zuo was stationed in the eastern Gansu city of Pingliang, he noted how “people say this place is not suitable for cotton.”⁵ Naysayers apparently thought that neither the province's soil nor weather was propitious for cotton production. Some claimed that the “qualities of the soil” (*tuxing* 土性) would not nourish important cash crops like cotton and mulberry, while others complained that the weather turned cold relatively early compared to other parts of China.⁶ To many observers, in other words, the northwest provinces did not appear to be fertile ground for cotton.

Zuo was hard-pressed to refute claims that the climate of Gansu adversely affected agriculture. In his experience, compared with his home province and others that he had visited, it

⁴ Björn Alperman, *China's Cotton Industry: Economic Transformation and State Capacity* (New York: Routledge, 2010), 170; David Bachman, “Making Xinjiang Safe for the Han? Contradictions and Ironies of Chinese Governance in China's Northwest,” in *Governing China's Multiethnic Frontiers*, ed. Morris Rossabi (Seattle: University of Washington Press, 2004), 170. Bachman perceptively notes the connection between cotton production and Han migration into the region: “the amount of cotton acreage seems to be growing in tandem with the increasing Han population in northern Xinjiang.” *Ibid.*, 172.

⁵ TZ10/2/4 (1871), *Zuo Zongtang weikan shudu* [Unpublished letters of Zuo Zongtang], (Changsha: Yuelu shushe, 1989), 99-100.

⁶ TZ10/0/0 (1871), ZZQ, 14:528.

did have a shorter summer. In missives to other officials or reports to Beijing, Zuo remarked upon Gansu's cold air, its lofty mountains, its early winter—earlier even than that of neighboring Shaanxi province. In the spring of 1871, he had heard that Shaanxi's “fields of wheat have a lustrous sheen and grain flowers varnish the whole countryside.” Yet west of Jingyuan in Gansu, where the altitude increased and the temperature dropped, “the tender buds still have not fully developed, snow and rain frequently soak [them], and the splendors of spring are still held back.”⁷ Zuo lamented that he could not foresee the results of the year's harvest. Given the overwhelming influence of the seasons on Gansu's agricultural productivity, he could not avoid admitting that the province's “land leans toward the northwest, temperate weather is scarce, and cultivation is certainly inferior to the southeast.”⁸

Despite these doubts about climate, weather, and productivity, Zuo did not accept that Gansu's natural conditions were much different from those of Shaanxi. Perhaps Shaanxi's springtime had arrived earlier in 1871, but this did not mean Shaanxi and Gansu were ecologically distinct. Turning to sericulture, he noted how the *Airs of Bin* (*Bin feng* 邠風), a collection of verse contained within the ancient *Book of Songs* (*Shijing* 詩經), contained evidence of women raising silkworms in the Jing River valley running through the adjacent prefectures of Binzhou in Shaanxi and Jingzhou in Gansu. Moreover, sericulture of the Jing River valley was currently experiencing a revival. Making a clear case for the connection between geographical proximity and ecological resemblance, Zuo suggested that the lands of Gansu could indeed grow mulberry trees in abundance because they were adjacent and similar to Shaanxi. “The soil of Gansu province is linked together with [Shaanxi],” Zuo remarked. “Within some hundreds of *li* 里, how would the

⁷ TZ10/0/0 (1871), ZZQ, 11:231.

⁸ TZ10/0/0 (1871), ZZQ, 14:529.

environment (*tiandi* 天地) be any different?”⁹

Nor did Zuo surrender to claims that Gansu's environment was fundamentally unsuitable for cotton. The region had its climatic idiosyncrasies, he admitted, but it still had four seasons and “winter and summer naturally coming one after another” just like elsewhere in the empire. More importantly, the “land fosters myriad creatures (*wanwu* 萬物) and flora already grow in great abundance,” Zuo asserted, “so it is certainly untenable that everywhere is unsuitable” for growing crops like cotton.¹⁰ Nor was it inconsequential that cotton shrubs and mulberry trees had “no need for fertile land.” Zuo told his subordinates in Gansu that cotton would not reduce the production of cereals or other food crops because it could flourish on hillsides or blossom in the desert.¹¹

Trial Cultivation as Persuasion

Even though doubts about Gansu's fecundity lingered in Zuo's mind,¹² he remained committed to the idea of cotton. As he promoted agriculture in war-torn communities in the northwest, he articulated a systematic process which subordinates were to employ as they attempted to convince farmers to grow cotton and other cultivars. In a communiqué to district officials throughout Shaanxi and Gansu in 1871, Zuo summed up the process in these terms:

If those who are in charge first carefully investigate what is suitable for the land, and even more assiduously search for methods of cultivation and appropriate varieties of

⁹ TZ10/0/0 (1871), ZZQ, 14:529.

¹⁰ TZ10/0/0 (1871), ZZQ, 14:529.

¹¹ Zuo also recommended cotton and mulberry because they required relatively small initial expenditures of capital. TZ10/0/0 (1871), ZZQ, 14:528.

¹² In 1874, he repeated his observations of the region's abridged summertime and abundant cold and, with deflated optimism, complained that Gansu's “products (*wuchan* 物產) are exceedingly scarce.” See TZ13/3/22 (1874), ZZQ, 6:27.

seedlings; [if they] call together the elders of the villages and clearly declare that these things are profitable, notifying them explicitly and in earnest so that all of them know, and then supervise their trial cultivations (*shizhong* 試種), after one or two years there will be a small amount of profit and the common people will promptly pursue it like a flock of ducks.¹³

如為上者先詳察夫土地之宜，更勤求夫種植之法與夫秧種之宜，召鄉中父老明告其利，剴切曉示，俾咸知之，然後督其試種，一二年後稍有利益，小民即趨之若鶩矣。

As Zuo's statement indicates, attempting to herd farmers toward his vision for agriculture was a complicated process involving observation and investigation of natural conditions, plants, and cultivation methods; meetings with civilians to educate and convince them about the pecuniary rewards of following the vision; and experimental cultivation to test specific plants and methods. This process was neither quick nor easy, and Zuo realized that persuading farmers to follow along could take a matter of years.

Why was trial cultivation necessary? Trial cultivation held open the prospect of demonstrating to a skeptical audience the feasibility of adopting specific crops and production methods. To make cotton a viable alternative to opium poppy, Zuo had to legitimize its cultivation and give the idea of cotton wide purchase among local farmers. Zuo himself knew from reports that cotton could be grown in Gansu. But any lingering skepticism among farmers about its ability to grow, its methods of propagation, or its profitability had to be resolved, and this is where trial cultivation became important.¹⁴ In this sense, the trials undertaken by subordinates and local elites

¹³ TZ10/0/0 (1871), ZZQ, 14:528.

¹⁴ Zuo did not mention specific varieties of cotton, but plant variety may have been another variable in the experiments carried out under his purview.

and carried out under Zuo Zongtang's purview were largely designed to convince Gansu's farmers to grow cotton and other crops, to demonstrate the viability of specific cultivars as tools to obtain profit from the land, and to model the best methods of production. To be sure, trial cultivation may have also led to innovations in agriculture, from the tools and techniques to the plants themselves. But by and large, they targeted the skepticism of local people and purveyed specific plants and cultivation methods as agrarian technologies which could overcome the vicissitudes and irregularities of local environmental conditions and yield enticing harvests.

As he attempted to persuade Gansu farmers of cotton's viability, Zuo asserted that trial cultivation and crop experimentation in Chinese agriculture had legendary origins. In a March 1871 letter to Gansu's judicial commissioner (*anchashi* 按察使), Shen Yingkui 沈應奎, Zuo reasoned that “in the affairs of the world (*tianxia* 天下), what isn't revealed through testing (*shichu* 試出)? Prince Millet and Shennong were both like this.”¹⁵ Zuo's statement to Shen is rich with meaning, for he substantiated the universal and nearly timeless character of testing (*shi* 試) as an agrarian practice right when trial cultivations (*shizhong* 試種) were supposedly showing how cotton could overcome particularities of location and season and could be grown in almost any place. By claiming that the legendary progenitors of Chinese agriculture used testing, Zuo connected the practice to the birth of agriculture itself. But even if he claimed that test cultivation had originated in Shennong's attempts to spread agriculture to ancestors of the Chinese, testing was bound neither to any one location in the empire nor to any historical period. Zuo's statement suggests he believed that trial cultivation could be useful in any agrarian geography without restrictions in space or time. Not

¹⁵ TZ10/2/4 (1871), *Zuo Zongtang weikan shudu*, 99. Prince Millet (*Houji* 後稷) was the name of the revered agricultural ancestor of the Zhou, and Shennong 神農 (sometimes translated as the “Divine Farmer”) was the mythical emperor who taught agriculture to the Chinese. See Bray, *Agriculture*, 1, 36a.

coincidentally, this is precisely the message about cotton that Zuo hoped to disseminate among Gansu's farmers: that it could be profitable nearly anywhere in spite of local conditions.¹⁶

Notwithstanding Zuo's claims about mythical precedents for agrarian testing, the idea of planting crops for experimental purposes dated back at least to the late Ming dynasty, when Xu Guangqi reportedly experimented with the sweet potato, which had come to China from the New World. Recognizing this new tuber's potential value to the empire's food supply because of its ability to withstand poor weather, thrive in infertile soils, and resist insects, Xu anticipated spreading its cultivation among farmers, save for the fact that they were skeptical of its ability to flourish in diverse climates. As Francesca Bray and Georges Métaillé argue, Xu experimented with sweet potatoes and turnips “to prove that plants could adapt to almost any conditions provided the right cultivation techniques were found.”¹⁷ Although climate and land quality may have been noteworthy variables, Xu saw them merely as obstacles to be overcome in the process of finding the best cultivation methods. Xu carried out experimentation expressly for the purpose of identifying those methods and demonstrating to the unconvinced that they would make the tuber viable in almost any landscape. Sweet potato experiments were therefore also useful as a means to persuade farmers that crops could thrive in conditions that they presumed to be inhospitable. This seems to have been precisely what Zuo Zongtang was thinking about when he recorded trials with cotton, rice, and

¹⁶ Cotton and cultivation methods as described here seem to meet Francesca Bray's definition of “technological artefacts,” which “extend or multiply human capabilities” and “flatten out the irregularities of the world around us” (326). Test cultivation, by contrast, seems to be the mechanism that enables the claims about these technologies to “travel through time and space, and to subsume heterogeneity”—precisely what “a scientific fact or theory” must do in order to be persuasive (324). See Francesca Bray, “Science, technique, knowledge: passages between matter and knowledge in imperial Chinese agriculture,” *The British Journal for the History of Science* 41.3 (September 2008): 319-344.

¹⁷ Francesca Bray and Georges Métaillé, “Who was the Author of the *Nongzheng Quanshu*?” in *Statecraft and Intellectual Renewal in Late Ming China: The Cross-Cultural Synthesis of Xu Guangqi (1562-1633)*, ed. Catherine Jami, Peter Engelfriet, and Gregory Blue (Leiden: Brill, 2001), 342.

other cultivars in Gansu.

Zuo was not the first Qing official to adopt cotton as a strategic replacement for opium poppy and to grow the shrubby fiber plant in test plots to entice farmers away from the vilified flower. He Changling had promoted cotton as an alternative to poppy cultivation when he served as governor of Guizhou province during the Opium War.¹⁸ He facilitated trial cultivations of mulberry seeds and saplings imported from Sichuan,¹⁹ and he hoped to show through trials that cotton, too, would be a suitable crop for Guizhou's poor farmers. After having dispatched subordinates to purchase over 26,000 *jin* 勛 of cotton seeds in Hubei and Henan provinces, he sent local magistrates out to the villages to instruct the people in methods of propagation and to entice or compel them to switch from opium poppy to cotton.²⁰ Near the walls of the provincial capital at Guiyang, He hired civilians to plant what may have amounted to a demonstration garden—several *mu* 畝 of land sown with cotton on which future cotton farmers would be trained. He faced what Zuo would confront thirty years later in Gansu: skepticism about cotton's suitability on the land. But in late 1840, based on several years of trials, He assailed this pessimism with full force. Since his Guizhou cotton had matured and blossomed just like cotton plants in Hubei and Henan, he asserted, “we can do away with the longstanding saying that 'the soil is not suitable'” (*tudi bu yi zhi shuo* 土地不宜之說).²¹

Trial Cultivation in Gansu

In late 1871, Zuo issued a directive to all local government bodies throughout Shaanxi and

¹⁸ David Bello, *Opium and the Limits of Empire: Drug Prohibitions in the Chinese Interior, 1729-1850* (Cambridge, MA: Harvard University Asia Center, 2005), 279.

¹⁹ He mentioned test planting (*shizhong* 試種) mulberry in two memorials written in 1840. He Changling, *Nai'an zonyi* [Memorials of He Changling] (1882), 6:1b, 24b.

²⁰ DG20/1/19 (1840), He, *Nai'an zonyi*, 6:1b.

²¹ DG20/10/22 (1840), He, *Nai'an zonyi*, 6:25a.

Gansu to experimentally grow rice, mulberry, and cotton.²² If he chose the latter as a productive and strategic opponent of the “evil grasses,” the other two he promoted to improve and boost yields of foodstuffs and fiber materials. Having traveled through much of the eastern part of Gansu, Zuo recognized the various cultivars which local farmers propagated: barley and wheat (*daxiaomai* 大小麥), yellow and white millet (*huangbaimi* 黄白粟), broom corn millet (*mizi* 糜子), oil sesame (*youma* 油麻), and maize (*baogu* 包谷). But he lamented their “short tassels of grain, single shoots, and small granules.” These withered appearances signified that resulting harvests hardly enriched, and only sometimes met the needs of, the people who labored to produce them.²³ He also complained of Gansu's paucity of textile crops, a situation that subjected many civilians to high prices for cloth imported from other provinces.²⁴

One of Zuo's initial suggestions was to augment Gansu production with the cultivation of “southern rice” (*nanfang daogu* 南方稻谷).²⁵ Not a cultivar of local origin, rice from the south would purportedly multiply yields and profits. But the initial trial, which was carried out by military officers under his orders, did not meet his expectations. In 1870, “late rice” (*wan dao* 晚稻)—chosen to overcome the obstacles of a late spring—had raised and then dashed his hopes for success because, even though it sprouted fully and abundantly, the harvest eventually amounted to little. His experience with late rice prompted Zuo to suspect that Gansu really was inhospitable to this imported variety, and he was ready to relinquish the idea of southern rice in northern landscapes. But the following year, the acting magistrate of Pingliang prefecture, Wang Qichun 王啟春, offered

²² TZ10/0/0 (1871), ZZQ, 14:527.

²³ TZ10/0/0 (1871), ZZQ, 14:528. Zuo calculated the average harvest at about 100 *jin* 觔 for each *mu* 畝. In the Qing period, one *jin* equaled roughly .6 kilograms or 1.3 pounds, and one *mu* equaled roughly .15 of an acre. Li, *Agricultural Development in Jiangnan*, xvi-xvii.

²⁴ TZ10/0/0 (1871), ZZQ, 14:528.

²⁵ TZ10/0/0 (1871), ZZQ, 14:528.

tangible evidence of success. He sent Zuo a sample of harvested and refined rice obtained from a trial cultivation he had overseen. Since the harvest was roughly four times larger per *mu* 畝 than usual for cereal grains in the region, Zuo felt vindicated. He prognosticated that eastern Gansu could indeed support southern rice cultivars, provided they were quick-ripening varieties with access to ample irrigation water.²⁶

As important as cotton was to Zuo's plans for Gansu, he seems never to have overseen any of its trial cultivations. He instead relied on reports sent in from other regions of Gansu to assess cotton's viability in the province. By late 1871, he had received word from Shen Yingkui that cotton flourished outside the provincial capital, Lanzhou. It reportedly grew well even further to the northwest, along Gansu's periphery. An elite man in Zhenfan, Lan Peiqing 藍佩青, had propagated cotton in a successful trial in which the plants turned out “extremely fine,” helping to convince Zuo of the efficacy of promoting cotton more broadly.²⁷ But only two years later, he complained that many local officials had responded to his enthusiasm about cotton, mulberry, and other cultivars with the “excuse that local conditions are not suitable” (*yi fengtu bu yi wei ci* 以風土不宜為辭).²⁸ Such widespread pessimism may have caused Zuo to question how to utilize Gansu's climate in a strategic way, and he allowed for the possibility that some land would be better suited to grains than to cotton.²⁹ But the contents of his missives to Beijing suggest that he remained committed to the prospect of finding the right combination of weather, soils, and cultivation methods. “On warm, fertile land facing the sun,” Zuo maintained, “if [people] undertake propagation with the right

²⁶ TZ10/0/0 (1871), ZZQ, 14:528. The trial cultivation of rice in Pingliang under the leadership of Wang Qichun reportedly had a per-*mu* yield of 400 *jin*.

²⁷ TZ10/0/0 (1871), ZZQ, 14:529.

²⁸ TZ12/0/0 (1873), ZZQ, 11:379.

²⁹ TZ13/3/2 (1874), ZZQ, 6:29.

methods, the profits to be reaped have to be many.”³⁰

Rooting out Opium

Even before Zuo promoted cotton, he had issued strict prohibitions against poppy cultivation to expurgate local opium production and ameliorate the empire's addiction to the drug.³¹ In 1869, he wrote an edict outlining an anti-opium policy. A short document composed entirely of rhyming four-character lines (*sizi yunwen* 四字韵文) to make it easier for literate civilians to read and commit to memory,³² the edict traced the opium problem back to outside influences and castigated the “wicked plan of foreigners” which “harm our Chinese customs” (*bai wo hua su* 害我華俗). Yet the opium problem had reached new proportions as farmers across the empire became wise to the financial profits of growing poppies. Despite poverty, moral delinquency, and depravity arising in the wake of opium and addiction, farmers unceasingly pursued the poppy's “wicked profits” (*jian li* 奸利) and the “precious gold” (*jianjin* 兼金) yielded by piercing the bulbs of the yellow and white flowers and extracting the viscous liquid inside them.³³ Zuo despaired that “our Chinese people” (*wo hua min* 我華民) would willingly partake in the cultivation of a plant that spread immoral behavior. But poppy flowers were even more galling because they apparently would not grow on shabby land; they required fertile land to flourish. The edict thus recognized that the “evil grasses” (*e'hui* 惡卉) grew at

³⁰ TZ13/0/0 (1874), ZZQ, 11:444. In the previous year, he had used a similar phrase—“on land facing the sun, [we] have to try to cultivate”—to describe the necessity of cultivating plants like cotton. See TZ12/0/0 (1873), ZZQ, 11:379.

³¹ For an assessment of the opium problem in the Qing empire, see Bello, *Opium and the Limits of Empire*; and several of the essays in Timothy Brook and Bob Tadashi Wakabayashi, eds., *Opium Regimes: China, Britain, and Japan, 1839-1952* (Berkeley: University of California Press, 2000).

³² For later references to the edict, see ZZQ, 7:142; ZZQ, 12:367; ZZQ, 12:531.

³³ Nearly a decade later, Zuo called opium a “handful of precious gold” (*yi wo jianjin* 一握兼金). See GX4/7/4 (1878), ZZQ, 7:146.

the expense of the “good grains” (*jiagu* 嘉谷). Intended for widespread distribution to post houses and village schools, the edict emphasized that all farmers were prohibited from growing opium poppy and all local elites were responsible for helping to exterminate the plant.³⁴

Enforcing the prohibition was a completely separate matter from issuing the edict. Uprooting opium poppy demanded diligent surveillance in the countryside, a task fulfilled by battalions of Zuo's army that had been stationed throughout the province after rebellion had been quelled. Their participation in enforcement alongside civilians suggests that some aspects of agricultural promotion were militarized in the 1870s. For example, in the winter months of early 1877, Zuo reissued orders for surveillance after having received imperial approval for poppy prohibition. He commanded “each defense battalion to split up on different roads to investigate and uproot” the forbidden flowers.³⁵ Some of Gansu's top civilian leaders—provincial treasurer (*fansi* 藩司) Chongbao 崇保 and judicial commissioner Shi Nianzu 史念祖—also dispatched subordinates to “go everywhere in the countryside” (*zibouli xiangcun* 周歷鄉村) to search for signs of the illicit poppies, but they often called upon military forces to undertake surveillance and enforcement. Zuo thus described the process:

Local officials under my charge direct the defense forces in the prefectures and districts to go into the countryside with light cavalry from time to time to search for [opium poppy], ordinarily several times per month. Upon encountering a whole section of farmland, [they ensure that farmers] uniformly turn the plow and irrigate [the land] with water. In cases where [opium poppies] grow mingled among beans and wheat, [they] hoe them up and pull them out, so that no [poppy] shoots remain.

³⁴ For the prohibition, see TZ8/0/0 (1869), ZZQ, 14:587.

³⁵ GX4/7/4 (1878), ZZQ, 7:143.

Therefore, land already planted in opium poppy is completely cleansed of flowering shoots, returned to growing beans, wheat, and millet, and is suddenly transformed back into its previous appearance.³⁶

本管道府督同廳縣營汛，隨時輕騎赴鄉搜查，月凡數至。遇整段地畝，一律翻犁灌水，其雜植豆麥間者，亦且鋤且拔，俾無遺孽。于是已種罌粟之地花苗淨絕，復種豆麥糜谷，頓改前觀矣。

This straightforward description of military detachments uneventfully clearing opium poppy from the countryside elided an irony of the army's presence, one that Zuo himself recognized: extensive poppy cultivation partially resulted from military interventions and reclamation policies. After almost a decade of strict prohibition, farmers still grew poppies in remote locations or amidst grain crops to avoid detection, especially in northern Gansu's Ningxia prefecture.³⁷ Ningxia was purported to have wonderful growing conditions, with “highly fertile” (*shangyu* 上腴) soil irrigated by river water, and perhaps for this reason its production of poppies surpassed that of other areas in the province.³⁸ But natural conditions were not fully responsible for the boom in opium cultivation in the 1870s. According to Zuo, new settlers were. He explained that during the phase of civil unrest, the region's Muslims (*Hui* 回) had largely avoided the drug and its floral source, given their “customary taboo against smoking opium, which had long been far outside religious discipline.”³⁹ But if poppy cultivation had been a relatively minor practice during warfare, it did not remain so. When Ningxia was recaptured and “all the rebels were eliminated, recruits for land reclamation

³⁶ GX4/7/4 (1878), ZZQ, 7:143.

³⁷ GX4/7/4 (1878), ZZQ, 7:143.

³⁸ GX4/7/4 (1878), ZZQ, 7:147.

³⁹ GX4/7/4 (1878), ZZQ, 7:143.

gradually became more numerous, and the clandestine propagation of opium poppy turned out to be several times greater than in the past.”⁴⁰ As new non-Muslim settlers from beyond the region's borders reclaimed land, they expanded opium production by several-fold. Likely oblivious to any taboos, these farmers may have considered little more than the profitability of growing opium poppies. So even as military personnel and “light cavalry” participated in the surveillance of the countryside, it had been, in part, their presence and the new land policies that caused the explosion in opium cultivation.

Another reason for poppies flourishing in Ningxia was that some officials blithely neglected countryside surveillance or even colluded with growers to evade punishment. Zuo mandated that special attention be paid to the six districts of Ningxia after he cited at least six officials in 1878—prefectural magistrate (*zhifu* 知府) Li Zongbin 李宗宾 and a handful of district magistrates—for not thoroughly investigating or punishing agrarian scofflaws. In other cases, he criticized local officials for being dilatory and having “the intention of merely muddling along” (*deguo qieguo zhi xin* 得過且過之心), or for abstaining from enforcement out of fear that doing so would endanger their ability to collect land taxes from farmers.⁴¹ Some may even have demurred because they worried about “depriving the people of their source of profit” (*duo minjian liyuan* 奪民間利源).⁴² Still others, he complained, practiced extortion or collected bribes in return for covering up illegal poppy cultivation.⁴³

Opium farmers' resistance to enforcement also thwarted Zuo's anti-poppy policy. They

⁴⁰ GX4/7/4 (1878), ZZQ, 7:143.

⁴¹ GX4/7/4 (1878), ZZQ, 7:147.

⁴² GX4/0/0 (1878), ZZQ, 12:367.

⁴³ GX4/7/4 (1878), ZZQ, 7:146. On Zuo's punishment of derelict officials, also see the memorial of TZ13/5/6 (1874), ZZQ, 6:45.

sometimes used the cover and camouflage of other food crops to shield their valuable poppies from destruction. Typically a method of intensive horticulture used to increase land productivity or reduce pests and plant diseases, inter-cropping became a technique of Gansu poppy farmers for avoiding detection. In other cases, farmers eschewed passive resistance and resorted to violence to ward off inspectors. They confronted agents of the state and “often gathered in groups to hinder inspections” when minor officials approached their fields with shovels to weed out their flowering cash crops.⁴⁴ In neighboring Shaanxi, some deputized enforcers of the ban who surveyed the fields encountered the resistance of “conniving women” (*zongrong funu* 縱容婦女) who relented and pulled out their poppies only after being reprimanded.⁴⁵

Zuo Zongtang's opium prohibition policy called for a range of punishments for lawbreakers. In 1871, he claimed that any farmer who defiantly or surreptitiously grew opium poppies would have his land expropriated by the state and returned to the rightful landlord only when the farmer had committed himself to cultivating cotton, mulberry, rice, or other cereal grains.⁴⁶ Seven years later, in the aftermath of the drought and famine that devastated Shanxi and Henan provinces, Zuo and the Shaanxi governor, Tan Zhonglin 譚鍾麟 (1822-1905), jointly reported to Beijing an even stricter policy for punishing farmers who surreptitiously grew poppies at a time when grain was particularly scarce. Offenders were to have their land expropriated and they were to be given the *cangue* (*jiabao* 枷號), a wooden yoke worn around the neck as punishment, so that they could serve as examples to other farmers.⁴⁷ Yet given the paucity of labor power in Gansu and Shaanxi following the warfare of the late 1860s and the policy emphasis on resettlement, expropriating the land of

⁴⁴ TZ13/5/6 (1874), ZZQ, 6:45.

⁴⁵ Tan Zhonglin, *Tan Wenqin gong zougao* [Memorials of Tan Zhonglin] (1911), 6:3a.

⁴⁶ TZ10/0/0 (1871), ZZQ, 14:529.

⁴⁷ Tan, *Tan Wenqin gong zougao*, 6:3b.

criminal poppy cultivators does not seem to have been a standard punishment. In fact, destroying a farmer's valuable illicit crop was the primary objective of enforcement and the main penalty, and in certain cases in Shaanxi, guilty farmers carried out their own punishments by uprooting poppies and replanting other crops in the presence of officials.⁴⁸

Harnessing the Profit Motive in Gansu

Visual evidence of cotton along the road in the late summer of 1873 was just the kind of encouraging sign that Zuo could report to Beijing, but it was not the only sign of hope for an anti-opium policy. According to Zuo's recounting of his westward journey, “every time my vehicle stopped, the elders gathered together and looked on.” These impromptu meetings provided him the chance to transmit orders to local leaders in regions recently pacified. Face-to-face interaction also allowed him to consult with them directly about local patterns of agricultural production. If the sight of ripening cotton assuaged his worries about postwar dearth, he was also reassured that the elders seemed to know about cotton what he wanted them to know: “all are aware that the profits (*li* 利) of cotton are on par with opium poppy, and sometimes surpass it.”⁴⁹

At the heart of the matter was a conception of how Qing farmers operated. Zuo and other governors perceived that civilian agrarian subjects were motivated almost entirely by notions of profit rather than by propriety. Viewed in this manner, farmers elected to cultivate opium poppies because they brought larger financial returns than other crops. Over nine years after promulgating the rhyming edict against opium, Zuo and one of his officers, Liu Dian 劉典 (1820-1879), jointly lamented how “ignorant people lack knowledge and lust after large profits (*zhongli* 重利), and

⁴⁸ Tan, *Tan Wenqin gong zongao*, 6:3a.

⁴⁹ TZ13/0/0 (1874), ZZQ, 11:444.

thereupon take fertile soil suitable for grains and plant it with opium poppy.”⁵⁰ Precisely this was occurring in Ningxia in the late 1870s: “people on fertile land are constrained by evil customs, widely cultivating opium poppy and seeing it as source of profit (*liyuan* 利源).”⁵¹ Zuo accepted their pursuit of profit as a matter of course. He instead castigated their choice of the poppy as the technology by which to reap the nutrients of the soil and the commodity with which to pursue profits available through market exchange.

So Zuo turned to profit as a primary means to entice farmers away from poppy production. He acknowledged that “if when ignorant people greedily grow opium poppy they are greedy only for its profits (*li* 利), then [we] shall use profits (*li* 利) to mobilize them.”⁵² Caring little about what opium meant to a polity called “China” of which they perhaps had little or no consciousness, farmers would instead respond to officials' cajoling leadership about what would be profitable. As Zuo had earlier reported to the Qing court, he had surveyed various locations in Gansu and determined that “all which are fertile and warm areas facing the sun and able to grow opium poppies are not unsuited to growing cotton.”⁵³ This rough ecological correspondence between growing conditions for opium poppies and cotton made the latter crop a perfect substitute. And so he devised a straightforward formula for making Gansu poppy-free: “If one wants to prohibit poppy cultivation, one must first think of a [crop] variety that can surpass its profits (*li* 利), and then people will become aware of [the fact that] opium is not so profitable. Thereafter, avarice can gradually fill in.”⁵⁴ The linchpin of his plan was thus harnessing farmers' seemingly inherent desire for profit and

⁵⁰ GX4/7/4 (1878), ZZQ, 7:142.

⁵¹ GX4/7/4 (1878), ZZQ, 7:143.

⁵² GX4/7/4 (1878), ZZQ, 7:143.

⁵³ TZ13/3/22 (1874), ZZQ, 6:27.

⁵⁴ TZ13/0/0 (1874), ZZQ, 11:445.

turning what had been the race for “wicked profits” into the pursuit of morally and legally acceptable pecuniary reward. If farmers were strategically enticed and shown the profits of cotton, he imagined, they would automatically forgo opium poppies without officials having to resort to “harsh methods” (*junfa* 峻法). This seems to have been what the elders of those northwestern Gansu towns had evinced as Zuo passed through in the late summer of 1873.

Circulating the Methods of Cotton Production

How did Gansu's farmers learn to grow cotton? Trial cultivations demonstrated that cotton and other crops could be planted in the soils of Gansu. But it is unlikely that the techniques of propagation used in those trials circulated far beyond the local city or town in which they took place. And despite meeting elders on the roadside in 1873, Zuo did not always have the luxury of direct contact with townspeople and local officials. Instead, Zuo utilized printed texts and government-sponsored technical bureaus to disseminate information about cotton cultivation and weaving with the goal of encouraging and enabling farmers to increase their output.

By the 1870s, Zuo had long been aware of the value of consulting texts about agriculture, sericulture, and specific production techniques like the *qutian* method.⁵⁵ Nineteenth-century China abounded in republished versions of agricultural treatises, and Zuo had read a great many of them by the time he traveled to the northwest in the late 1860s. Publications about cultivating cotton were less commonplace than texts about mulberry propagation, perhaps because cotton, unlike silk, had not reached the status of a product for imperial consumption. But like He Changling, whose subordinates helped promote cotton by printing and distributing the eighteenth-century *Manual of*

⁵⁵ For Zuo's references to *qutian* in the 1870s, see TZ12/0/0 (1873), ZZQ, 11:379; TZ10/0/0 (1871), ZZQ, 14:291; and TZ11/0/0 (1872), ZZQ, 14:298.

Cotton (*Mumian pu* 木棉譜) in Guizhou in 1837,⁵⁶ Zuo opted to propagandize cotton by circulating texts. Printed at the government bureau in Xi'an in 1874, the *Ten Essentials of Growing Cotton* (*Zhong mian shi yao* 種棉十要) and *The Book of Cotton* (*Mian shu* 棉書) were to be disseminated among local officials and elders throughout the northwest.⁵⁷ The former text, a terse ten-point guide to cultivating cotton, is no longer extant. The latter text, however, still exists and its contents reveal the mundane and straightforward mechanics of growing cotton that were apparently sufficient to make the plant grow in diverse environments.

Originally published in southeast coastal Fujian province eight years earlier, *The Book of Cotton* showcased cotton varieties and production techniques from regions where the textile industry was relatively well-developed in the nineteenth century, particularly the lower Yangzi delta region. The book was printed by the office of the Fujian provincial treasurer (*fanshu* 藩署) in late 1866, just before Zuo Zongtang departed Fuzhou to take up his new post as the governor-general of Shaanxi and Gansu. This suggests that Zuo had already had some experience—or at least some previous enthusiasm for—promoting cotton based on methods drawn from other parts of the empire. Yet the text made no reference to cotton cultivation in Fujian's climate or landscape even though cotton had been a profitable crop in the province in earlier centuries.⁵⁸ The text played the same role in Gansu, namely as a means to disseminate information about production techniques without reference to local conditions.

A short booklet, *The Book of Cotton* explained methods for fifteen aspects of production.

⁵⁶ DG20/1/19 (1840), He, *Nai'an zonyi*, 6:1a.

⁵⁷ TZ13/3/22 (1874), ZZQ, 6:28; ZZN, 7:1a; Qin, *Zuo wenxiang gong zai xibei*, 243-44.

⁵⁸ After the seventeenth century, Fujian cotton production gradually diminished in competition with other cash crops like sugarcane and tea leaves. See Zhao Gang and Chen Zhongyi, *Zhongguo mian ye shi* [History of the cotton industry in China], (Taipei: Lianjing chuban shiye gongsi, 1977), 49.

Unlike other agricultural texts, which often contained prefaces situating them within the longstanding tradition of Chinese agricultural treatises, this text had no preface or any other explanations about its origins. Instead, it was a straightforward technical manual of methods for production. The first page jumped into the subject, cataloging the most prominent varieties of cotton seeds, including some of notable geographic origin. “River cotton” (*jianghua* 江花), for instance, came from Hubei, whereas “northern cotton” (*beihua* 北花), “soft and fine,” came from Beijing and Shandong. Also worthy of mention was the “Zhejiang cotton” (*Zhehua* 浙花), a product of the northern Zhejiang town Yuyao and a common variety across lower Jiangnan (*wuxia* 吴下).⁵⁹ *The Book of Cotton* also described techniques for planting, seedling division, weeding and irrigation, harvesting, drying, ginning, bowing, carding, thread spinning, warping, starching, textile weaving, and oil pressing.

Throughout its description of these techniques, the text assumed that people in any place might be able to adopt them for profitable cotton production. Despite being too brief and singularly focused on cotton to be considered a typical agricultural treatise, *The Book of Cotton* nonetheless fulfilled part of the function of official treatises “to produce comprehensive, mobile knowledge that could successfully be transferred through the medium of print, across vast spaces of the empire, and translated into local action.”⁶⁰ And although the majority of the instructions were provided without much reference to geographical context, the text did contain geographic-specific information that put the spotlight on rich areas of China proper or foremost cotton-producing regions—a rhetorical technique that emphasized the knowledge gap between regions with the best

⁵⁹ *Mian shu* (Fujian fanshu, 1866), 1a.

⁶⁰ Bray, “Science, technique, knowledge: passages between matter and knowledge in imperial Chinese agriculture,” 334.

practices and those which were not as advanced and thereby enabled the text to serve as “an early form of technology transfer” between such regions.⁶¹ If the book's listing of cotton seed varieties hinted that no commercially valuable cotton cultivars had been developed in the northwest by the nineteenth century, the text even more clearly stated the technological dominance of one region in matters of processing cotton: “for weaving tools, Songjiang prefecture is the best in the world (*tianxia* 天下).”⁶² Other regions would therefore look toward the east, to Songjiang and the greater Jiangnan region, including places like Yuyao, as having reached the technological pinnacle of cotton production. By its reference to these places and its omission of others, the handbook articulated the technological dominance of eastern regions of the empire that excelled at cotton production and served as the model for other regions attempting to imitate their success.

Reprinted editions of *The Book of Cotton* seem to have circulated widely in the late nineteenth-century northwest, perhaps stoking the desires of local officials to promote cotton as a convenient and acceptable replacement for opium poppy and to imitate advanced techniques from other regions. To the east of Xi'an, the cotton manual reached Shaanxi province's Dali district, where the compiler of the local gazetteer, Zhou Mingqi 周銘旂, wrote in 1879 of its positive influence on the local cotton industry.

In the several years since the noble minister Zuo issued *The Book of Cotton*, those within the area who grow cotton have gradually become more numerous, especially so in the [district's] southwestern countryside, [where] soil near sand yields to what cotton likes. Those who weave cloth and [use it for] clothing all depend thereupon.⁶³

⁶¹ Ibid., 335.

⁶² *Mian shu*, 12a.

⁶³ Zhou Mingqi, ed., *Dali xian xuzhi* [Updated gazetteer of Dali district] (1879), 4:20a.

自左爵相頒發棉書數年來，境內種棉者漸多，而西南鄉為最，以近沙地土輒于棉宜也。
織布而衣者皆依賴焉。

Significantly, like peanut plants which had colonized “pastures of sand” (*shayuan* 沙苑) in Dali and whose methods of cultivation had been transferred from Henan province's riverine lands, cotton was not a “special product” (*zhuanchan* 專產) of the local area but a newcomer that could thrive with techniques from afar.

Zuo's cotton publications also reached several thousand kilometers to the northwest into Xinjiang, where local officials in the oasis of Turpan reportedly received 200 copies of the *Ten Essentials of Growing Cotton* for distribution to area gentry and farmers so that they could emulate its production methods.⁶⁴ But Turpan's cotton production may not have needed any guidance from publications like this one. In 1879, Zuo reported that “what is produced in Turpan is better than [cotton in] China proper,” and that oasis cotton had long been transported via Hami and sold to the inner provinces of the empire. Turpan cotton was also reportedly cheaper than anything in China—three-fourths the price of local Gansu cotton and less than half the price of Sichuan and Shaanxi cotton. This was the case even after several years of official cotton promotion in these areas. Lamenting how this price disparity made the transport and sales of Gansu cotton within China proper “none too profitable” (*wu shen li* 無甚利), Zuo realized that a future of “outsiders” (*wairen* 外人) controlling cotton sales would be nearly unavoidable.⁶⁵

Despite this pessimism over the potential fate of Gansu cotton production, some local officials dedicated themselves not only to boosting the output of cotton on land once growing opium but also to teaching civilians how to process raw cotton into cloth. Two magistrates in

⁶⁴ GX4/3/25 (1878), XJDQ 15-21-113.

⁶⁵ GX5/0/0 (1879), ZZQ, 12:464.

northern Gansu, Yang Daniao 楊大年 of Ningzhou and Huang Shaoxin 黃紹新 of Zhengning, were particularly active proponents of Zuo's anti-opium, pro-cotton schemes, and they went farther than other officials to “establish bureaus to instruct [people in] weaving”⁶⁶ and institutionalize cotton in the province. They established sites to grow the seeds, distribute the plants, and train local people how to weave its fibers into marketable cloth, an endeavor that may have further raised the profitability of cotton. According to Zuo's letter to Beijing in May 1874, these two officials

bought cotton seeds from afar, propagated them into seedlings, and distributed them among the people, responding to the current situation with the arts of cultivation.

[They] also sought spinning wheels and weaving tools for purchase, and hired civilian women to train [people] in weaving, [endeavors which] have already been effective.

遠購棉種，栽蒔成秧，分布民間，因時樹藝，又購覓紡車織具，顧倩民婦教習紡織，已有成效。

Zuo proposed to Beijing that their successes in “growing cotton and teaching weaving” deserved imperial recognition and commendation, for which he recommended them.⁶⁷

The efforts of Yang and Huang are particularly notable inasmuch as they demonstrate how cotton promotion in Gansu may have drawn from an imperial model of textile manufacturing centered within government-operated workshops. Until the very late nineteenth century, cotton manufacturing in China took place almost solely within households,⁶⁸ and Gansu cottons were likely being woven by hand looms within single households in the 1870s. In contrast to this commonplace textile fiber, silk had long been produced in imperial factories for consumption at court or in

⁶⁶ TZ13/3/22 (1874), ZZQ, 6:27.

⁶⁷ TZ13/3/22 (1874), ZZQ, 6:27.

⁶⁸ Kang Chao, *The Development of Cotton Textile Production in China* (Cambridge, MA: Harvard University East Asian Research Center, 1977), 29.

commercial workshops to satisfy elite private consumption, imbuing it with a special status that cotton never acquired.⁶⁹ So when Yang and Huang established cotton training workshops and when they sought to make cotton textiles the focus of government bureaus, they may have borrowed loosely from a precedent of imperial textile manufacture. Whether influenced by cotton manuals or notions of bureaucratization, cotton promotion in Gansu drew its techniques from beyond the borders of the province. Like test cultivation, government-sponsored bureaus functioned to make cotton a viable industry despite seemingly unfavorable local conditions.

Profits and Morality in Gansu

Creating landscapes free of poppies and full of cotton was a task that required constant intervention. Officials used surveillance and punishment in an attempt to rid their districts of opium production. Zuo's plan for northwest agriculture also relied upon educative and communicative methods: he and his subordinates talked with village elders, carried out trial plantings to demonstrate the feasibility and profitability of crops they wanted to promote, circulated cotton manuals, and established government textile bureaus. Zuo and other officials aimed to convince farmers to see the possibility for profits as they did—in the form of fields of cotton and ripe bolls on the bush—and then enable them to utilize highly productive methods of cultivation and processing.

⁶⁹ This is not to suggest, however, that earlier imperial policies neglected cotton propagation, or that the imperial household never had any use for cotton. Yuan and Ming emperors promoted cotton production via various measures. The first Yuan emperor established the official position of Supervisor of Cotton (*mumian tijusi* 木棉提舉司) in five southern provinces. Shortly thereafter, cotton requisitioning was transformed into an official cotton levy, a taxation policy continuing at least until the mid-Ming. The Ming obtained cotton for use in the imperial house, for supplying military clothing, and for the horse trade with neighboring polities. See Zhao and Chen, *Zhongguo mian ye shi*, 43-46. Although cotton had lost some bureaucratic support by the Qing, the Qianlong emperor gave official recognition to cotton production by personally inscribing his poetic comments on the cotton pictorial *Illustrations of Cotton* (*Mian hua tu* 棉花圖) by Fang Guancheng. Fang's work is contained in Fan Chuyu, ed., *Zhongguo kexue jishu dianji tonghui, Nong xue juan* 4 (Zhengzhou: Henan jiaoyu chubanshe, 1994).

To a significant extent, however, Zuo developed plans for cotton promotion as a way to intervene in agriculture without challenging the basic principles by which Gansu's farmers chose what to plant, harvest, and sell to the market. Despite his claims about foreign malfeasance being the root cause of China's opium conundrum, he knew that for farmers of opium poppy, the question was one of financial gain rather than propriety or identity, and Zuo largely accepted their pursuit of profit. Given this fact, he tried to harness the profit motive to guide farmers toward cotton and convince them that it could be at least as financially rewarding as opium poppy.

In this quest, choosing cotton was not purely a matter of recognizing cotton's price on local or regional markets. Commodity values surely played a large role, but the idea of obtaining profit was more complex than exchange in the marketplace. When making claims about the profitability of cotton, Zuo also paid attention to Gansu's environmental conditions—its soils, weather, and seasons. When he assessed these conditions, he found them suited to cotton cultivation, and reports about successful trial propagation of cotton seemed to verify his judgments. Obtaining profit from cotton was, from his perspective, the end result of a more complex process of matching plants to suitable landscapes, demonstrating their potential, and educating farmers about propagation.

Reaping profits through cotton cultivation was also a moral activity, at least in the eyes of Zuo and other officials, because doing so meant shunning opium poppy, a flower vilified in the 1870s. Consider a poem about anti-poppy patrols in the countryside. Four or five years after Zuo circulated the cotton manuals, a local magistrate in northern Gansu wrote a verse entitled “Prohibiting Opium Poppy” (*Cha jin yingsu* 查禁罌粟):

Patrolling the countryside near and far,

Treading the rivers east and west,

Toxic grass roots have been completely eliminated,
 And opium flowers are not seen.
 Wielding hoes in the early morning brume,
 Finishing with the soil in the evening sun,
 Evil breeds no longer remain,
 Still teach [them to cultivate] our cops—exactly the same.⁷⁰

循來鄉遠近 / 踏偏水西東 / 毒草根除盡 / 煙花過眼空
 揮鋤朝靄外 / 繫壤夕陽中 / 無復留非種 / 還教我稼同

Zhu Meixie 朱美燮, who served as the district magistrate in Haicheng 海城 from 1878 to 1880,⁷¹ indicates in this verse that opium prohibition was not merely a policy of restricting farmers from growing a specific plant. It was a more comprehensive, transformative program to rid the land of unacceptable vegetation—the “evil breeds” (*feizhong* 非種)—and introduce vegetation that was acceptable, what Zhu called “our crops” (*wo jia* 我稼). If carried out successfully, it would have changed the appearance of the landscape: fields full of bolls of cotton, perhaps, or parcels of wheat, rather than expanses of bulbous, multi-colored flowers. And it would also have meant that farmers, whether willingly or begrudgingly, altered their agricultural habits and their practices of cultivation to more faithfully reproduce normative patterns of farming, at least according to officials like Zhu.

Efforts to exterminate the so-called “evil grasses” from Gansu's countryside echoed wartime attempts to defeat and root out enemies of the imperial state, particularly the so-called “bandit Muslims” (*fei Hui* 匪回) against whom Zuo's army fought in the 1860s and 1870s. Perhaps like his

⁷⁰ Yang Jingeng, ed., *Haicheng xian zhi* [Gazetteer of Haicheng district] (1908), 10:9b.

⁷¹ *Haicheng xian zhi*, 8:2b.

military campaigns, Zuo's agricultural operations were strategic maneuvers to make the province safe for the Qing and accord with his agrarian vision for it, a vision tempered by stark divisions between right and wrong. To intervene in Gansu agriculture, he chose the morally palatable cotton and a select few other crops as cultivars because he believed they were profitable for farmers and could take to Gansu's climate and landscape. Seeing fields of cotton in 1873 was thus a victory on many potential levels: a moral victory of good over evil, a victory of agricultural techniques over local conditions, a victory of official knowledge over peasant ignorance, and a victory of “our crops” over “evil breeds.” However unsure and incomplete these victories may have been toward the end of the 1870s, visions of cotton offered hope that, on the agricultural front, Gansu might replicate the productivity of other parts of the empire.

Chapter 4

“Spreading the Profits of Zhejiang”: Sericulture in Xinjiang

Commoners obdurately stick to the “soil of mulberry trees” in the *Tribute of Yu*. Explaining sericulture, they say that when planting mulberries, one must select land with suitable soil quality to obtain the greatest profit. They always act as if marginal areas have limitations. They are not aware that any household with five *mu* can plant mulberry trees and any family with a woman can raise silkworms. In this world, any place with soil is one where mulberry trees can be grown and silkworms can be raised.

—Shen Bingcheng, *Summary of Sericulture* (1871)¹

世人泥禹貢桑土。既蠶之說，謂種桑之地必擇土性所宜，以致天下大利。輒為方隅所限。不知五畝之宅可樹桑，匹婦之家可飼蠶。天下有土之地皆可種桑之地，皆可養蠶之地也。

The intense summer heat in Turpan may have already begun to stifle the oasis city and its arid farming villages when, on a day in late May 1889, an anxious imperial functionary sent a missive to Urumqi pleading for direction. Having arrived at the post almost three years earlier, the man had gained some experience supervising the city's military clothing bureau and its sericulture bureau. He was evidently troubled that these two Qing government bureaus ran increasingly large fiscal deficits as the years passed. But what truly exasperated him were the previous day's events at the sericulture

¹ *Tribute of Yu* (*Yu gong* 禹貢), a chapter within the *Classic of History* (*Shujing* 書經), records the geographical particularities of regions in ancient China. One *mu* 畝 equals one-sixth of an acre. Shen Bingcheng, *Cansang jiyao* [Summary of Sericulture], (Chang Zhen tong hai dao shu, 1871), preface:1a.

bureau, where dozens of Turkestani youth (*chantong* 纏童) labored to manufacture thread and silk cloth from cocoons purchased in the villages around Turpan and beyond. He solicitously recounted how, even though these young Turkestanis had never before expressed any dissent, “suddenly yesterday, each sericulture foreman extorted money for daily expenses (*yancaiyin* 鹽菜銀) [from us].” He attributed their effrontery—their demands for greater remunerations—to their malfeasance: foremen like this shirked corvée duties and hired themselves out for sericulture work several months at a time, yet knew nothing of the proper schedule for salary payments. As the imperial functionary lamented to superiors in the provincial capital, the young Turkestani workers had already begun to harbor “minds of dissent” (*yixin* 異心) owing to the incitement of these foremen. With mounting debts and obstreperous laborers, the future of Qing-sponsored sericulture in Turpan was in doubt.²

The potential fate of the Turpan bureau as it appeared to this official in 1889 stood sharply at odds with the optimistic proclamations of Shen Bingcheng 沈秉成 (1823-1895) about marginal territories being fertile land for sericulture. Following the social dislocation and ecological destruction of the Taiping Rebellion, Shen and an expanding group of activist governors promoted mulberry cultivation and silk production as one of the foremost economic panaceas of the times. Shen's vision of sericulture seemed to champion household production wherever the family lived or migrated in the post-conflict era, regardless of environment or custom. As long as the household had enough land and labor, local conditions were to make no difference.

In practice, however, late nineteenth-century promotions of sericulture relied upon a highly specialized and commercialized template of production from a very specific location within the empire. Shen and others looked to northern Zhejiang province, and particularly to Huzhou

² GX15/5/1 (1889), XJDQ 15-30-1009.

prefecture, to furnish everything from a prosperous model of political economy, to the expertise of silk craftsmen, right down to the mulberry and silkworm organisms. Huzhou became the top choice among these officials for hiring experts and purchasing the primary means of production—trees and insects—to be brought back to the districts they governed. The vogue for Huzhou sericulture forged expansive networks of commerce between this center of silk production and its peripheral territories.

Campaigns to promote sericulture also more tightly ensnared Qing localities and subjects in a complex system of social relations that included European merchants, Chinese officials, Huzhou experts, and local apprentices and farmers. The young Turkestani men in the Turpan sericulture bureau did not merely produce silk. They labored within the ambit of imperialisms, European and Qing. They may have attempted to strengthen their own positions within the system in May 1889 when they confronted officials over pay. But they were also subject to the visions of Qing officials who intended them to be willing recipients of Chinese sericulture expertise, workers capable of feeding silk demand on the world market, and residents of a territory more firmly incorporated into the empire and attached to China proper.

Humans were not the only organisms shaping the system of social relations in the late Qing era. The mulberry tree and the silkworm also played crucial roles inasmuch as they acted as the primary means of production for the industry. When Zuo Zongtang scrambled to expand agrarian production in Xinjiang beginning in the late 1870s, he followed Shen Bingcheng's initiative to hire experts and purchase huge numbers of mulberry trees and silkworm eggs in Huzhou. As bulk commodities, these organism embodied sets of knowledge distinct from their counterparts elsewhere in the empire. Human techniques of selection, cultivation, and modification had altered

and reshaped the mulberries and silkworms over centuries of practice. Transplanted into new environs, they retained their accumulated histories of human modification and their social characteristics as “biological artifacts” and products of Huzhou expertise.³ They were, in other words, subtle colonizers in new lands alongside the people who brought them—the same ones who had opened the Turpan sericulture bureau and had fancifully imagined a thriving Xinjiang silk industry.

The Huzhou Model and the World Market

The Huzhou model emerged out of crisis on the southern banks of the lower Yangzi River sometime in the 1860s. Like other places in China's agricultural heartland, this region's environment had been devastated by the Taiping catastrophe. A British naval captain who was charting his way up the Yangzi in 1861 put ashore at the city of Zhenjiang, where he discovered beyond its crumbling walls “nothing but a treeless country” where destroyed countryside hamlets “had the appearance of a number of Irish villages after the famine.” Perched on a hillock, the captain peered across the landscape and inside the walls, finding only a “heap of *débris*” where houses had once stood. Amidst the destruction, he could hardly mask his excitement that the countryside was “rapidly regaining a state of nature” where pheasants, quail, rooks, jackdaws, and ducks flocked in unimaginable abundance. Yet the enticing possibility of shooting these fowl or other flourishing fauna did not leave him oblivious to the “distinctive mark” of the Taiping landscape stretching from Zhenjiang to Wuhu, several hundred kilometers upriver: the startling “entire absence of trees.”⁴

³ This term comes from Edmund Russell, “Introduction: The Garden in the Machine: Toward an Evolutionary History of Technology,” in *Industrializing Organisms: Introducing Evolutionary History*, ed. Susan R. Schrepfer and Philip Scranton (New York: Routledge, 2004), 1.

⁴ Thomas W. Blakiston, *Five Months on the Yang-tszé; with a Narrative of the Exploration of its Upper Waters, and*

Eight years later, a forty-six-year-old native of the district of Gui'an in Huzhou moved to the southern banks of the Yangzi near Zhenjiang. Perhaps new vegetation had grown green and had covered some of the landscape's wartime scars, but in late 1869, the man, Shen Bingcheng, toured each village, surveyed the land, and discovered the country to be primarily “vast, empty soil” (*kuangtu* 曠土).⁵ A middling Qing official, Shen had received imperial orders to organize local military preparations, but the poverty and emptiness of the countryside gripped him. Across the barren land where thorny brambles extended almost limitlessly, fields remained unclaimed years after the Taipings had disappeared. What Shen found most dissatisfying about these scenes was the vacant land lying fallow with “untapped profits” (*yuli* 餘利).⁶

Shen admitted no surprise that the downward spiral of warfare, destruction, desertion, and desolation led to unending wasteland. But the most basic issue was not social conflict that had left the districts of Zhenjiang heavily depopulated.⁷ Rather, Shen decried farmers' lack of knowledge about how best to use the soil. He faulted the customs of the people (*minfeng* 民風) for not fully understanding the techniques of agriculture and sericulture,⁸ leaving them ignorant of how to raise mulberry trees and silkworms and unable to derive their livelihoods in a skillful way from the “natural profits of Heaven and Earth” (*tiandi ziran zhi li* 天地自然之利). Yet Shen imagined how easy it could be. He claimed to have once seen an eight-member family who pulled themselves out of poverty by raising ten wicker baskets of silkworms and reeling the silk, producing an income

Notices of the Present Rebellions in China (London: John Murray, 1862), 7-9, 55.

⁵ Shen, *Cansang jiyao*, preface:1b.

⁶ Shen, *Cansang jiyao*, guitiao:1a.

⁷ In the district of Dantu, the population dropped from around 330,000 to little over 100,000 between 1859 and 1867. *Dantu xian zhi* [Gazetteer of Dantu County] (1879), 12:18b.

⁸ Shen, *Cansang jiyao*, guitiao:1a.

equivalent to crop production on 100 *mu* of land.⁹ Apocryphal though Shen's claim may have been, it confirmed to him the value of sericulture in reconstruction.

Eager to create wealth and put peasants and soil to work, Shen planned to train local farmers in the entire process of sericulture. The Huzhou native reportedly consulted with local elders, gathered monetary contributions, and dispatched subordinates to his home prefecture to purchase over 200,000 mulberry saplings and hire workers skilled in their cultivation.¹⁰ Within the city, where there had been sericulture bureaus (*cansang ju* 蠶桑局) before the warfare, Shen proposed experimenting with mulberry tree cultivation.¹¹ He also requested that the project's chief supervisor, Wu Liufu 吳六符, draft regulations for establishing city and countryside mulberry and sericulture bureaus at which farmers could register to receive mulberry saplings. Shen also purchased silkworm eggs and invited “silkworm masters” (*canshi* 蠶師) to travel the region promoting silk production and spreading their knowledge. In Zhenjiang's southern outskirts, in the district of Dantu, Shen set up a mulberry tree bureau (*kesang ju* 課桑局) where specialists instructed farmers how to tend Huzhou trees, utilize their leaves for raising silkworms, and reel cocoons into silk thread.¹² What Shen brought to the lower Yangzi city was, in other words, a developed set of productive practices along with their corresponding organisms, the highly productive mulberry trees and silkworms of Huzhou.

Shen's pioneering attempts at Huzhou sericulture in Zhenjiang may have remained little more than regional reconstruction policy had he not recorded them in his *Summary of Sericulture*

⁹ Shen, *Cansang jiyao*, guitiao:1b.

¹⁰ Shen, *Cansang jiyao*, guitiao:1b.

¹¹ Shen, *Cansang jiyao*, guitiao:1b.

¹² Shen, *Cansang jiyao*, preface:1b; *Dantu xian zhi* (1879), 17:19a. For a reference to this, see Li Wenzhi, ed., *Zhongguo jindai nongyeshi ziliao* [Materials on modern Chinese agricultural history], (Beijing: Sanlian shudian, 1957), 1:883.

(*Cansang jiyao* 蠶桑輯要), a short text published several years later in the summer of 1871. In the preface, Shen recounted how it was Wu Liufu who had suggested compiling various production procedures pertaining to mulberry trees and silkworms.¹³ Shen answered the suggestion by explicating in detail a wide range of techniques, from grafting branches and feeding silkworms to operating silk looms. In fact, he devoted the vast majority of the text to these instructions for sericulture. Although Shen was surely knowledgeable about many techniques, he admitted to having “widely collected the sayings of various masters” in order to explain all of them.¹⁴

Yet Shen's work may also have served less utilitarian purposes. For one thing, the book was a textual encomium of his great-great grandfather, Shen Bingzhen 沈炳震 (1679-1738), who had penned a set of lyrical ruminations on twenty sericulture activities in the early eighteenth century. The living Shen appended his ancestor's work, entitled *Ballads of Sericulture* (*Cansang yuefu* 蠶桑樂府), to his own work.¹⁵ Perhaps far more significant than recognizing his debt to family heritage, however, was that Shen's text boasted of his project's successes and propagandized Huzhou sericulture. Whether in soil “high and flat or low and moist,” Shen proudly and imaginatively reported, his mulberries had “flourished into forest” and, after more than a year, eighty to ninety percent remained alive.¹⁶ Indeed, it was perhaps owing to his strong enthusiasm for the Huzhou mulberry tree as a robust cultivar suited to almost any landscape that Shen devoted all of his nine initial instructions to its cultivation. In an enticingly straightforward calculation of financial success aimed at sericulture's future acolytes, Shen proposed: “If today one grows an additional portion of

¹³ Shen, *Cansang jiyao*, preface:1b.

¹⁴ Shen, *Cansang jiyao*, preface:1b.

¹⁵ For citations of the elder Shen's work, see ECCP, 645; *Huzhou shi zhi* [Gazetteer of Huzhou City] (Beijing: Kunlun chubanshe, 1999), 616; Shen, *Cansang jiyao*, preface:1b.

¹⁶ Shen, *Cansang jiyao*, preface:1b.

mulberry trees, another year he will obtain an additional portion of profit.”¹⁷ Such forthright optimism urged readers in any location to adopt the techniques and the organisms explained within the text.

Like nineteenth-century sericulture production in the lower Yangzi delta, Shen's Huzhou model assumed the existence of a world market for silk textiles. Despite his idealization of the family unit of production and his claim that promoting sericulture enabled local people to clothe themselves, he was not envisioning production for self-sufficiency. Shen wanted to unleash the “private ambitions” (*si yuan* 私願) of individual producers who would clamor to supply the market in silks, which reached from local cities to imperial ports around the world. Back in his home region, he had “personally seen the silks produced every year” and had “met on the road those who come from all over to purchase them.”¹⁸ Inasmuch as Shen knew that foreign trade could boost prospects for the success of Huzhou sericulture, his plans coincided with the basic thrust of post-Taiping economic reconstruction in the lower Yangzi delta.¹⁹

Xinjiang Sericulture and the Possibilities of the World Market

A decade after Shen Bingcheng first adopted the Huzhou model in Jiangsu province, Zuo Zongtang picked up on the idea of deploying Huzhou trees, silkworms, and experts thousands of kilometers west, clear across the empire. In 1878, Zuo's army had just recaptured the last of the

¹⁷ The sericulture enthusiast reported that after “cultivating mulberry trees for three years, [one may] pick leaves for a lifetime.” Shen estimated that each *mu* of land could support forty to fifty trees, which in turn could produce leaves sufficient for silk production of eight to nine *jin* 勛. One *jin* equals half a kilogram. See Shen, *Cansang jiyao*, guitiao:2a.

¹⁸ Shen, *Cansang jiyao*, preface:1a.

¹⁹ Lillian Li, *China's Silk Trade: Traditional Industry in the Modern World, 1842-1937* (Cambridge, MA: Harvard University Council on East Asian Studies, 1981), 134.

southern cities of Xinjiang from the remnants of Muslim resistance.²⁰ Searching for a way to invigorate reconstruction and curtail the influence of Russian traders and diplomats, he chose to emphasize silk production in major cities across the territory. Although he articulated his vision for Xinjiang sericulture in a lengthy April 1880 memorial to Beijing that outlined many other strategies of reconstruction, projects like repairing waterworks and rebuilding public infrastructure did not offer the same profitable possibilities as mulberry cultivation and silkworm raising sponsored by the state. Unlike other measures, silk production would be aimed at filling the demands of the international markets.

According to Zuo, Xinjiang sericulture could be poised to supply markets both east and west, but the primary customers would be Kazakhs and Russians. The general acknowledged how Western countries (*taixi* 泰西) increasingly consumed Chinese silks from bustling seaports like Shanghai, but he vented frustrations that overland trade routes for manufactures were slow and costly and would likely hinder sales of Xinjiang silks in the east. Yet in Xinjiang itself, market demand for silk had gone locally unfulfilled. Zuo noted how the nomadic states (*xingguo* 行國) of the northwest had increasingly consumed silks and woolens in the recent era even though they had long used felts or animal hides for their clothes, quilts, and tents. To obtain these textiles, they conducted business with merchants from the “central lands” (*zhongtu* 中土) far to the east in China proper and bypassed Xinjiang products altogether, even though they still had to deal with the pitfalls of overland travel.²¹

²⁰ On the thirteen-year period of Muslim rule in Xinjiang after the defenestration of Qing authority, see Hodong Kim, *Holy War in China: The Muslim Rebellion and State in Chinese Central Asia, 1864-1877* (Stanford: Stanford University Press, 2004); James Millward, *Eurasian Crossroads: A History of Xinjiang* (New York: Columbia University Press, 2007), 116-130.

²¹ GX6/4/17 (1880), ZZQ, 7:520.

Xinjiang's current silk output also left Russians and other border merchants unsatisfied and unchecked, at least according to Zuo's estimate.²² Clearly very anxious about Russian intervention in the territory, the general lamented the fact that Russian merchants regularly journeyed far inside the precarious Qing borders to purchase merchandise that could potentially be produced much more closely in the cities of Xinjiang. This vexed him all the more because Russian authorities had been pressing for consulates in several northwestern cities and they still remained in control of the Ili Valley as of 1880, a point of contention in Russian-Qing relations.²³ He admitted that some merchants purchased silk in Xinjiang, but they continually proposed traveling to Sichuan because quantities of silk along the northwestern border were insufficient to meet the demand.²⁴

Zuo suspected that, by promoting sericulture, he could simultaneously reach strategic and economic goals. If Xinjiang produced cocoons in abundance and manufactured enough silk, then nomads, Russians, and other merchants would not have to travel far within Qing borders to conduct trade with the Chinese provinces. "All the various nomadic states of the northwest" could acquire their silks right in Xinjiang, obviating the need to "pass through Gansu to Sichuan to buy new silk."²⁵ This scenario would be mutually satisfying: "the other parties would obtain their profits, while I, for my part, could apply techniques for their control." In other words, deepening Xinjiang's connection to the international market would facilitate rather than hinder Chinese control of the region. Silk profits from trans-border commerce also translated into customs duties, so creating a

²² Prior to Zuo Zongtang's sericulture intervention in Xinjiang, at least some of the region's silk manufactures were exported to Russia. See A.N. Kuropatkin, *Kashgaria, Eastern or Chinese Turkistan: Historical and Geographical Sketch of the Country; Its Military Strength, Industries and Trade*, trans. Walter E. Gowan (London: W. Thacker & Co., 1882), 85-88 *passim*.

²³ See Immanuel Hsu, *The Ili Crisis: A Study of Sino-Russian Diplomacy, 1871-1881* (Oxford: Clarendon Press, 1965).

²⁴ GX6/4/17 (1880), ZZQ, 7:521.

²⁵ GX6/4/17 (1880), ZZQ, 7:521.

thriving silk industry would increase the funds available to Zuo's military government and relieve the urgency of its finances.²⁶

Yet deepening Xinjiang's connection to international commerce could not be accomplished without thoroughly improving Xinjiang sericulture. The general acknowledged that Xinjiang already had mulberry trees and some silk production. In fact, the existing stock of mulberry trees appeared to be huge. As he reported to Beijing in 1880, “because the land of Xinjiang's southern region is basically suited to mulberry,” he had ordered subordinates to survey and calculate the total number of mulberry trees in their areas. Their responses indicated that people in northern and southern Xinjiang cultivated more than 800,000 trees in total.²⁷ Despite the arid climate and irrigated lands of the oases being fertile ground for mulberry trees, however, Zuo judged other factors of production inadequate for a thriving industry.

Mulberry trees may have dotted the landscape in many locations, but often there was no evidence of silkworms, a mismatch of natural resources that astonished Zuo. As he wrote to Gansu's provincial treasurer Yang Changjun 楊昌濬 (1827-1897) in the spring of 1880, “the Western frontier has none of the profits of silkworms, yet the mulberry trees produced are numerous and fine.” This mismatch grated against his sense of agricultural norms. Mulberry trees without silkworms meant foregoing the potential profits of the land and wasting its resources. What was natural for him was to simultaneously harness the productivity of both organisms: “This is nothing more than if one has mulberries, it is certainly fitting to have silkworms.”²⁸

Perhaps even more frustrating for him, local people seemed inept in matters of sericulture

²⁶ GX 6/4/17 (1880), ZZQ, 7:521.

²⁷ GX5/12/17 (1880), ZZQ, 7:468. He increased the estimated number of mulberry trees by 6,000 several months later. See GX 6/4/17 (1880), ZZQ, 7:521.

²⁸ GX6/0/0 (1880), ZZQ, 12:618.

even where silkworms did exist. He particularly criticized Xinjiang's laborers and their lack of skills. He complained that the “Turkestani Muslims (*chanhui* 纏回) do not know the methods for grafting mulberries or raising silkworms.” Even if they managed to raise silkworms for their cocoons or weave silk, the products of their labor were more or less worthless. He claimed that the silk they produced came out “stiff, its color muddled,” hardly the qualities that would enable integration into international markets.²⁹

The ineptitude of Xinjiang's Muslims in matters of sericulture indicated to Zuo a horrendous discrepancy between labor and resources. He fretted that, lacking sufficient expertise, the Turkestanis were incapable of putting mulberry trees and silkworms to the most profitable uses. Where mulberries thrived, “locals (*turen* 土人) just gather mulberry fruits as replacement for grain or refer to the mulberry as medicinal material, so the profits of silk are not widespread.” Earlier he had reported the same problem: if people used the trees at all, they often merely collected the fruits to feed themselves.³⁰ Utilizing parts of the tree as medicine was no more helpful for feeding silkworms. Zuo thus equated this usage with a monumental waste of nature's bounty: “Heaven gives rise to such fine profits, and people just abandon them—a pity indeed!”³¹ Since Xinjiang's Muslims did not use mulberry trees in the ways that accorded with Zuo's knowledge of sericulture, he ridiculed them for squandering their resources.

The benchmark by which Zuo appraised existing silk production in Xinjiang was none other

²⁹ GX5/12/17 (1880), ZZQ, 7:468.

³⁰ A later Xinjiang governor, Wei Guangtao 魏光燾 (1837-1915), repeated the same charge: “local people who produced mulberry trees took the mulberry fruits as a substitute for grain.” See Wei Guangtao, *Kanding Xinjiang ji* [Record of the suppression and pacification of Xinjiang] (1899), 8:15b. After being exiled to Xinjiang, Lin Zexu noted in 1846 the same thing about southern Xinjiang Muslims: they ate mulberries (along with melons) to stave off hunger. See *Lin Zexu quanji* [Collected works of Lin Zexu], (Fuzhou: Haixia wenyi chubanshe, 2002), DG26/2/10 (1846), 3:511.

³¹ GX5/12/17 (1880), ZZQ, 7:468.

than Huzhou. In his assessment, Zuo had quickly concluded that low-grade silk was “far inferior compared to the central lands (*zhongtu* 中土).”³² Zuo implied that, by comparison, northern Zhejiang people had done exceedingly well in utilizing the resources of the natural world and in turning them into profitable manufactures. As he noted several months after his initial appraisal of Xinjiang, “as for silk from the central lands (*zhongtu* 中土), its profits reach everywhere, and the products of Hu[zhou] in particular rank first in the central lands (*zhongtu* 中土).”³³ Huzhou sericulture—its products, its laborers, its technology—was thus the standard against which Zuo judged Xinjiang's Muslims and the silks they manufactured.

Spreading Zhejiang into Xinjiang

As the general in charge of Xinjiang military affairs, Zuo Zongtang adopted the Huzhou model for sericulture in order to cultivate more highly productive laborers, mulberry trees, and silkworms in the borderland. Under the arrangements made by Zuo's staff, sericulture specialists hired in Huzhou brought their expertise, their trees, and their insects across the empire to be reproduced throughout Xinjiang. In this wholesale copying of Huzhou's technology, Zuo intended to train local people and organisms and erase their perceived inferiorities relative to Huzhou. Or, as the general phrased it, he intended “to spread the profits of Zhejiang into Xinjiang.”³⁴

Spreading Huzhou practices required expert knowledge. By early 1880, Zuo had enlisted Zhu Yingtao 祝應焘, a former district magistrate from Hubei province,³⁵ and Hu Guangyong 胡光墉

³² GX5/12/17 (1880), ZZQ, 7:468.

³³ GX6/4/17 (1880), ZZQ, 7:520.

³⁴ GX6/4/17 (1880), ZZQ, 7:521.

³⁵ According to Zuo's memorial, Zhu Yingtao was a former district magistrate of Chongyang county, Hubei province, who had been relieved of his position over the purported mishandling of a case involving a dispute about trees. Despite the black mark on this man's official record, Zuo deemed him a good

(1823-1885), Zuo's longtime “purchasing agent” in Shanghai, to locate and hire skilled sericulture craftsmen in northern Zhejiang and make arrangements for their journey to the oases of Xinjiang. Since the mid-1860s, Zuo had relied upon Hu, a native of Hangzhou, to make arrangements for shipments of military supplies and large cash remittances.³⁶ Zuo chose Zhu largely because he was a Huzhou insider, a Zhejiang native, and “very familiar with all matters concerning sericulture.”³⁷ Zuo ordered these two men to recruit sixty sericulture experts from Huzhou who were knowledgeable in all aspect of the silk production process, from the propagation of mulberry tree stock and the grafting of mulberry branches to the reeling of silk thread and the use of looms. Zuo also charged Hu and Zhu with purchasing mulberry tree saplings and silkworm eggs in Huzhou and finding a means to transport them three to four thousand kilometers westward. Zhu was responsible for chaperoning the experts and their tools on the journey to Xinjiang.³⁸ By January 1880, Zhu and these craftsmen had reached Lanzhou, and as soon as they arrived in Suzhou, Gansu, they were to be dispatched beyond the western end of the Great Wall.

Human resources being spent on Xinjiang's development, these experts would serve as Xinjiang's direct link to Huzhou knowledge. According to Zuo, they would teach Xinjiang's Muslims how to do everything from propagating and grafting trees to bathing and boiling silkworm cocoons, reeling their silk, and weaving the thread into cloth.³⁹ They had been hired, in other words, to train Turkestanis in Huzhou practices and to raise the productivity of local sericulture. Initially, they would be deployed in sericulture bureaus established in the oasis cities along the main transportation

candidate for sericulture envoy in both Zhejiang and Xinjiang.

³⁶ C. John Stanley, *Late Ch'ing Finance: Hu Kuang-yung as an Innovator* (Cambridge, MA: East Asian Research Center, Harvard University, 1961), 1-18.

³⁷ GX5/12/17 (1880), ZZQ, 7:468.

³⁸ GX6/4/17 (1880), ZZQ, 7:521.

³⁹ GX6/4/17 (1880), ZZQ, 7:521.

routes between Anxi (in northwestern Gansu province) and Aqsu (located in western-central Xinjiang), including Dunhuang, Hami, Turpan, and Kucha. Soon thereafter, Zuo hoped to promote silk production in the “four western cities,” namely Khotan, Yakan, Yengisar, and Kashgar.⁴⁰ Only after establishing bureaus for sericulture training in these ten sites did Zuo expect to expand the program to cities north of the Tianshan mountain range, into northern Xinjiang.

Although oases south of the Tianshan grew mulberry trees in great multitude, Zuo deemed the trees inferior to those in Huzhou and in need of modification. Many were “wild mulberry trees” (*shengsang* 生桑) and less advantageous than domesticated varieties for raising silkworms because of their relative paucity of leaves. Another report suggested that Xinjiang's farmland contained trees with “large trunks and emaciated leaves”—nearly worthless to sericulture since many of the silkworms that ate their leaves “turned stiff and died.”⁴¹ But Zuo was confident that such trees could be modified to suit new production initiatives. Zuo optimistically envisioned that “as soon as they are altered by grafting (*yjie* 移接), then [their leaves] can raise silkworms.”⁴² Because new branches could be grafted onto older trunks, Huzhou sericulture would flourish more quickly in southern Xinjiang, where tens of thousands of trees already grew, rather than in locations where mulberry trees would have to be started from seedling.

In the same bureaucratic missives, Zuo remarked upon modifying mulberries and training Turkestanis. Both were subject to his future vision of Xinjiang sericulture and, finding deficiencies in both, the general imagined the positive transformation of trees and people. With trees grafted and “Turkestanis (*chanmin* 纏民) diligently becoming familiar with [sericulture] work,” he foresaw the

⁴⁰ GX6/4/17 (1880), ZZQ, 7:521. For reference to the “four western cities,” see GX3/11/5 (1877), ZZQ, 6:776.

⁴¹ *Xinjiang tuzhi* (Dongfang xuehui, 1923), 28:5b; Li Wenru, *Xinjiang dili zhiwu kao* (MS, n.d.), cansang:1b.

⁴² GX6/4/17 (1880), ZZQ, 7:521.

possibility of improving the industry, increasing its output, and connecting its products to the international market along the Qing border.⁴³

Zuo issued a follow-up report to Beijing in January 1881 describing the early successes of the “trial run of sericulture bureaus and business” over the previous year.⁴⁴ About the time Zuo arrived in Hami in mid-1880, Zhu Yingtao sent him samples of silk recently produced in the bureaus of Hami, Turpan, Kucha, and Aqsu. After personal inspection, Zuo judged the cloth “white and resilient, no different from the central lands (*zhongtu* 中土).”⁴⁵ He also had reason to be increasingly optimistic about Xinjiang's mulberry stock. In a comment at odds with his own assessment the previous year, some Huzhou craftsmen claimed that “in comparison with Zhejiang, the leaves produced by mulberries of this land are large, juicy, and thick, truly suitable for silkworms.”⁴⁶ The experts of purportedly the best sericulture practices in the empire had put Xinjiang's mulberry trees at least on par with those of Zhejiang.

But shortcomings related to local production still hindered the industry. Even if Xinjiang mulberry leaves could adequately nourish silkworms, the experts from afar regretted that “when we arrived, the season had already passed, so there's not much silkworm raising.” The silkworms in Xinjiang were also lackluster. Zuo reported that if Zhu Yingtao were to purchase “local cocoons” (*tujian* 土繭) from Turpan, Kucha, or Aqsu, they would be flimsy and yellow, such that the “silk thread obtained would not reach one-half of [what can be done with] Zhejiang mulberry trees.” In fact, Zhu had inspected numerous bolts of various types of silk and had found them to be inferior

⁴³ GX6/4/17 (1880), ZZQ, 7:521.

⁴⁴ GX6/12/2 (1881), ZZQ, 7:630.

⁴⁵ GX6/12/2 (1881), ZZQ, 7:631.

⁴⁶ GX6/12/2 (1881), ZZQ, 7:631.

to Zhejiang's products.⁴⁷

Faced with these disappointing outcomes, Zuo Zongtang reiterated the importance of inputs and expertise from Huzhou. He proposed that if the recently established sericulture bureaus relied even more upon Zhejiang mulberry trees (*Zhesang* 浙桑) for local production, “material [inputs] can basically be saved.” He also remained optimistic that Xinjiang workers could reel threads and weave marketable silk on par with the manufactures of Huzhou if they followed the techniques of the experts and pressed more Zhejiang silkworms into productive service. In other words, he remained wedded to the goals of transforming Xinjiang sericulture in the image of the Huzhou industry, causing the “profits (*li* 利) of Zhejiang to move into the northwest,” and finding ways to “manage foreigners” (*yu yi* 馭夷) and control the border.⁴⁸

Huzhou Organisms and the Circulation of Knowledge

At the heart of the Huzhou model was the mulberry tree and the techniques for its cultivation. As Shen Bingcheng and other late nineteenth-century sericulture promoters believed, to produce silk of the finest quality, one had to start with the highest quality inputs. According to Shen, differences in land were not overly concerning; mulberries could flourish any place with soil and people to tend them. Silkworm varieties mattered, too, but the means of differentiation and alteration were not as highly developed as those for the mulberry tree. Shen and others thus gave their primary attention to the tree and particularly to the leaves it produced. As farmers had long recognized, although silkworms ate leaves from many types of trees, the quality of the silk fibers

⁴⁷ GX6/12/2 (1881), ZZQ, 7:631.

⁴⁸ GX6/12/2 (1881), ZZQ, 7:631.

they produced varied widely.⁴⁹ Even among mulberry trees, large variations in leaf size, texture, and moisture content determined the abundance and quality of fibers spun by the silkworms. So when Shen Bingcheng dispatched people to purchase hundreds of thousands of mulberry trees from his hometown in 1869 even though Danxi, a district of Zhenjiang, had always had “wild mulberry trees” (*yesang* 野桑) and cudranias (*zhe* 柘) and even had a small stock of mulberry trees from Huzhou,⁵⁰ he was likely thinking primarily of the leaves to be produced by the new transplants.

For Xinjiang, Zuo also chose the engineered mulberry trees that Huzhou's farmers had developed. The “Huzhou mulberry trees” (*Husang* 湖桑) that Zhu Yingtao and Hu Guangyong purchased in the region south of Lake Tai were products of centuries of selection as well as amalgamated specimens containing parts from different varieties of mulberry trees. As early as the Northern Song (960-1127), people in Huzhou had begun to improve the leaves of the mulberry tree by combining the branches and trunks of different trees through grafting, gradually creating trees that became known to the local population as distinctly “Huzhou mulberry trees,” a name in existence by the Ming (1368-1644).⁵¹ Later, Huzhou cultivators adopted methods for pruning branches and creating trees with short trunks; Shen's ideal mulberry, for example, was fully mature at 1.6 to 1.9 meters tall (see Figure 3).⁵² Such modifications gradually made mulberry tree leaves larger, more numerous, more nutrient rich, and easier to harvest. They also reduced the amount of fruit produced by the tree, thus leaving even more nutrients for the leaves. These changes enabled

⁴⁹ Li, *China's Silk Trade*, 11.

⁵⁰ *Danxi xian zhi* (1879), 17:19a, quoted in Li Wenzhi, ed., *Zhongguo jindai nongyeshi ziliao* [Materials on modern Chinese agricultural history], (Beijing: Sanlian shudian, 1957), 1:426.

⁵¹ *Huzhou shi zhi*, 617-18. Another source suggests that the practice of grafting mulberry trees became widespread during the Yuan era (1276-1368). See Dieter Kuhn, *Science and Civilisation in China*, v. 5, pt. 9, *Textile Technology: Spinning and Reeling* (Cambridge: Cambridge University Press, 1988), 289.

⁵² Pruning was to keep the tree at this height, between five and six *chi* 尺. One *chi* equaled approximately one-third of a meter in the Qing period. Shen, *Cansang jiyao*, zashuo:12a.

producers to feed higher quality leaves to more silkworms, which increased the output of silk fibers considered to be of high quality.⁵³

Categorizing trees was a key step in the process of producing mulberry leaves. In 1880, when Zuo had just initiated the project to transform Xinjiang sericulture, Huzhou native Wang Yuezhen 汪曰楨 (1813-1881) reprinted a detailed summary of techniques for raising mulberry trees and silkworms and transforming their labors into silk cloth. In his explanations, he emphasized the significance of getting the right types of trees for production. Wang described two categories of mulberry trees, domesticated mulberries (*jiasang* 家桑) and wild mulberries (*yesang* 野桑). The former, he claimed, had “round, thick, and juicy” leaves and few large fruits, and had also long been known as Shandong mulberries (*Lusang* 魯桑). The undomesticated trees, also called thorny mulberries (*jingsang* 荆桑) and mountain mulberries (*shansang* 山桑), were almost the opposite: they bore numerous small fruits and “frail, pointy” leaves. Aside from the poor quality of their leaves, undomesticated trees produced too many fruits, at least according to the households who raised them.⁵⁴ In contrast to Xinjiang's mulberry trees, which local people used specifically for fruit, the best trees in Huzhou bore little or no fruit.

After differentiation, grafting was a particularly important method for engineering resilient trees with thick, abundant leaves. As sericulture manuals of the nineteenth century attest, different parts of the domesticated and wild trees could be combined to create the ideal tree for leaf production and longevity. While domesticated varieties had the richest and most productive leaves and branches, its roots and trunk were known to be flimsy and to lack resiliency. The trunks of the undomesticated varieties, by contrast, were commonly said to be sturdy. To harness the useful

⁵³ For a short explanation of historical changes in Huzhou mulberry cultivation, see *Huzhou shi zhi*, 617-621.

⁵⁴ Wang Yuezhen, *Hu can shu* [On Huzhou sericulture], (1880), 1:12b.

qualities of both types of trees, authors suggested grafting the leaf-rich branches of the domesticated varieties onto the strong roots and trunks of the undomesticated varieties.⁵⁵ In this way, Huzhou people seem to have engineered mulberry trees to suit their production goals.

Distinct silkworm varieties had also emerged through a gradual process of selection and simplification. By the late Ming era, silkworm eggs of superior quality, known as lotus seed eggs (*lianxin zhong* 蓮心種), had been bred in Huzhou's Nanxun township. This variety purportedly produced fine, white, strong silk fibers. By the mid-Qing era, many refined varieties had been developed in the region, and specific strains were often associated with their towns of origin. During the Qing period, the lotus seed variety remained the most common, and producers throughout Huzhou prefecture and in cities in Zhejiang and Jiangsu provinces utilized it. Another variety, the torrey cocoon egg (*fei jian zhong* 榧繭種), was also widely cultivated because the silkworms ate fewer leaves, developed quickly, and had large, white cocoons that were easy to unravel.⁵⁶

Despite the development of these new silkworm varieties, modifying silkworms through selection seems to have been less significant to Qing sericulture than transforming mulberry trees into highly productive organisms. When describing Huzhou, Wang Yuezhen admitted that local people were ignorant of everything beyond the most commonly raised silkworm varieties. His comment suggests that the silkworm egg trade had become highly commercialized, with the result that homegrown knowledge of silkworm varieties was uncommon and was becoming increasingly marginalized. People who cultivated silkworms likely chose the best varieties available to them, but their main way to improve the process of silkworms spinning silk was by managing their life cycle,

⁵⁵ Ye Shizhuo, “Bian sang zhonglei” [Differentiating mulberry varieties], in *Zeng ke sangcan xuzhi* [Reprint of the Essentials of Sericulture], (1872), 17a.

⁵⁶ *Huzhou shi zhi*, 624-625.

which involved regulating the mulberry leaves they ate. Unlike mulberry trees, which the people of Huzhou had been reshaping for hundreds of years by selecting, grafting, and pruning them, Huzhou silkworms did not undergo substantial modification until the twentieth century, when early unsuccessful attempts to create pure strains were followed by the importation of Japanese silkworm varieties in the 1920s.⁵⁷

Human modulation of the immediate environment was far more significant for raising silkworm productivity and enabling them to thrive in new locations. Judging by Wang's admonitions to aspiring sericulturalists, Huzhou silkworms were extremely fickle creatures highly susceptible to changes in temperature, humidity, mulberry leaf quality and quantity, and other variables. Wang cautioned his readers to vigilantly monitor the creatures to forestall the onset of disease and to reduce the chances that they would come into contact with cold air, which could diminish their output. Indeed, only constant supervision of their living conditions and small interventions in their micro-environments would enable them to become highly productive. Raised in climate-controlled sheds, they were far more removed from the vicissitudes of weather and season than mulberry trees, but then also depended more heavily on people for their productivity. "All these affairs," the Huzhou scholar instructed, "succeed with labor and fail with leisure."⁵⁸

Perhaps because silkworm productivity depended so much on human labor, Wang exuded confidence that people could profitably introduce Huzhou sericulture to other regions.⁵⁹ And just as

⁵⁷ *Huzhou shi zhi*, 625.

⁵⁸ Wang, *Hu can shu*, 1:5b.

⁵⁹ In fact, Wang had spearheaded the compilation of the sericulture section of the 1872 edition of the *Huzhou fu zhi* [Huzhou prefectural gazetteer], but to increase the exposure of outsiders to this knowledge and make it easier for those interested to access Wang's compendium of sericulture facts without having to purchase the whole gazetteer, the scholar republished that specific section as a separate work, *Hu can shu* [On Huzhou sericulture].

the silkworm could be more productive through human supervision, so too could the mulberry tree produce a better harvest of leaves with proper soil management. Quoting from another Huzhou source, Wang reiterated that if one “manages the soil correctly and is able to accord with the nature of the mulberry, thus will grow leaves luxuriant, large, and thick.”⁶⁰ Like Shen Bingcheng, Wang envisioned readers adopting his advice to recreate Huzhou-style silk production in hinterlands and marginal territories.

Yet Wang also cast a shadow of doubt upon any attempt to follow Huzhou's methods too closely. Concerned that some readers might rigidly deploy the Huzhou model and completely disregard the diversity of landscape and custom, Wang wrote: “The natural conditions (*fengtū* 風土) in all directions have different things that are suited to them, so one cannot be completely restricted to Huzhou's existing methods. This, then, means adapting the means to do what is most profitable (*biantong jinli* 變通盡利), which I leave as a task for others.”⁶¹ This unabashed Huzhou promoter thus left open the possibility that officials in other locations would neither exactly nor completely replicate all aspects of sericulture from his home region as they endeavored to tap into the profits of the land.

Initial Outcomes of the “Zhejiang to Xinjiang” Plan

Late in 1880, with Zuo Zongtang about to leave the northwest for Beijing, Hunan native and military general Liu Jintang 劉錦棠 (1844-1894) became the next imperial commissioner of Xinjiang military affairs and inherited the project to transform Xinjiang's sericulture. Picking up where Zuo left off, Liu ordered Zhu Yingtao to the “four western cities” to establish bureaus to

⁶⁰ Wang, *Hu can shu*, 1:11a-b.

⁶¹ Wang, *Hu can shu*, preface:1b.

train locals in the technologies of silk production. He also requested Hu Guangyong to arrange another bulk shipment of mulberry saplings and silkworm eggs from Zhejiang. From his predecessor's perspective, these orders indicated that Liu was enacting measures “to do what is most profitable” (*jinli* 盡利).⁶²

Yet transporting hundreds of thousands of fragile mulberry saplings clear across the empire was no easy task. In 1881, Zuo enthusiastically endorsed Liu Jintang's reconstruction initiatives, which gave the border territory the “prospect of rapid development,” but the quality of Huzhou saplings in the latest shipment was not satisfactory.⁶³ Perhaps the circuitous route had stalled their journey: instead of being shipped overland via Hubei province as they had in the first shipment, these mulberries first sailed to Tianjin and then traced the long, overland route westward.⁶⁴ By the beginning of January 1881, many of the young trees remained east of Jiayuguan and had no chance to reach their intended destinations in the oasis cities. This problem had arisen despite Hu Guangyong's claims that the quality of the trees was better than the previous shipment. An anxious Zuo was displeased with Hu's performance and frustrated by reports of saplings' “furrowed bark and shriveled flesh” particularly because the Aqsu sericulture bureau awaited the shipment. That bureau's original request for trees had been small, but after some official recognition of the city's progress in silk production, the bureau wanted more. Zuo claimed that those in the imperial household (*gongfu* 宮府) had been “surprised by the unexpected,” namely the high quality of samples produced in the bureau the previous year. Eager to boost the recognition of Xinjiang silks, Zuo wanted the work of the Aqsu bureau to be supported, not hindered by problems with basic inputs.⁶⁵

⁶² GX6/12/2 (1881), ZZQ, 7:631.

⁶³ GX7/0/0 (1881), ZZQ, 12:693.

⁶⁴ *Cansang zhibu jiyao* (Henan cansang zhiwuju, 1881), 28a.

⁶⁵ GX7/0/0 (1881), ZZQ, 12:693.

The Perception of Success and Henan Sericulture

Despite the ambivalent initial outcome of government-sponsored sericulture in Xinjiang, the allure of the Huzhou model and its perceived successes in the far northwest enticed officials elsewhere to start their own projects. Perhaps because Zuo Zongtang had won imperial accolades for reconquering Xinjiang, some of his counterparts simply expected that reconstruction projects initiated under his leadership would be successful. “If Grand Secretary Zuo Zongtang previously did this in Gansu's territory and has already had remarkable success,” Henan provincial governor Tu Zongying 涂宗瀛 (1812-1894) presumptuously reasoned in March 1881, “then Henan can also similarly promote it.”⁶⁶

For Henan's project, Governor Tu did not solely rely upon Zuo's reputation or an inkling of what was unfolding in Xinjiang. Shen Bingcheng himself may have played a role in Henan, given that he was serving as the province's judicial commissioner (*niesi* 臬司) just as Tu and his other subordinates were arranging to establish mulberry promotion bureaus. Although the governor may not have closely consulted Shen, Tu was certainly aware that he had “brought with him his self-published *Summary of Sericulture*,” which the governor judged to be “fine and detailed.”⁶⁷

The province that Tu governed urgently needed a panacea in the aftermath of famine that had killed millions three years earlier and had left the outskirts of Henan's capital city, Zhengzhou, almost completely without trees—perhaps as lower Yangzi riparian landscapes had appeared two

⁶⁶ GX7/3/2 (1881), LFZZ 03-7068-103; *Cansang zhibin jiyao*, 14b; Wang Shumin and Wang Yanxi, ed., *Huang Qing Dao Xian Tong Guang zonyi* [Memorials from the imperial Qing reigns of Daoguang, Xianfeng, Tongzhi, and Guangxu], (Shanghai jiuqingzhai, 1902), 38:5a.

⁶⁷ GX7/3/2 (1881), LFZZ 03-7068-103; Wang and Wang, ed., *Huang Qing Dao Xian Tong Guang zonyi*, 38:5a.

decades earlier.⁶⁸ Despite the destruction, Tu imagined that the “fertile and thick soils” of his province would be able to foster the growth of almost anything, including Huzhou mulberry trees and domesticated silkworms, which he deemed far superior to Henan's lackluster “local mulberries” (*tusang* 土桑) and “wild pupae” (*yeiyong* 野蛹). The southern city of Nanyang produced some silks and damasks, but they were not of sufficient quality to circulate throughout the province.⁶⁹ With the governor's permission, Wei Lunxian 魏綸先 raised financial contributions from local elites for the purchase of 120 *mu* 畝 to set up a provincial sericulture bureau, a site with test fields and workshops.⁷⁰ Wei then dispatched officials on the several-month-long journey to northern Zhejiang for the acquisition of start-up materials: some 230,000 mulberry saplings, over 360 sheets of silkworm eggs, twenty-four Huzhou craftsmen with expertise in trees and looms, and all sorts of sericulture tools. Perhaps for comparative purposes, Wei also arranged to purchase 30,000 local mulberry trees as well as some oaks—chestnut oak (*xiang* 橡), daimyo oak (*hu* 榲), and oriental white oak (*qinggang* 青櫚)—whose leaves could feed wild silkworms.⁷¹ While the head bureau near the provincial capital “experimentally cultivated [mulberry trees] as a means to promote” sericulture, district bureaus were to supply saplings to farmers outside the capital.⁷²

Henan's sericulture bureaus also acted as places for purveying specialist knowledge to apprentices. In hiring several dozen skilled artisans from Zhejiang—not necessarily an easy task, since Xinjiang had already “hired off many workers” and some of those who remained were

⁶⁸ *Cansang jiyao bebian* (1880), preface:1a. On the famine of 1877-78, see Kathryn Edgerton-Tarpley, *Tears from Iron: Cultural Responses to Famine in Nineteenth-Century China* (Berkeley: University of California Press, 2008).

⁶⁹ GX7/3/2 (1881), LFZZ 03-7068-103; Wang and Wang, eds., *Huang Qing Dao Xian Tong Guang zouyi*, 38:5a.

⁷⁰ *Cansang zhibin jiyao*, 4a.

⁷¹ *Cansang jiyao bebian*, 1a.

⁷² GX7/3/2 (1881), LFZZ 03-7068-103; Wang and Wang, eds., *Huang Qing Dao Xian Tong Guang zouyi*, 38:5a.

unwilling to leave⁷³—Governor Tu intended to use these silk craftsmen to operate a textile hall (*jifang* 機房) where bright, young recruits and people of other districts could study silk-weaving.⁷⁴ Just as eager as Zuo Zongtang to aim for high-quality silks to satisfy markets, Tu optimistically believed in the feasibility of using the Huzhou model in his own province: “there will be no difficulty in bringing the profits of Zhejiang's Huzhou to Henan.”⁷⁵

Harvesting Leaves and Cocoons in Xinjiang

Xinjiang witnessed an expansion of government-sponsored sericulture activity in the 1880s. New divisions of labor emerged as Qing officials hired workers for the sericulture bureaus and arranged for the production of raw materials outside the bureaus. Within the bureaus, Zhejiang experts guided Turkestani laborers in manufacturing silk. In the countryside, officials under Liu Jintang's leadership attempted to harness village production of mulberry leaves and silkworm cocoons to supply the bureaus, the loci of activity in the push to increase production.⁷⁶

To arrange for the harvesting of mulberry leaves, Liu proposed that lower-level officials “hire workers from among the people to pick them.” But he also realized how the government-sponsored extraction of mulberry leaves could spark resentment and resistance, given that local people had their own systems of production. Liu also worried that hiring workers to harvest leaves

⁷³ *Cansang zhibu jiyao*, 63a.

⁷⁴ The Henan sericulture bureau in Zhengzhou later became one of the late nineteenth-century schools to train young Chinese men in industrial production. In 1898, prominent Qing official and Hebei-Henan governor general Zhang Zhidong issued a proclamation dedicated to setting up an industrial arts bureau (*gongyi ju* 工藝局) on the site, and within the repaired buildings, of the former sericulture bureau. See Zhang Zhidong, proclamation, GX24/0/0 (1898), item 61, box 10, Gerow D. Brill Papers, Cornell University Library.

⁷⁵ *Cansang jiyao hebian*, 3b.

⁷⁶ GX0/0/0 (?), XJDQ 15-34-3297.

could disrupt local habits and uses of the mulberry tree. His fears arose especially when he thought of southern Xinjiang. “The Turkestanis (*chanmin* 纏民) of Khotan,” Liu surmised, “have always been able to feed silkworms with mulberry leaves. They are particularly unwilling to hear of others taking [the leaves].”⁷⁷ In other words, the Khotanese had been practicing sericulture far too long to allow government-hired workers to intercede in their production processes. Hoping to avoid this dilemma, Liu ordered officials to follow previous stipulations for the “reduced feedings” (*shao wei* 少餵) of silkworms, supposedly in order to prevent excessive leaf harvesting. Yet a steady supply of leaves remained crucial for the bureaus, so Liu turned to cash incentives to entice mulberry cultivators to harvest leaves. For the Turpan sericulture bureau, purchasing agents were to travel to southern Xinjiang, obtain leaves in bulk quantities, and send the leaves northward.⁷⁸

Like other steps in the sericulture process, harvesting mulberry leaves required specific techniques. Drawing on his knowledge of these techniques, Liu explained how the person in charge of leaf collection (*zhibai* 知採) ought to pack leaves into baskets and ship them to the sericulture bureaus via pack animal. He was mainly concerned that improper handling of the leaves would ultimately hurt the silkworms, so he prohibited workers from stuffing leaves into their hats or shirts during the initial collection, and he cautioned against letting the leaves sit for too long after harvest for fear that they would wilt and spoil. Although Liu's instructions pertained to mulberry leaf harvests in Xinjiang, they were almost surely based on his understanding of Huzhou practices. He suggested that his subordinates consult the “established methods” (*chengfa* 成法) of sericulture within

⁷⁷ GX0/0/0 (?), XJDQ 15-34-3297.

⁷⁸ Local people were to be paid the price of five *wen* 文 of Xinjiang copper cash (*bongqian* 紅錢) for each ten *jin* 觔 of leaves, with the price rising according to this scale. Liu imagined large quantities of leaves, since his first calculation was 50 *wen* for 100 *jin* of leaves. GX0/0/0 (?), XJDQ 15-34-3297.

Shen Bingcheng's handbook, the *Summary of Sericulture*.⁷⁹ Shen's work thus became reading for minor officials on the margins of the empire and likely framed their knowledge of the techniques of sericulture as well as their conceptions of the geographic possibilities for production.

Liu devised a preliminary scheme for harvesting leaves from local people who otherwise had no relation to the Qing state project. But he also issued guidelines to prepare for the time when mulberry leaf production would bypass the local population more or less entirely. He ordered the reconstruction bureaus (*shanhou ju* 善後局) to select “many *mu* 畝” of government land suitable for mulberry trees in close proximity to the sericulture bureaus (*cansang ju* 蠶桑局) and carpet them with transplanted mulberry trees. To his mind, this was the best way to avoid needing to obtain large quantities of mulberry leaves in the villages and therefore “prevent the disturbance and fatigue” of locals.⁸⁰

Aside from relying on officials in the military government, Liu also had the idea to employ local Turkestani officials, the *begs* 伯克, to promote sericulture. *Begs* were to be carefully selected and dispatched to the villages to supervise mulberry tree planting. But Liu was also wary of using them too much. Worried that money to purchase leaves from local people might be embezzled, he warned against giving the money to *begs*, translators (*tongshi* 通事), mullahs (*maola* 毛拉), or other minor attendants (*lie yiren* 劣役人), whom he expected would transfer the money to themselves.⁸¹ In other words, although the plan for sericulture drew Muslim officials into the division of sericulture labor, they remained suspect and were not fully incorporated into the Qing state project.⁸²

⁷⁹ GX0/0/0 (?), XJDQ 15-34-3297.

⁸⁰ GX0/0/0 (?), XJDQ 15-34-3297.

⁸¹ GX0/0/0 (?), XJDQ 15-34-3297.

⁸² For analysis of the role played by *begs* in earlier periods, see Laura Newby, “The Begs of Xinjiang: Between Two Worlds,” *Bulletin of the School of Oriental and African Studies* 61.2 (June 1998): 278-297; and James A. Millward and Laura J. Newby, “The Qing and Islam on the Western Frontier,” in *Empire at the Margins*:

Obtaining supplies from Zhejiang also required some problem-solving. Although eager to start planting trees adjacent to sericulture bureaus, Liu dishearteningly reported how mulberry saplings acquired in Zhejiang were “still en route” and thus unavailable for immediate planting. The commander figured that if he ordered them to continue with the journey out west, they would have little chance of survival. So in consultation with other officials, he decided that the current year's saplings ought to be withheld from further travel and allocated for planting along the “rear route” eastward from Xinjiang by which he and the army had come west. Then, in the future, some could still be transplanted to Xinjiang for the benefit of the region's sericulture.⁸³

Creating a local source of silkworms was also Liu's concern. Recognizing that any sheets of silkworms (*canlian* 蠶連) obtained in Zhejiang had to undergo an extended journey, he suggested that people in Xinjiang should retain many more live silkworms and that officials would need to teach people how to gather the eggs. Then, in the following year, there would be no need to “acquire from afar” the sheets of silkworms purchased from the provinces of China. Liu's simplistic scheme for making Xinjiang self-sufficient in silkworm eggs, much like the plan for mulberry trees and their leaves, required training local people. Despite the seeming localization of these basic practices, however, the original inputs were almost all brought from afar, and his intention remained replicating the Huzhou model.⁸⁴

What happened to Liu's orders at the local level? Some district officials appear to have implemented orders for sericulture production involving both mulberry tree cultivation and silkworm raising. In mid-July 1881, an official in the Turpan region, surnamed Yang, reported on a

Culture, Ethnicity, and Frontier in Early Modern China, ed. Pamela Kyle Crossley, Helen F. Siu, and Donald S. Sutton (Berkeley: University of California Press, 2006), 117-123.

⁸³ GX0/0/0 (?), XJDQ 15-34-3297.

⁸⁴ GX0/0/0 (?), XJDQ 15-34-3297.

directive to the Turpan government office requesting statistical information about the number of mulberry saplings transplanted into each village. Yang provided no record of the volume of mulberry trees, but he did suggest that he would check the numbers in several villages under his purview.⁸⁵ While Yang supervised mulberry plantings, other Turpan officials managed silk cocoon production. In mid-1882, sericulture bureau official Huang Xianyi 黄憲儀 compiled a report listing purchases of cocoons from Han and Turkestani residents in over twenty villages throughout the Turpan area. Huang recorded 138 households involved in the production of about 315 kilograms of three varieties of cocoons.⁸⁶ The local bureau paid in “Hunan-measured” (*xiangping* 湘平) coinage according to set prices for each kind of cocoon. In a separate report sent to Liu Jintang, Xinjiang military affairs assistant Zhang Yao 張曜 (1832-1891), and Xinjiang sericulture chief Zhu Yingtao, Huang tabulated how much white and yellow silk had been reeled in six regional branch locations of Turpan's sericulture bureau.⁸⁷

These reports suggest that the newly established sericulture bureaus were government-sponsored commercial ventures that relied upon a division of labor between local villages and the bureaus. Huang's memo indicated how the Turpan bureau purchased cocoons from the villages for reeling at the bureau. Other reports described the government's purchasing leaves directly from mulberry producers, suggesting that the bureaus also raised silkworms. Yet Liu Jintang's orders foreshadowed a future in which government workers could sidestep Turkestani communities and

⁸⁵ GX7/6/20 (1881), XJDQ 15-29-345.

⁸⁶ GX8/5/0 (1882), XJDQ 15-29-422. According to the report, the total harvest was about 630 *jin* of cocoons. There were over 400 *jin* of *gannan* (white) and *ganbei* (yellow) cocoons and nearly 200 *jin* of *tonggong* (yellow) cocoons.

⁸⁷ GX8/6/0 (1882), XJDQ 15-29-383. The six locations were Putaogou, Tuokesun, Ya'erhu, Erbao, Lukeqin, and Pizhan. In total, the area had reeled just over 2900 *liang* of silk for the year—out of which about 80 *liang* were submitted as silk samples—from a combined total of nearly 2000 *jin* (1000 kilograms) of cocoons. One *liang* equals one-twentieth of a kilogram.

more directly control a key resource, mulberry leaves. In other words, local communities were first incorporated into the process as producers of raw materials to supply government-run workshops. Later, if Liu succeeded in bringing his plan to fruition, Turkestani producers of mulberry leaves would become disengaged from—or at least have reduced involvement with—Qing production.

Controlling the supply of silkworms continued to plague the sericulture venture. Perhaps since shipments from Zhejiang had been unreliable, Liu Jintang issued regulations in 1884 for purchasing silkworm egg sheets from southern Xinjiang. Liu ordered prices for sheets of southern eggs (*nanzhong* 南種) to be determined by their quality, which he divided into three ranks. The Turpan sericulture bureau seems to have been involved in procuring silkworms from the south according to Liu's regulations.⁸⁸ Private merchants also partook in the southern silkworm trade. One merchant purchased silkworm cocoons in the south on behalf of Turpan officials according to a three-tiered pricing system and shipped them back north.⁸⁹

Laboring in Sericulture Bureaus

Xinjiang's sericulture bureaus were sites of silk production. They also served as places where Zhejiang craftsmen trained Turkestani apprentices and laborers. Most comments about this arrangement, with Turkestanis studying under the tutelage of their Han teachers, blindly praised the success of the students in the first few years of the program. Liu, for instance, reported many benefits coming from the efforts to educate the Muslims, who could now “support themselves by their own craft” (*zi shi qi yi* 自食其藝).⁹⁰ In fact, owing to the perceived successes of the bureaus, in

⁸⁸ GX10/4/9 (1884), XJDQ 15-30-624.

⁸⁹ GX12/1/29 (1886), XJDQ 15-30-738.

⁹⁰ GX0/0/0 (?), XJDQ 15-34-3297.

late 1882 Liu issued updated regulations for their operation. Based on Zhu Yingtao's claims that Xinjiang “silk weaving now has a foundation” and his own sense that Turkestanis had already begun to acquire skills for raising silkworms and reeling silk, Liu approved proposals to restructure the bureaus, discharge personnel, and grant leaves of absence. Three or four Zhejiang craftsmen would be retained at each site and assigned to work with local governments to direct instruction in sericulture. Labor schedules would be partially based on the natural cycles of the silkworms and partly on the requirements of Qing reconstruction bureaus, which would be in charge of production and education. In this rearrangement, Liu exhorted officials to closely monitor the training of sericulture laborers, not least of all because operating looms was very difficult.⁹¹

Reorganizing the sericulture bureaus meant dismissals and adjustments to the seasonal labor schedule. One Turpan official acknowledged receiving orders to dissolve a branch bureau around Turpan and to remove one manager (*sisbi* 司事), three craftsmen from Zhejiang (*Zhe jiang* 浙匠), one mullah, and two cooks (*huofu* 火夫), whose stipends were all set to expire. This left a sizable group of workers: three Zhejiang craftsmen, three Turkestani craftsmen (*chanjiang* 纏匠), ten adult Turkestani apprentices (*changnian chantu* 長年纏徒), one interpreter, one cook, and two bodyguards (*qinbing* 親兵). These twenty were temporarily sent to the sericulture bureau at Putaogou, near Turpan, for the winter and allocated money for oil and charcoal, rice, wheat flour, and cooking firewood. A manager, surnamed Guo, had been consulted about the inventory of tools, all of which were stored and turned over to Turkestanis for oversight. Once the silkworms became active again the following year, additional managers were to be dispatched to direct the sericulture training.⁹²

⁹¹ GX8/9/29 (1882), XJDQ 15-29-448.

⁹² GX0/0/0 (?), XJDQ 15-34-3525. See GX8/11/29 (1883), XJDQ 15-29-448, for a very similar draft version of this document.

Bureaucratic reorganization also entailed approving and supervising the return of some Zhejiang craftsmen to their native places. In April 1883, Zhu Yingtao outlined basic stipulations for sending experts back home. According to the recruitment guidelines used by Hu Guangyong several years earlier, each craftsman would be given a daily food allowance on the return journey—the allowance totaled five months if the point of origin was somewhere in southern Xinjiang—and every two craftsmen were to be allocated one cart.⁹³ These Huzhou specialists would be given their allowances by local reconstruction bureaus, which now controlled the sericulture bureaus.⁹⁴ By early 1883, some were already on their way back home. According to a prefectural supervisor in Turpan, surnamed Liu, three craftsmen previously employed in the local bureau had been allowed to return to Zhejiang.⁹⁵ Over a year later, an official in Qarashahr reported that two Zhejiang sericulture experts working in Khotan had been dismissed from service and were being sent back along the circuitous route around the Tarim Basin with food money, two horses, and orders for the allocation of a cart.⁹⁶

The return of these experts to Zhejiang did not necessarily indicate the lasting success of government-sponsored sericulture in Xinjiang. Inadequate finances and poor relations between Turkestanis and Han Chinese plagued the project and may have caused its early demise. In 1883, for instance, Turkestani laborers complained of being owed wages for their work in the bureaus. Three workers in the Turpan bureau, Barat (Ch *Ba-la-ti*), Semati (Ch *Se-ma-ti*), and Osman (Ch *A-si-man*),

⁹³ The daily allowance for food was set at 1.6 *qian* 錢, totaling 24 *liang* 兩 for a five-month passage.

⁹⁴ GX9/3/10 (1883), XJDQ 15-29-510.

⁹⁵ Yang Changlin, 39 *sui* 歲 from Qiantang near Hangzhou; Rui Jichang, 30 *sui* from Huzhou; and Guo Baoqing, 25 *sui* from Renhe near Hangzhou were allocated two carts and daily food stipends for their journey from Turpan, about which other officials along the route were to be notified. GX9/1/21 (1883), XJDQ 15-4-471.

⁹⁶ GX10/4/13 (1884), XJDQ 15-30-614.

requested permission in March of that year to travel to Aqsu to collect 64 *liang*—over two and a half times what Zhejiang craftsmen each received in food money for the journey home—owed to them for labor over the two previous years.⁹⁷

During the 1880s, the financial troubles of the project continued to mount. The nameless Turpan functionary whose distress was caused by sudden Turkestani demands for more pay in May 1889 acknowledged previous complaints that the subsidies lost to sericulture in the “eight southern cities” had been considerable. In light of these losses, orders had been issued to make sericulture the responsibility of local officials, precisely as Zhu Yingtao had suggested and Liu Jintang had approved. But this had not relieved the burden of funding salaries and food stipends, and it surely did not resolve tensions between Turkestani workers and their Chinese managers. After the confrontation with the sericulture foremen on that day in late spring 1889, the functionary realized that the days of Muslim youth studying and laboring docilely in the sericulture bureaus were over.⁹⁸

To solve financial deficits and quell labor unrest, the Turpan functionary opted for the rather drastic solution of shutting down the sericulture project. He could find no way around the insolence of the workers: “if they're not ruining the looms and textiles, then they're wolfishly bringing calamity upon the cocoons and silk, so we will still worry about public money.”⁹⁹ But the government could close the bureaus and save money. And so this was his solution: “stop the looms and do not weave; gather the cocoons and put them on sale.” He suggested making up the principal investments through the sale of materials and tools at a discount.¹⁰⁰

⁹⁷ GX9/2/1 (1883), XJDQ 15-29-460.

⁹⁸ GX15/5/1 (1889), XJDQ 15-30-1009.

⁹⁹ GX15/5/1 (1889), XJDQ 15-30-1009.

¹⁰⁰ GX15/5/1 (1889), XJDQ 15-30-1009.

The Huzhou Model in the Borderlands

What Qing officials like Zuo Zongtang imagined as a straightforward process of implementing Huzhou sericulture turned out to be a costly and often frustrating venture. Although Xinjiang's provincial leaders may not have adopted the Turpan functionary's pessimistic outlook or his suggestion to shut down silk production in 1889, they now perceived some of the social antagonisms engendered by implementing a model from afar. But even if they had long been disabused of any “exhilaration of mastery” that their predecessors felt in conquering and managing the frontier region,¹⁰¹ they did not allow frustrations to impede their visions for constructing Xinjiang province, a designation the borderland territory acquired in 1884. In this case, the project for Huzhou sericulture was not merely a quotidian bureaucratic measure of economic reconstruction. Rather, it was a means of reshaping geopolitical space, of harnessing and controlling the international market in order to more firmly substantiate the Qing claim to Xinjiang. Perhaps for this reason, the sericulture project seems to have lasted at least until the final years of the empire, when in 1907, Zhao Guihua 趙貴華, a Zhejiang native from Shaoxing (roughly 100 kilometers southeast of Huzhou), toured southern Xinjiang oases, inspected local sericulture, and issued suggestions for improving production in hopes of strengthening the industry.¹⁰²

In an era when northwestern Qing borderlands were being more tightly incorporated into the state, the deployment of the Huzhou model initiated potential resemblances between center and periphery. No longer were Xinjiang's mulberry trees to be unique, stocky specimens of oasis vegetation. They were to become “organic machines” whose natural form was more thoroughly,

¹⁰¹ Peter C. Perdue, “Sustainable Development on China's Frontiers,” in *Natures Past: The Environment and Human History*, ed. Paolo Squatriti (Ann Arbor: The University of Michigan Press, 2007), 187.

¹⁰² *Xinjiang tuzhi*, 28:6a-7a; Li, *Xinjiang dili zhiwu kao*, cansang:2a-4a.

though not completely, reshaped by human needs and whose primary function was to produce leaves for silkworms.¹⁰³ Silkworms from Huzhou, too, were to spin silk threads indistinguishable from their counterparts any other place in the empire. The circulation of the Huzhou model also reshaped local practices. It did not quite require the “dogmatic uniformity” evident in the “Learn from Dazhai” campaign nearly a century later in the 1960s, when peasants throughout China were urged to emulate the farmers of Dazhai village in their fervent revolutionary commitment to reclaiming land, terracing hillsides, and expanding grain production at breakneck speed, all regardless of local ecological conditions or agricultural practices.¹⁰⁴ Yet when Shen Bingcheng and his counterparts promoted Huzhou sericulture, their conscious attempts at replication may have come at the expense of local systems of production. The sericulture project meant training people to use lands, trees, and insects in proper ways. From Zuo's perspective, Turkestanis needed guidance because they did not know the best methods for using organisms like the mulberry tree. In this sense, the deployment of Zhejiang craftsmen to educate imperial subjects in the skills of Huzhou sericulture constituted part of the process by which Zuo, Liu, and other late nineteenth-century Chinese leaders hoped to render the frontier and its people more amenable to imperial power and more able to produce profit from lands, plants, and animals of the types they envisioned.

¹⁰³ On the notion of the “organic machine,” see Richard White, *The Organic Machine: The Remaking of the Columbia River* (New York: Hill and Wang, 1995).

¹⁰⁴ Judith Shapiro, *Mao's War Against Nature: Politics and the Environment in Revolutionary China* (Cambridge: Cambridge University Press, 2001), 98.

Chapter 5

Horticulture and the Politics of Connecting

In the sweltering heat of early August 1880, three travelers from Shanghai arrived at an earth-constructed military barracks on the outskirts of Hami, an oasis town in eastern Xinjiang. A German by the name of Focke (*Fu-ke* 福克), an Austrian named Mandel (*Man-de* 滿德), and their Jiangsu province interpreter, surnamed Xi 席, had reached the final destination of their half-year journey across the Qing empire. The barracks served as the new headquarters for Zuo Zongtang, who had moved there several months earlier from his previous outpost at Suzhou 肅州, in northwestern Gansu. Upon arrival, the trio paid a visit to Zuo, who invited them to stay and whose hospitality deeply impressed them. After sharing their insights about travel and responding to the old general's questions about affairs in Shanghai, the German inquired about Zuo's ability to live so frugally, work diligently, and bear the hardships of living in the desert, especially as he was on the verge of becoming a septuagenarian. Focke's travelogue, which was reprinted in an abridged version in the Shanghai newspaper *Shenbao* 申報 in early January 1881, went into some detail about the general's daily routine.¹ What really seemed to impress Focke was not Zuo's rigid schedule or his routine of rising at dawn and sleeping at midnight but rather his frequent attention to a patch of land beside the barracks: his vegetable garden. Each day after rising, Zuo “went to the vegetable garden to look out over it for quite a while,” and in the evening at five or six o'clock, he went “again

¹ Fu-ke 福克, “Xi xing suo lu” 西行瑣錄 [Trivial records of westward travel], in Wang Xiqi 王錫祺, ed., *Xiao fang hu zhai yu di cong chao* 小方壺齋輿地叢鈔 [Collected transcriptions regarding territory from Small Square Kettle Studio], (Shanghai: Zhu yi tang, 1877-1897), case 6, 4:303a. See also Fu-ke, “Xi xing suo lu,” reprinted in ZZYS, 259. For the news report on which it is based, see Fu-ke, “Xi xing suo lu,” *Shenbao* 申報, 2766-2768 (9-11 January 1881), 3-4.

to the vegetable garden to oversee the watering.”² While he certainly spent more time conducting military business, Zuo's daily supervision of twenty *mu* 畝—roughly three acres—which grew “all kinds of melons and vegetables” hardly seems a trifling matter, at least because the harvest provided sustenance for Zuo. He reportedly ate six bowls of vegetables for breakfast each morning.³

Seeing an aging general attempting to make a garden bloom almost literally in the desert may have been little more than a curiosity for Focke and his fellow travelers. Yet Zuo's attention to the garden was not mere show for his visitors or for the Shanghai readers of the *Shenbao* who may have marveled at Focke's report. A fortnight before his visitors arrived, Zuo had written a letter to his youngest son, Xiaotong 孝同, who planned to journey to Hami the following month. After complaining about the oppressive summertime heat in Hami and Turpan and about his own ailments, Zuo requested that his progeny send him vegetable seeds. He asked that his son engage one of his brothers to “quickly purchase red and white radish seeds (*bong bai luobo zi* 紅白蘿蔔子) as well as wild goose-egg seeds (*tian'e dan zhongzi* 天鵝蛋種子) and send them here, in order to distribute them to each military detachment; the more the better.” Zuo had a utilitarian justification for ordering seeds: he wanted to allocate them to his soldiers, who could plant them to supply food for themselves. Yet Zuo's calculations were also based on his assessments of the land and his suspicion that flora from elsewhere could flourish in Hami's soils. As he pointed out to his son in the letter, the land appeared to be very fertile: “In this place, the terrain conditions (*dimai* 地脈) are extremely rich and planting vegetables would be most marvelous.”⁴ And Zuo seemed to have a third justification for requesting seeds: his own epicurean predilections, a desire for familiar flavors. At the

² 往菜園眺望半晌[. . .] 督看澆灌。Fu-ke, “Xi xing suo lu,” in Wang, *Xiao fang hu zhai*, 6:4:303a-b.

³ 諸色瓜菜俱全。Fu-ke, “Xi xing suo lu,” in Wang, *Xiao fang hu zhai*, 6:4:303b.

⁴ Letter to son Xiaotong 孝同, GX6/6/14 (1880), ZZQ, 13:232. The “wild goose-egg” is another type of Chinese radish, having a “green root with green flesh.” See Shiu-ying Hu, *Food Plants of China* (Hong Kong: The Chinese University Press, 2005), 419.

edge of the desert and suffering the oppressive heat, the general found the land offered some hope for reproducing seeds from China proper.

Zuo Zongtang's practices of cultivating edible vegetation in gardens and his plans to bring vegetable seeds to Hami open up a window onto the aesthetics and politics of horticulture along Qing frontiers in the late nineteenth century. One of the corollaries to late nineteenth-century military and imperial control over Xinjiang and northwestern Gansu was the reproduction of specific forms of biological life and cultural practice. From China proper, sojourners and migrants to the frontier brought their knowledge of horticulture as well as their plants and their seeds. What they did with familiar cultivars in landscapes far from their original homes helped, even if in minor ways, to create lines of resemblance between the frontier and China proper and add to the symbolic construction of political control in the northwest.

It was through the reproduction of seeds, gardens, and landscapes that Zuo and others attempted to overcome the geographical and environmental differences between one region of the empire and another. As they sought to cultivate vegetables in the northwest, migrants may also have harbored visions of abundant landscapes that grew out of their idealized notions of horticulture as an economic and cultural practice—even along the edges of the desert. In his assessment of the horticultural dreams of Californians to transform barren land into garden landscapes in the late nineteenth and early twentieth centuries, Ian Tyrrell has written of “cultural landscapes” as the “product of popular dreams” that symbolize the “aspirations of social groups and classes.”⁵ In their desire to replicate vegetables in what were sometimes adverse conditions, Zuo Zongtang and settlers from China proper constructed cultural landscapes that set baselines for visions of Gansu and Xinjiang as lands awaiting the flourishing of horticulture and the expansion of agriculture. It turned

⁵ Ian R. Tyrrell, *True Gardens of the Gods: Californian-Australian Environmental Reform, 1860-1930* (Berkeley: University of California Press, 1999), 2.

out to be more difficult than Zuo may have originally imagined to construct gardens, grow vegetables, and be satisfied with the abundance of horticulture in arid terrains in the northwestern outposts where he resided as a military sojourner. Nonetheless, a vision of northwest landscapes as sites for the reproduction of life from China proper underscored the attempts to render parcels of land into vegetable gardens. This vision harbored the hopes and dreams not of people already on the land, but of sojourners and settlers from China proper.

The Aesthetics of Garden Reproduction

What Zuo established on the outskirts of Hami and in several other locations in the northwest were gardens where he oversaw the cultivation of vegetables. He and his visitors often called these spaces *yuan* 園, a term which I have chosen to translate as “garden.” Yet the terminology of the garden should not flatten the complexity of such spaces as sites for the creation of tangible and symbolic resources, for a *yuan* may also denote a park or a yard whose utility is not wholly, or not even primarily, in its production of edible vegetation. Indeed, gardens in late imperial China often had multiple overlapping functions, as Craig Clunas has shown, and the notion that there was a clear dichotomy between the aesthetic and economic functions of garden spaces is a modern fabrication.⁶ It may seem that the sheer size of the vegetable garden in Hami limited the aesthetic value of the space. With three acres committed to growing vegetables, Zuo was surely invested in the tangible outcomes of productive horticulture in Hami as well as in the two other locations where he established gardens in the 1870s, Lanzhou and Suzhou 肅州. While there is no evidence that these gardens were linked to commercial networks or supplied fresh produce to local markets, they did have a clear material utility insofar as the vegetables they produced provided sustenance to Zuo and

⁶ Craig Clunas, *Fruitful Sites: Garden Culture in Ming Dynasty China* (Durham: Duke University Press, 1996), 22.

his troops. Yet the garden spaces that Zuo constructed also had an aesthetic value, one that was inseparable from the material practices of vegetable cultivation—observing plots of vegetables, walking between the rows of greens, maybe even getting one's hands dirty in the soil, and consuming the fruits of the garden.

Zuo's gardens were spaces for the kind of activity that allowed him to reproduce a vision of himself as a rural farmer who enjoyed the sights and tastes of familiar vegetables. Craig Clunas has written of late imperial gardens in Jiangnan as lavish sites of consumption and leisure designed to entice visitors and reproduce the owner's elite social distinction. These gardens did not completely shun productive uses of the land, however, and one characteristic of gardens in Suzhou 蘇州 was their focus on the “mimesis of productive resources,” the replication of fruitful landscapes like vegetable plots, fish ponds, and orchards within the enclosed walls of the garden.⁷ The gardens of Lanzhou, Suzhou 肅州, and Hami were also sites of mimesis, but ones in which the process of mimesis was enacted in distant geographical space, from the southeast to the northwest, from Hunan to Gansu and beyond. It was in these gardens that Zuo planted familiar seeds of the vegetables that he had eaten earlier in life while he still lived in Hunan. The plots of vegetables became replicas for his own fields in Hunan even as they produced foodstuffs for his troops on the frontier. And the act of cultivating vegetables in these gardens re-created the aesthetics of productive rural husbandry on which Zuo based his identity as a countryside scholar. In this sense, the gardens that he established were sites not to reproduce his elite status vis-a-vis a select group of elite counterparts but to reproduce an aesthetic sense of home and create a feeling of connection when he was so far away.

It was the products of his work—the vegetables themselves—that may have allowed him to

⁷ Clunas, *Fruitful Sites*, 22.

emulate what he referred to several times as the “distinct flavors of my native place” (*guxiang fengwei* 故鄉風味). His hankering after tastes from home by no means made Zuo unique among officials of the Qing and earlier dynasties who sojourned far from their native places. Merchants and officials who lived in large, late imperial cities like Beijing and Shanghai found ways to consume their home cuisines, including through the patronage of restaurants serving up the dishes and flavors of their native places.⁸ These sojourners partook in what Mark Swislocki has called “culinary nostalgia,” which he defines as “the recollection or purposive evocation of another time and place through food.”⁹ Culinary nostalgia aptly describes how Zuo approached not cooked meals but their raw vegetable ingredients from his northwest gardens. In their cultivation, harvest, and consumption, these vegetables were the locus of Zuo's desire to reproduce tastes from home and evoke the sense that he was in Hunan rather than on the frontier. Insofar as there was an aesthetic value to the gardens established by Zuo, it was in the enjoyment of their very productivity: places that could recreate a feeling of home and replicate a local cuisine half-an-empire away.

Zuo established the first of three northwest gardens in the city of Lanzhou some eight years before his garden experiment in Hami. In August 1872, Zuo moved his headquarters to the capital city of Gansu, which was also the site of the government office compound (*jieshu* 節署) for the former governors-general of Shaanxi and Gansu provinces. Among the various locations within the compound, perhaps none elicited so much joy in Zuo as the anterior garden (*jieyuan* 節園), which I will call the Office Garden. Zuo noted that the space had once served less productive purposes: it

⁸ Bryna Goodman, *Native Place, City, and Nation: Regional Networks and Identities in Shanghai, 1853-1937* (Berkeley: University of California Press, 1995), 22. Although native place cuisines may have been important to sojourners, they were not always replicated by the institutions set up to support those sojourners away from home. Richard Belsky argues that native place lodges in Qing Beijing did not automatically serve cuisines associated with their native places. See his *Localities at the Center: Native Place, Space, and Power in Late Imperial Beijing* (Cambridge, MA: Harvard University Asia Center, 2005), 110-112.

⁹ Mark Swislocki, *Culinary Nostalgia: Regional Food Culture and the Urban Experience in Shanghai* (Stanford, CA: Stanford University Press, 2009), 1.

used to be the site of plots of flowers (*huapu* 花圃) for the governors-general to stroll about and enjoy the scenery. Zuo apparently dispensed with the flowers but kept a landscape of pavilions, rocks, and trees, and added waterways and vegetable plots. After he moved to Lanzhou, Zuo seems to have taken little time to fix up the Office Garden. By the spring of 1873, he had begun to work the soil and, as he later reported to another official, he had transformed what had once been a garden of flowers into vegetable plots (*caiqi* 菜畦).¹⁰

The Office Garden came to have multiple functions under Zuo's leadership. When Pei Jingfu 裴景福 (1854-1924) traveled through Lanzhou on his way out to Xinjiang in late 1905, he stopped by the garden behind the former governor's compound and discovered a couplet over the entrance gate that he ascribed to Zuo Zongtang. The inscription read: "Close the gate and plant vegetables. Open the pavilions and engage guests."¹¹ If growing edible plants was largely a private affair, the garden also served public functions. Insofar as it belonged to the governor-general's compound, Zuo's Office Garden may have been more connected to networks of Qing officials and bureaucrats than to merchants and other non-governing elite, but this did not preclude the use of the garden for elite gatherings. He recognized that the garden was a site of official banquets, where important visitors were brought in and hosted. He himself invited guests to come and take a look at the renovations he had made to the compound on the occasion of a Mid-Autumn banquet in 1872, not much more than a month after he moved into the compound. His renovations included fixing up older temples to serve new functions.¹² He also built pavilions around the gardens, and at his banquet attended by

¹⁰ Letter to Yang Changjun, GX4/0/0 (1878), ZZQ, 12:428. For the early date of this transformation, see ZZQ, 15:289.

¹¹ 閉門種菜，開閣延賓。Pei Jingfu 裴景福, *Hehai kunlun lu* 河海崑崙錄 [Record of the Journey to the Kunlun Mountains] (N.p, 1914), 2:41b; ZZYS, 120; ZZQ, 15:294. Xie Xiaozhong also saw this on his journey through Lanzhou in January 1917. See Xie Xiaozhong 謝曉鐘, *Xinjiang you ji* 新疆游記 [Record of Travels to Xinjiang], (Shanghai: Taipingyang zazhi she, 1922), 43.

¹² He established two temples where offerings could be made to spirits of the past inhabitants of the

over 100 guests, he composed the “Poem of the Pavilion of Limpidity” (*Chengqing ge shi* 澄清閣詩).¹³

The name of the pavilion alluded to the most significant renovation in the garden: the creation of a waterworks to provide a steady source of clean water to the residents of Lanzhou. Here was a public function of the garden that foregrounded Zuo's continuing commitment to the Qing state project of resettling society and rebuilding infrastructure in the late nineteenth century. The government compound in Lanzhou was situated beside the Yellow River, and Zuo harnessed the river for this new waterworks. A waterwheel scooped water out of the river and into a series of three interconnected pools in the garden. Designed by “people who change the work [of nature]” (*huagong ren* 化工人) and built by thousands of soldiers from Zuo's army,¹⁴ these pools channeled the water through a course of twists and turns that enabled muddy water to drop its sediment along the way. In other words, the waterways transformed yellow, turbid river water into limpid water suitable for cooking, drinking, and watering plants.¹⁵ The endpoint of the garden's waterworks was the Pool of Imbibing Tranquility (*Yinhe chi* 飲和池), a spot where residents came with all manner of jars and vessels for drawing out and carrying away water.¹⁶ The waterworks, then, was one of the main public features of the Office Garden and a point of pride for Zuo. He touted

compound, including Prince of Su of the Ming 明肅王, his family members, and their servants. These were the Temple of Loyalty and Righteousness (*Zhongyi ci* 忠義祠) to honor virtuous men and the Temple for Martyred Women (*Liefei miao* 烈妃廟). Letter to sons, TZ11/11/22 (1872), ZZQ, 13:178. Also see “Gansu jieshu yuan chi ji” 甘肅節署園池記 [Record of the Garden and Pond at the Gansu Governor-General's Compound], TZ11/0/0 (1872), in Zuo Zongtang, *Dun bi yu shen* 盾鼻餘瀋 [Writing left behind from the shield's handle] (N.p., 1881), 28b-29b; also reprinted in ZZQ, 13:371.

¹³ TZ11/0/0 (1872), ZZQ, 13:463-64; Letter to sons, TZ11/11/22 (1872), ZZQ, 13:178.

¹⁴ TZ11/0/0 (1872), ZZQ, 13:463; “Yinhe chi ji” 飲和池記 [Record of the Pool of Imbibing Tranquility], ZZQ, 13:370.

¹⁵ See “Yinhe chi ji” 飲和池記 [Record of the Pool of Imbibing Tranquility], ZZQ, 13:370.

¹⁶ Another rendition of this name would be Pool of Unrestrained Comfort. See “Yinhe chi ji” 飲和池記 [Record of the Pool of Imbibing Tranquility], ZZQ, 13:370; also contained in Zuo, *Dun bi yu shen*, 27b-28b; TZ11/0/0 (1872), ZZQ, 13:463. For another mention of the record, see Letter to sons, TZ11/11/23 (1872), ZZQ, 13:179.

that such a water-supply project in Gansu was unprecedented,¹⁷ and it is one of the reasons he claimed that the garden was a “place to be proud of myself on the western journey.”¹⁸

Zuo's vision for the garden was influenced not only by the impetus to advance the Qing state project by refurbishing buildings, showing off a renovated government office compound, and constructing waterworks to serve the populace. Memories of landscapes and the aesthetics of garden produce also trained Zuo's mind on attempting to re-create the feeling of being at home. Ripples in the water of ponds and waterways reminded him of his home environment; they were “just like waves on the Xiang,” the river running northward through Hunan and right past his native place, Xiangyin 湘陰.¹⁹ Yet it was more than poetic imagination that enabled Zuo to conjure resemblances. In Lanzhou, gardening as an activity of reproducing plants from seed was meaningful largely because it allowed him to reproduce the trappings of his home environment. Consider the couplet he wrote for the Raft Pavilion (*Cha ting* 槎亭), a structure within the garden. Perhaps as he peered out over the Yellow River, he saw rafts going back and forth, vessels connecting one place to another. And looking over to his garden, plots of vegetables reminded him of his own connections, and transported him back in space and time, from Lanzhou to Hunan.

In the eighth month, rafts traverse the water from Heaven [i.e. the Yellow River].

In plots linked together, vegetables bring forth the life of the old garden.²⁰

八月槎橫天上水，連畦菜長故園春。

¹⁷ Letter to Wu Minshu 吳敏樹, TZ12/0/0 (1873), ZZQ, 11:403.

¹⁸ 西行得意之所。Letter to Yang Changjun, GX4/0/0 (1878), ZZQ, 12:428.

¹⁹ 如湘波然。“Yinhe chi ji” 飲和池記 [Record of the Pool of Imbibing Tranquility], ZZQ, 13:370.

²⁰ “Cha ting lian” 槎亭聯 [Couplet for the Raft Pavilion], TZ11/0/0 (1872), in Zuo, *Dun bi yu shen*, 62b; recorded in ZZQ, 13:474. The rafts were out on the river, but some of the buildings in the garden that were made out of bundled grasses and situated amidst the hillocks had made him think of the material used to build rafts. Chen Dingxi 陳鼎熙, *Xu yuan cang gao* 栩園藏稿 [Draft stored in the Lively Garden], (N.d.), j. 5, quoted in ZZYS, 107-108.

Gardening was about connecting to another place. In the spring of 1873, Zuo wrote an inscription entitled “A Connection” (*Yi xi* 一繫) in which he celebrated the ability to reconnect with his native place. This was premised on the possibility that gardening allowed him to create a vision of himself as a rural farmer who found fulfillment in the productive use of land rather than a haggard, lonely, old military general close to the frontier. Indeed, Zuo seemed to shun his identity as a military general by writing that he had been “accidentally put in charge of military affairs” (*miu ren jun shi* 謬任軍事). But now that he found time to retreat from strategic planning, he could focus his energy on the matters of the garden. Calling himself the “Farmer on the Xiang River” (*Xiang shang nongren* 湘上農人), an appellation he had first used nearly thirty years prior, Zuo wrote:

With frontier affairs roughly settled and my request for sick leave not yet finished, I have opened up plots in the Office Garden to plant vegetables, and I obtain to a considerable degree the distinct flavors of my native place.²¹

邊事略定，以病乞休未得，於節園開畦種菜，頗得故鄉風味。

Like rafts on the river, gardening carried him to other places and points in time. “I think back to plowing the fields myself,” Zuo wrote. “[It was] as if I were in heaven.”²² The practice of growing edible plants gave Zuo a feeling of connection to Hunan and its flavors of life that few other things in Gansu could in the 1870s. Years later, when his lengthy sojourn in the northwest was over, he wrote of his delight at using the vegetables of the garden to evoke a sense of his old home:

When vegetables in the Office Garden are grown, they can be air-dried and taken as rations so that one may remember the distinct flavors of the native place, which is,

²¹ “Yi xi” 一繫 [A Connection], TZ12/0/0 (1873), ZZQ, 15:289.

²² 回首躬耕，如在天上也。“Yi xi” 一繫 [A Connection], TZ12/0/0 (1873), ZZQ, 15:289.

for its part, extremely fortunate.²³

節園蔬長，能晾干見餉，俾識故鄉風味，亦至幸耳。

Replicating a sense of home and its familiar tastes through gardening was a fully material affair requiring tangible inputs. At the heart of the process of replication were seeds. I have yet to find evidence describing what kinds of vegetables Zuo planted in the Lanzhou garden or where he acquired the seeds for them.²⁴ Perhaps they came in packages from Hunan, side by side with the flavors of home. In 1878, some six years after Zuo first cultivated the vegetable garden in Lanzhou, he was inquiring about a shipment of food and seeds from his sons back in Hunan. He apparently had requested three wooden boxes containing pickled water chestnuts (*yanji* 腌薺) and vegetable seeds (*caizhong* 菜種). Worried that the vegetable seeds might be hurt by winter temperatures, Zuo asked his associate Yang Changjun, who was acting as a middleman, to send along the chestnuts but withhold the seeds from further shipment until warmer temperatures prevailed.²⁵ By the time he requested and received the shipment of foods from home, Zuo had already long moved his headquarters to Suzhou, where he was much closer to military operations taking place in Xinjiang. When the boxes arrived to him there at the end of January 1879, he was quite pleased with their contents. He was particularly delighted with the salted ginger (*yanjiang* 鹽姜), and turned out to be dissatisfied only with the shrimp and brined gourd (*xialugua* 蝦滷瓜), which he determined was not

²³ Letter to Yang Changjun, GX7/0/0 (1881), ZZQ, 12:694.

²⁴ There are descriptions of what continued to be grown in the same garden decades after Zuo's departure from the northwest. Pei Jingfu noted on his visit to Lanzhou in 1905 that the vegetable plots in the garden that he saw in that year were all ones that were developed by Zuo. Pei, *Hebei kunlun lu*, 2:41b. Several decades after that, Mu Shouqi 慕壽祺 wrote that the garden was still producing vegetables, including Chinese onions and scallions (*xiejun* 薺韭), melons and gourds (*guabu* 瓜壺), radishes (*luofu* 萝服), potatoes and yams (*shuyu* 薯蕷), and winter mallow (*dongbancai* 冬寒菜). See Mu Shouqi 慕壽祺, *Gan Ning Qing shilüe* 甘寧青史略 [Historical outline of Gansu, Ningxia, and Qinghai], (N.d.), j. 24, quoted in ZZYS, 209.

²⁵ Letter to Yang Changjun, GX4/0/0 (1878), ZZQ 12:422; Letter to sons, GX4/12/19 (1879), ZZQ, 13:208.

homemade (*jiazhi* 家制).²⁶ Zuo made no mention of other contents, but if his sons had responded to his request, those boxes also held vegetable seeds which he could plant in future gardens.

In Suzhou from April 1876 until his journey out to Hami in the summer of 1880, Zuo continued the practice of cultivating vegetables and reproducing garden landscapes. In that frontier post close to Jiayuguan, the western terminus of the Great Wall, he opened up a vegetable garden of several tens of *mu* 畝 and conscripted some lower-level soldiers (*caiguan* 材官) into service as farmworkers to tend the plots of vegetables and to do farm-related chores, including processing manure for use on the fields.²⁷ Zuo wrote several times to Yang Changjun suggesting that he travel out to Suzhou in the spring of 1879 once the new season had arrived, ice had begun to melt, the garden in Lanzhou had begun to come to life, and green grasses had begun to appear along the roads out west.²⁸ Along the frontier, they could go together to the springs at Jiuquan 酒泉 (lit. “Wine Springs”) to drink and eat to their contentment. The food would include Zuo's “self-grown garden vegetables” (*zijzhong yuan shu* 自種園蔬).²⁹

The views at Jiuquan may have been stunning, though the appearance of the landscape was of recent vintage. Just as he had done in the garden of the governor-general's compound in Lanzhou, Zuo reformulated the land to serve the aesthetic and productive purposes of his presence and the anticipated presence of future sojourners from China proper. As he wrote to Shaanxi governor Tan Zhonglin in 1879, he had spent money and effort in order to add “fine scenery” (*shenggai* 勝概) to the place where he now resided. The centerpiece of the newly landscaped vista was

²⁶ Letter to sons, GX5/1/8 (1879), ZZQ, 13:210.

²⁷ Shi Buhua 施補華, *Ze ya tang wenji* 澤雅堂文集 [Collected writings from Zeya Hall], (1893), j. 1, quoted in ZZYS, 65.

²⁸ Letter to Yang Changjun, GX4/0/0 (1878), ZZQ, 12:428.

²⁹ Letter to Yang Changjun, GX4/0/0 (1878), ZZQ, 12:422.

a lake roughly a kilometer around³⁰ which was filled by local springs.

Recently, I have also dredged Jiuquan to form a lake. I planted flowering trees on the surrounding embankments, erected a pavilion at the center of the lake, and constructed a small boat as an aid to sightseeing. In the middle of the lake I have made an island and have kept three islets. I have purchased over 10,000 fish fry, and I swim in their midst. Waterfowl on the sandy island come without calling. Dust on the frontier extends for 10,000 *li*, and by completing this, I have created a new pattern [to life here]. In some other year, it would make for a great picture.³¹

近又浚酒泉為湖，環堤種花樹，構亭湖心，造小舟以助游眺。湖中作島，留洲渚三，買魚苗萬餘，游泳其間。水禽沙島不呼而至。邊塵萬里，得此別開生面，他年好作畫圖夸也。

In a more poetic rendering of his construction of the lake, Zuo noted how it reminded him of Dongting Lake back in Hunan.³² Despite being surrounded by desert, he was enchanted with the great expanse of water that he had crafted with spring water using the labor of his soldiers. The aesthetic pleasures of boating on the lake, swimming in its waters, or walking along the shoreline did not, however, cause him to forget or dismiss the productive utility of the land. Unused land around the lake could become sites for farming and horticulture. As he wrote in 1879, “I still need to reclaim the open spaces beside the lake for fields and gardens, to provide an occupation for scholars.”³³ Zuo seems to have intended that the land adjacent to the lake be opened to settlement and cultivation.

³⁰ 隄周三里廓。“Qiuri fan zhou quan hu zuo” 秋日泛舟泉湖作 [Composed on the occasion of boating on the springs lake on an autumn day], GX5/0/0 (1879), in Zuo, *Dun bi yu shen*, 33b; reproduced in ZZQ, 13:464.

³¹ Letter to Tan Zhonglin 譚鐘麟, GX5/0/0 (1879), ZZQ, 12:488.

³² 渺渺洞庭波，宛連湘與鄂。Zuo, *Dun bi yu shen*, 33b; ZZQ, 13:464.

³³ 尚須墾湖旁隙地為田圃，以業學者。Letter to Tan Zhonglin 譚鐘麟, GX5/0/0 (1879), ZZQ, 12:488.

One of the ironies of Zuo's move to Suzhou and Hami was that it made him nostalgic for his time in Lanzhou. From April 1876 until late 1880—when Zuo left Hami and passed back through Suzhou and Lanzhou on his way to Beijing—he lived at a great distance from his native place *and* the Lanzhou garden. On several occasions, Zuo's nostalgia for gardening and food was transferred from his native place garden in Hunan to its Lanzhou mimesis. It was the harsh conditions of far northwestern winters and summers that made him yearn for the purportedly more moderate climate of Gansu's capital. In the midst of a dust storm that blotted out the sun and prevented him from resting for days on end, Zuo wrote in 1879, “I suppose the new vegetables of the Office Garden are already exuberantly green and ready for eating.”³⁴ But he could no longer enjoy the taste of the vegetables nor take pleasure in the visual aesthetics of the garden: “I regret that I long ago moved to and am holed up in Jiuquan, and I won't again share in the pleasure of these ponds and halls.”³⁵ Northward from Jiuquan, wrote Zuo to one of his sons in August 1880, “there is desert as far as the eye can see, and travel by cart is rather hard.” And all the way out at Hami, the summer heat and winter chill were both more intense than in China proper.³⁶ “The frontier has a bitter winter,” Zuo wrote again the next month, “and in Hami the cold and heat are completely different from inside the pass [i.e. Jiayuguan].” These assessments did not hold for Lanzhou, however: “In the Office Garden, the autumn scenery is delightful and the flavor of the vegetables is quite fine.”³⁷ Unexpected shifts in the weather caused him the most consternation and sparked a sense of nostalgia for Lanzhou. Earlier that spring in Suzhou, the vegetables he sowed had been damaged by an unforeseen cold snap.

³⁴ 節園新蔬度已青青入口。Letter to Yang Changjun, GX5/0/0 (1879), ZZQ, 12:474.

³⁵ 惜老我移封酒泉，不復共此池堂樂意也。Letter to Yang Changjun, GX5/0/0 (1879), ZZQ, 12:474.

³⁶ 砂磧彌望，車行頗苦。Letter to Xiaotong 孝同, GX6/6/23 (1880), ZZQ, 13:232.

³⁷ 節園秋景宜人，蔬味正佳。Letter to Xiaotong 孝同, GX6/7/20 (1880), ZZQ, 13:234.

At the Beginning of Spring, it was warm and pleasant, and the garden vegetables were only just emerging from the ground. The leaves of the trees harbored green that was about to be emitted. But then there was a night of frigid wind, the whole day there was snow to a depth of roughly two *cun* [about three centimeters], and the eaves dripped and froze. To look forward with pleasure to [the time when the vegetables are] flourishing green and ready to eat is now all but impossible. Moving to and being holed up here thus does not compare with the satisfaction of resigning and returning to my native place.³⁸

春日和淑宜人，園蔬甫有出土者，樹葉含青欲吐。乃一夜寒風，竟日雪厚兩寸許，簷滴且冰。欲盼青青入口不可得矣。移封於此，故不如歸臥故園之得也。

This was the disappointment that Zuo found living on the frontier. The means that he had to reproduce the tastes of home—the vegetables and seeds—did not always come to fruition, could not always be relied upon in the environments of the northwest. With a climate perhaps more amenable to vegetables, Lanzhou thus became a temporary stand-in for Hunan and the point at which Zuo focused his desires for the flavors of his native place.

Climate and weather did not seem to undermine Zuo's optimism about the transformation of frontier lands into gardens, however disappointed he may have been about the outcome of his seedlings in the spring of 1880. Central to his vision for horticulture was the notion that he could make barren land bloom green, even out in the midst of the desert. Consider what he wrote toward the end of his service to the Qing in the northwest, in early June of 1880, when he was headed out to Hami to take up residence there for five months. As he passed by Anxi, a city out beyond the Great Wall, he puzzled over the conditions of the desert and its ability to become productive land.

³⁸ Letter to Yang Changjun, GX6/0/0 (1880), ZZQ, 12:595.

The *gobi* lacks water and grasses, so it is impossible to estimate the land in order to settle people; this is true. Yet as I lean on the crossbar [of the carriage] to observe it, there are also things I cannot fathom. The mix of sand and stones harbors water vapor. Although there are no fountainheads springing forth, the moisture of rain and dew is sufficient to cover grains. This is one thing.³⁹

戈壁乏水草，不能度地以居民，固也。然憑軾觀之，亦有不得於心者，沙石間雜中含潤氣，雖無涌現之源泉，雨露之滋潤，其足蔭嘉穀，一也。

This apparent anomaly caused Zuo to consider the possibility that the *gobi* in the upper northwest of Gansu might be able to yield grains. His observations near Anxi reminded him that at a location north of Lanzhou called Qinwangchuan 秦王川, the land had been turned into productive agricultural soil even though people had claimed that grains would not grow there. That location could serve as a model for what Zuo envisioned in Anxi. “I suspect,” Zuo wrote of the deserts east and west of Anxi, “that they can imitate the methods of Qinwangchuan, using them to cultivate grains.”⁴⁰

Zuo's visions for the transformation of the desert around Anxi brought to light his own predilections for a landscape that was thoroughly cultivated. Noticing any signs that the land might be able to produce crops, Zuo made clear his suspicions that the land could be made to grow not only grain crops, but also fruits and vegetables.

Wild grasses grow all over large and small mounds of sand, and in their midst, reeds grow in motley clumps. Since [the land] already produces grass, it must be suitable for grain. How would it only be suited to animal herding and not convenient for

³⁹ Letter to Yang Changjun, GX6/0/0 (1880), ZZQ, 12:610.

⁴⁰ Letter to Yang Changjun, GX6/0/0 (1880), ZZQ, 12:610.

plowing and reclamation? As for sandbanks, although the *gobi* lacks trees, elms and willows appear at all places near water, so I suspect that land with underground moisture can all be cultivated. How would it be suited only to elms and willows and not suited to fruits and vegetables? All of these are things that have been going back and forth in my mind over the past ten days and that I cannot let go.⁴¹

就中大小沙堆，遍生野草，間有蘆葦叢雜，既產草則必宜禾，奚僅宜畜牧不便耕墾乎？至沙灘戈壁雖乏樹木，然近水各處亦見榆柳，疑下濕之地皆可種植，奚僅宜榆柳不宜蔬果乎？凡此，皆旬日往來腦中未能少釋者。

He recognized the immediacy of providing funding for animal herding as the mainstay of the local economy around Anxi, and he planned to raise contributions to purchase breeding sheep (*zhong yang* 種羊) for distribution to soldiers and civilians in order to obtain the “profits of animal herding” (*chumu zhi li* 畜牧之利).⁴² But that was only a temporary measure to spur production. “I plan to first use animal herding to guide the people,” Zuo wrote after his assessments of the landscape, “yet order them to gradually plan for cultivation and harvest.”⁴³ Within his visions for agriculture around Anxi, grain cultivation surely claimed the key position. Yet his mention of fruits and vegetables suggests that horticulture, too, framed his visions for the landscape, visions that he seemed to share with sojourners and migrants to Xinjiang in the same decades.

Patterns of Propagation in Xinjiang

Garden-making in Lanzhou, Suzhou, and Hami arose from Zuo's personal aesthetics of production, landscape, and taste, but postwar horticulture in the northwest expanded well beyond

⁴¹ Letter to Yang Changjun, GX6/0/0 (1880), ZZQ, 12:610-611.

⁴² Letter to Yang Changjun, GX6/0/0 (1880), ZZQ, 12:610.

⁴³ 擬先以畜牧導民，而令其漸謀耕獲。Letter to Yang Changjun, GX6/0/0 (1880), ZZQ, 12:611.

the rows of vegetables where he resided. Settlers from China proper, including the soldiers in Zuo Zongtang's armies, brought their interests in horticulture, their techniques, and their desires to overcome the environmental limitations on growing vegetables. They also brought their plants with them. Xiao Xiong 蕭雄 (?-1893), a native of Hunan who joined the camps of several top military commanders and lived along the frontier for over ten years in the 1870s and 1880s, noted in a collection of verse and prose about Xinjiang that much of the contemporary garden cultivation in the borderland territory was the result of Han people settling there and bringing along their vegetables seeds.

Among Han people who have migrated and settled [in Xinjiang], those who grow vegetables are quite many. When the Hunan army went beyond the [Jiayu] Pass, they brought with them all kinds of vegetable seeds and planted them everywhere, and so [people now] possess garden vegetables.⁴⁴

漢民徙居者，種菜較多。及楚軍出關，帶各項菜子，隨地廣種，而園蔬將備矣。

Xiao's assertion that the cultivation of new vegetables in Xinjiang followed from the arrival of soldiers and postwar settlers from China proper was echoed by later accounts. Sun Anfu 孫龔甫 (?-?), who wrote chapters about agriculture, sericulture, forestry, herding, industry, commerce, and mining for the 1912 publication *Illustrated Gazetteer of Xinjiang* (*Xinjiang tuzhi* 新疆圖志), recorded how “after the start of warfare, Hunanese who went on the military expedition bound together and carried along sprouts and roots [of plants], and transplanted them into this land.”⁴⁵

⁴⁴ Xiao Xiong 蕭雄, *Xinjiang zashu shi* 新疆雜述詩 [Assorted narrated poems about the western borderland], (N.p., preface 1892), 3:43a.

⁴⁵ 軍興以後，湘人之從征者，捆載芽麥，移植茲土。Yuan Dahua 袁大化 et al., *Xinjiang tuzhi* 新疆圖志 [Illustrated gazetteer of Xinjiang], (Tianjin: Dongfang xuehui, 1923 [1911]), 28:4a; Zhong Guangsheng and Sun Anfu, *Xinjiang bei sheng* 新疆備乘 [Full history of the western borderland], (N.p., 1914), 2:6; Zhong Guangsheng and Sun Anfu, *Xinjiang zhibiao* 新疆志稿 [Draft of the gazetteer of Xinjiang], (N.p., 1930), 2:21a. For Sun Anfu's authorship of these chapters, see his postface in *Xinjiang zhibiao*, 1a-1b.

The movement of plants and people went hand and hand in the late nineteenth century, as it had been in earlier periods. Officials earlier in the century made connections between the settlement of sojourners from China proper and the arrival of new patterns of livelihood, including horticulture. Bi-chang 璧昌 (?-?), a Mongol who served in high-ranking posts in Xinjiang, wrote about newcomers who came to Xinjiang in a short tract about border defense. According to his brief historical summary of the situation based on observations in the 1830s, after the territory of Xinjiang had been conquered by the Manchus in the mid-eighteenth century, new patterns of economic growth enabled local Muslims to get rich, but items of trade from China proper were quite scarce—things like gold and silver ingots (*yuanbao* 元寶), tea leaves (*chaye* 茶葉), Chinese rhubarb (*daihuang* 大黃), silks (*chouduan* 綢緞), porcelains (*cizi* 磁器), sugar (*tang* 糖), and needles (*zhen* 針)—items that he considered to be in demand among Turkic Muslims (*yihui* 夷回).⁴⁶ When merchants from all parts of China proper came to trade these goods in Xinjiang, they established patterns of life that replicated how they had lived in their home provinces. As Bi-chang recorded, merchants who were long-term sojourners settled down and “erected houses, set up markets, grew vegetables, and raised pigs, so there began to be the distinct flavors of China proper.”⁴⁷ It was not just merchants who brought their flora as a means to recreate patterns of life. Officials and convicts who had been exiled to Xinjiang in the eighteenth century also had desires to eat of their home cuisines⁴⁸ and grow what they had grown before. A century before the arrival of Zuo Zongtang's army in Xinjiang, exiles from China proper in northern Xinjiang were transplanting floral specimens

⁴⁶ Bi-chang 璧昌, *Shoubian jiyao* 守邊輯要 [Edited essentials for guarding the borderland], (N.p., preface 1839), 5a.

⁴⁷ 蓋房立市，種菜養豬，始有內地風味。Bi-chang, *Shoubian jiyao*, 5a.

⁴⁸ L. J. Newby, “The Chinese Literary Conquest of Xinjiang,” *Modern China* 25.4 (1999), 466-467; Joanna Waley-Cohen, *Exile in Mid-Qing China: Banishment to Xinjiang, 1758-1820* (New Haven: Yale University Press, 1991), 153, 180.

like peonies, peach trees, and flowering poppies into the regions around Urumqi and Ili.⁴⁹

But migrants to Xinjiang in the late nineteenth century were also interested in vegetable horticulture for economic gain, and they were not all Hunanese nor associated with Zuo's army. Sun Anfu pointed to three groups of migrants (*kemin* 客民) who were prominent in Xinjiang's horticulture after the reconquest and the establishment of Xinjiang Province in 1884. He listed them in order of how adeptly they made a living from agrarian production. At the top of the list were migrants from Tianjin, followed by settlers from Hunan and Hubei, and finally settlers from Shaanxi and Gansu. Each group also seemed to have a particular economic niche within agriculture. Whereas Hunan people grew rice, Hubei people generally cultivated cotton, and people from Shaanxi and Gansu grew opium, the migrants from Tianjin were the ones who largely focused on vegetables. Sun claimed they were skilled at vegetable cultivation and had opened many garden plots (*yuanpu* 園圃) in the region around the provincial capital at Urumqi. If it was the Hunan army that had brought some vegetables into Xinjiang during the reconquest, Tianjin people soon followed in the cultivation of products of the garden, and Sun wrote that they stuck together in their gardening, cooperating and working side-by-side.⁵⁰

For Zuo, the impetus to grow vegetables had been aesthetic and practical: to recreate the flavors of home and transform the landscape into something pleasing while producing food for consumption. For the migrants to Xinjiang, growing vegetables was more often cast in the language of market and economy, even if horticulture retained its aesthetic value as a practice of one's native place. As Sun made clear, there was great money to be made in vegetables in Xinjiang.⁵¹ From an

⁴⁹ Waley-Cohen, *Exile in Mid-Qing China*, 152.

⁵⁰ Zhong Guangsheng and Sun Anfu, *Xinjiang beicheng*, 2:6; Yuan Dahua et al., *Xinjiang tuzhi*, 28:4a; Li Wenru 李文如, *Xinjiang dili zhiwu kao* 新疆地理植物考 [An examination of geography and vegetation in Xinjiang], (M.s., n.d.), 2:9b.

⁵¹ The Chinese notion that horticulture was an especially profitable venture dates back at least to the sixth

economic perspective, vegetables were “indispensable for livelihood”⁵² and Sun claimed that the “profits of gardening are ten times as plentiful as for agriculture.”⁵³ This was in large part because they afforded the opportunity to partake in profitable market exchange. And it was the chance to make quick money through the market that attracted many migrants out to Xinjiang. Moreover, because the exchange rate between copper money (*qian* 錢) and silver taels (*yin liang* 銀兩) was running at 400 to 1, market exchange in Xinjiang turned out to be extremely lucrative: the “abundance of profit is ten times that of China proper.”⁵⁴ One group of items that turned opportunity into wealth was garden vegetables. At the provincial capital, the “varieties of vegetables are especially numerous,” and people gathered from all around to purchase them and other commodities.⁵⁵

People from Tianjin seem to have dominated vegetable production and marketing around Urumqi in the late nineteenth and early twentieth centuries. Their vegetable patches were reputed to be trim and orderly, and they employed special techniques for cultivation, which may have allowed them to surpass other migrant groups in vegetable sales and production. These techniques enabled them to circumvent problems presented by springtime cold of the kind that made Zuo's vegetables perish in Suzhou and hindered spring horticulture near Xinjiang's capital. People from Tianjin used the method for “hothouse flowers” (*tanghua* 唐花), a measure by which they heated vegetable seedlings in order to speed up or control the rate of their growth in cold climates. Various techniques to warm vegetable seedlings as a means to promote growth in the winter and spring had

century, when Jia Sixie 賈思勰 mentioned this prospect in his work *Qimin yaoshu* 齊民要術 [Essential arts for aiding the people]. See Francesca Bray, *Science and Civilisation in China*, vol. 6, pt. 2, *Agriculture* (Cambridge: Cambridge University Press, 1984), 541.

⁵² 蔬菜為生事所必需。Yuan Dahua et al., *Xinjiang tuzhi*, 28:4b.

⁵³ 園圃之利，富於農十倍。Yuan Dahua et al., *Xinjiang tuzhi*, 28:4a.

⁵⁴ 其利之豐什倍於內地。Yuan Dahua et al., *Xinjiang tuzhi*, 28:4a.

⁵⁵ 蔬菜品彙特繁。Yuan Dahua et al., *Xinjiang tuzhi*, 28:4a.

been increasingly described in textual sources since the middle of the Ming dynasty (1368-1644), though they had existed as early as the Han dynasty.⁵⁶ According to the method as described in the *Illustrated Gazetteer of Xinjiang*, in the winter months people dug pits into the ground where they planted seeds and warmed them by small fires. The plantings would be closely protected by reeds and covered with reed-woven screens to keep out wind and snow. After the arrival of the spring thaw, seedlings would be transplanted into vegetable patches. “Thus, the early spring vegetables all go on the market in season” in Urumqi, wrote Sun, a Zhejiang native who was perhaps accustomed to the timing of the seasons far back east.⁵⁷ In other words, the hothouse method enabled Tianjin people to get around the deep cold that set into northern Xinjiang in the winters and allowed them to reproduce the vegetables, on schedule, that they may have brought with them.⁵⁸

The Politics of Seed Dissemination

The spread of new vegetables and crop production methods into the northwest in the late nineteenth century was promoted through official policy. As he passed through Lanzhou in late 1905, Pei Jingfu surmised that “all of the small vegetables on the southern side of Gansu province were brought and planted by Zuo Zongtang, who taught people to cultivate them.”⁵⁹ Although Pei's claim is hard to verify, there are several indications that Zuo's passion for vegetables was not just a

⁵⁶ Liang Jiamian 梁家勉, ed., *Zhongguo nongye kexue jishu shigao* 中國農業科學技術史稿 [Draft history of Chinese agricultural science and technology], (Beijing: Nongye chubanshe, 1989), 534.

⁵⁷ 故春初之菜，無不應時入市。Zhong Guangsheng and Sun Anfu, *Xinjiang beicheng*, 2:7; Yuan Dahua et al., *Xinjiang tuzhi*, 28:4a.

⁵⁸ Earlier instances of importing Chinese plants into Xinjiang also necessitated special measures to insulate them from the chilly temperatures of winter. Xiao Xiong noted that, aside from the rose (*meigui* 玫瑰) which was indigenous to Xinjiang, flower varieties could not withstand cold without special measures. He gave the example of the Muslim King 回王 (perhaps of Hami or Turpan), who in times past had brought flowers back from a residence in the imperial capital (*jingdi* 京邸) and had to grow them in a hothouse (*wenshi* 溫室) to keep them alive. Xiao Xiong, *Xinjiang zashu shi*, 3:43b.

⁵⁹ 甘省所有南邊小菜，均文襄公攜種來，教人栽植。Pei Jingfu, *Hebei kunlun lu*, 2:10b; reprinted in ZZYS, 119.

matter of personal taste. Nor was it merely individual sojourning merchants or postwar settlers who attempted to reproduce vegetables in accordance with their tastes or in their attempts to make money. Growing vegetables became a matter of policy as Zuo oversaw the distribution of vegetable seeds and the dissemination of cultivation techniques to farmers in many locations in Gansu and out into Xinjiang.

The year before his arrival in Hami in 1880, Zuo and local officials exchanged missives regarding plans to allocate vegetable seeds to residents of Turpan. The few details that we have about this plan reveal the close nexus between knowledge about growing seeds and the seeds themselves. For it was not only the vegetable seeds that were to be transported to Turpan, but also the knowledge about how to properly cultivate them. In 1879, the vice prefect (*tongzhi* 同知) of Turpan, Kui Fu 奎紱 (?-?), composed a memo affirming his participation in a plan to distribute pamphlets about “southern methods for growing vegetables.”⁶⁰ Kui recounted how those southern methods had been carved and printed as a short publication (*pian* 篇), of which 1000 copies were made and delivered to local officials in the corridor stretching more than a thousand kilometers from Ganliang—present-day Liangzhou, nearly three hundred kilometers northwest of Lanzhou—all the way westward to Hami. The officials, in turn, were to summon agricultural supervisors from the cities and countrysides and order them to publicize and explicate the methods to local people. Recognizing how “exhausting the profits of the land and enriching the people” was precisely what local officials should be doing, Kui suggested that each military bureau and local government unit west of Jiayuguan ought to reprint the leaflets for easy distribution among gentry, peasants, and soldiers so that they could all gain the knowledge of vegetable cultivation. Not much more than a week later, Kui confirmed his resolve to print an extra two hundred copies of the leaflet about the

⁶⁰ 南方種蔬之法。GX5/2/30 (1879), XJDQ 15-4-181.

“established methods” (*chengfa* 成法) for vegetable cultivation. As soon as they were ready, he claimed, he would distribute them to local Turkic Muslims (*chan hui* 纏回) so that they would act in accordance with the new measures.⁶¹

But soon, Kui was reporting an acute problem which threatened the feasibility of the whole venture. Whereas the farmers could obtain the knowledge about how to plant southern vegetables that had been promoted and circulated via pamphlet and word of mouth, it appears that they did not have the biological specimens to implement the new cultivation techniques: they did not have the vegetable seeds. “In previous years,” he wrote, Turpan “has certainly not had the seeds of the Chinese cabbage (*huangyabai* 黄芽白), winter mallow (*dongxian* 冬莧), red amaranth (*bongxian* 紅莧), water spinach (*wengcai* 蕹菜), asparagus lettuce (*wosun* 高笋), and mustard greens (*paicai* 排菜).”⁶² To bring the new cultivation methods to fruition, Kui suggested that an order be made to distribute seeds to Han and Turkic Muslim residents of the oasis for supplementary cultivation; his request was for “all kinds of vegetable seeds” (*ge yang caizi* 各樣菜籽).⁶³ Eastward in Suzhou, Zuo Zongtang found this plan worthy of approval, and he recognized the need to spread seed stock from China proper to Turpan. In a June 1879 missive, the general acknowledged the formal request for “all kinds of vegetable seeds” (*ge se shucai zizhong* 各色蔬菜籽種) from Turpan. He apparently had accepted Kui's request, because by that time, he stated that seeds of the Chinese cabbage, winter amaranth, and water spinach had already been sent to the local government in Turpan for allocation.⁶⁴ Kui responded with a short message of acknowledgment, saying the seeds would be

⁶¹ GX5/3/8 (1879), XJDQ 15-4-181.

⁶² For references to these vegetables, see Hu, *Food Plants of China*, 413, 542, 381, 636, 740.

⁶³ GX5/3/15 (1879), XJDQ 15-4-181.

⁶⁴ GX5/4/27 (1879), XJDQ 15-4-181.

distributed immediately to Turkic Muslims for planting.⁶⁵

None of the subsequent messages between Kui and Zuo clarified the success or failure of their plan to bring new vegetable seeds to Turpan and train farmers to cultivate them. And given the historic linkages between Turpan and China proper through trade and diplomacy, there may be reason to question Kui's claim about the people of the Turpan oasis never having had those varieties of vegetable seeds.⁶⁶ Nonetheless, this example is significant insofar as it demonstrates what new visions for horticulture and vegetation entailed in the late nineteenth-century northwest. It seems to indicate that "southern" techniques for vegetable cultivation were highly regarded among Zuo and other officials, and their importation into the northwest was matched by a need to bring along their biological counterparts, vegetable seeds. If the techniques had been devised over the long term to support the growth of specific varieties of vegetables, then perhaps the techniques could not succeed without the proper seeds. And so the desire to raise the productivity of the land and people in Turpan and to make a style of horticulture from China proper prosper on the edges of the desert may have required new plants. In turn, vegetables of the varieties that Kui and Zuo imported into Xinjiang may have introduced novel culinary forms or daily practices to the people of the oasis. According to Xiao Xiong's postwar collection of poetry and prose about Xinjiang, "not many Muslims eat vegetables, so the business of gardening is neglected and there are also few varieties of vegetables."⁶⁷ This set them in distinct contrast to the migrating Han who were coming to Xinjiang to find new land for agriculture and new opportunities to make money through vegetable cultivation. If Xiao's claim holds true, then Kui's distribution of vegetable seeds and the knowledge of techniques to grow them may well have been an attempt to transform the habits of the residents

⁶⁵ GX5/5/16 (1879), XJDQ 15-4-181.

⁶⁶ I have been unable to confirm or deny Kui's claim based on present research.

⁶⁷ 回人不多食菜，故圃事疏而菜類亦少。Xiao Xiong, *Xijiang zashu shi*, 3:42b.

of Turpan while at the same time trying to make inhospitable climates and soils yield abundant harvests.

Xiao Xiong perceived that vegetable gardening was a less common form of horticulture in Xinjiang. The oases were abundant in the fruits of gardens and orchards, and he cataloged melons, raisins, peaches, pears, pomegranates, apricots, and cherries among Xinjiang's produce.⁶⁸ Yet even if fruit horticulture was far more common than vegetable cultivation, Xiao still recognized a number of commonplace vegetables, perhaps in the local markets.⁶⁹ Although it is difficult to determine from his process of translation alone to what degree Xinjiang and China proper shared specific varieties of vegetables in the nineteenth century, Xiao certainly thought they did. He listed both Chinese names and the Chinese transliterations of Turki names for several vegetable varieties, including turnips (Ch *manjing* 蔓菁, Tu *chamghur* 產木古爾), carrots (Ch *buluopu* 胡蘿蒲, Tu *zerdek* 栽爾達克), and coriander (Ch *yansui* 芫荽, Tu *yungac sut* 引麻蘇). For the last of these, Xiao Xiong noted that the “Chinese variety” (*Zhongguo zhi zhong* 中國之種) was known as *busui* 胡荽 and had been brought to China from the region that was now known as Xinjiang by Zhang Qian 張騫, a Han dynasty military general who had undertaken campaigns in the northwest. There were others, however, that Xiao seemed to think were unique to Xinjiang or to the greater northwest, including Shaanxi and Gansu—places where Zuo Zongtang's army had operated. Among these varieties were

⁶⁸ Xiao, *Xijiang zashu shi*, 3:39b-42b.

⁶⁹ The space and activity of the market afforded sojourners the opportunity to appraise the region's local produce and compare the array of commodities with what they knew of other regions in the empire. In 1882, a Manchu by the name of Shakedulinzhabu 沙克都林扎布 (1842-1897), who was serving as the commandant (*lingdui dachen* 領隊大臣) of Barkol 巴里坤 in northern Xinjiang, was dispatched to survey the border between the Qing state's territory in southern Xinjiang and imperial Russian territory. In his diary of the trip in the middle of September of that year, he recorded his short visit to Aksu, an oasis city lying on the edge of the Tarim Basin some 450 kilometers northeast of Kashgar. Shakedulinzhabu tersely noted what he saw in the markets of Aksu: “the fruits, vegetables, fish, and meat on the market are largely similar to [those of] China proper.” 市上蔬菜魚肉大似內地。Shakedulinzhabu 沙克都林扎布, *Nanjiang kan jie riji tushuo* 南疆勘界日記圖說 [Illustrated diary of surveying the border in southern Xinjiang], (M.s, preface 1884), 261.

a kind of onion (Tu *piyaʒ* 丕牙斯)⁷⁰ as well as what I believe was kholrabi (Tu *chaylan* 切蓮).

According to Xiao, kholrabi was not to be found in “southern China” (*nan z̄hong* 南中) but existed in Shaanxi and Gansu.⁷¹

Evidence from southern Xinjiang several decades after Xiao's sojourn suggests that, despite the existence of a few varieties unique to Xinjiang, local people recognized many vegetables commonly cultivated by Turkic residents as having a definite geographic origin—China. In the first decade of the twentieth century, a mullah in Kashgar by the name of Abdu Vali Akhon compiled a short description of local vegetables and their cultivation at the behest of a Swedish missionary.⁷² According to the mullah, “The seeds for the vegetables have [always] been taken from China. Rather few [seeds of] vegetables have been made available from other cities.”⁷³ In this list of twenty-one vegetable varieties from China, he included several varieties that were among those that Zuo had sent to Turpan in the form of seeds some thirty years earlier. Just as significant as the recognition of origin was the pattern of naming vegetables, which in many cases seemed to follow from Chinese names. Turkic speakers adopted the names for a number of Chinese vegetables, including cabbage (Tu *baysay*, Ch *baicai*) and asparagus lettuce (Tu *usung*, Ch *wosun*).⁷⁴ In other words, at the frontiers of the Qing empire in its last years, the vegetable varieties that had been brought from China proper at

⁷⁰ The late eighteenth-century *Xiyu tuzhi* 西域圖志 [Illustrated gazetteer of the western regions] lists this as the wild onion (Ch *yecong* 野葱, Tu *piyaʒ* 辟雅資). See *Xiyu tuzhi jiaozhu* 西域圖志校注 [Edited and annotated gazetteer of the western regions], (Urumqi: Xinjiang renmin chubanshe, 2002 [1762; 1893]), 552.

⁷¹ For his description of these vegetables, see Xiao Xiong, *Xijiang z̄ashu shi*, 3:42b-43a. As an aid to determining Turkic names for vegetables, I have used Gunnar Jarring, *Agriculture and Horticulture in Central Asia in the Early Years of the Twentieth Century with an Excursus on Fishing: Eastern Turki Texts with Transcription, Translation, Notes and Glossary* (Stockholm: Almqvist & Wiksell International, 1998), 53-57. For the kholrabi, Xiao noted another Turkic name that he transliterated as *pielan* 撇蘭, but I have been unable to find a corresponding Turkic name for this. Jarring, *Agriculture and Horticulture*, 55n29.

⁷² Abdu Vali Akhon, “Otyashlarning beyani” [A description of vegetables] (ca. 1905), reprinted and translated in Jarring, *Agriculture and Horticulture in Central Asia*, 53-57.

⁷³ *Ibid.*, 53.

⁷⁴ *Ibid.*, 54n20, 55n23.

some point in the past had retained their identities as imports from China with non-Turkic names.⁷⁵

Understanding Relations through the Transfer of Seeds and People

This initial evidence of the movement of seeds and vegetable varieties from China proper to Xinjiang is reason to question the geographical scope and social importance of “germplasm transfer” within and beyond the Qing empire in the nineteenth century. Jack Kloppenburg has employed this term to describe the movement of plant genetic stock in the form of seeds from one part of the world to another. In the early modern period, “plant germplasm was appropriated and shifted across the continents and archipelagos of what is now the Third World as the European powers sought commercial hegemony.”⁷⁶ The spread of vegetable seeds and other horticultural plants from the center of the Qing empire to the northwestern periphery in the late nineteenth-century as I have described does not exhibit the same patterns of unequal exchange based in the expansion of commercial networks and capitalism. This was not capitalist asymmetry of the kind described by Kloppenburg, even if germplasm transfer in the early modern world system had a huge and lasting impact upon the movement of people from China proper to the imperial peripheries.⁷⁷

⁷⁵ Swedish scholar Gunnar Jarring, who conducted extensive research on Turkic languages, expressed his surprise that a large proportion of vegetable names were derived from Chinese: “The names of the different kinds of vegetables are strikingly often of Chinese origin. My conclusion is that these vegetables do not belong to the original diet of the Turk population of this Central Asian area. But further research in the field is necessary.” Jarring, *Agriculture and Horticulture in Central Asia*, 8.

⁷⁶ Jack Ralph Kloppenburg, Jr., *First the Seed: The Political Economy of Plant Biotechnology, 1492-2000*, 2nd ed. (Madison: The University of Wisconsin Press, 2004), 154. For Kloppenburg, germplasm transfer reproduced the asymmetries of global relationships within the world system, and these asymmetries were manifest in quantitative and qualitative ways. Not only did metropolises appropriate much more germplasm from peripheries than it transferred to them. Germplasm also had a different social character that correlated with the direction of transfer. Seeds and plants have been appropriated as free goods from the peripheries, whereas the products of biotechnology in the metropole have flowed back to the peripheries as commodities. Kloppenburg, *First the Seed*, 15.

⁷⁷ The irony of Kashgar mullah Abdu Vali Akhon's inclusion of the tomato among the list of vegetables from China is that the tomato was an import to China from the New World. Although the tomato does not seem to have had the ecological and economic importance of maize, potatoes, or peanuts—all New

The most developed core regions of China proper seem to have gained nothing in varieties of flora or valuable germplasm from Xinjiang in the nineteenth century that they could put into the service of further economic development or the accumulation of wealth.

Nonetheless, there was an asymmetry in the nineteenth-century relationship between China proper and the frontier regions that becomes visible by focusing on the movement of plants and seeds to places like Xinjiang. At least for the nineteenth century, the evidence suggests that the geography of germplasm transfer in the Qing empire was quite different from the geographical trajectories of transfer within the networks of European colonialism whereby seeds and plant specimens often traveled from colonial peripheries to capitalist cores or between colonies under the control of a single European power. In the Qing, the transfer seems to have been largely unidirectional, with valuable genetic material in the form of seeds moving to the margins rather than to the center of the empire. In some ways, this outward movement of plant material coincided with the long-term spread of highly productive domesticated varieties to new lands. This trend applied to the vegetables of China, and historians have begun to trace the geographical expansion of plant cultivation in the late imperial period.⁷⁸ Yet the nineteenth century may have been unique in the volume of human movement to the frontiers which resulted, as a matter of course and of official policy, in the transfer of plant stock to these regions. The organic materials for food production accompanied the increasing stream of migrants out to Xinjiang and other borderlands. In fact, the

World cultivars which enabled Han migrants to expand cultivation to inhospitable soils and terrains within China proper and on its peripheries—the arrival of the tomato and these more valuable cultivars in China was an unintended manifestation of germplasm transfer derivative of European colonization in the Americas. On New World food crops, see, for example, Ping-ti Ho, “The Introduction of American Food Plants into China,” *American Anthropologist* 57.2, pt. 1 (April 1955), 191-201.

⁷⁸ Sub-varieties of common cultivars like the Chinese cabbage multiplied and expanded geographically in the late imperial period. Bai Hewen 白鶴文 et al., *Zhongguo jindai nongye keji shigao* 中國近代農業科技史稿 [Draft history of Chinese agricultural technology in recent times], (Beijing: Zhongguo nongye keji chubanshe, 1995), 160.

germplasm transfer facilitated by Zuo's military intervention and carried out by merchants, soldiers, and civilian agrarians reflected the basic necessities of early modern explorers and colonizers worldwide. They took staples and other plants with them to peripheral regions in support of their own subsistence.⁷⁹

What guided high officials like Zuo just as much as it guided civilian settlers as they migrated out to the frontiers was the desire for the reproduction of subsistence cast in the flavors of home. For some migrants, like the vegetable farmers from Tianjin, the will to specialize in horticulture grew out of the desire for easy money-making in the markets of northern Xinjiang, and so they did not aim merely to ensure their own biological subsistence and reproduction. Yet as far as the evidence will allow, I would like to argue that bringing vegetable seeds from one's native place and cultivating them in distant lands was never simply a question of economics or subsistence. Migrants came bearing their desires to re-create home life, and horticulture was one of the methods for doing so, because familiar tastes and landscapes reminiscent of home provided some sense of stability despite being in a foreign land. It was in the material practice of gardening that Zuo found this sense of stability. The gardens that he created in Gansu and Xinjiang promised to provide the aesthetic pleasure of treading across cultivated land, the daily practice of acting like a farmer, and the regular enjoyment of vegetables that fed his nostalgia for home.

The growing resemblance between the practices and products of horticulture in China proper and Xinjiang became an important trope in the years when Zuo Zongtang was not merely bringing new plants and seeds but also leading soldiers and refugees to the frontier. A stream of settlers followed in the wake of his army's reconquest of Xinjiang, and insofar as they brought

⁷⁹ Kloppenburg writes of European movement around the globe: "As more voyages of exploration were undertaken and as colonization proceeded, germplasm transfers of staple food crops were made as a matter of course, principally by sailors and settlers interested in subsistence production. [. . .] Old World vegetables went west." Kloppenburg, *First the Seed*, 155.

plants and practices with them, they added to the resemblance. To be sure, there were countervailing forces that sometimes impeded the replication of Chinese horticulture in peripheral territories. As Zuo and others discovered, the climate of Xinjiang was not always hospitable for growing hinterland vegetables, and attempts at horticulture may have floundered upon extremes in weather or other environmental conditions that set the frontier apart from China proper. There was another obstacle as well. Writing about Xinjiang agriculture at the end of the Qing dynasty, Sun Anfu complained of migrants traveling out to the borderland only long enough to accrue sizable wealth through commerce before they returned to their native places. Because they had “no plan to cultivate fields and gardens and raise sons and grandsons,” too many sojourners added little to the agricultural and horticultural soils of Xinjiang or to the region's Han population.⁸⁰ Despite these obstacles, there remained a vision of horticultural abundance in the northwest in the late nineteenth century. Bringing seeds and a deep commitment to cultivated landscapes, Zuo hoped to overcome the environmental conditions that made him feel so distant from Hunan. The push to spread vegetables to oasis cities like Turpan was corollary to the process of resettling refugees from China proper after warfare in the 1860s and 1870s. Insofar as the varieties of seeds, the cultivation practices, and the aesthetics of garden production were all imported from China proper, it was also an endeavor to render distant lands into familiar landscapes.

⁸⁰ 無殖田園長子孫之計。Yuan Dahua et al., *Xinjiang tuzhi*, 28:4b.

Chapter 6

Populating the Land: Regulations for Resettlement across the Empire

Taiping marauders returned to the northern Zhejiang town of Wukang sometime in early 1864. They forced themselves through front doors with knives bared, raided storage trunks, grains, and household utensils, and then occupied homes for days on end. When at last they departed, they left fields and gardens barren. Survivors had nothing to eat but “grass, roots, and tree bark.” Of those lucky enough to escape, some “entrusted their lives to tiny brooks and river branches” and bid their time amongst the dense thickets of reeds by the water's edge, scooping out fish and shrimp and picking wild rice shoots (*gu* 菰) and water poppies (*xing* 荇). Others fled into the piedmont, taking refuge in bamboo forests and along mountain cliffs. But most did not survive—Wukang was startlingly depopulated. One observer estimated that out of around 200,000 original inhabitants, only several tens of thousands remained in the town.¹

Precipitous depopulation was a defining characteristic of Zhejiang society following the Taiping disaster. Perhaps close to a half of the province's original thirty million people died or fled in the chaos.² In one northwestern district, Anji, the population fell from over 130,000 to fewer than 7000 within a matter of four years, between 1860 and 1864.³ The military agents of pacification and reconstruction were deeply aware of depopulation even before they had suppressed the last remnants of the Taipings in 1864. When Zuo Zongtang entered the beleaguered province from the

¹ This story is related in Qin Xiangye, *Ping Zhe ji lue* [Brief account of the pacification of Zhejiang], (Zhejiang shuju, 1873), 13:9a-b.

² Mary Backus Rankin, *Elite Activism and Political Transformation in China: Zhejiang Province, 1865-1911* (Stanford: Stanford University Press, 1986), 55. On the issue of nineteenth-century Taiping-era depopulation, see Ping-ti Ho, *Studies on the Population of China, 1368-1953* (Cambridge, MA; Harvard University Press, 1959), 236-48.

³ *Anji xian zhi* [Gazetteer of Anji county], (N.p., 1874), 4-*hukou*:4a-b.

southwest with his forces in early 1862, he discovered barren fields with survivors barely clinging to life. His initial reports indicated widespread death and desertion in the countryside, where farmland had quickly fallen out of use. This caused him great concern as the new governor of Zhejiang because he bore the responsibility for reviving agricultural production, providing food and clothing to survivors, and generating tax revenue for state treasuries stretched far beyond their means. Without labor in the countryside, the task of rebuilding would be all but impossible.

For late Qing governors charged with reconstruction, the quintessential characteristic of a devastated rural landscape was its paucity of people. The most startling landscapes were those without labor power to undertake farming. In the wake of rebellion, provincial policies to reconnect land with labor multiplied throughout the empire in the late nineteenth century. Governors from Zhejiang all the way to Xinjiang adopted stipulations to solicit settlers for land reclamation (*zhaoken* 招墾), among the first priorities in the wave of reconstruction efforts from the 1860s to the 1880s. Despite the great diversity of environments and landscapes within the empire, officials eager to promote production rarely tailored their regulations to specific regions. Instead, they assumed that the homogeneous mechanism of production—agriculture—would be employed in nearly the same manner everywhere. Likewise, although they usually raised the issue of water control and purported to repair waterworks, water control per se hardly differentiated one region from another. The details of place were all but effaced as these officials drafted and circulated regulations in the sprint to resettle the land.

In contrast to the *de facto* regulatory homogenization of agricultural landscapes, late Qing governors keenly categorized land's counterpart, human laborers. Eager to control the social ecology of agricultural production, officials almost always circumscribed specific groups of people whom they deemed worthy of additional government supervision based on their geographic origins or

their economic identities. Sometimes this meant outright exclusion from the process of reconstruction and social reincorporation, as was the case for some Shaanxi Muslims in the 1860s.⁴ In other cases, provincial policies initiated the strategic yet cautious inclusion of diverse populations into the process of land resettlement. Despite the appearance of equanimity created by commonplace regulatory claims about accepting both local people (*tuzhu* 土著) and migrants (*kemin* 客民) for resettlement, governors carefully discriminated between undesirable settlers and other groups they deemed unproblematic. As these agents of the Qing state strategized for the revival of postbellum agriculture, what mattered most was not the land itself but the people who would cultivate it.

Zhejiang's Initial Reconstruction under Zuo Zongtang

Appointed Zhejiang's new governor after the last one had died at the hands of the Taipings in Hangzhou, Zuo Zongtang was horrified by the disruption of agricultural production when he arrived with his army in early 1862. That summer, he reported how the Taipings had occupied the province's most fertile areas and how, in the preceding year, its military leaders Li Shixian 李世賢 and Li Xiucheng 李秀成 had ravaged hinterland countrysides “right when farming people were separating seedlings [for planting] and reaping rice, so that old grains were plundered and new grains were not harvested.” He was estranged by the extent of the ruins, by the enormity of the land without tillers, and by peasants who had escaped death but were now starving. The Taiping disruption to Zhejiang agriculture had resulted in deserted fields and sparse harvests. The few remaining people Zuo encountered as his army marched into the province from the southwest, through the prefecture of Quzhou, were “starving and tired in the extreme,” and “none had color in his face, even to the point

⁴ For example, see Liu Rong's “Regulations for Land Management” (1865), in HJWX, 39:64a-72a.

where some just withered and died.” He inspected destroyed buildings strewn with reeking “putrid flesh and skeletons,” leaving “diseased vapors” to waft through the air. As survivors struggled for life, the fields grew no grains.⁵

Even as his army made progress expelling Taiping forces from major cities the following year, the countryside languished. As he victoriously reported the recapture of Shaoxing in March 1863, Zuo appended a dire missive: in Zhejiang, “people and materials have faded away, the fields are wastelands, and as far as one can see there are white bones and yellow cogongrass (*huang mao* 黃茅).” Almost all of the farming tools had been destroyed. Unable to purchase seeds of staple grains and beans, survivors scavenged the fields for scraps of edible vegetation: “they go along, hunched over in barren farm plots and abandoned vegetable gardens, picking wild vegetables for food.” When they could search no more for lack of light, “they snuggle up and lay their heads under cracking and crumbling walls, using pieces of earth to sleep.” Perhaps most appalling to the governor, starvation victims had lost the will to live and looked with complete indifference upon “their own flesh and blood dying at their sides.”⁶

Zuo responded to these scenes of deprivation with commonplace famine-relief measures. His army doled out gruel to survivors from grain stocks confiscated from captured rebels or from their own provisions. But seeing as how Zuo's army consistently faced grain shortages, he deemed this only a stopgap solution, the mere “application of small drops of water” to a conflagration.⁷ To replenish the stocks, he procured grain from northeastern Jiangxi province and had it shipped by boats, carts, and human porters across the mountains of southwestern Zhejiang.⁸ Yet this precious grain did not satisfy the needs of his army and famine survivors. By the spring of 1863, the

⁵ TZ1/6/16 (1862), ZZQ, 1:74-75.

⁶ TZ2/2/4 (1863), ZZQ, 1:178.

⁷ Ibid., 1:178.

⁸ TZ1/6/16 (1862), ZZQ, 1:75.

governor was fretting about how distant the fall harvest seemed, and he harbored little hope that the destitute would survive the summer.⁹

More than soup kitchens would be necessary to make Zhejiang thrive, so Zuo devised a concise set of twelve guidelines for reconstruction within his first year in the province. In the winter of 1862-63, he purportedly distributed to subordinates “Twelve Articles of Remediation” to instruct local officials how to initiate and manage reconstruction efforts.¹⁰ Each district of each prefecture was to establish a “united welfare bureau” (*tongshan ju* 同善局) headed by local gentry who could also set up branch bureaus in countryside villages at their discretion.¹¹ Although there were pre-Taiping precedents for such bureaus in the existence of government-run charities, the number of welfare institutions greatly increased in the era of reconstruction.¹² The wide range of functions of the new bureaus also surpassed the more narrowly defined responsibilities of previous agencies. The twelve articles stipulated that the bureaus undertake charitable activities, reorganize and regulate local finances and solicit donations, and enforce prohibitions against four activities deemed harmful to public order.¹³ The united welfare bureaus were to be funded by raising new *lijin* 釐金 taxes on salt

⁹ There were also indications that relief in the form of gruel was insufficient. The new military general of Hangzhou, Yi-le-dong-a 伊勒東阿, despaired at the “look of starvation” on the faces of the people even after local officials had begun to distribute free porridge. Yi-le-dong-a was struck by the depth of depravity of the scenes in Zhejiang when he entered the province sometime before the summer of 1863. He noted how the population had greatly shrunk, fields had gone to waste, and many houses had been lost to immolation. On top of this, the weather had not proved cooperative in ameliorating the plight of the survivors. He reported in August 1863 that the rains had been delayed in coming, leaving the fields dry and hurting grain crops. See T'Z2/6/26 (1863), GZZ 04-01-22-0061-050.

¹⁰ T'Z2/2/4 (1863), ZZQ, 1:178; Qin, *Ping Zhe ji lue*, 13:3a.

¹¹ Qin, *Ping Zhe ji lue*, 13:3a; Li Yingjue, *Zhe zhong fa fei ji lue* [Brief account of the hairy bandits in Zhejiang], (N.p., n.d.), 84.

¹² Rankin, *Elite Activism and Political Transformation in China*, 94.

¹³ The twelve articles are as follows: “Take in and provide support for children”; “Take in and provide support for women”; “Provide aid for widowing, orphaned, and crippled beggars”; “Bury bodies”; “Increase *lijin* taxes on salt and tea”; “Raise *lijin* taxes on boating households”; “Urge donations from the private rents [collected by] ancestral temples”; “Urge donations from the gentry”; “Prohibit abductions and kidnapping”; “Prohibit disturbances and swindling”; “Prohibit bullying and insulting”; “Prohibit the slaughter of plough oxen.” Qin, *Ping Zhe ji lue*, 13:3a-5b.

and tea at production grounds, trading ports, and checkpoint bureaus.¹⁴

Despite the clear concern of the articles for charitable, financial, and security matters, the newly established bureaus also paid attention to rebuilding agriculture. The final article, for example, strictly forbade the slaughter of plough oxen, an integral input for productive farmwork. According to Zuo, in early 1863 the number of living draft animals in Zhejiang was a tiny fraction—“not one in a hundred”—of the original number in the province.¹⁵ This paucity of “oxen power” meant that reclaiming all of the abandoned and unused farmland would be far more difficult than before, and Zuo's prohibition was intended to stem any further loss of these valuable, living agricultural tools.¹⁶

The bureaus also aimed to revive handicraft production, a significant component of the rural household economy in nineteenth-century Jiangnan. The second article of Zuo's regulations outlined plans for using female labor to produce textiles in a kind of work-as-charity arrangement. Despite the mandate to “take in and provide for women” (*shou yang funu* 收養婦女), the details of the article indicate how bureaus took advantage of the crisis to tap into women's knowledge and labor. Women first registered at the bureaus with a long list of personal details, including their ages, place of origin, residence, and the names of parents-in-law, husband, parents, uncles, brothers, and all other relatives, living or deceased. Then the bureaus were to distribute raw cotton and hemp and exhort the women to spin the materials into thread and weave it into cloth. Once the weaving process was complete, women were to return to the bureaus to sell the finished cloth. This kind of putting-out system engaged surviving women in productive activity and also helped the bureaus “to satisfy expenditures.”¹⁷ Although the women's work was not agricultural fieldwork, it was no doubt intended as a counterpart to farming.

¹⁴ Qin, *Ping Zhe ji lue*, 13:4a.

¹⁵ TZ2/2/4 (1863), ZZQ, 1:178.

¹⁶ Qin, *Ping Zhe ji lue*, 13:5b.

¹⁷ Qin, *Ping Zhe ji lue*, 13:3b.

The united welfare bureaus may have provided relief for local survivors in the short term, but the governor knew that their work alone was not sufficient to rebuild agricultural production in the long term. Much land had fallen out of cultivation as landlords and peasants fled or died in the violence, and only a fraction of the original population remained. The primary task for agriculture was therefore to recruit more labor to settle on Zhejiang's abandoned cropland. As of March 1863, the governor planned to purchase seeds and plough oxen and entice the “farming people of neighboring provinces to come to Zhejiang to cultivate land, in hopes that the future might have the expectation of population growth.”¹⁸ Despite his resolve to promote the province's reconstruction, Zuo stayed in Zhejiang only until late 1864, when he was ordered to defeat rebel movements in Fujian and Guangdong provinces.

Differentiating Settlers: Ma Xinyi's Zhejiang

Plans for recruiting farm settlers to Zhejiang's fields awaited Zuo's successor, Ma Xinyi 馬新貽, an experienced military general from the army of Zeng Guofan 曾國藩. Not more than a month after taking up his post as the new governor in January 1865, Ma articulated six objectives for provincial reconstruction, two of which directly pertained to agricultural production: water control and land reclamation.¹⁹

Like his predecessor, Ma understood the urgency of repairing embankments along the coastline to protect littoral communities and provide irrigation for crops. Dikes along the north side of Hangzhou Bay and the Qingtang River—in places like Renhe, Haining, and Haiyan—had fallen into various states of disrepair. Several years earlier, Zuo had reported how “salty water poured into

¹⁸ TZ2/2/4, ZZQ, 1:178.

¹⁹ Ma Xinyou, *Ma Duanmin gong nianpu* [Chronological biography of Ma Xinyi], (N.p., n.d.), 26a; TZ4/1/15 (1865), *Ma Duanmin gong zou yi* [Memorials of Ma Xinyi], (N.p., 1894), 1:3a-6b.

farmlands, mulberry trees withered and rice turned into weedy grasses, and farmers next to the seas lost their occupations” because stone embankments and reinforced earthen dikes had eroded.²⁰ Ma acknowledged the initiative of some local gentry to repair embankments, but he envisioned much grander plans: replacing the bunches of sticks or bundles of tree twigs, grain stalks, and stones that formed some embankments with costly stonework. Beyond these urgent issues, the provincial capital also faced water problems. West Lake was clogged with turnip mustard (*fengfei* 葑菲), making dredging difficult, but Ma firmly resolved to clear the grasses from the lake and other waterways to prevent sedimentation and thus enable farmland irrigation.²¹

Despite the significance of water control, Ma identified repopulating Zhejiang's farmlands as the foremost task for the reconstruction of agriculture. He deemed the human resources of the land fundamentally inadequate to fully extract the resources of the soil. Depopulation in the previous decade had ruined the province's agriculture: “In Zhejiang, farmland hitherto has been mostly fertile, and Western Zhejiang the best. Since warfare, the greater part has become wasteland (*huangtu* 荒土). Seeking a reason for this, [I find] the main cause is that people were forced to leave and nine out of ten houses are empty.”²² To initiate reclamation of wasteland and make Zhejiang fertile again, Ma instructed subordinates to recruit refugees and migrants. The governor initially showed almost no preference for who would settle and cultivate abandoned land. He may even have been frustrated that, nearly six months after Zhejiang had been completely retaken by imperial forces, more local people had not returned. Calling into question the basic intentions (*benxin* 本心) of the common people who “have a native place yet do not return and have fields yet do not farm,” Ma instructed each district to recruit farmers—anyone “willing to cultivate”—regardless of whether they were

²⁰ TZ3/4/13 (1864), ZZQ, 1:423.

²¹ TZ4/1/15 (1865), *Ma Duanmin gong zou yi*, 1:5a-b.

²² TZ4/1/15 (1865), *Ma Duanmin gong zou yi*, 1:6a.

refugees of local origin or peasants from other provinces.²³ Just as Zuo Zongtang had planned, local officials were to provide seeds and tools to the recruits, who would repay these capital inputs only after the following year's autumn harvest.

Ma's summary of reclamation plans lent a veneer of universality to his reconstruction tactics. Any farmer should be allowed to cultivate any piece of vacant and unclaimed land, no matter the agricultural knowledge he had, his geographical origin, or the local ecological conditions. Yet Ma also recognized local differences would likely shape how plans were carried out. He made local officials responsible for “taking appropriate action according to local conditions” (*yin di zhi yi* 因地制宜) on the issues of recruitment tactics and tax assessments after reclamation.²⁴ Ma also articulated vast discrepancies in mores and popular sentiments of the people in each of Zhejiang's eleven prefectures. Given these localisms, the governor suggested that petty officials should be chosen “according to the locality” (*yin di* 因地), a way to ensure their rapport with local inhabitants. This was especially important for prefectures where he assumed some people to be morally delinquent. The people of Ningbo and Shaoxing prefectures, for example, may have been extravagant or frugal, but they all had a knack for “clever swindling,” an aspect of their character likely to be handled adroitly only by officials who governed flexibly and were “shrewd and able to endure problems.” By contrast, the “savage” people of Taizhou prefecture along the eastern littoral required “determined and powerful” leaders who could “restrain their ferocity and obstinacy and calm them into being good.”²⁵

²³ TZ4/1/15 (1865), *Ma Duanmin gong zou yi*, 1:6a.

²⁴ TZ4/1/15 (1865), *Ma Duanmin gong zou yi*, 1:6b.

²⁵ TZ4/1/15 (1865), *Ma Duanmin gong zou yi*, 1:5b. Ma reported that land in the three prefectures of Jinhua, Quzhou, and Yanzhou was barren, yet the people's feelings were “all simple, gentle, and obedient.” Their primary activities after destruction had become mere “rest and procreation.” Yet Ma prognosticated that if “merciful, propitious, and kindly” local officials were employed and “went above and beyond their offices,” life would gradually return to normal. Ma also called the people of Hangzhou, Jiaying, and Huzhou “luxuriously extravagant” and the people of Chuzhou and Wenzhou “peaceful and quiet.”

When he detailed formal policies for soliciting settlers and facilitating reclamation in the “Regulations for Reclamation in Zhejiang” several years later, Ma intimated that local officials ought not to differentiate between settlers, only between different pieces of land.²⁶ Ma cloaked this aspect of the regulations in imperial ideology by claiming that the “imperial court makes divisions between land but does not distinguish between people” (*you fen tu wu fen min* 有分土無分民). In other words, in the process of surveying land and reappropriating it into the system of government extraction, officials ought to pay attention only to boundaries in fields and waterways. No distinction would be made among the potential settlers, a clear contradiction of Ma's desire to categorize Zhejiang people when he first arrived in the province. Regardless of if they were local (*bendi* 本地) or from another region (*waichu* 外處), they would be allowed to take up new claims on abandoned land as long as they cultivated it. The regulations mandated that settlers register their previous activities, the position and location of their new fields, the number of *mu* 畝, and the grain output. If several people vied for one parcel of land, the first person to arrive would have priority.²⁷

Despite this air of universality, however, Ma's categorizations of Zhejiang people crept into settlement regulations. Anxious about dangerous and uncouth southeasterners, Ma maintained a tepid attitude toward any farmers who came from Wenzhou and Taizhou prefectures. Previously, Ma had warned about needing to restrain them. Now, he only very warily incorporated them into Zhejiang's reconstruction process. The regulations thus cautioned his subordinates: “For the fierce people of Wenzhou and Taizhou, one need not recruit them to come, [but if] there are those who have come willingly, one need not command them to leave.”²⁸ If Ma stopped short of outright

²⁶ TZ5/8/22 (1866), *Ma Duanmin gong zou yi*, 3:49a-57b; TZ5/9/20 (1866), LFZZ 03-9552-17. The memorial containing the regulations dates to late September 1866, but the regulations contain passages indicating decisions made in 1864.

²⁷ TZ5/8/22 (1866), *Ma Duanmin gong zou yi*, 3:53b-54a.

²⁸ TZ5/8/22 (1866), *Ma Duanmin gong zou yi*, 3:53b.

prohibition, he nonetheless differentiated Wenzhou and Taizhou people from the rest of the potential settlers, who would be given legal access to cultivate Zhejiang's abandoned lands.

Although Ma never clarified why he targeted people from those two southeastern prefectures, it seems likely that he reproduced the late imperial precedent of official animosity toward so-called “shack people” (*pengmin* 棚民), a derogatory moniker for seasonal or permanent migrants who cultivated land and labored in the Yangzi highlands and who were known for their flimsy hillside abodes.²⁹ Qing officials came to associate the shack people with social instability and ecological degradation in upland regions, and blamed them for problems like deforestation, soil exhaustion, and erosion.³⁰ Although these upland settlers had arrived from various locations in southeastern China during the Qing era, post-Taiping Zhejiang officials apparently associated them with the prefectures of Wenzhou and Taizhou.³¹ In these prefectures, Ma reported, the mountainous terrain had little arable land, so residents migrated and sought new opportunities to cultivate land elsewhere, despite the fact that their native regions were relatively unharmed by the rebellion. But as Ma recognized, residents of the countryside in places like Hangzhou, Jiaxing, and Huzhou refused to conduct business with any such people because “their temperament is fierce by nature” (*xingqing su ban* 性情素悍), and landowners apparently expected them to cause trouble at the first sign of

²⁹ On the shack people, see Stephen Averill, “The Shed People and the Opening of the Yangzi Highlands,” *Modern China* 9.1 (January 1983):84-126; Anne Osborne, “The Local Politics of Land Reclamation in the Lower Yangzi Highlands,” *Late Imperial China* 15.1 (June 1994):1-46; Anne Osborne, “Highlands and Lowlands: Economic and Ecological Interactions in the Lower Yangzi Region under the Qing,” in *Sediments of Time: Environment and Society in Chinese History*, ed. Mark Elvin and Liu Ts'ui-jung (Cambridge: Cambridge University Press, 1998), 218; Shiba Yoshinobu, “Environment Versus Water Control: The Case of the Southern Hangzhou Bay Area from the Mid-Tang through the Qing,” in *Sediments of Time: Environment and Society in Chinese History*, ed. Mark Elvin and Liu Ts'ui-jung (Cambridge: Cambridge University Press, 1998), 163-164.

³⁰ For example, see XF1/5/1 (1851), LFZZ 03-4489-23.

³¹ One post-Taiping gazetteer describes “shack people” as “people of Wenzhou and Taizhou who cultivate the mountains. Their dwellings are all grass huts. Thus, they are called shack people.” See *Anji xian zhi* (1874), 4-*bukou*:4b. For other references to shack people being from Wenzhou, see Anne Osborne, “The Local Politics of Land Reclamation in the Lower Yangzi Highlands,” 4, 7n10, 14.

tension in the relationship.³² Ma thus realized the potential difficulties of harnessing the labor power of Taizhou and Wenzhou people to revive agriculture in the northern and western prefectures—Hangzhou, Jiaxing, Huzhou, Jinhua, Quzhou, and Yanzhou—where large expanses of farmland had grown into weeds.

Yet these discriminatory sentiments created a conundrum for local officials and landowners who failed to attract other tenants. The regulations called for outsiders and non-Zhejiang people to be accepted as new cultivators, but Ma worried that people from provinces bordering Zhejiang—namely Jiangsu, Anhui, and Jiangxi—would prefer to remain in their native places rather than migrate to Zhejiang, especially because the Taiping had wreaked havoc and left wasted farmland in those provinces as well.³³ Nonetheless, Ma envisioned a time when Zhejiang could complete its recovery. He estimated that the renewal of “livelihoods” (*shengli* 生理) and “vitality” (*yuanqi* 元氣) by means of agricultural reconstruction could occur within three to five years in areas with relatively little wasted property (*huang chan* 荒產) and within ten to twenty years in areas where there was much land to be reclaimed.³⁴

To hasten reclamation and ensure the new land system's long-term stability, the regulations called upon local officials to clarify and delineate private property rights as they pertained to environmental resources. Recognizing how settlers lived mixed together, with the “good and the bad intermingled,” officials were not only charged with reestablishing systems for public security (*baojia* 保甲) and ejecting vagrants, gamblers, thieves, and people who secretly slaughtered their animals. They also had to define the geographic boundaries of property and rights to land use. Wherever local people or settlers “gathered firewood, siphoned spring water, or cultivated garden vegetables,”

³² TZ5/8/22 (1866), *Ma Duanmin gong zou yi*, 3:51b.

³³ As Ma worried, “Who would be willing to abandon what is near to seek what is afar?” Memorial of TZ5/8/22 (1866), *Ma Duanmin gong zou yi*, 3:51b.

³⁴ TZ5/8/22 (1866), *Ma Duanmin gong zou yi*, 3:51b.

Ma made officials responsible for clarifying the dividing lines (*jiexian* 界限) between potentially conflicting parties. The strict enforcement of these demarcations was, in Ma's mind, a key means to preventing future disputes, avoiding potential unrest, and ensuring the lasting impact of reconstruction in Zhejiang.³⁵

Resettling and Colonizing Northern Xinjiang

Far across the empire, northern Xinjiang's oases and steppe lands also awaited agricultural settlers. Stark depopulation of the territory's cities and countrysides followed in the wake of Zuo Zongtang's final reconquest of the imperial territory in 1878. Just as Zuo had bemoaned the utter destruction of agrarian production in the Zhejiang countryside, the acting military governor of Urumqi in 1879, Gongtang 恭鏜, complained that warfare had lain waste to the city and had caused residents to flee. As he reported in May of that year, “no more than ten or twenty percent of the Manchu and Han soldiers and civilians have survived; all [of the rest] have drifted away and become destitute.” Other officials had attempted to recruit new settlers, but with poor results: because “there is nothing left of houses or tools, there is no way to earn a living.”³⁶ Without these basic implements of daily agricultural life, Gongtang worried, farmers would not return and the land would remain without labor.

By the time Xinjiang became a province in 1884, Gongtang had already been transferred from his post in Urumqi. But his sentiments about reconstructing agriculture by recruiting farmers from beyond the region were echoed by provincial leaders. The province's first governor, Liu Jintang, also remarked upon warfare's legacy in the landscape: the vast fields of useless grasses. (Perhaps only coincidentally, Liu identified the weedy culprit as cogongrass, the same organism that

³⁵ TZ5/8/22 (1866), *Ma Duanmin gong zuo yi*, 3:57a.

³⁶ GX5/R3/21 (1879), LFZZ 03-9553-47.

had blanketed abandoned fields in Zhejiang two decades earlier.) Yet Liu recognized the immense agricultural potential of these deserted lands, which belonged not to the worthless stretches of sand and rock—the *gobi*—but to the realm of fertile soil.³⁷ Much like Ma Xinyi in Zhejiang, Liu and the province's administrative commissioner, Wei Guangtao, devised stipulations to solicit settlers to cultivate the soil (*zhaoken* 招墾) and expand agricultural production. And just as in Zhejiang, one overwhelming concern was to determine which groups of people would be involved in the resettlement. The regulations also prioritized water, but said almost nothing about local ecological conditions.

Wei Guangtao apparently drafted formal regulations for soliciting settlers around 1886.³⁸ Aimed at guiding the process of resettlement and reclamation, they began with admonitions to repair waterways and irrigation facilities, suggesting the absolute importance of water control in a region where mountain springs and snow melt supplied irrigation canals in each new growing season. Whereas the irrigation channels of southern Xinjiang (*nanlu* 南路) had already been repaired by the defense forces (*fangying* 防營)—a reference to Qing troops—and whereas the region was densely populated with relatively few fallow fields (*huangtian* 荒田), in sparsely populated northern Xinjiang (*beilu* 北路) the greater portion of ditches were clogged with silt and did not serve the function of irrigation. But given sources of water, farmers would gradually be able to prosper. So the most pressing issue was to devote effort and financial resources to provide water for northern districts and stave off drought in places like Qitai, several hundred kilometers east of Urumqi, whose people suffered through extreme drought the year Wei penned the regulations.

³⁷ GX13/2/12 (1887), *Liu Xiangqin gong zongao* [Memorials of Liu Jintang], (Changsha, 1898), 12:16a.

³⁸ XJDQ 15-34-3258. The document is undated and only partially preserved, but a comparison of the contents with a memorial of Xinjiang Governor Liu Jintang suggests a date prior to early 1887. See memorial of GX13/2/12 (1887), *Liu Xiangqin gong zongao*, 12:16a-18a. See also Zhongguo di yi lishi dang'anguan, ed., *Qing dai zoushe huibian: nongye, huanjing* [Compilation of Qing-era memorials: agriculture, environment], (Beijing: Shangwu yinshu guan, 2005), 553.

As the regulations made clear, however, clearing silt from canals and patching up destroyed embankments was part of the process of recruiting new settlers, not merely saving the ones already there. By all accounts, there was far too little labor power to reclaim all of the northern lands. Early in 1887, Liu Jintang bemoaned how only 20 to 30 percent of the land had become productive via reclamation. Wei's guidelines attributed this apparent waste of land to sparse population and destroyed water resources: "That wasteland still cannot be opened up and taxation still cannot be swiftly resumed is indeed because of the paucity of people and also because ditches have yet to be repaired."³⁹ Despite the staggering short-term costs of repairing them, in the long run the regulations assumed that such expenditures would enable settlement and would lead eventually to surpluses for military coffers.

Xinjiang's leaders expected to entice local people and migrants to participate in agricultural reclamation in zones of settlement north of the Tianshan mountains. Yet because there were few local people (*tuzhu* 土著) remaining to cultivate the land, the regulations imagined three large groups of people responding to the government's initiative. A motley mix of migrants (*kemin* 客民) composed the first group, which was to include soldiers who had taken leaves of absence as well as "people who followed the battalions conducting trade, seeking relatives, or looking for trouble (*mishi* 覓事)."⁴⁰ In the eyes of officials like Liu and Wei, the presence of these migrants challenged Xinjiang's social stability. The regulations claimed that some labored and adhered to the law, but others lived by indolence or mischief, or furtively cultivated opium in the mountains in spring and summer, and so they actually undermined Qing state goals through their labor. Others stayed purely because they had no money to return home or because business losses elsewhere caused them to peregrinate to "distant lands" (*yidi* 異地). The territory of Xinjiang had long served as a peripheral

³⁹ XJDQ 15-34-3258.

⁴⁰ XJDQ 15-34-3258.

geographic receptacle for Chinese criminals, an undesirable land where outlaws and exiled officials served time away from their home provinces.⁴¹ The question for officials in Xinjiang in the 1880s was how to transform petty crooks, gamblers, troublemakers, and economic refugees who had come to Xinjiang of their own accord into productive farm laborers, to “change the bad into good” (*hua you wei liang* 化莠為良). Uncultivated land provided just such an opportunity for their transformation. Indeed, Liu and Wei saw it as a chance for the mutual transformation of useless subjects—aimless people and wasteland—into productive components of the landscape.⁴² The regulations thus called for subordinates to thoroughly investigate “peddlers, hired laborers, loafers, and the jobless,” register them, resettle (*ancha* 安插) them on vacant land, and calculate their allotment of irrigation water. Local officials were to provide loans for initial farming inputs because, as the governor recognized, all of the “newly recruited households” were “impoverished.”⁴³

Turkestanis (*chanmin* 纏民) from southern Xinjiang comprised a second category of settlers to be involved in state-sponsored reclamation. From the governor's viewpoint, these people populated the southern landscape in abundance, leaving little extra land for cultivation in the oases.⁴⁴ They could thus “aid in the assemblage” of cultivators in the north. Appropriating their labor for state goals was hardly a new phenomenon; Qing officials had long utilized southern Muslims for farmwork in northern Xinjiang.⁴⁵ Within the first decade of Qing conquest of Xinjiang in the 1750s, the Manchus brought thousands of households of southern Turkestanis to cultivate land in the

⁴¹ Joanna Waley-Cohen, *Exile in Mid-Qing China: Banishment to Xinjiang* (New Haven: Yale University Press, 1991).

⁴² XJDQ 15-34-3258. As the regulations claimed, “Having one more household opening up land, a place will have fewer people flaunting the law.”

⁴³ GX13/2/12 (1887), *Liu Xiangqin gong zongao*, 12:16a.

⁴⁴ GX13/2/12 (1887), *Liu Xiangqin gong zongao*, 12:16a.

⁴⁵ Peter C. Perdue, *China Marches West: The Qing Conquest of Central Eurasia* (Cambridge, MA: Harvard University Press, 2007), 344-345, 351-352.

region around Ili.⁴⁶ The 1887 regulations pointed out that there had been no precedent for Turkestani Muslims cultivating in the north except for Gulja (Ch. *Gu-le-zha* 固勒扎)—the local place name for Ili—where they had grown to over six thousand households and generated annual revenues of 100,000 *shi* of grain.

Imagining the Muslims as important bodies of labor and sources of revenue, the regulations departed from precedent and envisioned southern Turkestanis settling into the region around the new provincial capital, Dihua 迪化 (lit. “enlightenment”), a Chinese name for Urumqi. Since “wasteland is everywhere, and local people (*tu-zhu* 土著) are few and far between,” the land in this region awaited settlers. In the eyes of Qing officials, southern Turkestanis had a clear financial advantage over settlers from China proper because to “imitate the methods of transferring people [from the provinces] to solidify the border” would be extremely costly. The “impoverished and indolent households” of the burgeoning Turkestani Muslims of the south held great potential for aiding agrarian expansion. The regulations suggested allowing Muslim households without any fixed property (*hengchan* 恆產) to migrate north with their families, and allocating to them start-up “capital (*ziben* 資本), just like the regulations for soliciting for reclamation among locals and migrants (*tu ke* 土客).” But their incorporation into this state-sponsored agricultural project did not indicate full integration with the Han population of late nineteenth-century Xinjiang. A native headman (*tunzhang* 屯長) in charge of social control would accompany groups of ten or more households from the south.⁴⁷ After they had been settled (*ancha* 安插), they were to be “isolated” (*gejue* 隔絕) from local and migratory Han settlers (*tu ke* 土客) even as they would reclaim land and participate in the official project to build the new province.

⁴⁶ Dorothy Borei, “Beyond the Great Wall: Agricultural Development in Northern Xinjiang, 1760-1820,” in *To Achieve Security and Wealth: The Qing Imperial State and the Economy, 1644-1911*, ed. Jane Kate Leonard and John R. Watt (Ithaca, NY: Cornell East Asia Program, 1992), 30.

⁴⁷ XJDQ 15-34-3258.

Despite the financial benefits of using southern Muslim labor for reclamation, Liu and Wei apparently thought that Muslims would be insufficient for the project. Indeed, neither the Turkestanis nor the Han migrants already in Xinjiang could match the “loafers from inside the Great Wall” (*guannei xianmin* 關內閑民)—people from China proper without employment or land—as a potential pool of recruits for agriculture.⁴⁸ To find these laborers, they looked east to Gansu. Although that province's native inhabitants (*tuzhu* 土著) were “not very abundant,” Gansu functioned as a zone of sojourning and settlement for migrants from the neighboring provinces of Sichuan and Shaanxi who worked as hired laborers or peddlers. Gansu's unclaimed land was particularly attractive to Sichuan migrants, who faced high population density and land scarcity back at home. But as a poor province, Gansu lacked the resources to fund any large-scale recruitment of farmers, and Liu and Wei assumed that sojourning migrants faced “perpetual hardship” and the prospect of failure there. So some migrants continued westward in pursuit of economic refuge. Wei claimed to have seen them himself west of Jiayuguan, the point of passage between Gansu and Xinjiang: a great many “poor people (*pinmin* 貧民) who carried belongings on their backs along the road, going to Xinjiang to avail themselves of opportunities for employment.”⁴⁹ Excited by the possibility of enticing these people to reclaim farmland, the regulations proposed soliciting willing settlers from all across Gansu and beyond. Xinjiang province would accept economic outcasts from anywhere in the east: “No matter if the unemployed of the migrant populace (*kemin minren* 客民民人) are from this province, Sichuan province, or any province, allow all of them through the pass to diligently work for reclamation (*qin ken* 勤墾).”⁵⁰

Given the limitations of a single point of passage, however, Liu and Wei may have worried

⁴⁸ XJDQ 15-34-3258.

⁴⁹ XJDQ 15-34-3258.

⁵⁰ XJDQ 15-34-3258.

that some migrants were prevented from entering Xinjiang. So their regulations proposed ordering Jiayuguan to stay open from morning to dusk to remove any impediments to outward migration. The officials there were also to be “lenient in checking their [transit] tickets and interrogating them” such that migrants would not hesitate to move through the checkpoint.⁵¹ (People from Xinjiang who wanted to enter the pass and travel toward China proper, by contrast, would be checked as usual.) With these changes in transit policy, Liu and Wei imagined the future when “all people within the pass (*neidi gemin* 内地各民) would come as soon as they heard the news.” They also imagined a screening effect, whereby new settlers from afar who had responded to their solicitations would “set their minds to agriculture, unlike the savage and hard-to-domesticate (*han ye nan xun* 悍野難馴) who have long followed the army.”⁵² Diligent farm workers from China proper thus held the position of model agricultural settlers in one of the empire's newest peripheral provinces.

Unlike post-Taiping settlement guidelines in Zhejiang, Xinjiang's regulations contained no details about determining land ownership. Recently reappropriated for the Qing state by Zuo Zongtang's military forces, the lands of northern and southern Xinjiang were open ground for provincial officials to determine who would be settled and at which location. The regulations did, however, spell out clear financial and land obligations to new settlers to be borne by provincial officials. Wei's regulations called for each settler household—defined as two people—to receive 60 *mu* of farmland, three *shi* of seed, a pair of draft animals, food stipends and grain rations in wheat for eight months, and money for agricultural tools and house construction materials.⁵³ The regulations also made sure that tax obligations or repayments of capital would not hinder the grand process of reclamation. Repayment would be scheduled over the course of the first two harvest

⁵¹ XJDQ 15-34-3258.

⁵² XJDQ 15-34-3258.

⁵³ The total financial obligations of the state to a settler household were calculated at 73.1 taels. GX13/2/12 (1887), *Liu Xiangqin gong zongao*, 12:16b; XJDQ 15-34-3258.

seasons—longer if the harvest failed—and only in the third and fourth seasons were local officials to begin levying taxes.⁵⁴ In other words, they were almost wholly concerned with enticing new settlers to cultivate land and providing them with the necessary resources. When he reported the new regulations in 1887, Governor Liu Jintang also claimed early successes. He calculated that about 1090 households of locals and migrants, civilians and convicts, had been resettled near Dihua, near cities to Dihua's northeast and northwest, as well as in Hami.⁵⁵

Reconstruction, Settlement, and Colonization in the Late Qing

In the era of post-Taiping reconstruction, Qing officials beyond Zhejiang and Xinjiang articulated their intentions to repopulate landscapes with people cultivating crops. In 1865, Governor Liu Rong 劉蓉 of Shaanxi province developed “Regulations for Land Management” (*Chouban yingtian zhangcheng* 籌辦營田章程) to clarify procedures for settlement, which included temporarily setting up land bureaus, differentiating between abandoned, absentee-owner, and confiscated properties, and surveying land—even in “remote wasteland areas.”⁵⁶ He had the same visions as his counterparts for reviving and extending cultivation where land appeared to lie fallow owing to a shortage of labor. Liu in Shaanxi, Ma Xinyi in Zhejiang, and Liu Jintang and Wei Guangtao in Xinjiang all endeavored to solve the fundamental problem of the landscape, its lack of productivity. They repeatedly voiced frustrations that farmland had turned to grass or brambles after warfare. Hoping to extract what they conceived of as the untapped but intrinsic profits of the soil, these Qing officials instituted specific regulations for gathering human capital—farmworkers, tenants, and owner-cultivators—and channeling it to the “wastelands” in their provinces. In

⁵⁴ GX13/2/12 (1887), *Liu Xiangqin gong zongao*, 12:16b.

⁵⁵ GX13/2/12 (1887), *Liu Xiangqin gong zongao*, 12:17a.

⁵⁶ TZ0/0/0, LFZZ 03-4967-25, 2a. This document has been published in at least two different compilations. See Liu Rong, TZ4/0/0 (1865), in HJWX, 39:64a-72a; Liu Rong, *Yang bui tang wen ji* (1877), 10:39a-47b.

principle, the agrarian labor of these new settlers would yield tax revenues and provide a steady source of funding for extended and costly reconstruction projects.

Late Qing officials often reported taking appropriate action to suit local conditions (*yin di zhi yi* 因地制宜).⁵⁷ Liu Rong repeated this axiom as he planned a series of “public reconstruction bureaus” (*shanhou gongju* 善後公局) across Hanzhong prefecture in southern Shaanxi in the mid-1860s.⁵⁸ Such a claim may have served to rationalize to higher authorities these officials' inability to follow standard bureaucratic procedure in the midst of disaster. It also may have conveyed their recognition of variations in geography, environment, and social customs in the regions where they help posts. As Liu tersely explained of Shaanxi, “the conditions in each location are different.” Yet regulations for postwar resettlement in widely divergent geographic and ecological spaces hardly mentioned these types of spatial variations. Qing officials seem to have paid scant attention to differences in land and agricultural practice as they hurriedly pursued reconstruction projects. Concerns over topographical variation focused almost solely on water—channeling it toward parched fields or away from zones of inundation—if they existed at all.

The strong urge to ensure swift settlement and reclamation meant that, in principle, officials of Ma Xinyi's ilk recruited anyone willing to diligently work the fields. In an era of “mass Chinese emigration,”⁵⁹ laborers who departed their native places seeking new work in new lands may have crossed oceans, but many others stayed within the empire and their labor was incorporated into provincial projects to expand agriculture. What officials needed most was labor to transform unused

⁵⁷ This phrase was used as early as the Eastern Han (25-220 CE), but seems to have been common only in the Qing era. A related phrase, “taking appropriate action according to present circumstances” (*yin shi zhi yi* 因時制宜), which reflects a greater concern for temporal rather than spatial difference, seems to have been much more common than *yin di zhi yi* prior to the Qing era. See Luo Zhufeng, ed., *Hanyu da cidian* (Shanghai cishu chubanshe, 2007), 1698-99.

⁵⁸ For an example, see Liu, *Yang hui tang wen ji*, 10:35a.

⁵⁹ Philip A. Kuhn, *Chinese Among Others: Emigration in Modern Times* (New York: Rowman & Littlefield, 2008), 107.

land into agricultural landscape. This common desire to maximize crop production in the late nineteenth century compelled officials to resettle almost anyone who arrived on the doorstep of the local yamen or reconstruction bureau.

In practice, however, Zhejiang and Xinjiang officials categorized migrants, judging them less or more suitable as agents of reclamation. They differentiated migrants by their origins and backgrounds, and they elaborated plans for their strategic inclusion or exclusion. In an era when native place associations among social elites sojourning or taking refuge in Shanghai were becoming a significant aspect of civic life,⁶⁰ the origins and perceived characteristics of agricultural migrants shaped officials' decisions about settlement policy. When outsiders moved into a region still populated by native inhabitants, officials sensed the potential for conflict. In Zhejiang, leaving the door open to supposedly uncouth migrant farmers from Wenzhou and Taizhou but not actively recruiting them may have prompted nervous officials to later issue new regulations for their control. In early 1879, Zhejiang governor Mei Qizhao 梅啟照 approved a fourteen-point plan for keeping potential social conflict in check, particularly in places like Huzhou that attracted a great many migrants. The plan prohibited migrants from a whole range of behaviors—squatting, tax resistance, spontaneous out-migration, forming factions, illegal cutting of trees, water control sabotage, vegetarianism—and established “reclamation inspection bureaus” (*qingcha kenhuang ju* 清查墾荒局) to record the movements of migrants and issue permits.⁶¹ Although the rules pertained to Wenzhou and Taizhou people who were suspect in the eyes of officials because they migrated on a seasonal basis, the rules were in fact aimed at the largest group of migrants, reportedly from Hubei and Henan. If they followed the rules, registered with the authorities, and worked diligently, they would

⁶⁰ Bryna Goodman, *Native Place, City, and Nation: Regional Networks and Identities in Shanghai, 1853-1937* (Berkeley: University of California Press, 1995).

⁶¹ *Chouban Zhejiang tu ke shanhou zhangcheng* [Reconstruction regulations for the handling of locals and migrants in Zhejiang], (N.p., 1879), 5b-7a.

be allowed to stay. If, on the other hand, they turned out to be vagrants (*youmin* 游民) without permanent residence, farming tools, or capital, officials were to deport them.⁶²

Xinjiang settlers likewise played integral roles in altering the political and human geography of the region, at least in the minds of Qing officials. When Liu Jintang and Wei Guangtao claimed to incorporate diverse categories of migrants into their resettlement project, they seemed to replicate the all-inclusive style of the Zhejiang regulations. But in their minds, neither the malfeasant, ragtag followers of Zuo Zongtang's army nor the southern Turkestanis could provide enough stable labor to transform the land as they had envisioned. They staked their largest hopes upon poor but diligent farmers and laborers who would trudge out to Xinjiang from inside the Great Wall and participate in the process of effacing the social and environmental idiosyncrasies of the borderland.

Indeed, reforming patterns and policies of migration at Jiayuguan accorded with Xinjiang's new status as a province like the others of China proper. "Now that Xinjiang has become a province," Wei's regulations proclaimed, "it cannot be compared with the complete separation of domestic and foreign (*nei wai geju* 内外隔絕) that existed in the past."⁶³ This statement indicates the great significance that settlers from China proper would supposedly play in the process of erasing differences between the new province and the rest of the empire. Perhaps like the experience in Nanjing after the defeat of the Taipings, where "new leaders [. . .] transformed the city and redefined the relationship between Nanjing residents and the larger polity,"⁶⁴ Wei and Liu announced their intentions to reinforce Xinjiang's new provincial status by transforming the northern Xinjiang countryside with a continuous flow of migrants from China proper. Like the settlers of Zhejiang, their farming labor would play a key role in reviving agriculture and reintegrating the empire in new

⁶² *Chouban Zhejiang tu ke shanhou zhangcheng*, 12a.

⁶³ XJDQ 15-34-3258.

⁶⁴ William Charles Wooldridge, "Building and State Building in Nanjing after the Taiping Rebellion," *Late Imperial China* 30.2 (December 2009): 85.

ways in the late nineteenth century.

Chapter 7

Growth, Population, and the Discourse of Colonizing Xinjiang

Each additional person who can act as a soldier or farmer in Xinjiang means one less person in Beijing who is neither scholar nor civilian [. . .] How could it not be that Heaven intentionally left a fallow land, an area of barren frontier to serve as the fluctuating *outlet* (*weihu*) for the Central Plains! Enact what is suitable based on present circumstances and reduce what is excessive to add to what is insufficient. Such would be Your Majesty acting in accordance with Heaven.¹

—Zhang Peilun, Memorial to the Qing court, 1876

夫新疆多一可兵可農之人，即京師少一不士不民之人 [. . .] 豈非天故留一汙萊之地、甌脫之區為中原之消息尾閭哉。因時制宜，裒多益寡，是在順天而行之聖人矣。

By late December of 1876, Hanlin Academy scholar Zhang Peilun 張佩綸 (1848-1903) had read the official reports: Zuo Zongtang's armies had successfully recaptured the “key to Xinjiang,” its northern commercial and transportation center, Urumqi.² Pleased by the news, the young academician contemplated the immediate future of the imperial frontier. He claimed that, in comparison to the reconquest, the postwar process of “cultivating life” (*xinyang shengxi* 修養生息) would be quite difficult. But in a lengthy memorial to the throne, Zhang attempted to articulate a plan for social rejuvenation centered on the government-sponsored migration of Manchu

¹ GX2/11/7 (1876), LFZZ 03-9553-19, emphasis added. This memorial is reprinted in a collection of Zhang's missives and other writings. See Zhang Peilun, *Jianyu ji* [Collection from Jianyu], (Fengrun Jianyu caotang, 1918), 1:3a-7b.

² Zhang reported that he read this information in the court gazetteer (*dichao* 邸抄). Zuo called Urumqi the “key to Xinjiang” (*Xinjiang guanjian* 新疆關鍵) in a report to Beijing, GX2/7/18 (1876), ZZQ, 6:494.

bannermen—the empire's hereditary military corps—from Beijing to Xinjiang. On the frontier, these bannermen would take up farming and remain there for the rest of their lives. After being circulated to governing officials, Zhang's proposal sparked a lengthy rejoinder from Zuo Zongtang when he was still orchestrating military operations well over 1500 kilometers to the west of Beijing.³

This proposal to transfer bannermen permanently to the northwest frontier gives us reason to reconsider the meaning of “cultivating life” in late Qing China. Zhang's desire to revive society and to promote productive activity after warfare was shared by governors across the empire in the second half of the nineteenth century in the wake of destabilizing and destructive uprisings. These officials developed policies like crop promotion, land resettlement, household registration, and tax remissions and reforms “to restore confidence and to get people back to work.”⁴ These mundane reconstruction policies that were devised to ameliorate the hardships of everyday life at the local level were part of the process of what Zhang called “cultivating life.”

Yet Zhang's ideas for revitalizing society were also attentive to the geography and political economy of the Qing empire as a whole. Writing from the imperial capital, Zhang Peilun took little interest in the lives of war survivors in Urumqi despite the city's devastation and their loss of livelihood. Zhang's interest in Xinjiang and in the notion of “cultivating life” instead grew out of misgivings he shared with other scholars about the intensifying contradictions of demographic growth and imperial prosperity. Both of these trends had their origins in the internal stability and unprecedented imperial expansion of the eighteenth century. Qing emperors had recognized some of the conundrums created by rapid growth, including the intractable challenges it posed for sustaining agrarian livelihoods. As Robert Marks has shown, the Yongzheng 雍正 (r. 1723-36) and

³ GX2/11/7 (1876), LFZZ 03-9553-19. In 1876, Zhang served as an expositor-in-waiting (*shijiang* 侍講), a middling position in the Hanlin Academy. For Zhang Peilun's biography, see ECCP, 48-49.

⁴ Wright, *The Last Stand of Chinese Conservatism*, 124.

Qianlong emperors attempted to mitigate social insecurity with policies that encouraged farmers to expand cultivation into marginal or abandoned lands through on-site agronomic training and multi-year tax exemptions.⁵ Over a century later, Zhang's concern for “cultivating life” was likewise a response to the growing contradictions between demographic expansion and one of the central ideals of late imperial Chinese political economy, namely that productive subjects should have access to the most fundamental factor of agrarian production, arable land. In 1876, Zhang identified Xinjiang as a solution to the contradictions of growth because it could provide land to bannermen.

As I show in this chapter, Zhang Peilun was not the first nineteenth-century scholar to look toward the frontier seeking panaceas for growth in China proper. In fact, Zhang participated in a discourse of frontier colonization that had arisen a half-century earlier among scholars with a keen interest in frontier studies and in Xinjiang.⁶ As James Millward has argued, it was in the 1820s that “an elite group of Han scholars adopted the Qing imperial territory as their own and lobbied to transform it into a full-fledged Chinese colony.”⁷ The 1820 proposal of Gong Zizhen 龔自珍 (1792-1841) to make Xinjiang a province like those in China proper was emblematic of this movement, and it marked a shift away from the previously ascendant “Qianlong ideology of empire” in which “neither Han Chinese nor Chinese culture was granted privileged position in the Inner Asian parts of the realm.”⁸ This shift was fully apparent only after Zuo Zongtang's reconquest of Xinjiang and its transformation into a province in 1884, when Han officials populated the new provincial government and schools were established to train Turkic Muslims in Chinese language,

⁵ Robert B. Marks, *Tigers, Rice, Silk, and Silt: Environment and Economy in Late Imperial South China* (Cambridge: Cambridge University Press, 1998), 299-306 *passim*.

⁶ See Nailene Josephine Chou, “Frontier Studies and Changing Frontier Administration in Late Ch’ing China: The Case of Sinkiang, 1759-1911” (Ph.D. diss., University of Washington, 1976), 81-145.

⁷ James Millward, *Beyond the Pass: Economy, Ethnicity, and Empire in Qing Central Asia, 1759-1864* (Stanford: Stanford University Press, 1998), 250.

⁸ *Ibid.*, 234.

literature, and ethics.⁹ But by 1877, when Zuo responded to Zhang's proposal to transfer Beijing bannermen to the frontier as a measure for “cultivating life,” the discourse of colonizing Xinjiang had already gone a long way toward substantiating the utility of Xinjiang to China proper.

Gong Zizhen's Proposal for Balance

In 1820, Gong Zizhen outlined his plan to transform Xinjiang into a province. The plan was later reprinted in the widely circulated *Statecraft Compilation* published in 1827.¹⁰ An aspiring scholar-official who had struggled with the metropolitan examinations and who had purchased a position within the Grand Secretariat in Beijing,¹¹ Gong was one among a group of scholars in the capital who studied frontier geography and took an interest in Xinjiang. He was also an active proponent of practical statecraft, and it was in this milieu that he developed his proposal to “make Xinjiang the antidote to a decadent China” and resolve some of the empire's most pressing concerns.¹² He recoiled at the fact that, since the final years of the Qianlong emperor's reign, imperial subjects had succumbed to the morally corrupting habits associated with wealth and prosperity. As Gong remarked, “Inheriting the abundance of peace in the sixty years of Qianlong, people's hearts have become accustomed to arrogance and extravagance, and in their social customs, they have taken to

⁹ On Chinese education in late nineteenth-century Xinjiang, see James A. Millward, *Eurasian Crossroads: A History of Xinjiang* (New York: Columbia University Press, 2007), 142-146.

¹⁰ Gong Zizhen, “Xiyu zhi xingsheng yi” [Proposal for establishing a province in the Western Regions], in HJWB, 81:6b-9a. The text also appeared in a late nineteenth-century compendium of essays on geography. See Wang Xiqi, ed., *Xiao fang hu zhai yudi congchao* [Collected transcriptions about territory from the Small Square Kettle Studio], (Shanghai: Zhuyi tang, 1877-1897), 2:114a-116a. For an English translation of Gong's proposal, see David C. Wright, “Gong Zizhen and His Essay on the 'Western Regions',” in *Opuscula Altaica: Essays Presented in Honor of Henry Schwarz*, ed. Edward H. Kaplan and Donald W. Whisenhunt (Bellingham, WA: Western Washington University Center for East Asian Studies, 1994), 655-685. On Gong's proposal, also see Kataoka Kazutada, *Shincho Shinryo tochi kenkyu* [Research on governance in Xinjiang in the Qing dynasty], (Tokyo: Yuzankaku, 1991), 90-97.

¹¹ ECCP, 432.

¹² Alexander Woodside, “The Centre and the Borderlands in Chinese Political Theory,” in *The Chinese State at the Borders*, ed. Diana Lary (Vancouver: University of British Columbia Press, 2007), 11.

wandering about, especially so in Beijing.”¹³ Gong claimed that at least half the population no longer fit the socially productive categories of scholar, farmer, workman, or merchant. Indolence, opium-smoking, heterodoxy, and capital crimes had consumed their energies, making them useless to society. They could not even “make once inch of silk or one grain of rice to benefit other people.” The result was general social decay, in which “rich households become poor households, and poor households becoming starving ones.”¹⁴ Moreover, Gong recognized that these social ills did not cover all the manifestations of early nineteenth-century decadence. It was also grave environmental and population pressures that troubled the rich but slowly decaying state. “These days in China (*zhongguo* 中國),” noted Gong, “the population is increasing daily, the atmosphere is daily more cramped, and the Yellow River is daily more of a disaster.”¹⁵

The increasingly dismal state of society convinced Gong to seek an underlying principle for resolving the contradictions of growth and prosperity in China. He asserted that officials ought to rely on the “principle of increase and decrease” (*sun yi zhi dao* 損益之道), a political and philosophical formula for inducing balance within society and for aligning human patterns of behavior with the cosmic order. Gong's innovation in applying this principle to the contradictions of nineteenth-century growth was to execute the “increase and decrease” within geographical space, across political and ecological boundaries. The balance that he intended to bring about would be arrayed from east to west, and west to east, across the empire. In concrete terms, Gong proposed that between China proper and Xinjiang, people would flow in one direction and wealth would flow in the other direction: “For people, [it means] decreasing the center [i.e. China] to add to the west [i.e.

¹³ On hooliganism in Beijing in the Qing dynasty, see Chen Baoliang, *Zhongguo liumang shi* [The history of hooliganism in China], (Shanghai: Shanghai renmin chubanshe, 2008), 281-286.

¹⁴ Gong, “Xiyu zhi xingsheng yi,” 81:7a.

¹⁵ *Ibid.*, 81:7a. Government expenditures on the upkeep of Yellow River hydrology in the early nineteenth century were particularly heavy. See Kenneth Pomeranz, *The Making of a Hinterland: State, Society, and Economy of Inland North China, 1853-1937* (Berkeley: University of California Press, 1993).

Xinjiang]. For wealth, [it means] decreasing the west to add to the center.”¹⁶ Gong thus argued that the western frontier would gradually ease the misfortunes of Chinese decadence by siphoning excess population from the empire's heartlands while also adding to its financial resources.

Despite the apparent simplicity of this colonial formula, implementing a plan for colonization would be complicated by the process of choosing migrants. Gong did not approach population in the aggregate but rather visualized a highly diverse group of people divided by geographic origin, economic status, and psychological temperament. Starting with the “itinerants and non-native people of Beijing,” Gong identified people who he thought would be most suited to settle the frontier. This group included civilians of Zhili, Shandong, Henan, Shaanxi, and Gansu provinces; people from specific prefectures in Anhui, Jiangsu, and Shanxi provinces who “have pugnacious tempers, dare to take to the roads, and have not haughtily become habituated to eating rice and wearing silk”; and the masses of “villainous people who grow tobacco” in Fujian and Jiangxi provinces and who “greatly harm China (*zhongguo* 中國).” Gong also left the door open to farmers of any province who were eager to migrate to the frontier, whether or not they had occupations. Excluded from the plan were people from south of the Yangzi River, because Gong considered them weak, quick-tempered, and too distant from Xinjiang; civilians from Yunnan, Guizhou, Hubei, Hunan, Guangdong, and Guangxi provinces who also lived at a great distance; people from Sichuan province, where open land remained unsettled; and people from Shanxi province, who would be unwilling to migrate because theirs was considered the richest province in the empire.¹⁷

Gong also pointed to the burgeoning population of Manchu banner troops stationed throughout the provinces of China proper as suitable subjects for colonization. Just like the civilian

¹⁶ Gong, “Xiyu zhi xingsheng yi,” 81:7a.

¹⁷ Ibid., 81:7a-b.

population, the Beijing banners were growing numerous, to the extent that grain shipments from the south no longer satiated their needs. With a combination of anxiety and disgust, Gong noted that they now ate rice and wore silks. He worried that, “if they continue to reproduce (*shengyu* 生育) for several more years, the expenses of this province will be without end.”¹⁸ Gong thus suggested that banner garrisons in each province should consider sending some bannermen westward to become self-sufficient frontier settlers and relieve the financial burdens of state support for them.

The crux of Gong's plan was the notion that the arable soils of Xinjiang would render migrants into productive laborers. Once in Xinjiang, they would occupy the land in perpetuity as their property, cultivate crops year after year, and entrust the property to their descendants. As Kenneth Pomeranz has argued, Chinese political economy had long favored sending waves of migrants out to regions with scarce labor and abundant land, owing to a basic preference for agricultural labor dispersed throughout the countryside versus industrial labor concentrated in towns and cities. In the late imperial period, this preference resulted in massive waves of migrants settling frontier zones and, most of the time, occupying land as freeholders.¹⁹ Gong's plan largely accorded with other late imperial Chinese visions of state-sponsored migration to arable peripheries.

Geographical divisions aside, Gong identified the “people of China proper who have no property” (*neidi wuchan zhi min* 內地無產之民) as the primary agents of colonization. They would also be its subjects. Imaginatively prognosticating the future transformation of these people, Gong proclaimed, “What would it be like if [they] were people with property along the western borders (*xibian youchan zhi min* 西邊有產之民), farming and herding, able to raise their sons and grandsons!”²⁰ Given government stipends for the long journey westward, migrants would be allotted land according to the

¹⁸ Ibid., 81:7b. Although unclear, Gong was likely referring to his present location, Zhili province.

¹⁹ Kenneth Pomeranz, *The Great Divergence: China, Europe, and the Making of the Modern World Economy* (Princeton: Princeton University Press, 2000), 84.

²⁰ Gong, “Xiyu zhi xingsheng yi,” 81:7b.

size of their households and resettled in both northern and southern Xinjiang, where they could occupy land only if it had been distributed by the government. They would also be supplied with Mongolian yurts, oxen, tools, and seeds.²¹

If the landless of China proper found their transformation in Xinjiang, colonization would also transform the landscape and land ownership. In Gong's vision, as waves of migrants entered Xinjiang, officials would pay homage to the spirits of natural features of the landscape with the goal of rendering conditions suitable for agrarian production. As he explained:

All along the frontiers near the desert, every location shall establish a shrine to the spirit of the wind and a shrine to the spirit of the springs. At specific times of the year, conduct sacrifices; admire and praise the lord above. The land will emit its springs and the wind will cease in the skies, so as to be suitable for vegetables and grains. Issue words of praise in those locations.²²

凡近磧之郊，處處設立風神祠、泉神祠，歲時致祭，仰祝上帝，地出其泉，風息於天，以宜蔬宜稌，頒祝文焉。

In principle, these ritual practices would work in tandem with colonization to make the land naturally more productive for agriculture. By performing rites to the spirits of the winds and waters, settlers would reap the agrarian rewards of fruitful landscapes favorable to production.

Careful attention to local spirits would not be the only thing enabling productivity. If the sacrifices were unable to subdue the wind and quell dust storms, Gong thought wind barriers might

²¹ Ibid., 81:7b. According to Gong's plan, special ministers would supervise the migration and serve for seven years. Prior to the migration, they would create a passable route to Xinjiang by “cutting through precipitous cliffs, marking off narrow mountain ridges, drawing out gurgling springs, and draining inundated ravines.”

²² Ibid., 81:8b. Gong also suggested deliberating on how many sacrificial sites should be established at rivers and mountain passes: “Examine and discuss how many locations there should be for sacrificial rites at large rivers (Ch. *guo-le* 郭勒 from Mong. *gol* [?]). Examine and discuss how many locations there should be for sacrificial rites at large mountain passes (Ch. *daba* 達巴 from Mong. *daba'a* [?]).”

do the job. He asserted that officials in Xinjiang should distribute a particular kind of “tall and wide object that blocks the wind” for use in the fields, a suggestion he attributed to a fellow native of northern Zhejiang province, Wang Xi 王錫. He proposed that these wind-blocking devices be manufactured for this purpose.

Gong surmised that these landscape interventions would enable Xinjiang's unused land to become private farmland, a transformation that would adumbrate the fullest possible use of the land's productive capacity. At the heart of the matter was the legal status of land occupied by government troops in the system of garrison cultivation (*tuntian* 屯田). As Gong explained, this system was not ideal because it “does not use up the strength of the farmland.” Although the system of garrison cultivation had a long historical pedigree, its original goals were no longer tenable. “The Three Dynasties [Xia, Shang, and Zhou] are already long gone,” he noted. “To desire to combine soldiers and farmers, to desire to use private efforts (*sili* 私力) to manage public fields is [now] hardly possible.” Because production on garrison farmland was inefficient and hard to manage, Gong suggested modifying the landscape with wind barriers as a means to ameliorate harsh conditions and initiate the process whereby “*tuntian* can be completely withdrawn.”²³

The actual dismantling of the system amounted to the wholesale privatization of land. Fields that had formerly comprised government-supervised military farms would henceforth become the private and individually cultivated property of the soldiers. The Qing state, Gong explained, should take the current 280,000-odd *mu* of garrison farmland and give them to the 100,000-plus current garrison troops to be their inheritable property. Public farmland would become private farmland, visiting soldiers would become registered households, and those who defend the frontiers would become native inhabitants.²⁴

²³ Ibid., 81:8b.

²⁴ Ibid., 81:8b.

應將見在屯田二十八萬畝零，即給與見在之屯丁十萬餘人，作為世業，公田變為私田，客丁變為編戶，戍邊變為土著。

In addition, Gong saw no need for convicts who had been exiled to Xinjiang to be returned home; they could farm poor-quality land and pay their taxes on the frontier. He also reasoned that separate systems of land registration for different types of households could be abandoned in favor of permanent, unified registration. Whereas in the past, banner troop registers had been distinguished from civilian and Muslim household registers, Gong envisioned a future in which no such divisions would be made.²⁵ Along with the civilian migrants from China proper, these people would be included in the process of colonizing and transforming the frontier into a highly productive patchwork of small, private farms.

Wei Yuan's Letter about Xinjiang

One of Gong's close associates, Wei Yuan, also articulated a vision of Xinjiang's utility to China proper in the early nineteenth century. Like Gong's proposal for provincialization, Wei's contribution to the debate—written as a letter to “someone inquiring about the northwest frontier”—was published in the 1827 compendium of statecraft writings.²⁶ In the letter, Wei described the geographical reach of Qing power in superlative language and summarized the empire's border regions and peoples in the north and west. Wei was clearly awed by and exulted in the power of the Qing to extend control to what was now an imperial domain of unprecedented geographical breadth, and he briefly recounted how the northwest frontier had been incorporated into the state.²⁷ Several decades later, in 1842, just after the Qing state had been defeated by Great

²⁵ Ibid., 81:8b.

²⁶ Wei Yuan, “Da ren wen Xibei bianyu shu” [Letter in response to someone inquiring about the northwest frontier], in HJWB, 80:1a-2a. On Wei's plan, see Kataoka, *Shinbō Shinkyō tōchi kenkyū*, 100-102.

²⁷ Wei, “Da ren wen Xibei bianyu shu,” 80:1b.

Britain in the Opium War, he would complete the *Record of the Emperor's Military* (*Shengwu ji* 聖武記), a triumphalist and legitimizing account of the Qing empire's violent incorporation of vast borderland territories into its realm.²⁸

To Wei's chagrin, some scholars had questioned the value of retaining imperial control over Xinjiang. Critics deemed the northwestern territory worthless, or worse yet, damaging to the interests of the Qing state. According to Wei, “Some claim that the land is vast but useless.” Every year, so the complaint went, huge amounts of money were forwarded to the frontier for official emoluments and military stipends, a balance of payments that amounted to “squandering the center [i.e. China proper] to deal with the border [i.e. Xinjiang]” (*hao zhong shi bian* 耗中事邊), an arrangement whereby “there is loss but no gain” (*you sun wu yi* 有損無益).²⁹ Although not in direct dialog with Gong Zizhen, these critics employed the same terms he did—“decrease” or “loss” (*sun* 損) and “increase” or “gain” (*yi* 益)—to suggest that there was absolutely no balance in the relationship. Xinjiang, the logic went, was fundamentally unprofitable and should therefore be abandoned.

But where the detractors of the empire's northwestern frontier saw outright and unmitigated loss, Wei envisioned an irreplaceable space for living into which the population of China proper could expand. What he found so valuable and unique about Xinjiang was not only its abundant open land and sparse population but also its plentiful and inexpensive resources:

The country has grown rich and strong. In China, the land is completely full of people. Only Xinjiang is vast and sparsely populated. Its cattle, sheep, wheat, noodles, vegetables, and melons are cheap. Cultivation, irrigation, felts and furs, and trade are profitable. Gold mining flourishes. Corvée and taxes are light and have

²⁸ Perdue, *China Marches West*, 501-504; ECCP, 851.

²⁹ Wei, “Da ren wen Xibei bianyu shu,” 80:2a.

been reduced. Moreover, all are ten times more so than in China proper.³⁰

國家醞釀孳生，中國土滿人滿，獨新疆人寥地曠，牛羊麥麵蔬蓆之賤，播植澆灌、氈裘貿易之利，金礦之旺，徭役賦稅之輕且糶，又皆什倍內地。

It was precisely the open space and the potential riches that made the frontier attractive to Wei. And he was not the only one enticed by the frontier. According to Wei, a stream of migrants had headed out to Xinjiang—“poor folk engage in trade and lead their cattle out through the pass”—where they raised their progeny, settled permanently, and hardly looked back.

Wei presented this evidence of westward migration to demonstrate how readily the region allured imperial subjects. The evidence also justified and substantiated the role that Wei thought Xinjiang should play vis-a-vis China proper: as a site of colonization to ease the pressures of growth and to induce the same type of social and cosmic balance that Gong had proposed. In phrasing that Zhang Peilun would later appropriate for his own arguments, Wei proclaimed that

Heaven has left an undeveloped and desolate wasteland to serve as the fluctuating *outlet (weilu)* for the era of prosperity. The righteousness of the Your Majesty's statesmanship of balance [*lit.* “decrease and increase”] necessarily follows from this and makes use of this.³¹

是天留未闢之鴻荒以為盛世消息尾閭者也。是聖人損益經綸之義所必因焉乘焉者也。

³⁰ Ibid., 80:2a. Some fifteen years later, in 1842, when Wei incorporated parts of his letter into the *Record of the Emperor's Military*, he was even more forthright about the contradiction between land and population growth, and the value of holding Xinjiang. Compare this to the previous version: “The country is immense. The land does not increase, yet the population grows more abundant by the day. In China, the land is completely full of people. Nowadays, in northern and southern parts of the Western Regions, the land is large and the products are vast. Its cattle, sheep, wheat, noodles, vegetables, and melons are cheap. Irrigation, cultivation, and trade are profitable. Gold and copper mining flourish. Corvée and taxes are simple. Market trade with other countries in teas, horses, cloths, and satins is profitable. Moreover, all are ten times more so than in China proper.” 國家提封百萬，地不加增而戶口日盛，中國土滿人滿。今西域南北二路地大物賚，牛羊麥麵蔬蓆之賤，澆植貿易之利，金礦銅礦之旺，徭役賦稅之簡，外番茶馬布緞互市之利，又皆什伯內地。See Wei Yuan, *Sheng wu ji* 聖武記 [Record of the emperor's military], (N.p., preface dated to 1842), 4:11a.

³¹ Wei, “Da ren wen Xibei bianyu shu,” 80:2a, emphasis added.

In this passage, Wei pointed to the emperor's policy-making as a function of the geopolitical relationship between the hinterland and potential colonies in Xinjiang. He spelled out a rationale for dealing with the frontier that paid attention both to the patterns of nature and to the role of human government. As Wei had asserted earlier in the letter, the constancy of “ebbing and flowing is the way of Heaven, [whereas] reducing what is excessive to add to what is insufficient is the craft of governance.”³² He thus assigned to the ruler the task of bringing into balance the asymmetries of social life even while recognizing an underlying pattern of fluctuation. Like Gong, Wei understood the imbalance somewhat more in temporal terms; it was owing to the “era of prosperity” that Xinjiang had become more meaningful to China proper. Nonetheless, geography mattered. Xinjiang's remoteness from China proper and its undeveloped state made the frontier even more enticing as a solution for the contradictions of growth.

Keenly interested in preserving the frontier and refuting the claims of critics of imperial policy, Wei attacked them with a barrage of aspersions that assailed their stupidity and insularity as “bumpkinly, near-sighted, Confucian ignoramuses.” He criticized their propensity to “forget what happened in the past”—a reference to victorious Qing campaigns along imperial frontiers in the previous two centuries and, in particular, the efforts of the Qianlong emperor to conquer northern Xinjiang, all of which Wei detailed in his *Record of the Emperor's Military*. Aside from their lack of historical memory, critics were also prone to misjudge the financial stakes of retaining Xinjiang. They “begrudge a tiny trickle of expenses,” Wei asserted, but “are ignorant of oceans of profit.” From Wei's perspective, expenditures on Xinjiang were small investments compared to the huge benefits awaiting the Qing. Wei's attention to frontier policy showed his deep investment in Qing expansion and his commitment to sustain the empire through reform—to “take from what is

³² 且夫一消一息者天之道，哀多益寡者政之經。Ibid., 80:2a.

excessive and add to what is deficient.”³³

Lu Fu'en's Productive Frontier

The notion of balancing the population of China proper with the resources of the northwest borderland was not an uncommon trope of Chinese colonial discourse in the nineteenth century. Probably sometime in the 1840s or 1850s, Lu Fu'en 陸馮恩 (1803-1874), a scholar from Changzhou and the author of the four-part essay *Proposals on Money* (*Qianbi yi* 錢幣議), crafted a plan for colonizing the frontier that, like Gong's, paid attention to the disparity in resources between Chinese hinterlands and the distant frontier.³⁴ In Lu's plan, the impetus for frontier colonization arose from the fiscal problems of the Qing state.³⁵ Although in his essay he was not debating the issue of money per se, his rumination on the frontier started from the problem of money. Some of his interlocutors had taken issue with his assertion that people's problems arose from the price of silver, and they challenged him with the claim that, in fact, the issue was population, the “filling in of the people” (*ren man* 人滿).³⁶ According to Lu, they asserted that

the country's [people] are multiplying and daily becoming more abundant. Farmland has not expanded, soil has not been further opened up, and grains have not increased. Letting money circulate [provides] little relief for people's hardships. Yet as for the celestial forecasting of dearth or abundance, it cannot inevitably be from

³³ Ibid., 80:2a.

³⁴ On Lu Fu'en's biography, see Qian Sezhi et al., ed., *Jiangsu yiwen zhi: Changzhou juan* [Jiangsu bibliographic gazetteer: Changzhou volume], (Nanjing: Jiangsu renmin chubanshe, 1994), 697; Zhang Weixiang, ed., *Qingdai Piling mingren xiao zhuan* [Draft biological sketches of notable people from Piling in the Qing dynasty], (Shanghai: Changzhou lü Hu tongxianghui, 1944), 7:18. Lu's essays concerning money are contained in HJWX, *juan* 32.

³⁵ For a discussion of nineteenth-century notions of state finance, see Man-houng Lin, *China Upside Down: Currency, Society, and Ideologies, 1808-1856* (Cambridge, MA: Harvard University Asia Center, 2006).

³⁶ Lu Fu'en, “Mu min tun bian yi” [Discourse on recruiting people to garrison the frontier], in HJWX, 39:88a.

Heaven. As soon as famine strikes, bemoaning swans [i.e. poor people] fill the countryside. Even though there is money, they have no clothing to guard against cold, and no food to guard against hunger. The common people have not half a year's savings, and the Ever Normal [Granaries] lack a full month's worth of grain.

國家滋生日盛，田不加增，土不加闢，穀不加多，縱錢幣得行，民困稍蘇矣。而木飢金穰，不能必之於天。一遇災荒，哀鴻遍野，雖有錢幣，寒不可衣，飢不可食，閭閻無半年之蓄，常平無匝月之糧。

They argued, in other words, that China faced a serious shortage of resources relative to the population, a conundrum that manipulating currency or letting it circulate freely would not solve. They believed that some provinces had reached population saturation—the limits to growth—which normal measures could not solve. They implied that there was no good solution to growth, which would cause problems regardless of whether the people stayed put or moved around.

At present, the Five North Provinces [Zhili, Shandong, Shanxi, Shaanxi, and Gansu] are truly full of people. Although there is widespread cultivation, harvests are meager. The productivity of the soil is not yet exhausted. Yet as soon as an order to reclaim wasteland is issued, [it would mean] dispossessing the native inhabitants of their proprietary occupations and giving them to refugees. This is the disturbance caused by growth.³⁷

且今之五北省，人固未嘗不滿也。雖廣種薄收，地力容有未盡。然墾荒之令一下，奪土著之業以與流民。是滋之擾也。

In the minds of Lu's opponents, colonization did not present a viable solution to population growth because it created political tensions among local people and incoming settlers. But Lu refuted their

³⁷ Ibid., 39:88a.

claims and turned a blind eye to the potential pitfalls of colonization. Instead, he focused his attention on sending settlers to the northwest frontier. He had once heard an official who had been banished to Xinjiang claim that “out beyond Jiayuguan, for several thousand *li* 里 as far as the eye can see, it is all fertile land.”³⁸ This fertility translated into unimaginable productivity; when it came time for the autumn harvest, “grains come like flood and fire without end.”³⁹ But what appeared to be such enticing productivity was apparently going to waste. As a native of densely populated Jiangnan, he had a hard time fathoming how northwest borderlands could contain “abandoned land” (*shu huang* 熟荒) or how farmers could abandon ripe harvests in the fields. But as he explained, in cases where farmers calculated that income from the harvest would not satisfy the costs of their labors to harvest the grain, they reduced the ripened grain fields to ashes. They also used these farmlands to pasture their own animals and the animals of neighbors, which foraged among and trampled the crops. This tremendous loss occurred, according to Lu, because farmers had no waterways by which they could ship their grains to distant markets. The frontier was just too remote, too disconnected.

Yet Xinjiang's remoteness also made it incredibly enticing. Lu imagined Xinjiang as an isolated Arcadia, a place available for colonizing in the future yet fruitful enough in the present to be a site worthy of fancy and fantasy. As Lu explained, “What all along has been blowing sand for one thousand *li* 里 without signs of people as far as the eye can see” was now being reshaped into a highly productive and well-ordered landscape, a place almost fit for poetry. Here, Lu's perspective was of someone looking out across a landscape settled by farmers and transformed by agriculture: “Now, mulberry and hemp cover the countryside, and chickens and dogs are both heard.”⁴⁰ In the

³⁸ Ibid., 39:88a.

³⁹ Ibid., 39:88a.

⁴⁰ 今且桑麻蔽野，雞犬相聞。Ibid., 39:89b.

second phrase of this line, Lu alluded to the famous prose work “Record of Peach Blossom Spring” (*Tao hua yuan ji* 桃花源記) by the poet Tao Yuanming. In the “Record,” Tao had narrated the journey of a fisherman who followed a river through a peach grove only to discover a hidden Arcadian village beyond the mountains. In this idyllic community the fisherman found farmers who had become rich by their agrarian labors. Among the fields and the orchards, “chickens and dogs are both heard,”⁴¹ a sign of the prosperity and vivacity of village life. The scene evoked images of populated and productive rural landscapes beyond the horizon, just the type of vision for Xinjiang that Lu hoped to articulate.

For Lu, productive Arcadianism would be the result of migration born of the desire for demographic balance. More than his predecessors Gong or Wei, the scholar from Changzhou characterized the process of inducing balance in financial terms. “I once said,” claimed Lu, “that there are two main ways to manage finances (*licai* 理財).” In phrasing copied almost verbatim from one book within the Confucian canon, the *Great Learning* (*Da xue* 大學), Lu identified these two methods simply as having the “producers be many” and the “consumers be few.” It is not hard to imagine that if these methods were removed from a geopolitical context already characterized by structural imbalance, they would lead, in principle, to surpluses of production—to imbalance—and perhaps to the prosperity that Gong targeted for its deleterious social effects. Finding the solution to this conundrum meant thinking geographically. It meant creating a relationship between geographic regions characterized by structural imbalance that could serve the purpose of inducing balance. For Lu, the fulcrum against which to “manage finances” and adjust the relative balance of producers and consumers became the geographical division between China proper and Xinjiang, or between the southeast and the western frontier:

⁴¹ On Tao Yuanming's reception in later eras, see Wendy Swartz, *Reading Tao Yuanming: Shifting Paradigms of Historical Reception (427-1900)* (Cambridge, MA: Harvard University Asia Center, 2008).

At present in the southeast, those who produce would not be considered few, but those who consume are especially numerous. In the western borderlands, those who consume would not be considered many, but those who produce are few. If there is persistent hardship because [the southeast and northwest] cannot be interlinked, why not consider whether they are full or empty [of producers or consumers] and adjust them?⁴²

今東南之地，生之者不為不衆，無如食之者尤衆。西邊之地，食之者不為不寡，無如生之者亦寡。恆苦於不能相通，則何如酌其盈虛而調劑之。

Achieving balance between producers and consumers on an imperial scale meant recalibrating the relationship between China proper and the frontier and bringing the two zones into a tighter nexus of interaction and exchange. As James Millward has demonstrated, Qing imperial policy up to the 1820s had allowed Chinese merchants to trade in Xinjiang but had prohibited them from settling in southern Xinjiang, whereas after the 1820s, the Qing state encouraged permanent Chinese colonization in the region.⁴³ Lu's suggestion for fuller intercourse between China proper and the frontier based on this kind of comprehensive financial and demographic accounting coincided with the state-supported shift toward a closer relationship.

In practical terms, adjusting geopolitical relations and inducing balance meant colonizing the frontier, just as Gong had surmised. Lu devised a plan to “move civilians and station them beyond the Great Wall” (*xi min tun saiwai* 徙民屯塞外). This would enable demographic recalibration without unduly draining wealth from state treasuries and without sparking social conflict. Where Lu's plan differed considerably from Gong's was in its reliance on private financing, private oversight, and new

⁴² Lu, “Mu min tun bian yi,” 39:88b.

⁴³ Millward, *Beyond the Pass*, 226. On the policy of separation between Han and Muslims, see Lin Enxian, *Qingchao zai Xinjiang de Han Hui geli zhenge* [The segregation policy for Han and Muslim in Xinjiang during the Qing dynasty], (Taipei: Taiwan shangwu yinshu guan, 1988).

regulations for “land management” (*yingtian* 營田). He envisioned rich people recruiting “indigent people and those without occupations” from their home villages and providing them with food and funding for the migration. Yet Lu was also open to the possibility that landowning farmers within China proper would decide to migrate of their own accord, or that rich families in the northwest would sponsor poor folk from the southeast. Lu had no apprehensions about the potential for social antagonism between these groups despite the fact that they came from widely different origins; after a long time of “friendly feelings” they would “naturally be harmonious.”⁴⁴ It is unlikely that Lu imagined well-to-do Muslims of the northwest recruiting poor settlers from the southeast, for he said nothing of their overcoming religious and linguistic differences in the process of colonization.

Private initiative and funding for colonization may have set Lu's proposal apart from others, but the details of the plan largely coincided with nineteenth-century regulations for land resettlement. Rich sponsors “ushered households into the settlements,” where each household would be allocated 20 *mu* 畝 of farmland and supplied with money for oxen, seeds, and housing.⁴⁵ Settlers would thereupon farm the land and pay taxes starting after three years, apparently at reduced rates according to “middle and lower grades for northwest provinces.” Lu anticipated that farming would become the new “hereditary occupation” (*shiyè* 世業) for previously indigent and jobless migrants. The elite who managed the lands and households of these colonies—including supervising their legal affairs, taxes, and rent payments—were correspondingly rewarded with salaries and minor bureaucratic posts based on the number of households they recruited, with the

⁴⁴ Lu, “Mu min tun bian yi,” 39:89a.

⁴⁵ Colonization was also a communicative process. Lu suggested that settlers be ordered to promote colonization by “sending letters for the sake of persuasion” (*yushu quanda* 寓書勸導). The epistolary targets would be colonists' relatives in their home villages. Lu imagined that once the people back at home had heard about life on the frontier, they would endeavor to make the journey. Evoking the language of feudal relations, Lu suggested that these new recruits would “come in a steady stream to submit as vassals” (*yuanyuan laigui* 源源來歸), supposedly to the rich people who would supervise their agricultural work and provide them with the necessary supplies. Lu, “Mu min tun bian yi,” 39:89b.

most adept receiving hereditary posts (*shiguan* 世官).⁴⁶ Lu also suggested that several new Grand Minister Superintendents (*banshi dachen* 辦事大臣) be created to supervise the settlement areas (*tunsuo* 屯所) and to pay special attention to land reclamation, irrigation works, and agricultural promotion. They would also oversee projects to build infrastructure like city walls, granaries, government offices, and schools.⁴⁷

For Lu, colonization also offered the prospect of creating an almost utopian society on the frontier at a time when the society he knew was encountering grave problems. He was tantalized by this prospect. After ironing out all of the details of colonization, he listed what the future would bring because of his plan:

The well-field [system] will be restored as a result. The system of enfeoffment will follow as a result. Rites and music will flourish as a result. The army will be trained as a result. Corvée labor will be normalized as a result.⁴⁸

井田復於是，封建由於是，禮樂興於是，軍旅講於是，力役準於是。

Lu imagined frontier colonial villages as sites for the reincarnation of idealized forms of Confucian social organization from China's pre-imperial and early imperial periods. His invocation of the so-called “well-field system” (*jing tian zhi* 井田制) is especially provocative, given its history as a politically charged and divisive symbol of social ideology.⁴⁹ Mencius had originally described the system as a community based upon idyllic rural cooperation, security, and conviviality. A community's farmland would be arranged in the shape of the character for “well,” 井, with the central parcel of land set aside for communal labor surrounded by eight parcels of privately farmed

⁴⁶ Ibid., 39:89a.

⁴⁷ Ibid., 39:89a.

⁴⁸ Ibid., 39:89a.

⁴⁹ Joseph R. Levenson, “Ill Wind in the Well-Field: The Erosion of the Confucian Ground of Controversy,” in *The Confucian Persuasion*, ed. Arthur Wright (Stanford: Stanford University Press, 1960).

land.⁵⁰ Lu's description of the cohesion of colonial villages matched the way in which Mencius framed the well-field community. Whether or not Lu believed the system to have been an actually-existing form of social organization in the distant past, his invocation of it suggests that he saw the frontier as a space for the re-creation of ideals that, in his day, did not exist in China proper.

In principle, Lu's colonialism would translate into clear and distinct advantages for people at opposite ends of the empire. Once the system of land settlement had been established and frontier landscapes were being transformed, “the strength of the land (*dili* 地力) in the northwest will be fully used and the spirits of the people (*minqi* 民氣) of the southeast will be at ease.” In this equation, Lu united the material and psychological rewards of colonization. As the southeast gave up people to the northwest, those who stayed behind would experience a sense of relief from the tensions of land scarcity and economic deprivation. And as the northwest accommodated new colonies, laboring migrants would exhaust the productive capacities of lands along the frontier.⁵¹

Colonizing Xinjiang could also induce pecuniary solvency for the Qing state, strengthening it vis-a-vis other colonial powers. Opened up to farming, frontier lands would yield new tax revenues, and Lu supposed that “the taxes of the northwest would provide for army provisions in the northwest.” It may have appeared that Lu was advocating a kind of financial autarky for Xinjiang, but his plan was framed by larger conceptions of national financial and military strength. Aside from sending Han farmers to the northwest, Lu wanted to dispatch bannermen to regions north of Beijing, beyond Dushikou and Zhangjiakou, where the “fertile wilderness [extends for] a thousand *li* 里” and “everywhere can be cultivated.” By having these “surplus bannermen” (*yuding* 餘丁) colonize lands beyond the Great Wall in the same system of elite sponsorship and supervision that he planned for Xinjiang's colonies, Lu imagined that the financial rewards would empower China to

⁵⁰ Yang Bojun, ed., *Mengzi yizhu* [The annotated *Mencius*], (Beijing: Zhonghua shuju, 1960), 119.

⁵¹ Lu, “Mu min tun bian yi,” 39:89b.

confront the challenges posed by European imperialism.⁵² If everything went according to plan, the country's military funds will not be completely reliant upon the southeast, and with its surplus [we will] pay great attention to military affairs and skillfully build ships and cannons. [We will] be both rich and strong. The foolish and petty foreigners will certainly be unable to cause China any worry.⁵³

國家之兵餉，不盡仰給於東南。以其有於，講求軍政，精造船礮。既富且強，蠢爾小夷，固不足煩中國之慮矣。

In other words, colonizing frontiers was a competitive enterprise. Pursuing the systematic exploitation of frontier landscapes would boost wealth and create financial surpluses, which could be invested in military preparations and armaments.

Zhang Peilun's Plan for Banner Colonies

The discourse of colonization to which Zhang Peilun contributed in 1876 took overpopulation and social degeneracy in China proper as the starting point for thinking about relations between frontier and hinterland. Whereas Zhang's predecessors had largely envisioned the agents and subjects of colonial migration to be the landless, poor, or malfeasant commoners of the empire's most densely populated provinces, he called upon the Qing state to sponsor the resettlement of a large proportion of Beijing's Manchu bannermen in the area around Urumqi. Yet this discrepancy was largely inconsequential for the political economy of late Qing colonialism, which favored divvying up the frontier into parcels of farmland and allocating them to laborers as property in perpetuity. His plan viewed the frontier as open space that could support the financial and demographic well-being of those in China proper and provide agrarian livelihoods for colonists.

⁵² Ibid., 39:89b.

⁵³ Ibid., 39:89b.

Zhang identified the excess banner population in Beijing as a formidable financial challenge for the Qing state. After the Manchu conquest of China, in the era of the Shunzhi emperor (r. 1644-1661), the banner population in Beijing had numbered 80,000 *jia* 甲—in principle, a unit of ten households⁵⁴—but in the intervening two centuries, the banners had multiplied enormously, to the point where a single *jia* contained “several tens or several hundreds of men, which the grain rations for one *jia* could no longer support.” Even under the Qianlong emperor in the eighteenth century, imperial officials had “all worried about the means of livelihood of the eight banners.”⁵⁵ As Mark Elliott has argued, fears about banner livelihoods coincided with anxiety about their loss of Manchu customs. Eighteenth-century scholars had attributed the gradual evisceration of the “Manchu way” to urban, sedentary lifestyles coddled by guaranteed emoluments from Qing state coffers.⁵⁶ Now, in the late nineteenth century, Zhang largely dispensed with worries about the bannermen's incapacity in Manchu language or their lack of equestrian skills and martial spirit. Instead, he focused on the fact that “the population is ever increasing, and if we discuss pay and provisions, [we would say that] they are exceedingly inadequate.”⁵⁷

Just as Gong Zizhen had identified landlessness as a fundamental obstacle to ameliorating social problems in a prosperous and populated China proper, so Zhang recognized that the problem of livelihoods for Beijing bannermen turned upon questions of labor and property. Like Gong, he understood it as an issue of having access to the means of production, without which bannermen succumbed to social malfeasance. According to Zhang,

The means of livelihood of the bannermen have long been inadequate. *They have no*

⁵⁴ On the system of mutual household supervision, see Kung-chuan Hsiao, *Rural China: Imperial Control in the Nineteenth Century* (Seattle: University of Washington Press, 1960).

⁵⁵ GX2/11/7 (1876), LFZZ 03-9553-19.

⁵⁶ See Mark C. Elliott, *The Manchu Way: The Eight Banners and Ethnic Identity in Late Imperial China* (Stanford: Stanford University Press, 2001).

⁵⁷ GX2/11/7 (1876), LFZZ 03-9553-19.

property. None succeed in borrowing money. Of those who are rather cunning, some end up drifting about and doing nothing, deciding for themselves what is right and what is wrong.⁵⁸

旗丁生計久絀，產業無存，借貸莫遂，其稍黠者，或至流為不肖，良非得已。

Being “neither scholar nor civilian,” many unproductive but able-bodied bannermen no longer had recognizable roles in society. Zhang implied that their lack of property caused their rootlessness, spurred their deviancy, and made them poor.

To reduce their burden on the state treasury and give them new social roles as productive farmers, Zhang argued for sending bannermen to the frontier. He called upon officials to undertake a flurry of activity to prepare the way for bannermen. He suggested that Zuo Zongtang dispatch subordinates to survey (*lukan* 履勘) the land to determine which places could be opened up for farming and how many bannermen those places could support. Back in Beijing, officials were to select a set number of “young and vigorous” men who had not yet married, give them supplies for the journey, and send them with chaperoning supervisors out to Xinjiang, where groups of them would conduct “trial reclamation” (*shiken* 試墾). In frontier villages (*tun* 屯), they would be “conferred land to serve as their life's work.” Once bannermen had turned useless expanses into productive soil, their per-head rations (*koufen* 口分) would cease, and they would supply themselves from then on, cultivating the fields for three-fourths of their time and doing military drills for the remaining time. When off duty, they were to be sent back to Beijing to find wives; upon their return to the frontier, they would bring their families with them. For the rest of their lives, bannermen would spend their time trying to create wealth from Xinjiang's soils, and in Zhang's vision, this would be the key to their gradual but inevitable prosperity. And since they would no longer be in

⁵⁸ GX2/11/7 (1876), LFZZ 03-9553-19, emphasis added.

Beijing, government outlays for bannermen could be reduced.

To be sure, the pecuniary benefits of Zhang's plan for Beijing did not completely overshadow the advantages accruing to Xinjiang's security. Zhang speculated that the Manchu bannermen could become a “crack force” (*jīnlǚ* 勁旅) competent to handle security matters after devoting several years of their non-agricultural time to military training. Indeed, Zhang's memorial argued that these Manchu settlers would be able to regain their customs and their skills for horsemanship and archery if given the chance to settle the frontier. Depending on the successes of Zuo's army in retaking the Russian-occupied Ili Valley by the time they arrived, the transplanted bannermen could either spend their efforts stockpiling grain or creating a strong defensive perimeter. In either case, Xinjiang's security would be improved.

At first glance, Zhang's demographic and financial calculus of colonizing the frontier appears to be little different from how Gong, Wei, and Lu considered the advantages of sponsoring migration to Xinjiang. Like many parts of China proper, Beijing was home to a surfeit of people who consumed but did little labor or who lacked the means of production to support themselves. Zhang determined that sending them out beyond the western end of the Great Wall was a sure, if tedious and costly, way to provide new opportunities to create wealth. I am almost certain that Zhang borrowed from Wei Yuan's text in describing the relationship between Xinjiang and China proper. Almost exactly like Wei, Zhang asserted that the emperor should accord with cosmic forces by “reducing what is excessive to add to what is insufficient.” In this way, Zhang's articulation of relations between the frontier and China proper reproduced a discourse of colonization rooted in conceptions of balance.

Zhang's language was also unique in the way that it placed more emphasis on the geographical, rather than temporal, quality of the relationship. Fifty years earlier, Wei Yuan had

written of Xinjiang as the “fluctuating outlet for the era of prosperity (*shengshi* 盛世).” His choice of words highlighted the temporality of affluence and Xinjiang's role as a function of that temporality. The space of affluence—prosperity manifest in a particular geographic location—was less important than the occurrence of affluence at a particular moment in time. In borrowing from Wei's language, Zhang removed the temporal reference—“era of prosperity”—and replaced it with a geographical one. So for Zhang, Xinjiang became the “fluctuating outlet for the Central Plains (*zhongyuan* 中原).” This subtle shift suggests that the terms of the relationship between China's most developed regions and Xinjiang were now somewhat more fixed than they had been for Wei. They were less a function of temporality and circumstance than a structural function of geography.⁵⁹

Yet Zhang was not averse to rallying temporal arguments for the plan to send bannermen to Xinjiang. Indeed, one of the reasons Zhang wrote his proposal in 1876 was to respond quickly to military events on the ground. Having heard that Zuo Zongtang's armies had recovered Urumqi, Zhang eagerly asserted that tense relations with Xinjiang's Muslims created a perfect opportunity for colonization. He recounted how relations had been completely devoid of animosity in the mid-eighteenth century, when the Qianlong emperor's armies had conquered northern and southern Xinjiang and “Uyghurs respectfully submitted” (*Huamen gong shun* 花門恭順) to Qing imperial power. According to Zhang, it had been appropriate at that time to resettle them in separate “Muslim colonies” (*Hui tun* 回屯) at locations with rivers and springs sufficient for irrigation. Perhaps most telling of social relations between local Muslims and the Qing was Zhang's notion that the imperial newcomers “could not bear to dispossess [the Muslims] of the profits of their lands.”⁶⁰ Yet, however amicable relations had been in the past, Zhang recognized that times had changed. He laid

⁵⁹ GX2/11/7 (1876), LFZZ 03-9553-19.

⁶⁰ 不忍奪其地利. GX2/11/7 (1876), LFZZ 03-9553-19.

the blame for recent animosities and violence squarely on them and argued that the crisis had created the perfect opportunity for colonization.

In recent times, the Muslims made themselves antagonistic to the Nurturing [of the Qing]. Thereafter, the army traveled to that remote region. There was no alternative but to launch punitive expeditions against [the Muslims], and comfort anew the good Muslims. Recently, there have been hardly any *Wuhuan* [i.e. Turkic people]. The land is vast and sparsely populated, so it is possible to set up more agricultural colonies and more broadly open up the land to cultivation.⁶¹

今回人自外生成，然後移師絕域，不得已而討之，新撫良回。比則無幾烏桓，地曠人稀，可以多置營屯，廣為墾闢。

With little remorse over the passing of an era of peaceful relations between Turkic Muslims and Qing people—Manchu, Mongol, and Han—in Xinjiang, Zhang proceeded to argue that the crisis could well be a boon to the Qing. The conflict had resulted in depopulation among local Muslims, which had left even more land available for colonization. At the same time, Zhang's silence about the issue of native people's dispossession implied that, in great contrast to the eighteenth century, to dispossess them after the present conflict posed no moral quandary.

Like those who had pioneered the nineteenth-century colonial discourse, Zhang foresaw the transformative influence of frontier settlement. In simple terms, this meant turning unused land into productive agricultural fields. Although Zhang noted that the area around Urumqi already contained many undeveloped but naturally fertile “places with sweet spring and rich soil,” adding people and their labor to the landscape would increase its value.

In the future, as colonial sites are increasingly abundant, the [land's] fertility will be

⁶¹ GX2/11/7 (1876), LFZZ 03-9553-19.

increasingly developed. As the household population naturally multiplies, the local place will naturally become rich and fertile.⁶²

將來，屯政日豐，膏腴日闢。戶口自然蕃衍，地方自然富饒。

The process of increasing population as a means to improve productivity would also be self-catalyzing. Although he reserved a special role for agriculture as the centerpiece of political economy and the central mechanism for colonization, Zhang nonetheless realized that merchants, too, would participate in the search for wealth: “If wasteland beyond the Jiayuguan is opened up, merchants will be able to go out [beyond the Great Wall] and seek profit (*mou li* 謀利).” Zhang thus conflated new settlements, the enrichment of Xinjiang's landscape, and the possibilities for making profit on the frontier as he imagined the future success of colonization.⁶³

Zhang also gestured to the past to persuade the Qing court and Zuo Zongtang to support his proposition. Although there is no evidence that Zhang had traveled out to the frontier, he noted how the landscape contained traces of the past that would be beneficial to migrant bannermen. Around Urumqi, on land that had previously been reclaimed, they could seek the “old traces of waterways and the boundaries of fields,” supposedly as starting points for renewed cultivation. Zhang also turned to history to demonstrate the precedent for military colonization. In 1764, for example, the Qianlong emperor had sent Manchu soldiers to colonize and cultivate the Ili Valley, where they had successfully “dedicated themselves to agriculture” and had raised their families and horses. But as Zhang argued, even more important than the proof of the historic success of agricultural colonies in Xinjiang was the great men of the past who had overseen frontier colonization. He offered the names of two generals, Zhao Chongguo 趙充國 (137-52 BCE)⁶⁴ and

⁶² GX2/11/7 (1876), LFZZ 03-9553-19.

⁶³ GX2/11/7 (1876), LFZZ 03-9553-19.

⁶⁴ In 1867, Zuo Zongtang also lauded Han general Zhao Chongguo for his perseverance in advocating for and implementing colonization in the Gansu-Qinghai region after fighting the Qiang (*Xianlian Qiang*)

Guo Ziyi 郭子儀 (697-781), and honored them for their great success with military agrarian colonization (*tuntian* 屯田). Most importantly, Zhang used them to woo Zuo Zongtang's support. By his “planning and management,” Zhang sycophantically asserted, Zuo would “certainly be able to follow in the footsteps of previous worthies.” Praising Zuo for the fact that his “discernment is firm and he clearly knows the border situation,” Zhang suggested that Zuo would be able to join the pantheon of great frontier generals by adopting the plan to colonize Xinjiang with bannermen.⁶⁵

Zuo's Rebuttal of Zhang's Plan

Within five months of Zhang Peilun's proposal's being circulated among the empire's top officials, Zuo Zongtang responded with a lengthy memorial rebutting the idea of banner colonization near Urumqi yet broadly agreeing on the urgency of dealing with the burgeoning population in Beijing.⁶⁶ Zuo astutely recognized that even though Zhang had claimed to be making a proposal for “opening up colonies to secure the border,” his real intention was to ameliorate the financial and social burdens of unproductive bannermen in the capital, a goal that Zuo supported. Indeed, he fully acknowledged the conundrum presented when banner populations far outstripped the resources available for their support. According to Zuo,

The population of the Eight Banners grows more numerous by the day. The allotment [of provisions] per *jia* [i.e. group of households] is set. The country

despite repeated admonishments from Emperor Xuan. Zuo reiterated Zhao's eventual success with the colonies—although by what measure, he was not clear—as an indication that military ventures in the northwest necessitated agricultural colonization after a thorough assessment of the situation. See TZ6/1/10 (1867), ZZQ, 3:373. For an early Qing perspective on Zhao that was reprinted in the 1827 statecraft compilation, see Chen Qianhe, “Zhao Chongguo lun” [On Zhao Chongguo], in HJWB, 77:17a-b.

⁶⁵ GX2/11/7 (1876), LFZZ 03-9553-19.

⁶⁶ For Zuo's rebuttal, see “Fu zou choudiao qiding tuntian Xinjiang shu” [Response to memorial for transferring bannermen to take up *tuntian* in Xinjiang], in HJWX, 40:31a-36a; GX3/3/29 (1877), LFZZ 03-9553-2; and GX3/3/29 (1877), ZZQ, 6:635-640.

supports a limitless population with provisions that are set. Given these circumstances, there will certainly come a time when everything is used up.⁶⁷

謹按八旗生齒日繁。甲分有定。國家以有定之錢糧，養無限之丁口。勢必有時而窮。

Framed in this way, the future would almost inevitably bring deprivation and dearth to the overpopulated capital.

Zuo Zongtang also agreed with Zhang that bannermen faced a crisis of productivity and morality. This was particularly the case for Manchus who had no skills in agriculture, craftsmanship, or commerce, and who were not among the brightest or strongest who could usefully serve as scholars or soldiers. The remaining bannermen, Zuo lamented, “waste their days in frolic” and “meander as they please,” and even “those who were fated with talent gradually turn into wasted talent.”⁶⁸ But it was not merely a question of degeneracy. As Zuo explained, “the young ones have no professions in which to engage,” a predicament that left them impecunious.⁶⁹

If Zuo subscribed to Zhang's analysis of the banner predicament, he wholeheartedly disagreed with the solution. For one thing, he emphasized the impracticalities of funding their migration to Xinjiang, which would unnecessarily drain treasury reserves. Zuo complained that supplying them with housing, tools, draft animals, seeds, and grain upon arrival would add untold expenses at a time when coastal and frontier defenses awaited urgent funding. In this sense, Zuo disputed Zhang's assumption that banner colonization would save money for the state treasury, that sponsoring migration for the purposes of greater demographic balance would have any kind of fiscal payoff. He also predicted that the presence of bannermen along the frontier could prompt suspicion among local civilians and engender mutual antagonism. If frontier officials in Xinjiang did

⁶⁷ Zuo, “Fu zou choudiao qiding tuntian Xinjiang shu,” 40:31a.

⁶⁸ Ibid., 40:31b.

⁶⁹ Ibid., 40:32a.

not adeptly handle such cases, Zuo feared that they could explode into outright hostility, causing needless headaches for officials and residents.

Zuo most adamantly objected to Zhang's plans because he judged the bannermen almost completely unfit for agriculture. He assailed them for having no knowledge or experience of cultivation, which set them in stark contrast to the sons of farmers who had grown into their professions. For Zuo, this was reason enough to fear what might happen if they were sent to act as farmers on the frontier.

Government troops of the Eight Banners usually have not personally [used] ploughs and plowshares. They do not know suitable ways of cultivation. They have not studied the works of the agronomists. Abruptly ordered into the fields and made responsible for the effectiveness of agriculture, they would rightly fear “cultivation, yet hunger in its midst.” It would be a great burden to plan for aid.⁷⁰

八旗官兵，平時未親耒耜，未知種植之宜，未習農家諸務。驟驅之隴畝，責以為農之效，正恐耕也而餒在其中，重煩籌濟。

Zuo railed against the thought that bannermen could productively use land or farm tools, as Zhang's plan seems to have taken for granted. He thought that, rather than supporting themselves, they might just starve in the fields. And so Zuo could only surmise that the plan would entail detrimental losses on multiple fronts. From his perspective, the bannermen colonies would not become self-sufficient. In fact, for “state finances” (*guoji* 國計) and “borderland reserves” (*bianchu* 邊儲), Zuo worried that Zhang's plan would result in losses (*sun* 損). In other words, it would not induce demographic or fiscal balance between distant locations within the empire.

Although Zuo denied the Beijing bannermen a role in colonizing farmland around Urumqi,

⁷⁰ Ibid., 40:32b.

he suggested transforming them into laborers and employing them to repair the hydrological infrastructure in Zhili province, surrounding Beijing. He recalled how previous officials like Yinxiang 胤祥 (1686-1730),⁷¹ a son of the Kangxi emperor and a favored statesman of the Yongzheng emperor, had overseen the repair and upkeep of Zhili's waterworks.⁷² But, Zuo lamented, their achievements had largely been forgotten, and the current state of disrepair of the waterworks resulted in frequent droughts and floods. Given the circumstances, Zuo proposed dispatching bannermen to live in Zhili and to work on refurbishing waterways, because whereas they were unfit for frontier agriculture, they could surely master the skills of dredging canals. For the talented bannermen, Zuo proposed ushering them into the governing bureaucracy or into new state-sponsored technical training bureaus (*jiqiju* 機器局) to study manufacturing.⁷³ Here, Zuo appeared to depart from the dominant ideology of late imperial political economy whereby state support for self-sufficient agrarian livelihoods was a top priority. But aside from special cases like these, he surmised that bannermen who worked in Zhili would eventually learn the value of hard labor and would come to take agriculture as their “hereditary occupation” (*shiyeye* 世業). Sending them to nearby locations would greatly reduce the cost of their migration, but it would be no less transformative and important for their self-sufficiency. Zuo even suggested that the skilled farmers among them could eventually be transferred to the northwest provinces and out into Xinjiang to colonize and cultivate the land at an undetermined point in the future.⁷⁴

Despite his hesitation about bannermen, Zuo was wholly convinced of the urgency of colonizing Xinjiang. For one thing, he saw migration and settlement as means to substantiate Qing

⁷¹ ECCP, 923-24.

⁷² Zuo, “Fu zou choudiao qiding tuntian Xinjiang shu,” 40:34a.

⁷³ Ibid., 40:34b.

⁷⁴ Ibid., 40:35a.

claims to the territory. Yet he was also enticed by the possibilities for highly productive agriculture, possibilities that seemed to go unexploited. Even if “upper Gansu province (*longshang* 隴上) is basically wide open land with few people, and the border area (*biansai* 邊塞) is also mostly gravel, stones, and barren soil,”⁷⁵ Zuo reported that “Xinjiang is wide open land with few people, and its soils are mostly abundantly fertile.”⁷⁶ It was an enticing prospect, a place to imagine bountiful harvests. Zuo's visions of the frontier had been influenced by Lin Zexu, with whom he had discussed northwestern agriculture years earlier, after Lin's exile in Xinjiang and his experience with building arid land irrigation systems there in the 1840s.⁷⁷ They were also influenced by the reports of his commanders. As Zuo envisioned it, the richest agricultural land extended from east to west across northern Xinjiang, with Urumqi at the center: “the farmland is fecund and moist, and if one plants one *shi* 石, one can harvest multiple tens of *shi*.”⁷⁸ This hypothetical return on potential investments of seed and labor suggested to Zuo that the land was well worth populating. Since most of the local Muslims and Han had not survived the reconquest, Zuo recognized that it would be difficult to revert to old patterns of settlement and that Xinjiang's regrowth required colonists from China proper.

The implication of Zuo's refusal to allow bannermen to migrate to Xinjiang because they lacked agricultural knowledge was that the reconquered frontier would be largely the colonial preserve of Han Chinese. Postwar insecurity and financial belt-tightening surely entered into his calculations. But unspoken intentions to make the most of agriculture in Xinjiang, to make the land produce as much as possible, were just as important. In his almost categorical denial that Manchu

⁷⁵ Ibid., 40:33b.

⁷⁶ Ibid., 40:35a.

⁷⁷ ECCP, 513.

⁷⁸ Zuo, “Fu zou choudiao qiding tuntian Xinjiang shu,” 40:35b.

bannermen were fit for agricultural labor, Zuo implied a certain degree of correlation between identity and technical aptitude, particularly for rendering the material resources of the natural world into the products of basic existence and into valuable commodities. On the basis of this assumption, then, people like himself were most capable of farming the frontier. In practice, this meant that the soldiers of the Hunan and Hubei region (*Chu* 楚) whom he commanded in the field were accustomed to agricultural labor, and he used them strategically as “agrarian specialists” (*nongjia* 農家) to cultivate grains, grow vegetables, plant elms, willows, and poplars alongside roadways, open up irrigation channels, and develop local water resources (*shuili* 水利).⁷⁹ His military officers, too, had “come from being engaged in toilsome farmwork,” and so were supposedly prepared for agrarian labor in northwest countrysides. Once refugees and laborers for hire had returned to a locale, Zuo's plan was to transform sites of military farming into zones of civilian settlement. As Manchu bannermen were barred, at least initially, from the agrarian reconstruction of the frontier, the movement to reclaim land and exploit its productivity would largely be a process carried out by those who were assumed to be the empire's best agrarians.⁸⁰

Conclusion: Xinjiang as an “Outlet”

In the discourse of nineteenth-century Qing colonialism, Gong Zizhen and Wei Yuan were pioneers. By the time their works were published in 1827, Xinjiang had been incorporated into the empire for at least sixty years and was no longer a “new frontier territory” (*xinjiang* 新疆), in spite of its name. But their proposals presented the frontier in a new light. Xinjiang became a geographical solution to the conundrums of growth—landlessness, fiscal deficits, decadence—that had already

⁷⁹ Ibid., 40:33a.

⁸⁰ Ibid., 40:33b.

started to become apparent in the previous century. Xinjiang offered the hope of overcoming the intensifying contradictions of the late imperial economy. Some of these contradictions comprised what Kenneth Pomeranz has called the “ecological bottleneck” that acted as a “severe constraint on further population growth, per capita income growth, or movement out of agriculture” by the end of the eighteenth century.⁸¹ The ideals of political economy dictated that, in order to solve these problems of growth, more people had to be given access to land to support themselves and to be productive taxpayers. And so starting with Gong Zizhen's proposal, Xinjiang's arable land was to be subordinated to the ideals of Chinese political economy. In principle, colonization would transform fertile but unused land into productive landscape and transform city vagrants, the rural poor, or Beijing bannermen into productive agricultural subjects. The various proposals of these scholars largely agreed that Xinjiang could ease China's growing pains.

Inasmuch as Wei Yuan chose the term “outlet” (*weilu* 尾閭) to characterize Xinjiang, the nineteenth-century discourse of Qing colonialism may have also initiated new conceptions of the population within China proper as a unified body politic with a life of its own. It is unclear which late imperial texts mediated Wei's selection of the term, but the term had originally appeared in a passage from the *Zhuangzi* (莊子), a work of Daoist philosophy dating to the Warring States period (475-221 BCE). In a chapter on autumnal floods, the text stated,

Among all the waters of the world, none is larger than the ocean. Ten thousand rivers flow into it without end, yet it does not overflow. It incessantly drains off at the outlet (*weilu*), yet it is never empty.⁸²

天下之水，莫大於海，萬川歸之，不知何時止而不盈，尾閭泄之，不知何時已而不虛。

⁸¹ Pomeranz, *The Great Divergence*, 234, 241.

⁸² This translation is amalgamated from Burton Watson, trans., *The Complete Works of Chuang Tzu* (New York, Columbia University Press, 1968), 176; and Herbert A. Giles, trans., *Chuang Tzu: Mystic, Moralist, and Social Reformer*, second ed. (New York: AMS Press, 1974), 201.

In this chapter, I have rendered the term “weilu” in English as “outlet” to convey its meaning as a place made valuable by the function it serves in relation to another geographic location.⁸³ In the conceptions of Wei and Zhang, Xinjiang was to become an important site for re-channeling China's unproductive population away from densely populated urban areas or countrysides and into agrarian livelihoods. Yet the allusion to the *Zhuangzi* is also significant because it begs the question of the nature of the source of the water flowing into the outlet. By this analogy, the population of China would be rendered metaphorically as an undulating ocean. It would be a massive body constantly in flux, a living entity that, by its very nature, must have an external means to remain in balance, to stay healthy. Within the nineteenth-century discourse of colonialism, this allusion may very well have functioned to naturalize the population of China proper as a distinct body politic with its own metabolism. It also served to legitimize the vision of Xinjiang as a colony for China proper, because the demographic body would naturally require such an “outlet” to stay in balance, and would also naturally overflow into regions beyond its perimeter. Perhaps the metaphor of China's population as an ocean also conveyed to other scholars the enormity and gravity of the situation, as well as the urgency of finding an “outlet.”

As I have shown, Zhang Peilun borrowed Wei's language to make a case for colonizing Xinjiang with bannermen. Although he failed to convince Zuo Zongtang, he was not the last Chinese scholar to frame the process of colonizing in terms of finding an “outlet” for a country's people. In 1916, one of the brightest and most influential reformers of the early twentieth century employed the term “outlet” and used the metaphor of flowing water in his definition of what he

⁸³ Defining the term, however, is by no means simple or straightforward. For example, R.H. Mathews defines it as “a rock called, 'the eye of the sea,' to which all the waters of the ocean converge” and also “the posterior.” See R.H. Mathews, *Mathews' Chinese-English Dictionary*, revised American ed. (Cambridge, MA: Harvard University Press, 1943), 1055. In his translation of the *Zhuangzi*, Burton Watson leaves “weilu” untranslated but notes one definition as “a huge fiery stone against which the sea water turns to steam.” Watson, 176n5.

called “national imperialism.” In his *Discourse on the New Citizen* (*Xin min shuo* 新民說), a text describing the formation of a national citizenry, Liang Qichao 梁啟超 (1873-1929) wrote,

What is national imperialism? Having filled up the interior, citizens' strength is bound to overflow into the exterior, whereupon they anxiously seek to extend authority to other lands, which they use as “our outlet” (*weilu*).⁸⁴

民族帝國主義者何？其國民之實力，充於內而不得不溢於外，於是汲汲焉求擴張權力於他地，以為我尾閭。

Unlike other scholars in this chapter, Liang was not explaining a proposed or imagined geopolitical relationship between China proper and Xinjiang, even if he considered colonization important for the development of a nation, and in particular for a national literature.⁸⁵ He instead used the term to define the imperialism of European nations in the nineteenth century, when the people of those nations surged beyond national borders and into other lands and asserted their authority with claims expressed in the language of morality and inevitability. Despite his focus on Europe in this passage, it is possible that Liang's conception of imperialism may have been influenced by the language of Qing colonial discourse. His choice of “outlet” to describe the process of imperialism raises the possibility that legacies of nineteenth-century colonial discourse lay hidden in Chinese nationalist thinking of the twentieth century.

⁸⁴ Liang used the English phrase “national imperialism” within the text. See Liang Qichao, *Xin min shuo* [Discourse on the new citizen], (Shanghai: Zhonghua shuju, 1936 [1916]), 4.

⁸⁵ Xiaobing Tang, “Poetic Revolution, Colonization, and Form at the Beginning of Modern Chinese Literature,” in *Rethinking the 1898 Reform Period: Political and Cultural Change in Late Qing China*, ed. Rebecca E. Karl and Peter Zarrow (Cambridge, MA: Harvard University Asia Center, 2002), 245-267. On Liang's interest in historical Chinese colonizers in southeast Asia, see *Zhongguo weiren zhuan wu zhong* [Five types of biographies of great men from China], (Taipei: Taiwan Zhonghua shuju, 1957), part 4, “Zhongguo zhimin ba da weiren zhuan” [Biographies of eight great Chinese colonists].

Conclusion

Environmental Interventions and Lines of Connection

The great general who deals with borderland affairs has yet to return,
As the sons and brothers of Hunan fill in the Tianshan,
And newly planted poplars and willows extend three thousand *li*,
Introducing a spring wind across the Jade Pass.¹

大將籌邊尚未還，湖湘子弟滿天山，新載楊柳三千里，引得春風渡玉關。

—Yang Changjun, ca. 1878-1880

Travelers to northwest China sometimes caught sight of the massive trees from a distance. Claude Pickens, an Episcopal missionary from Virginia traveling through the northwest “in search of Moslems” in the spring of 1936, noticed the trees in the vicinity of Pingliang, Gansu, and in his journal entry for May 12, he made a note about “the stately old willow trees lining the road.” Perhaps inspired by their stature in the landscape, he seems to have snapped a photograph of the trees along the roadway that day (see Figure 4). From the standpoint of Pickens' camera, the trees appear to be giant pillars running alongside the dusty treads and separating the road from cultivated fields. Their upper branches reach above the tops of the hills in the distance, and they tower over wayfarers, whose horse-drawn carts have pulled their loads past them. The trees seem to provide the

¹ Yang Changjun, “Gong song Zuo gong xi xing gan tang” 恭誦左公西行甘棠 [Respectful recitation of Duke Zuo's benevolent governance on the westward journey], in Gansu sheng difang shizhi bianzuan weiyuanhui 甘肅省地方志編纂委員會, ed., *Gansu sheng zhi* 甘肅省志 [Gazetteer of Gansu province], (Lanzhou: Gansu renmin chubanshe, 1999), 20:42. See variants of this poem in Wang Yitang 王逸塘, *Jin chuan shi lou shibua* 今傳是樓詩話 [Notes on poetry from the Contemporary House of Transmitting Truth], (Tianjin: Da gong bao she chuban bu, 1933), 366-367, reproduced in ZZYS, 215; and Wu Aichen 吳藹宸, ed., *Lidai xiyu shichao* 歷代西域詩鈔 [Collected poetry of the western regions from past dynasties], (Urumqi: Xinjiang renmin chubanshe, 2001), 270-271.

only source of shade for single travelers who go by foot. For Pickens, they were perhaps the most eye-catching sights in the landscape, juxtaposed against the light tones of the soil and the hues of the sky. He recorded no more about the willows by the roadside, save for their origin: “These were planted by Tso [Zuo], the general who conquered Yaku[b] Beg of Kashgar about 1875.”²

Pickens was not alone in his attribution of northwest trees to Zuo Zongtang. In the late nineteenth and early twentieth centuries, poplars and willows became living monuments to the leader of the military campaigns that suppressed rebellion across the northwest and saved Xinjiang for the Qing empire. One traveler, Pei Jingfu, recognized the immensity of Zuo's arboreal work in 1905. In his estimation, the poplars and willows tracing the roads westward from eastern Gansu all the way out to Jiayuguan formed over a thousand kilometers of “continuous shade” (*lianyin* 連蔭).³ The stature of individual trees sometimes shocked Pei, who found willows near Pingliang set in four or five tiers that were “tall enough to reach to the sky and too large to reach around.”⁴ Yuan Dahua 袁大化 (1851-1935), who was traveling west to Urumqi in the spring of 1911 to assume the governorship of Xinjiang, encountered the arboreal signs of Zuo Zongtang's army scattered in various locations from eastern Shaanxi province to points west of Lanzhou. In one place, trees had grown together so densely and their shade had blanketed the roadway so completely that the thoroughfare by which they stood appeared to be a “narrow gorge road” (*xialu* 峽路). In another location, poplars planted in the 1870s now reached over thirty meters tall, “towering and sticking up into the heavens.”⁵ In his journal of the journey westward, Yuan seemed to coin a new appellation

² Claude L. Pickens, Jr., “*In Search of Moslems in China*”: *The Story of a Journey through Northwest China, April 30-July 2, 1936*, ed. Martha Lund Smalley (New Haven, CT: Yale Divinity School Library, 2004), 15.

³ Pei Jingfu 裴景福, *Hebai kunlun lu* 河海崑崙錄 [Record of the Journey to Kunlun Mountains], (Anhui, 1914), 2:32a

⁴ Pei Jingfu, *Hebai kunlun lu*, 2:11b.

⁵ 高聳插天. Yuan encountered the dense clumps of trees in Tongguan and Huayin in eastern Shaanxi, whereas he spotted the poplars in western Gansu near a town called Hongcheng. Yuan Dahua 袁大化, *Fu*

for these roadside trees. He called them “Duke Zuo's Willows” (*Zuo gong liu* 左公柳). Near the border between Shaanxi and Gansu, he wrote that he had seen “pleasant lines of Duke Zuo's Willows still in order, without many missing.”⁶

Observers imbued the trees with the mantle of benevolent governance that they imagined Zuo Zongtang to have employed in his northwest campaigns. Pei Jingfu compared the poplars and willows planted by Zuo's army to the “sweet pear trees of the Earl of Shao” (*Shao bo gantang* 召伯甘棠),⁷ an allusion to a verse from the ancient *Classic of Poetry* (*Shijing* 詩經). People of ancient times had composed the lines entitled “Sweet Pear Trees” (*Gantang* 甘棠) to honor the Earl of Shao. Originally enfeoffed in Northern Yan 北燕, in the region around present-day Beijing, the Earl of Shao had gained a reputation for his adroit and just governance in towns of the west (*xifang* 西方), where he conducted the business of government under the branches of sweet pear trees. After he died, people honored him by turning the trees into symbols of his rule and vowing not to harm them.⁸ The term *gantang* 甘棠 thus came to bear a double meaning, referring to sweet pear trees and to the benevolent rule of the person with whom they were associated. In adopting this term and the allusion to the Earl of Shao, Pei represented Zuo's legacy as the living organisms in the landscape as well as the effects of Zuo's benevolent governance which they represented.⁹ Perhaps Pei had

Xin ji cheng 撫新記程 [Record of the journey out to govern Xinjiang], (1911), 1:8b, 1:35b.

⁶ 左公柳甘界尚整齊，無甚短闕。Yuan, *Fu Xin ji cheng*, 1:20a.

⁷ Pei Jingfu, *Hebai kunlun lu*, 2:11b.

⁸ For the original poem, see the *Classic of Poetry*. A short record of the Earl of Shao's administration in the western regions is contained in Sima Qian, *Shiji* 史記 [Records of the Historian]. For a translation, see William H. Nienhauser, Jr., ed., *The Grand Scribe's Records, Volume V.1: The Hereditary Houses of Pre-Han China* (Bloomington, IN: Indiana University Press, 2006), 171. Although Sima Qian records the region to which Shao went to govern as the “western regions,” other records indicate that the Duke of Shao governed not in the west but in “southern states” (*nan guo* 南國). See the introduction to the poem contained in the “Mao Preface to the *Poetry*” (*Mao shi xu* 毛詩序). The poem itself is included in a section of the *Classic of Poetry* entitled “Shao and the South” (*Shao nan* 召南).

⁹ The only difference, noted Pei, was that Zuo's “far-reaching strategy” (*yuanlue* 遠略) quite surpassed that of the Duke of Shao. Pei Jingfu, *Hebai kunlun lu*, 2:11b.

followed the lead of Yang Changjun, whose poetic encomium to Zuo's transformative influence on politics and environments in the northwest—the epigraph of this conclusion—had adopted the term *gantang* as part of its title. From this perspective, it was not just the colonizers from Hunan who spearheaded the transformation of northwest lands and communities but also the trees that they planted, symbols of Zuo's righteous leadership.

Wayfarers in Shaanxi and Gansu may have had the chance to observe the poplars and willows firsthand, but periodical readers far to the east caught glimpses of them in print. Shanghai's illustrated periodical, the *Dianshizhai Pictorial* (*Dianshizhai huabao* 點石齋畫報), published a two-page spread depicting rows of trees planted by Zuo's armies (see Figure 5). The title of the illustration, “The Remaining Benevolence of Sweet Pear Trees” (*Gantang yize* 甘棠遺澤), alluded to the same fruitful trees of the classical verse, the living arboreal signs of magnanimous governance. In the illustration, a long road guides travelers—and the *Pictorial's* readers' eyes—from the foreground off into the distance. Lining the roadway on both sides, trees serve as immobile ambassadors accompanying travelers out west, and their straight, slender trunks hoist a canopy of branches and leaves over passersby. The road appears to cut through a topographical corridor of natural and human origin. On the right side, a small, nearly hidden section of wall peeks out from amongst cliffs overlooking a stretch of cultivated soil. To the left of the roadway, the outlines of distant mountain peaks rise above the tallest branches. With the Great Wall to the north and the Qilian mountains to the south, the roadway traces a route through Gansu and out toward Xinjiang. The travelers form a long camel train laden with goods. One rider appears to be looking backward, toward the east, but the rest file onwards to points further west, places beyond the view of the periodical's readers.

The illustration in the *Dianshizhai Pictorial* suggests that trees were planted not only to form swaths of shady leaves amidst dusty fields or deserts but also to create connections between one

part of the empire and another. Willows and poplars gave travelers shelter from the elements and drew lines linking distant places along the roadway. They made the lengthy and arduous westward journey more enticing, and travelers who experienced the respite provided by shade under their canopy may have been prone to attribute their existence to Zuo. After more than ten years, the trees created

a thick shade concealing the sun, an emerald tent linked to the clouds. In the sweltering summer heat of the sixth month [of the year], [people] take shelter from sunstroke underneath. All feel the shade of benevolent favor from Zuo Zongtang and their praise [for him] does not subside.¹⁰

濃陰蔽日，翠幄連雲。六月徂暑者蔭喝於下。無不感文襄之德庇而稱道勿衰。

In the visions of those who esteemed Zuo, the trees created a hospitable environment all the way out to the Jade Pass 玉關 (or Jade Gate Pass 玉門關), a relic of the Han dynasty whose poetic and rhetorical uses had long outlived its actual function as the point of passage between Chinese hinterlands and regions further west, a function in which it had been superseded by Jiayuguan. The Jade Pass was a time-honored place of geographical differentiation between the land inside and the land beyond, but it was also a point of connection. And from the perspective of late nineteenth and early twentieth-century observers, it was Zuo Zongtang's trees that brought this connection alive. “At present, the springtime sun is clear and warm and the fine shade is still verdant,” the caption claimed. “Into the distance, poplars and willows set each other off alongside the Jade Pass.”¹¹ The trees seemed to guide travelers up to the pass and out beyond it.

¹⁰ Fu Genxin 符良心, “Gantang yize” 甘棠遺澤 [The Remaining Benevolence of Sweet Pear Trees], in *Dianshizhǎi huabao daquan* 點石齋畫報大全 [The complete *Dianshizhǎi Pictorial*], (Shanghai: Jicheng tushu gongsi, 1910), 38:54b-55a.

¹¹ 今當春日晴和，美蔭蔥蘢依然。與玉關楊柳遙相掩映。Fu Genxin, “Gantang yize,” in *Dianshizhǎi huabao daquan*, 38:54b-55a.

Despite the laudatory representations of Zuo's trees, their growth in the last decades of the Qing empire did not always match their imagined significance as signs of upright governance. Some of them literally did not stand upright. West from Pingliang, Yuan Dahua saw willows “bending like a fist and barren, unlike the uninterrupted luxuriance of the balsam poplars.”¹² This sight prompted him to question whether the “nature of the soil” (*tuxing* 土性) in the west was perhaps better suited to poplars than willows. But even some of the poplars could not remain straight, as they had appeared in the *Dianshizhai Pictorial*. At a place near Pingliang called Sishilipu, Yuan discovered poplars “bending and slanting; perhaps in the high mountains and cold air, [they are] forced [over] by the wind.”¹³ Battered by weather and shaped by climate, the trees could do little more than reflect the conditions in which they grew. Pei Jingfu recognized this correlation between land and their development. “For barren saline soil,” he wrote, the trees “wither as soon as they are planted. In fertile soil, they are abundant and luxuriant, tall enough to reach into the skies and surpassing several arm-lengths [in girth].” Tree growth was an expression of the quality of the land, and Pei asserted that “as soon as you observe if what's growing is prospering or declining, you'll know whether the land is rich or barren.”¹⁴ Pei himself had used the laudatory rhetoric of “sweet pear trees” to bring recognition to Zuo's arboreal work, but in making these observations, he admitted that the efforts of Zuo's soldiers could not, in the end, determine how well they grew.

People also had a hand in damaging the corridors of trees in the northwest. Pei Jingfu discovered a placard by the roadside in Gansu warning people against furtively chopping down (*daofa* 盜伐) the trees. The placard ascribed to the trees the pedigree of Zuo Zongtang's military fame

¹² 拳屈瘠薄，不如青白楊之條達肥美。Yuan Dahua, *Fu Xin jicheng*, 1:24b.

¹³ 拳曲欹斜，或山高氣寒為風凌逼耳。Yuan Dahua, *Fu Xin jicheng*, 1:27b.

¹⁴ 凡苦澗不毛之地，旋植旋萎。沃土則蒼蔚干霄，逾數抱。[...]一觀所植之盛衰，而知土地之肥瘠。Pei Jingfu, *Hebai kunlun lu*, 2:32a.

and imbued them with the profundity of living monuments. The second two lines of the prohibition read: “Who introduces the spring wind, a thousand *li* all jade green? Do not cut and do not fell what Marquis Zuo planted.”¹⁵ Living expressions of a novel state of affairs, the trees were not to be chopped down and hauled away. But interdictions like this apparently had not worked. For some people, the trees became a readily accessible resource awaiting their use. The caption in the *Dianshuzhai Pictorial* noted that even though people “did not have the heart to cut and chop” the trees immediately after Zuo departed from the northwest for Beijing in late 1880, they later lost interest in their preservation. “Rascals and the like came to take advantage of the situation and chopped them down with axes, making [the land] as barren as Niu Mountain,”¹⁶ an allusion to a mountain mentioned in the *Mencius* where people had cut down forests and grazing animals had stripped the land of vegetation.¹⁷ In March 1911, Yuan Dahua happily reported that willows near Tongguan, in eastern Shaanxi, had grown mature and robust, strong enough to supply wood for tool-making, but he had also heard the news of willows being “secretly cut down by local people.”¹⁸ Further to the west in Gansu, where he saw some of Zuo's poplars huge and reaching to the sky, he found that “many have been felled by villains,” and even the remaining ones had had their branches lopped off.¹⁹ Pei Jingfu had blamed local officials for the destruction of these living legacies of Zuo's work because they had not actively admonished people to spare them. But he soon discovered that he had not been adequately vigilant. One of his own servants who had gone to purchase firewood had

¹⁵ 誰引春風，千里一碧。勿翦勿伐，左侯所植。Pei Jingfu, *Hebai kunlun lu*, 2:32a.

¹⁶ 無賴之輩往乘間，研以斧斤，致同牛山之濯濯。Fu Genxin, “Gantang yize,” in *Dianshuzhai huabao daquan*, 38:54b.

¹⁷ Mencius employed the metaphor of the barrenness of the hillside to discuss human nature and the lack of humaneness. See Mencius 11.8, in Yang Bojun 楊伯峻, ed., *Mengzi yizhu* 孟子譯注 [The annotated Mencius], (Beijing: Zhonghua shuju, 1960), 263.

¹⁸ 被土人偷伐。Yuan Dahua, *Fu Xin jicheng*, 1:8b-9b.

¹⁹ 多為奸民翦伐。Yuan Dahua, *Fu Xin jicheng*, 1:35b.

returned with wood from “government willows stealthily chopped down.”²⁰

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The disappearance of willows and poplars or even just their stunted growth hardly tarnished the reputation of Zuo Zongtang in the late nineteenth and early twentieth centuries. His reputation, in the end, was not built upon the success of agriculture or the growth of trees. Zuo gained posthumous fame as the military general who had reconquered Xinjiang, preserving its connection to China proper. It was the urbanites of Shanghai and other cosmopolitans of the emerging Chinese nation—readers of periodicals like the *Dianshizhai Pictorial*—who became enthralled by the military man who had achieved imperial victory in an era of defeat after defeat by European nations.²¹ Popular memories of the dead general and his military victories lived on well into the twentieth century, and they have risen and fallen along with the fortunes of Chinese politics and the tenor of Chinese nationalism. Zuo has played many roles in history, including the late Qing modernizer who introduced important foreign technologies to China and the feudal reactionary who suppressed the anti-imperial uprisings of the masses. But above all, Zuo Zongtang was considered a patriot for his efforts to unite the borderland with China proper.²²

By early 1878, Zuo's army had completed its reconquest of Xinjiang. But it was the year

²⁰ 盜伐官柳. Pei Jingfu, *Hebai kunlun lu*, 2:32a.

²¹ Such was the public appeal of tales of Zuo's military adventures that they were composed into a new drama (*xinju* 新劇), entitled *Duke Zuo Pacifies the West* (*Zuo gong ping xi* 左公平西). Staged at Shanghai's Tianyi Tea Garden 天儀茶園 in the spring of 1895, the drama was reviewed on the front page of the *Shenbao* newspaper and was later published in several different editions with line illustrations depicting the cast of characters in opera costume. “Guan Zuo Gong ping xi xin ju you gan” 觀左公平西新劇有感 [Feelings upon seeing the new opera *Duke Zuo pacifies the west*], *Shenbao*, no. 7933, GX21/4/29 (May 23, 1895), 1. For examples of the publication of the drama, see *Xin ji Zuo gong ping xi zhuan* 新輯左公平西傳 [Newly edited story of Duke Zuo pacifying the west], (Shanghai: Shanghai shuju, 1908); *Zuo Wenxiang gong zheng xi yanyi* 左文襄公征西演義 [The romance of Zuo Wenxiang's conquering the west], (Shanghai: Jinzhang tushuju, 1930).

²² For the various roles and interpretations of Zuo Zongtang, see Sun Zhanyuan 孫占元, *Zuo Zongtang ping zhuan* 左宗棠評傳 [A critical biography of Zuo Zongtang], (Nanjing: Nanjing daxue chubanshe, 1995), 1; Lipman, *Familiar Strangers*, 129n85.

1884 that marked a more significant turning point in relations between China proper and Xinjiang. In that year, the Qing court accepted the proposal to transform Xinjiang from an imperial territory into a province and establish the organs of civilian government modeled upon the provinces of China proper. Several years prior to this decision, Zuo had ridiculed Gong Zizhen's early nineteenth-century suggestion that Xinjiang become a province. He did so on the grounds that Gong was unfamiliar with the terrain. "There is much in Gong's proposal that cannot be implemented," wrote Zuo in 1880. "For he did not personally go through the territory and he was not very familiar with the arrangement of mountains and waterways."²³ Nonetheless, he accepted the utility of Gong's proposal for Xinjiang insofar as it promoted civilian institutions of governance in a territory long guarded by military garrisons—a change in status that would be the key to making the “frontier and hinterland indivisible” (*bian fu bu fen* 邊腹不分).²⁴ When Xinjiang's transformation to provincial status came in late 1884, it marked the realization of Gong's plan for civilian government and the culmination of Zuo's military intervention and his advocacy for provincialization. Xinjiang province acquired a new governor—the first civilian governor was Liu Jintang, Zuo's top military commander during the reconquest—and a new administrative hierarchy of prefectures and districts. Historians have described this as “administrative sinicization,” “inlandization,” or part of the process of the “domestication” of Xinjiang,²⁵ and the replication of the provincial form in Xinjiang seemed to formalize and justify the Qing empire's renewed control over the territory after a period of political

²³ 龔議多不可行。蓋未親歷其境，不習知山川條列。Letter to Tao Guang 陶栻, GX6/0/0 (1880), ZZQ, 12:596.

²⁴ Letter to Tao Guang 陶栻, GX6/0/0 (1880), ZZQ, 12:596.

²⁵ These descriptors appear respectively in Ping-ti Ho, “In Defense of Sinicization: A Rebuttal of Evelyn Rawski's 'Reenvisioning the Qing',” *The Journal of Asian Studies* 57.1 (February 1998): 148; Kataoka Kazutada, *Shinchō Shinkyō tōchi kenkyū*, 202-213, quoted in Sugawara Jun, “Tradition and Adoption: Elements and Composition of Land-Related Contractual Documents in Provincial Xinjiang (1884-1955),” in *Studies on Xinjiang Historical Sources in 17-20th Centuries*, ed. James A. Millward, Shinmen Yasushi, and Sugawara Jun (Tokyo: Toyo Bunko, 2010), 120n1; and Millward, *Beyond the Pass*, 232.

absence. In the decades when the empire increasingly faced military and diplomatic challenges to its territorial integrity from imperial Russia along the extensive land borders and from European nations and Japan along its seacoasts, provincialization also exemplified the move to shore up the borders of the empire, and the process was repeated in Taiwan, formerly a prefecture of Fujian province, one year later in 1885.

Zuo's ability to marshal financial resources and orchestrate the reconquest and reconstruction of the borderland suggests that, while the Qing empire may have been imperiled in many ways and on many fronts in the nineteenth century, it was by no means inevitably headed for collapse after the Opium War.²⁶ This study demonstrates how officials dealt creatively with the crises of the century, including the question of the social and environmental contradictions of demographic growth, by turning to colonial solutions. While Zuo was sent by the imperial state to suppress the Muslim rebellions and was later given the imperial mandate to recover Xinjiang, he viewed northwest lands with imaginative eyes and envisioned agrarian abundance. Like Gong Zizhen and Wei Yuan, he speculated that places where the “land is vast but people are few” (*dikuang renxi* 地曠人稀) were places where Han people from China proper could reproduce their agrarian lifestyles, draw profit from the land, and ease the social and ecological tensions of growth elsewhere in the empire. The late nineteenth-century process of expanding agriculture in the northwest must be viewed in light of these contradictions and the attempts on the part of Qing scholars to find spatial, or geographical, solutions for them.

Several years earlier, in November 1876, the *Shenbao* newspaper had reported upon the logic behind colonizing the northwest when the fortunes of the Hunan army seemed to be heading for

²⁶ Philip Kuhn has recently argued that “the nineteenth century is best viewed as a permanent summons to flexible thinking.” He argues against older, juxtaposed categories of historical interpretation that have generally shaped our thinking about the nineteenth century. Kuhn, “Toward the Nineteenth Century,” *Late Imperial China* 29.1 (June 2008), 6.

victory. At the end of an article describing the army's stunning maneuvers and capture of Urumqi, it touched upon the postwar plans for Xinjiang devised by Zuo Zongtang and the Manchu commander Jinshun 金順 (1835-1885), or what amounted to their strategy for “political-economic management” (*jingji* 經濟)²⁷ of land and people through ecological transformation. The plan called for colonization by settlers from China proper in order to modify the social and natural environments of the northwest and make them places of cultivation. The plan would require moving soldiers and civilians from within the pass [i.e. Jiayuguan] to solidify [the borderland]. It will thus be possible to transform overgrown wilderness into prosperous bustle. Compared with merely defending it with soldiers, this seems like a more successful scheme.²⁸

徙關內兵民以實之，如此可化狃榛為繁華。較之僅戍以兵者，似更得計。

In this conception of securing the borderland for the Qing, settlers would defend the territory by their presence and their ability to enrich the landscape through agrarian work. The political economy of colonizing the borderland thus hinged upon the shared perception among late Qing officials that northwest lands could yield abundant harvests in places where the the potential productivity of the soil went untapped but where the land could be settled with labor.

In the thirty years after Zuo's reconquest, migrants flowed to Xinjiang with the official sanction and encouragement of Qing settlement policies. Although records of the number of migrants to the northwest frontier in the last three decades of the empire are sparse, existing

²⁷ This term was an abbreviated form of “ordering the world and aiding the people” (*jingshi jimin* 經世濟民), but it would come to be translated as “political economy” by the end of the nineteenth century under the influence of foreign translations and loan words from the Japanese lexicon. Wolfgang Lippert, “The Formation and Development of the Term 'Political Economy' in Japanese and Chinese,” in *Mapping Meanings: The Field of New Learning in Late Qing China*, ed. Michael Lackner and Natascha Vittinghoff (Leiden: Brill, 2004), 119-128.

²⁸ “Lun kefu Wu-lu-mu-qi ge cheng shi” 論克復烏魯木齊各城事 [On the recapture of Urumqi and other cities], *Shenbao*, no. 1383, GX2/9/19 (November 26, 1876), 1.

evidence suggests that the post-reconquest era was a time of significant land settlement and demographic growth. Indeed, this period may have witnessed a “high tide” (*gaochao* 高潮) of movement from the provinces of China proper to the new province of Xinjiang, and rough estimates suggest that the population of the territory increased around sixty percent over the twenty-five years between 1887 to 1912, from approximately 1.2 million to two million people.²⁹ Some migrants traveled out to the frontier for the opportunities of commerce,³⁰ but many others apparently took advantage of the provincial government's offer of 60 *mu* 畝 of high-quality land—or even more for lower grades of land—for households willing to trek out to Xinjiang, settle down, and grow crops.³¹ Migrants arrived from different regions of China proper bearing their own selection of plants and their own methods for making frontier agriculture a successful and profitable venture.³² But from the perspective of late Qing officials, perhaps the most important thing was that they were coming at all and supplying the borderland with new labor. In 1912, the Xinjiang gazetteer noted with a certain satisfaction that the longevity of peace after Zuo's reconquest had created the conditions in which the “population is multiplying” (*shengchi zifan* 生齒滋繁)—precisely the phenomenon in China proper that had alarmed Gong Zizhen and other observers almost one hundred years earlier and had made them look to the frontiers for solutions. In the year when the

²⁹ Zhao Zhen 趙珍, *Qingdai xibei shengtai bianqian yanjiu* 清代西北生態變遷研究 [Research on ecological change in the northwest in the Qing dynasty], (Beijing: Renmin chubanshe, 2005), 175, 181.

³⁰ Kataoka Kazutada 片岡一忠, *Shinchō Shinkyō tōchi kenkyū* 清朝新疆統治研究 [Research on governance in Xinjiang in the Qing dynasty], (Tokyo: Yuzankaku, 1991), 278-282.

³¹ The regulations devised by Wei Guangtao in the mid-1880s suggested that each settler household would receive 60 *mu* of land without specifying the quality of the land (see Chapter 5). In 1912, the *Illustrated Gazetteer of Xinjiang* recorded that, in the postwar era, land was doled out at three levels: settler households could claim 60 *mu* of land at the highest grade (*shang di* 上地), 90 *mu* at the middle grade (*zhong di* 中地), or 120 *mu* at the lowest grade (*xia di* 下地). Zhong Guangsheng and Sun Anfu, *Xijiang beicheng*, 2:5; Li Wenru, *Xinjiang dili zhiwu kao*, 2:6a.

³² Zhong Guangsheng and Sun Anfu, *Xijiang beicheng*, 2:6; Yuan Dahua et al., *Xinjiang tuszhi*, 28:4a; Li Wenru, *Xinjiang dili zhiwu kao*, 2:9b.

last Qing emperor abdicated the throne, the flow of migrants out to Xinjiang appeared to have some momentum and may have provided some reassurance, however meager, to anxious officials worried about the future: “People from inside the pass who come, arm in arm and side by side, are increasingly numerous.”³³

One of the strongest legacies of Zuo's intervention in the northwest was continued optimism about the future prosperity of agriculture in Xinjiang. Other nineteenth-century scholars had envisioned abundant landscapes along the frontier, but Zuo was the most famous advocate for settlement late in the second-half of the century, and later boosters echoed the rhetoric of enrichment through profitable uses of the environment. In 1909 and 1910, when scholar Sun Anfu wrote the chapter about Xinjiang's agriculture for the provincial gazetteer, he placed Xinjiang's soils into the middling echelons of fertile lands within the empire. Despite its remoteness and its inferiority to the most productive agrarian zones in the empire, it had a certain unfathomable and untapped natural richness.

Xinjiang is remotely located on the frontier. Its climate and soil fertility cannot be compared with the Central Lands. Yet its skies are rich even without rain and its land is fertile even though not heaped [with fertilizer].³⁴

新疆僻處邊陲，天時地利宜不得與中土比。然天不雨而膏，地不壅而腴。

According to Sun, it was this natural fecundity that allowed Xinjiang to have decent harvests on a regular basis despite what he considered to be the indolence and self-contentment (*zì'ān* 自安) of native labor. He suspected such people to be the kind who would claim the natural productivity of Xinjiang's environment as a function of their own work. “Aren't such [people] greedy to take the

³³ 關內之民，連袂接軫，來者益衆。Zhong Guangsheng and Sun Anfu, *Xinjiang beicheng*, 2:8; Li Wenru, *Xinjiang dili zhiyin kao*, 2:11a.

³⁴ Yuan Dahua et al., *Xinjiang tuzhi*, 28:4b.

achievements of nature (*tiangong* 天功) as their own ability?”³⁵ Sun asked rhetorically. The people who worked the fields did not have the capacity to “exhaust the strength of the land” (*jin di li* 盡地力) owing to their lack of diligence and to their “poor, inferior tools which they have not changed for generations.”³⁶ But it was precisely the fertility of the natural environment which could create the basis for even greater material prosperity as soon as new workers and new tools arrived.

In spelling out future policies, Sun echoed the language Zuo Zongtang had used decades earlier when he wrote in his 1838 exam essay about the need to survey the environmental conditions of a place before implementing agrarian policies. Sun emphasized the need to accord (*yin* 因) with the seasons and to estimate (*duo* 度) what would properly grow in Xinjiang's soils. But just like Zuo, Sun devised an agrarian strategy shaped less by observations of local conditions than by imported notions of what would be most productive. It would be necessary to reshape and standardize the contours of the land's fields and waterways to suit the goals of agrarian prosperity. It would require improving the technologies available to farmers—the tools (*qi* 器) of cultivation and the methods (*fa* 法) of fertilization—which, as it had been thirty years earlier, would be imported from China proper and drawn from the technical knowledge of Chinese farming practices. Finally, taking a phrase from the pre-imperial text *Zuo zhuan* 左傳, Sun proclaimed that if the people “abandoned their old [practices] and take [what is] new as the correct stratagem,” they would become rich (*fubou* 富厚).³⁷

This was the same vision of a prosperous future in Xinjiang that Zuo attempted to realize and it was

³⁵ 若此者豈非貪天功為己力者耶。Yuan Dahua et al., *Xinjiang tuzhi*, 28:4b-5a.

³⁶ 皆窳之器，世守而不改。Yuan Dahua et al., *Xinjiang tuzhi*, 28:4b.

³⁷ The entire passage reads as follows: “If we are able to follow the seasons, estimate what's suited to the land, and on their behalf open up wasteland, rectify boundaries and divisions, dredge the rivers and ditches, punish the tyrants and evaders, equalize the farmland, repair tools for cultivation, perfect the methods of fertilization, abandoned their old [practices] and take [what is] new as the correct stratagem, they would be materially rich. What a superb assessment! What a superb assessment!” 誠能因天之時，度地之宜，為之闢草萊，正疆理，濬川澮，懲豪隱，均田畝，繕耕耘之器，精土化之法，舍其舊而新是謀，其為富厚。豈勝量哉。Yuan Dahua et al., *Xinjiang tuzhi*, 28:5a.

a vision that he had propagated among his subordinates who took the reigns of civilian government in the 1880s.

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Yang Changjun saw Zuo Zongtang's work in the northwest through rose-colored glasses. In his poem, which is the epigraph to this conclusion, he lauded Zuo's ability to transform northwest regions by introducing life forms—trees and people alike—who would colonize and alter the lay of the land in these geographically and ecologically marginal territories. Having served among Zuo's top military advisors, Yang was certainly aware that it had been devastating, bloody, and sometime punitive warfare that had enabled Zuo and his army to lead the way in forging these material connections. This was quite the opposite of a “spring wind” which represented the invisible yet powerful influences of benevolent governance, education, and other forms of acculturation.

Yang was also silent about the social and environmental obstacles that Zuo had faced as he attempted to rebuild and expand agriculture in the 1860s and 1870s. Plants were not as resilient in the environments of the northwest as laudatory accounts suggested they were. Mulberry tree saplings from Zhejiang withered on the long road out to Xinjiang in the late 1870s. Trials of cash crops and vegetables sometimes floundered upon local conditions: plants perished in cold weather, succumbed to aridity, or did not take to local soils. Local people and migrants sometimes proved uncooperative or acted in ways that undermined official visions of a cultivated, settled, and agriculturally productive borderland. Some farmers resisted efforts to change their production practices while others continued to invest their labor into morally dubious and illicit productive activities. These included the opium growers of Shaanxi and Gansu who became infamous in the last thirty years of the empire for clandestinely planting poppies in the hills and mountains of northern Xinjiang and for being sojourners invested not in long-term agrarian development but only

in the quick profits of opium.³⁸ They also included the Turkic workers of the sericulture workshops who protested pay scales and undermined the smooth development of sericulture in Xinjiang in the 1880s. And they included local people who were branded as bandits for chopping down willows and poplars for use as firewood.

The obstinacy or noncooperation on the part of locals and migrants and the seeming inhospitableness of the environment were obstacles for Zuo and other officials to overcome as they worked to lay claim to the potential wealth of the land. Moving people, plants, silkworms, and agricultural tools to these borderlands and disseminating the technologies of agrarian production made these northwest regions, especially upper Gansu and Xinjiang, increasingly subject to the productive practices of people from China proper, perhaps more so than at any time in previous history. Questions about how to overcome the particularities of land and environment and how to convince farmers to adopt production methods and crops from elsewhere connected Zuo's postwar work to the intellectual trends of the Qing period. As I have tried to show, one of the key issues in his scholarly upbringing was how best to judge the most productive uses of the land. For him,

³⁸ Late nineteenth and early twentieth-century migrants from Shaanxi and Gansu were not the borderland's first growers of the poppies, which had been observed growing in Xinjiang as early as the late eighteenth century. (David Bello, "Opium in Xinjiang and Beyond," in *Opium Regimes: China, Britain, and Japan, 1839-1952*, ed. Timothy Brook and Bob Tadashi Wakabayashi [Berkeley: University of California Press, 2000], 129.) But their opium cultivation subverted the late Qing state's attempts at long-term agrarian development in Xinjiang because they typically rented land already under cultivation rather than applying to the provincial government for new land for reclamation. (Zhong Guangsheng and Sun Anfu, *Xijiang beicheng*, 2:6; Yuan Dahua et al., *Xinjiang tuzhi*, 28:4a; Li Wenru, *Xinjiang dili zhiwu kao*, 2:9a.) Moreover, of the estimated thirty to forty thousand who migrated to Xinjiang to profit from opium cultivation, perhaps a small minority stayed. According to one early twentieth-century account of opium in Qitai in northern Xinjiang, "Opium poppies are everywhere in the southern mountains. In any given year there are about 20,000 migrants from Shaanxi and Gansu who come, greedy for its profits. All believe that it is common to come empty-handed and return full [of riches]." 罌粟徧南山。關隴敖民饗其利而來者歲約二萬人。皆虛往實歸以為常。 (Yuan Dahua et al., *Xinjiang tuzhi*, quoted in Kataoka, *Shincho Shinkyō tōchi kenkyū*, 286n13.) The red and white poppies that they planted created a "riot of color across the mountain valleys" (*lanman shan gu* 爛熳山谷), but by their connection to the opium trade, their labors did not contribute to the moral vision of environmental transformation that underscored Zuo's conception of borderland political economy. (Zhong Guangsheng and Sun Anfu, *Xijiang beicheng*, 2:6; Yuan Dahua et al., *Xinjiang tuzhi*, 28:4a; Li Wenru, *Xinjiang dili zhiwu kao*, 2:9a.)

obtaining profit or benefit from the land (*dili* 地利) was a question to be addressed on the basis of textual studies and experiences in the local environment, where agrarian techniques could be tested out and put on display for farmers. When Zuo attempted to expand agriculture in the northwest, however, what seemed to be most critical was not observations of environment or custom but the dissemination of agrarian manuals, the propagation of techniques and plants from the south, and the movement of specialists to train people in new ways of farming. He still had to convince local farmers of the profitability of crops and techniques, but it was this constant attempt to overcome the obstacles posed by local environments and farming practices that was a primary trope of Zuo's environmental interventions in the northwest.

At the heart of these processes, as I have argued, was the pursuit of the “profits of nature.” Zuo was certainly not the only Qing scholar-official to think about these material rewards. The idea that these profits would inevitably result from well-managed regimes of agrarian production was shared among late Qing officials, Han and Manchu alike. In 1863, for instance, Manchu military commander Pingrui 平瑞 wrote to Beijing arguing that the imperial pasture lands of northern Xinjiang should be divided up into sites where agrarian laborers could settle and tap into the “vastness of the profits of the land.”³⁹ This kind of wealth, drawn from the soil and rendered as taxes to the government, was crucial for the health of the empire in an era of fiscal uncertainty. He therefore urged officials to “rely on the profits of nature as the long-term strategy,” a plan which would mean transforming what had been horse pasture into arable land for intensive cultivation.⁴⁰ The same kind of proposition framed plans for agrarian development after Zuo's reconquest. The acting superintendent of Xinjiang, Gongtang, speculated that land throughout the Urumqi area

³⁹ 地利之溥。Ping Rui, “Wulumuqi kaiken changdi shu” 烏魯木齊開墾廠地疏 [Memorial for opening up the pasture land in Urumqi], in HJWX, 39:81a.

⁴⁰ 因自然之利為久遠之謀。TZ02/01/08 (1863), LFZZ 03-9559-18.

could yield rich harvests in direct proportion to the quantity of labor power. In a simple calculus about labor and profit, he wrote in 1879 that “Using up one more portion of agricultural labor means [gaining] one more portion of profit from the land.”⁴¹ These expressions about the material rewards to be gained by combining human labor with the environment exemplified the notion among Qing officials that borderlands were places of great potential wealth in the late nineteenth century. But they also expressed deeply held assumptions about forms of material wealth within the environment that could be brought to the fullest fruition and extracted through the application of human knowledge and labor. It was the potential for these profits that made the frontiers such enticing places for agrarian expansion and colonial development in the late nineteenth century.

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Despite these uses of “profit” in the late nineteenth century, the word and the idea retained their connection to the *Mencius* and to a moralizing discourse about the profanity of certain forms of profit-seeking and commercial activity.⁴² Zuo Zongtang not only railed against opium in the 1860s and 1870s but was also sometimes fond of pointing out that profit had corrupted the hearts of common people, as in this line from a letter he wrote in 1877: “In recent eras, people's minds have been completely corroded by the word 'profit,' and it is really difficult for them to free their minds [of it].”⁴³ Despite these moralizing claims, however, he and others wielded the idea of profit

⁴¹ 盡一分農力，即多一分地利。GX05/R3/21 (1879), LFZZ 03-9553-47.

⁴² Timothy Brook has written about the long-existing “cultural framework that preferred to praise moral reciprocity over profit taking and to see in each the diminution of the other.” Brook, “Profit and Righteousness in Chinese Economic Culture,” in *Culture and Economy: The Shaping of Capitalism in East Asia*, ed. Timothy Brook and Hy V. Luong (Ann Arbor: University of Michigan Press, 1997), 32. Profiting from commercial activity, however, was never fully circumscribed and, in fact, sometimes was considered an honorable activity in late imperial times. See John Lufrano, *Honorable Merchants: Commerce and Self-Cultivation in Late Imperial China* (Honolulu: University of Hawai'i Press, 1997).

⁴³ 近世人心，被一利字蝕盡，實難放心。GX3/0/0 (1877), ZZQ, 12:214. Six years later, Zuo lamented almost exactly the same issue, for which he thought the only solution was to turn a blind eye. In an 1883 missive to the Zongli Yamen, he wrote, “In recent times, people's hearts have been completely corroded by the word 'profit.' They speak of it with deep feelings. At present, there is no other method to deal with it

to train the focus of peasants on activities like agriculture deemed important for the social stability of the Qing state. If profit was sometimes a dirty word, it was also a significant rhetorical tool employed by scholar-officials to mobilize peasants to adopt crops, reclaim land, implement cultivation techniques, build waterworks, or focus their energy on other productive endeavors.

Insofar as these profit-making labors almost always required collaboration with some part of the natural world beyond humans—land, plants, animals, water—the rhetoric of profit was not only a social question, but an environmental one as well. If we are to focus on one important contradiction of rhetoric and practice in human relations with the environment in late imperial China, we may gain some insight by asking why scholar-officials railed against profit as a mediator of social relationships on the one hand while being fully committed to “exhausting” the “profits of land” or the “profits of nature” on the other hand. The unease about commercial profit's potential to disorder social hierarchies seems not to have translated into misgivings about motivating people to seek as much profit as possible for their labor within the environment.

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The Qing-era push to make productive use of land, water, mineral, arboreal, and other resources in the empire intensified as the density of market exchange grew and as the population expanded and pushed outward, to the margins of China proper and beyond. Within this context, Zuo Zongtang's work for agrarian development and the expansion of settlement along the northwestern frontiers amounted to a form of late Qing colonialism. Although the territory that he and his armies sought to control—Shaanxi, Gansu, and Xinjiang—had all once been within the geographical ambit of Qing imperialism, the late nineteenth-century endeavor to reconquer them

besides paying no attention.” 近日人心被一利字蝕盡。言之慨然。此時惟有以不睹不聞之法處之而已。GX9/0/0 (1883), ZZQ, 12:796. On at least three other occasions in missives in 1846, 1878, and 1879, Zuo complained about profit using similar language. See ZZQ, 10:58; ZZQ, 12:417; and ZZQ, 12:458.

and expand settlement and agrarian cultivation matches nominal definitions of colonialism as the process of settling people on land far away and even echoes the English word's Latin root, *colere*, meaning “to cultivate.”⁴⁴ Yet this examination of late Qing colonialism has also revealed how the processes of territorial incorporation were supported by the logics of normalizing patterns of agrarian practices, making these depopulated regions into productive landscapes, and using the northwestern borderlands as a lifeline for late Qing political economy.

Much recent historical scholarship on nineteenth-century colonialism has focused on relations between European bourgeois societies and their colonial subjects. As Frederic Cooper has pointed out, “the principal meaning of colonization has come to involve people rather than land: coercive incorporation into an expansionist state and invidious distinction” in which colonial authorities tightly circumscribed the political rights of subjects and increasingly policed the boundaries of their identities.⁴⁵ Yet in studying colonialism, to so simply shift the focus from land to people—to analyze the cultural and discursive practices of colonialism without the political economy—would diminish the prospects for coming to terms with how cultural practices inhered in the material concerns that motivated those who sought to benefit from colonial relations, as well as those who sought to contest or subvert colonial relations. In other words, as Cooper and others have recognized, histories of colonialism need to pay attention to both the cultural and material practices inherent to the relationship.⁴⁶ This is precisely the nexus, I have argued above, that environmental

⁴⁴ Several definitions of colonialism refer to this process of land settlement. Frederic Cooper recognizes an older meaning of colonialism as the “bringing of new territory into use by an expanding society, including settlements for trade and agriculture.” Cooper, *Colonialism in Question: Theory, Knowledge, History* (Berkeley: University of California Press, 2005), 27. Edward Said defined colonialism as the “implanting of settlements on distant territory.” Said, *Culture and Imperialism* (New York: Vintage, 1993), 9, quoted in Teng, *Taiwan's Imagined Geography*, 8.

⁴⁵ Frederic Cooper, *Colonialism in Question: Theory, Knowledge, History* (Berkeley: University of California Press, 2005), 27.

⁴⁶ Frederic Cooper and Ann Laura Stoler have called for a “more dynamic relationship between the two approaches” to studying colonialism, namely research into the “culture of colonialism and its relationship

historians should unravel to explicate and thereby overcome the contradiction seemingly peculiar to Chinese history between philosophies of human-environmental harmony and the practices leading to ecological degradation.

In Zuo Zongtang's push to circulate agrarian knowledge to farming communities in the northwest, both people and land became subject to his observations and oversight. His assessments of the productivity of local people in agricultural efforts—made explicit, for example, in his statements about how Turkic Muslims wasted their sericulture resources—shows that he was often classifying people based upon their ability to use their environments productively. At the same time, he surveyed the land with an eye toward attempting to make it more productive, as when he judged Gansu's climate and soil to be well-suited to cotton. In both of these ventures to train land and people, Zuo Zongtang and other officials relied upon technologies of agriculture and sericulture—seeds, plow animals, farming tools, looms, tree saplings, and silkworm eggs. The standards of technology and productivity by which he judged land and people along the frontier were not only borrowed from certain highly developed parts of China proper, but were also identified with Han people. In this sense, his work evinces the process of distinguishing between groups of people based on their knowledge and technological level, a process that echoed the categorization of people in parts of Africa and Asia so seemingly characteristic of early modern European imperialism.⁴⁷

Another characteristic of what I have called late Qing colonialism was the will to imagine the Qing northwest, and particularly Xinjiang, as a lifeline for the political economy of China proper. Qing documents refer to the “reconstruction” of agrarian society, but in light of the fact that the

to modernity” on the one hand and “political economy” on the other. Their article is “Between Metropole and Colony: Rethinking a Research Agenda,” in *Tensions of Empire: Colonial Cultures in a Bourgeois World*, ed. Frederick Cooper and Ann Laura Stoler (Berkeley: University of California Press, 1997), 4.

⁴⁷ Michael Adas, *Machines as the Measure of Men: Science, Technology, and Ideologies of Western Dominance* (Ithaca, NY: Cornell University Press, 1989).

proposals of Gong Zizhen, Wei Yuan, and others were under active consideration and framed the way in which scholars like Zuo Zongtang thought about frontier territories distant from China proper, reconstruction should not be construed as signifying the attempt to return to what had previously existed. By the nineteenth century, with the growing interest in the geographies, histories, and languages of the frontier territories and their peoples on the one hand, and with the increasing worry over demographic and ecological crises on the other hand, scholars looked toward the frontiers for solutions to the problems of China proper. And in the late nineteenth century, when Zhang Peilun and Zuo Zongtang both sent memorials debating the expediency of sending Beijing bannermen to settle along the frontiers, the subtext of their debate was the idea that Xinjiang could provide open land for excess population and thereby ease social contradictions that had arisen over the course of the previous century. At least in principle, the frontiers were to play an integral role in the maintenance of a system of agrarian political economy that had allowed the empire to prosper in the previous century.⁴⁸ In this way, the lands of the northwest, and the profits to be had by using them productively, came to be viewed as the solution for the environmental and social dilemmas that plagued China proper in the final century of Qing rule.

⁴⁸ Promoting agrarian expansion into Xinjiang in the late nineteenth century was neither qualitatively nor quantitatively similar to how Immanuel Wallerstein has considered the expansion of the capitalist world-system to peripheral territories in the early modern period. Nonetheless, his effort to attempt to understand the political economic nexus between colonies and metropolises in a systematic fashion begs the question of how colonial settlement along the frontiers in the Qing period functioned in a systematic way to support and reproduce the dynamics of Qing agrarian political economy. See Immanuel Wallerstein, *World-Systems Analysis: An Introduction* (Durham: Duke University Press, 2004), esp. chapter 2.

Figures



TSO TSUNG-TANG A. D 1812-1885
The most Progressive and Patriotic Chinese Statesman of the Nineteenth Century.

Figure 1. "Tso Tsung-tang [Zuo Zongtang]," from *Mesny's Chinese Miscellany* 4.1 (January 1, 1905), 2-3.

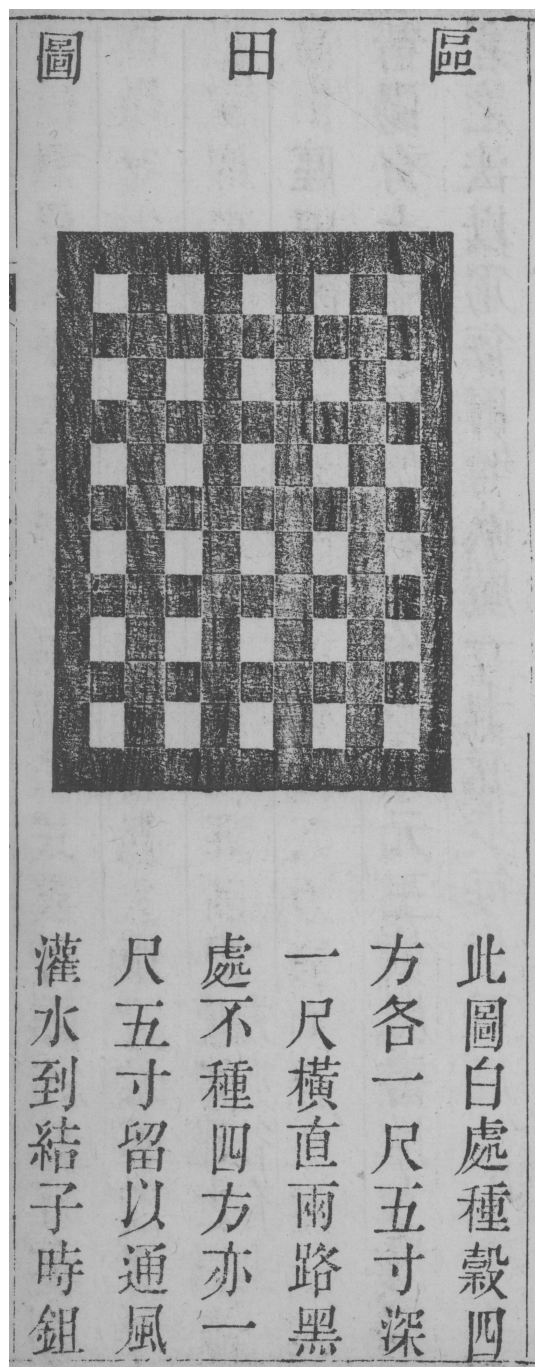
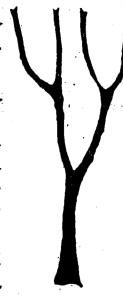
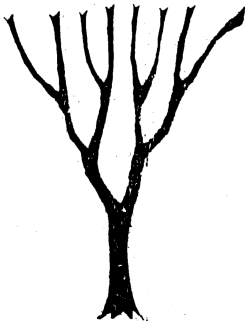


Figure 2. “A depiction of *qutian*.” The caption explains that the white squares are to be cultivated with grain. The black spaces remain fallow and are left to facilitate ventilation and irrigation. Sun Zhaikui 孫宅揆, *Jiao jia shu* 教稼書 [Book for instruction in agriculture] (preface, 1721), reprinted in Zhao Mengling 趙夢齡, ed., *Qu zhong wu zhong* 區種五種 [Five titles on plot cultivation], (Lianhuachi, 1878), 2:2a.

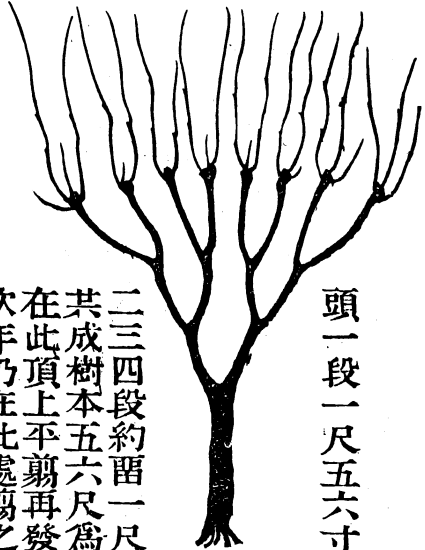
桑葉末摻在葉上拌之其葉即乾飽蠶無患
 一栽桑將根理直覆土築實翦去上條只留二寸栽在
 春冬萌芽時只留一芽深秋肥者長成五六尺高冬
 令又翦去上條離地一尺五寸如此樣
 來春頂上又留兩芽長成雙條冬令又翦去如此樣
 翦如此樣
 清明出芽頂上又各留兩芽冬又
 春芽又如前法雷之冬令又翦成八頭如此樣

自此以後年年在此
 此翦之即成拳樣

又如前雷芽十六條自此冬令不翦在立夏後連枝
 葉翦下抹葉飼蠶全在樹本之下出芽年年抹盡只
 雷頂上者要緊不時捉蟲毋使蟲食頂葉長成如此
 樣

蠶桑輯要 雜說
 一桑味甘易於生蟲葉上毛蟲與步屈用噴筒巴豆水
 噴之即除最惡者新條方長二尺有水牛蠱口夾嫩
 條遇風枝折老皮處夾之沿水不已到深秋水止疤
 乾內有蟲如蛆速宜剝去否則冬令入木內蛙夏令
 成蛹飛出又為水牛蠱矣
 一桑蠶初生如白屑漸成細粒如半蘿蔔子狀吸引皮
 漿皮漸枯蘖生苔自此葉少而枯所以用刮桑鈹刮
 之不若有白點時用巴豆研細和豆油用機帚蘸油
 掃之白蠱自盡又有一種時蟲立夏時遇西南風成
 酉時從土中飛出食葉至卯時復又入土捉之不能
 盡黃昏時灼以亮火蟲盡投火而燒除之宜遠燒於



頭一段一尺五六寸高
 二三四段約留一尺三四寸高
 共成樹本五六尺為定立夏後
 在此頂上平翦再發芽為微條
 次年仍在此處翦之

Figure 3. Instructions and illustrations for Huzhou mulberry trees. From Shen Bingcheng 沈秉成, *Cansang jiyao* 蠶桑輯要 [Summary of Sericulture], (Chang Zhen tong hai dao shu, 1871), *zashuo*:11a-12b.



Figure 4. “Along the old Silk Road to Europe. Trees planted by General Tso Chung-t'ang [Zuo Zongtang] on the campaign to capture Yakoob Beg in 1876.” Photograph taken by Claude L. Pickens, Jr., on about 12 May 1936 on the road running northwest outside of Pingliang, Gansu Province. Pickens Collection, Harvard-Yenching Library, Harvard University. Copyright © President & Fellows of Harvard College. Used by permission.



Figure 5. “The Remaining Benevolence of Sweet Pear Trees” (*Gantang yize* 甘棠遺澤), an illustration by Fu Genxin 符良心, appeared in the Shanghai periodical *Dianshizhai Pictorial* [*Dianshizhai huabao* 點石齋畫報]. Taken from *Dianshizhai huabao daquan* 點石齋畫報大全 [The complete *Dianshizhai Pictorial*], (Shanghai: Jicheng tushu gongsi, 1910), 38:54b-55a.

Note on Sources

Writing about the late nineteenth-century northwest in Chinese history presents two particular problems related to historical sources. The first is the limitation on the quality and diversity of sources. The so-called Muslim rebellions were the primary focus of attention for high-ranking officials in Shaanxi, Gansu, and Xinjiang from the 1860s to the 1880s, so many of their writings deal primarily or even solely with the patterns and outcomes of military operations. Details about what happened on the ground in the aftermath of warfare in specific locations are often nonexistent or quite sparse, which is a result both of the chaos of the era and the extent of destruction and dislocation caused by warfare. Compilers of several late nineteenth and early twentieth-century gazetteers from Gansu province, for example, noted that it had been difficult to gather information about local areas and local customs because few informants had been available for interview (*caifang* 采訪) or because local populations had been completely dispersed.¹ It is perhaps for these reasons that new gazetteers for districts and prefectures in Shaanxi, Gansu, and Xinjiang were often not edited or published until decades after Zuo Zongtang's army had moved through the region. Although some authors recognized that compiling gazetteers was both a symbol and a measure of postwar reconstruction, many were not published until years after the fall of the Qing dynasty in 1911.

The second problem is one of restricted access to documents pertaining to late nineteenth-century history in what is now northwest China. Restrictions are most easily perceived when one inadvertently comes up against them. This happened to me twice during the course of my fieldwork.

¹ *Pingyuan xian zhi* 平遠縣志 [Gazetteer of Pingyuan county], ed. Chen Rixin 陳日新 (1879), *fanli*:1a; *Xinxiu Guyuan zhou zhi* 新修固原州志 [Newly revised gazetteer of Guyuan prefecture], ed. Wang Xueyi 王學伊 (1909), *fanli*:3b-4a.

In the first case, librarians in the rare books room at the National Library of China in Beijing informed me in August 2008 that several maps of the Qing empire's northwest regions dating to the 1870s and 1880s had been placed in “war preparations storage” (*zhanbei ku* 戰備庫) during the Cultural Revolution decade (1966-1976) and had remained inaccessible to readers since then. Judging by their electronic catalog titles, I suspect these maps depict the geographic boundaries of the northwestern provinces and Xinjiang in relationship to imperial Russian territory, and given that they were produced right around the time when Zuo Zongtang's army was in the region, they would have added to my understanding of the geopolitics of northwestern lands in the immediate postwar and post-reconquest eras.² The second instance in which I encountered restrictions was at the Xinjiang Uyghur Autonomous Region Archives in Urumqi. In April 2009, archivists there informed me that the section of the Qing archives devoted to the topic of “reconstruction” (*shanhou* 善後) was closed to readers. The Qing archives in Xinjiang are divided into seven sections, six of which correspond to bureaucratic offices, commonly known as the “six boards” (*liu bu* 六部), which comprised important organs of imperial governance in Ming and Qing times. The seventh archival division, however, was off limits. Indeed, such was the level of control over materials pertaining to “reconstruction” that I was denied permission to ask the archivists, who controlled computerized searches of the digital catalog database, to search the catalogs of the other six archival divisions for the term *shanhou*. Given that “reconstruction” in late Qing Xinjiang history refers not only to a group of activities but also roughly corresponds to the period after the intervention of Zuo Zongtang's army, such restrictions significantly frustrate and limit historical analyses related to the environmental and political

² These maps, listed in the National Library's electronic catalog as of August 2008, included *Xibei ge sheng yu E'guo fenjie tu* 西北各省與俄國分界圖 [Map of demarcated borders with Russia in the northwest provinces], catalog number /066/25/1875, and *Qing Guangxu jiu nian Zhong E huajie tu* 清光緒九年中俄划界圖 [Map of divided borders for China and Russia in the ninth year of Guangxu (1883) of the Qing], catalog number /066.1/255/1883.

significance of agrarian expansion in the 1870s and 1880s.

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