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Landscapes of boom and ruination: politics of seeing in China's "tin capital" Gejiu, 1912-1949

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Abstract

This article argues that landscapes of ruination and wasted labour are not an unfortunate finale in the history of mineral-rich cities under the "resource curse" but an always ongoing reality from the start of their involvement in the capitalist world market and pursuit of industrial modernity. Focusing on narratives about the "tin capital" Gejiu in southwestern China during the first half of the 20th century, I conduct a historical analysis and examine how geological and sociological experts introduced new politics of seeing and exploiting land and labour. Boasting the landscape of the industrial boom, Chinese intellectuals and technobureaucrats alike considered geological discoveries and resource extraction as a sign of a nation's civilizational status and modernization achievements. Their fascination with this outlying small town also exemplified a nationalist claim to the new Republican State's southwestern borderlands in an era of imperialist territorial divisions. Nonetheless, they had to constantly explain (away) appalling sights of environmental ruination and social polarization, often through promises of mechanization or labour welfare. Offering a close reading of travelogues, social surveys and scientific reports, I challenge the conventional narrative from prosperity to decline and reveal landscapes of ruination at the heart of modernization and nationalist discourse of conquering and utilizing natural resources.

Keywords

tin mining; landscapes of ruination; wasted labour; politics of seeing; Republican China; industrial modernity

Paisajes de auge y ruina: la política de la mirada en la 'capital del estaño' de China, Gejiu, 1912-1949

Resumen

Este artículo argumenta que los paisajes de ruina y despilfarro de mano de obra no son un final desafortunado en la historia de ciudades ricas en minerales bajo la «maldición de los recursos», sino una realidad siempre continua desde el inicio de su participación en el mercado mundial capitalista y la búsqueda de la modernidad industrial. Centrándome en narraciones sobre Gejiu, la «capital de estaño» en el suroeste de China durante la primera mitad del siglo xx, realizo un análisis histórico y examino cómo los expertos geológicos y sociológicos introdujeron una nueva política de ver y explotar la tierra y el trabajo. Con el panorama del auge industrial, tanto los intelectuales chinos como los tecnoburócratas consideraron los descubrimientos geológicos y la extracción de recursos como un signo del grado de civilización y de los logros en cuanto a modernización

de una nación. Su fascinación por esta pequeña ciudad periférica también ejemplificaba una afirmación nacionalista a las fronteras del sudoeste del nuevo estado republicano en una era de divisiones territoriales imperialistas. Sin embargo, tenían que explicar constantemente las vistas aterradoras de la ruina medioambiental y la polarización social, a menudo a través de promesas de mecanización o bienestar laboral. Ofreciendo una lectura de cerca de los viajes, encuestas sociales e informes científicos, desafío la narrativa convencional desde la prosperidad hasta el declive y desvelo paisajes de ruina en el corazón de la modernización y del discurso nacionalista de conquistar y utilizar recursos naturales.

Palabras clave

minería de estaño; paisajes de ruina; mano de obra desperdiciada; política del punto de vista; China republicana; modernidad industrial

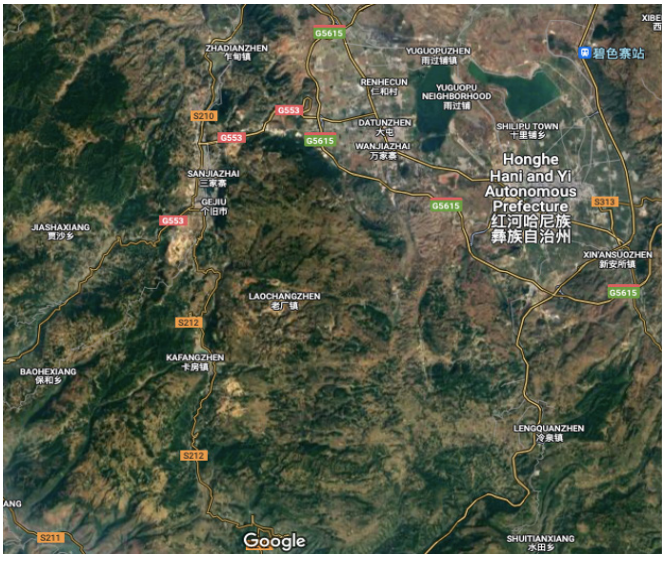
Introduction

In *The Works of Heaven and the Inception of Things* (*Tiangong kaiwu*), an encyclopedia of science and technology first printed in 1637, its compiler, Song Yingxing, comments that southwestern China is particularly abundant in tin resources, but the tin deposits in the Yunnan province are virtually inaccessible due to long and mountainous roads.[1] The scenario would change drastically in the centuries to follow. The mineral-rich town Gejiu stood out, its fate prototypical of the vicissitudes experienced by a mining city at the advent of industrial modernity in China roughly from the second half of the 19th century. Situated in a narrow valley in southeastern Yunnan at an altitude of 1,680 m, the small town was surrounded by mountain ranges where tin ores were found (Figure 1). Endorsed during the Qing dynasty (1644-1912) as an effective measure to simultaneously draw raw materials for minting coins, collect taxes and consolidate the frontier, the tin industry in Gejiu was to become an extremely contentious site in the 20th century.[2] Throughout the Republican (1912-1949) and Socialist (1949-1978) periods, knowledge produced in newly institutionalized scientific disciplines such as geology and sociology fueled state-sponsored endeavors to rationalize the lucrative business through mechanization and infrastructural investment. At the same time, the national pride in the "tin capital" was constantly challenged by the appalling images of ruined land and wasted labour.[3]

Marxist scholar Michelle Yates conceptualizes human-as-waste under the capitalist mode of production, where workers' bodies are used up and easily disposed of at accelerated rates. Waste, here, is not the end product of capitalism during the processes of distribution and consumption but an always ongoing reality during the process of production, even an indispensable part for the accumulation of capital (Yates, 2011, pp. 1679-1695). That capital wastes labour and lays waste to the environment through resource extraction, points to the unsustainability of the capitalist mode of production. One remaining question, then, is why labour conditions and ecological degradations continued to be obscured? What kind of narratives and ways of seeing glossed-over landscapes of ruination so that industrial development became the indisputable future to be sought after?

This article traces out a story of miners and minerals in the transformation of Gejiu into a famous "tin capital" in Republican China (1912-1949), as an essential episode to understand its fate of slipping into industrial ruination. Through the lenses of geological reports, travel writings and social surveys, I will explore how the technological system of the production of tin interacted with the social system of governance and labour. The limitation of primary sources confines the discussion mainly to the outsiders' gaze, instead of uncovering local and subaltern voices. Nevertheless, seeing "through their eyes" gives an intriguing chance to examine the very politics of seeing. Fundamental to this inquiry is the question of how an overwhelming majority of elites during this period, with a fervent desire for industrial modernity, witnessed and reconciled the two contradictory landscapes of boom and ruination. If the shanty dwellings and worn-out mountains were within their sight, how could intellectuals and technobureaucrats still firmly subscribe to the mining industry's potential to boost a city's future? How was a picture of a booming modern city conjured up on top of disconcerting sights of ruined land and wasted labor? Ultimately, by examining the politics of seeing in the case of Gejiu during the Republican period, this paper ponders on how particular ways of vision and envisioning ushered in an era of rationalization and anticipated a regime of extensive state planning in socialist China.

Figure 1. Contemporary satellite map of Gejiu and surrounding areas, showing (a) Gejiu city, the (b) Malage tin mine and the (c) Bisezhai Railway Station



Source: Google Maps. [Accessed: 29 November 2023]

The way of seeing this landscape underwent a clear premodern/modern divide. In the *Mengzi County Gazetteer* published in 1791,

1. Song, 1637, pp. 337-342 (or Third Section, pp. 17-20 in the original thread-bound version).
2. For an overview of tin mining in Gejiu, see Golas, 1999, pp. 99-106.
3. I borrow Michelle Yates' conceptualization of "human-as-waste" to capture both the ecological and social impact of capitalist production. See Yates, 2011, pp. 1679-1695

the compiler Li Kun delineates local tin deposits as an extraordinary occurrence: "Amongst mountains of treasures in Mengzi County, Gejiu is the most celebrated. Its terrain features a ring of hills containing lengthy veins, which gather the radiance of heaven and earth and transform it into silver, copper and tin… No one knows when mining began, nor is it possible to calculate when it will end. Only waves of mining yards flourish and decline, their destiny being uncertain" (Li, K., 1967, p. 61). His ornate prose frames mineral resources as supernatural and infinitely bountiful, in contrast to the erratic fate of fortune-seeking human beings. To modern eyes, however, mineral resources were objectively locatable in both geological time scales and the Earth's crustal space. People, consequently, were no longer imagined to be arriving and leaving at random. Instead, they are expected to map out the mines and extract mineral resources until the exhaustion of either labour or land.

Today, tin is still a vital component in the production of consumer electronics and other goods, but China has ceased to be an exporter. In 2008, Gejiu was designated as one of the twelve "resource-depleted cities" by the National Development and Reform Commission, the Ministry of Land and Resources and the Ministry of Finance of the People's Republic of China. If the opening of the Yunnan-Vietnamese railway in 1910 were set as the start of modern tin mining in Gejiu, then the lifespan of this mining city touches merely a rough century. The life story of such cities is conventionally narrated as a trilogy of birth and initial slow growth, prolonged boom and rapid ruination. In an article appearing in *Southern Weekly* (*Nanfang zhoumo*) in 2013, the bleak images of unemployment, drug abuse and prostitution in today's Gejiu are contrasted with the "communist utopia" of the previous era of socialist-planned economy. Interviewed by the journalist, a former worker recalled fondly her first sight of Gejiu via narrow-gauge railway in 1956. She was amazed by the workers' village on the hillside, which gave an illusion of the wondrous hanging gardens. In this narrative, the surge of unplanned private mining since the mid-1980s is considered to be the main cause of Gejiu's decline into a wasteland, where ecological destruction, human damage and economic decline gradually took hold (Fan, 2013).

Post-socialist nostalgia and blame on the withdrawal of state regulation shed light on the deprivation and disorientation felt by former workers of state-owned enterprises. However, this narrative tends to underestimate the prehistory of socialist transformations. Industrialization in the Socialist era, though attempting to address the plight of workers under the capitalist mode of production, was nonetheless a continuation of previous generations' undertakings, the outcome of a century-long quest for industrial modernity. Mining, in particular, is an activity that greatly ravages the environment, affecting soil and water, not to mention its detrimental consequences for the miners' health. In the 1970s and 1980s, various epidemiologic studies in Gejiu confirmed the correlation between tin mining and lung cancer as well as pneumoconiosis (Yunxi Gongsi, 1976; Sun *et al*., 1981). In fact, similar hypotheses have been circulating half a century ago, even though the correlation was not statistically established (Zhang, X., 1931, pp. 1912-1913). The landscape of boom, from the beginning, produced and coexisted with the landscape of ruination. An "archeology" of a mining city, therefore, must dig deeper into strata formed earlier than the immediate past in order to reflect on the upper layers of socialism and post-socialism.

1. Geology and mineral resources in the discourse of civilization

In a treatise on geology appearing in the Tokyo-based magazine *Zhejiang Tide* (*Zhejiang chao*) in 1903, the famous Chinese writer Lu Xun, then still an overseas student in Japan, designates the absence of "precise geological maps" as a sign of "uncivilized countries" (Suozi, 1903, p. 59). His anguished tone exemplified Chinese intellectuals' frustration with coping with the then-prevalent civilization discourse, which ridiculed China as lagging behind Western countries even in the exploration and exploitation of its own underground riches. Lu Xun explicitly lists several foreign geologists' works that would put Chinese people to shame, including the expedition dispatched by the Chamber of Commerce of Lyon to southwestern China (1895-1897), surveying the distribution of mineral resources and agricultural produce.[4] The Lyon mission of exploration was by no means the only French adventure into China's southwestern hinterland with future territorial and economic gains in mind. In fact, in the second half of the 19th century, as the French craved a colony in Southeast Asia, one of their main objectives was to open up a gateway into the untapped resources in southwestern China (Lee, 1989; Brötel, 1996). Geology was an essential form of knowledge deployed by explorers to transform, at least mentally, an unknown terrain into a promising colony, a process typifying the "survey modality" categorized by Bernard Cohen (Cohn, 1996, pp. 7-8).

These missions introduced new ways of seeing the landscape, replacing indigenous knowledge with precise and rationalized geological mappings. For sure, to venture into an unfamiliar land, foreign explorers had to rely at first on local informants. Explorers sought highly specific information when they were browsing anecdotal literati writings and gazetteers boasting a sense of locality. One example is the famous Mekong Expedition (1867-1868) which surveyed the river and land route from Saigon all the way to Shanghai. Its leader, Francis Garnier purchased a copy of *Illustrated Accounts of Minerals and Mines in Southern Yunnan* (*Diannan kuangchang tulüe*) in a Yunnan bookshop and included a translation of it in the mission's published report *Voyage d'exploration en Indo-Chine* (1873). Compiled in the 1840s by Wu Qijun, then the provincial governor and an amateur botanist, it outlines Yunnanese mines with maps and succinct descriptive texts, with the taste typical of a curious and responsible literati official. In the French adaptation, Francis Garnier did not reproduce this "vague and boring" text as a whole, leaving out "puerile beliefs and superstitious practices," as well as original maps. His editorial decisions turned it into a treatise on indigenous metallurgy, highlighting administrative, statistical and geographical details that might give readers "an exact idea of the unprecedented riches contained in this province and the prosperity

4. Suozi, 1903, pp. 61-63. For details about the Lyon mission of exploration, see Chambre, 1898. For foreign geologists in China, see also Wu, 2015, pp. 33-65; Shen, 2014, pp. 17-46.

that can be expected from it as soon as it finds its way to the market and receives a strong and honest administration" (Garnier, 1873, pp. 173-174).

In other words, the relatively *laissez-faire* Qing statecraft, manifest in Wu Qijun's work, was now seen as inadequate. Implicitly, the Qing state had also failed to realize the full potential that the mineral resources in Yunnan could offer. More French and British geological and mineralogical explorations were dispatched to Yunnan in the ensuing decades, sponsored by colonial authorities, financiers and industrialists (Deprat & Mansuy, 1912; Brown, 1920). In 1910, the French-owned Yunnan-Vietnamese railway was put into operation, running from Kunming, the provincial capital, to the Vietnamese port city Haiphong, by that time under French colonial rule. Its route passed Mengzi County, with the Bisezhai Station located some 50 km east of Gejiu. The heavy investment in transportation infrastructure was soon to make Gejiu a thriving mining city, connecting its tin resources more efficiently to the expanding global market. Given these blatant intrusions, Lu Xun's suspicion toward foreign geologists' travels in China was not groundless:

> "They penetrated deep into our inland regions, looking around like wolves and eagles. *The Book of Songs* goes, 'You have drums and bells, but you will not have them beat or struck. You will drop off in death, and another person will possess them.'[5] No wonder that future masters come to examine the accounting books… Scholars of the world took pains to travel across mountains and rivers in their exploration. But when I hear of such things, I can't help being scared stiff with my blood rushing, feeling an awful premonition" (Suozi, 1903, p. 61).

What Lu Xun suggests, however, is not to restore the status quo. On the contrary, "seeing other kids were to seize his food, a kid would quickly swallow the food himself." He expects that chivalrous men, impressed with "the image of civilization (*wenming zhi ying*)," would take the initiative to develop the geology and mining industry in China (Suozi, 1903, p. 76).

Lu Xun did not hope in vain. In fact, the French ambition to seize mining rights in Yunnan soon backfired because of the rising tides of Chinese nationalism since the turn of the century. To the Republican government newly founded in 1912 and the new elites, civilization was a word soon equated with booming industrial centers. In a petition to the Ministry of Agriculture and Commerce made by Yunnan industrialists in 1916, the mining industry was lobbied on account that it would "bring unlimited common good to the public, connecting places, gathering people and products of all kinds, and creating commercial centers. A once remote and backward region can become enlivened once mineral resources are discovered. There are numerous such precedents of civilization" (Zhongguo di'er, 1991, p. 131). According to them, such a civilizing mission was especially called for in Yunnan, because "Yunnan is incredibly remote with a mixture of Han people and ethnic minorities. People there are extremely unenlightened. Previously, some people have tried to survey mineral resources in the mountain ranges. But they were always hindered by aboriginal people, who were unreasonably unwilling to see their ancestral mountains and geomantic attributes (*fengshui*) disturbed" (Zhongguo di'er, 1991, p. 131). Local people were deemed ignorant of the benefits of civilization that the mining industry would afford. The question is, what was meant by this magnetic term *civilization*? What kind of future could geological and mineralogical experts envision?

2. Professionalizing the geological eye

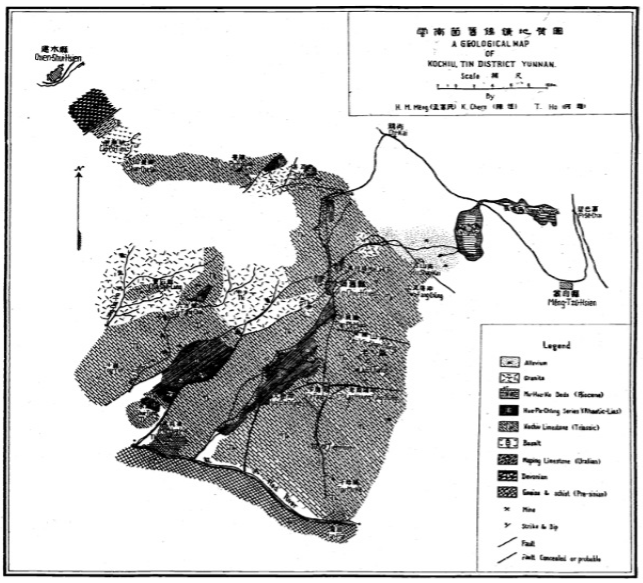
The Republican government was prompt to assume the lead in the promotion of geological surveys in the hope of vitalizing the mining industry. In 1913, a national Geological Survey Institute was established, headed by Ding Wenjiang, a returned student trained in the UK who was later revered as the "founding father of geology" in China (Furth, 1970). The next year, he was assigned the task of surveying mineral resources in eastern Yunnan along the projected route of the Qinzhou-Chengdu railway. He took a detour to visit Gejiu, feeling that it would be regrettable to miss this town, already appearing to be "the most prosperous city in Yunnan" (Ding, W., 1932a, p.19). His casual travel journals were published in the magazine *Independent Criticism* (*Duli pinglun*) in 1932, and a more systematic report appeared posthumously in *Geological Memoires* (*Dizhi zhuanbao*) in 1937, where the editor Yin Zanxun adds that the report had been circulating for a long time in the academic circle through handwritten copies and Ding's lectures (Yin, 1937, p.2). In the report, Ding gives an overview of this district's geological formation, tin mines and factories, and a vision of Gejiu's future, allowing a first-hand glimpse of the tin mining district in the mid-1910s.

What distinguishes Ding Wenjiang's account is that he does not focus exclusively on strictly geological matters. Outlining meticulously the topography of the region, he was attentive to the stratification of rocks. However, he makes it clear that science is ultimately concerned with practical affairs, and geological expertise should be mobilized to reveal the existence of tin and other profitable resources such as coal. This endeavor was only conceivable because of an industry and a market already on the ground. According to him, whilst tin was traditionally used domestically to make daily vessels and funerary money, by the 20th century, the considerably increased global demand for tin in "new style manufacture" was the main factor stimulating tin production in China, which amounted to 10,000 tons at its peak and ranked third in the world. Gejiu alone contributed about 95% to this figure, growing increasingly to be the economic lifeblood of Yunnan (Ding, W., 1937, p. 32). As a geologist, his analysis served to determine whether the circumstances were sustainable, and he concluded with a positive answer. On the one hand, deep mines remained to be exploited. Ding asserted that "if properly mined, there should be no worry of exhaustion in the near future" (Ding, W., 1937, p. 33). On the other hand, the demand of the global market was projected to be stable, and accordingly, "unless new tin fields are discovered, the price will remain high" (Ding, W., 1937, p. 37). If people were able to augment Gejiu tin's market share, they could even manipulate the price (Ding, W., 1937, p. 38). In a nutshell, the globalized circulation of capital was embraced as the generator of regional development. It appears as though such development and consequently accumulated wealth was taken to be the synonym for civilization.

5. English translation from Legge, 1871, p. 176

However, with the professionalization of geology, geologists intentionally dissociated themselves from economic concerns. Ding Wenjiang's eclecticism was conspicuously absent in later geological works, which took the mapping of soil strata as their sole vocation. For them, their predecessor's work was valuable, but not precise enough in the analysis of fossils and ores (Yin, 1937, p. 1). In 1934, Ding's successor, the U.S.-trained geologist Meng Xianmin revisited Gejiu on behalf of the Institute of Geology, Academia Sinica, spending six months to finish Ding's unaccomplished project of geological mapping. In his report published in the English-language journal *Bulletin of the Geological Society of China*, Meng presents a well-reasoned interpretation of the geological history of the terrain and a thesis on the genesis of tin deposits (Figure 2). According to his report, tin lodes were formed in Gejiu, a karstic plateau demarcated from all sides, due to a rare concurrence of multiple factors including tin-bearing magma, thick limestone deposited in Triassic times, structural arcs, etc. (Meng, H. M. *et al*., 1937, pp. 436-437). He deliberately distanced the scientificity of his study from the short-sightedness of mine owners, who only cared about the economic value of tin ore and made no effort to study its mineral association (Meng, H. M. *et al*., 1937, p. 435). Writing in English and conversing with international academia, Meng Xianhe demonstrated a new definition of civilization, measured by scientific achievements *per se* and detached from earthly calculations. In the meantime, the geological eyes ceased to see the real operation of mining, its effect on the environment and hundreds of thousands of lives. Geological science, thus, established its neutrality and objectivity, renouncing its origin in the search for profitable minerals.

Figure 2. A geological map of Kochiu's tin district, Yunnan made by Meng Xianhe



Source: Meng, H. M., 1937, plate 1

3. The plight of laborers vis-à-vis the lure of machinery

Contrary to professional geologists who only saw the objective existence of terra firma, Ding Wenjiang was keenly aware of the conditions of laborers, which composed a disheartening landscape of ruination. Not only were their duties heavy and dangerous, but also the minimum hope of earning something was insecure. In September 1914, Ding's geological survey took him to Xuanwei County, about 400 km from Gejiu. Yet, he encountered a group of people, whose clothing in reddish rags indicated that they were tin miners going homeward, even though the season should have entailed busy mining works. Among the miners, Ding recognized Lao Guo, who guided him down a mining pit in Gejiu. It was from Lao Guo's mouth that Ding learnt about the eruption of the First World War, which suspended Gejiu's access to the market. Tin plants closed one after another, dismissing miners without paying them overdue wages. These penniless travelers could only beg along the way or pick up ripe corn in the fields, surviving thanks to the kindness of peasants (Ding, W., 1932d, p.20).

The volatility of the global market was surely a reason for laborers' sufferings. Even in normal years, laborers were constantly exhausted and disposed of. In a short article published on a Kunming-based literary magazine in 1938, an author with the pen name Jianmei narrates his chance encounter with two miners during a train trip. One was blind and the other with sick eyes; they were on their way home from Gejiu. Unlike other passengers who settled down in their seats, these two men squatted near the compartment door. At first, the train attendant allowed them to ride without a ticket, despite a snort of contempt. At the next stop, however, an armed policeman approached, insisting that they could only ride one stop for free per day, which seemed to be an arrangement that they had previously made. The two poor men were only able to stay on board until the author purchased tickets for them. They told the author that they got eye diseases due to long hours of work underground and malnutrition. They were considered useless and thus laid off with no compensation but twenty local dollars, which were soon stolen en route (Jianmei, 1938, pp. 5-6).

The story might be real or fictional, but it certainly delivers an effect of realism through details based on lived experiences. For one thing, in Gejiu, trachoma was common, infecting as many as 70% of the workers according to a medical report in 1937 (Appalling Conditions in Tin Mines, 1937). What is also striking in this short piece is how the author emphasizes the framing of the train, the sensations that it provoked with the retreating landscape of trees and mountains, the dazzling sunlight and the wind blowing in through glassless windows. Perhaps not unintentionally, he speaks twice of how soot was also swept up, blown onto his face and into his eyes. This trivial feeling of unpleasantness in train travel, the quintessential experience of industrial modernity, was just like the sight of wasted laborers, stirring up a slight sense of uneasiness in the enjoyment of modern life. Ironically, the two miners were almost thrusted out of the train to keep the landscape of boom clean from the unsettling landscape of ruination. Their labour made industrial development possible, but their contribution was not recognized and their bodies were disregarded after draining all the usable bits.

Incentivized by profits, the mining industry wasted laborers and the environment at an ever-accelerating rate. The hazard resulted partly from the technological aspect of mining. Therefore, some observers heralded technological transformations, especially mechanization, to ease miners' work. Though not a metallurgist, Ding Wenjiang devoted considerable efforts to examining methods to extract and purify tin during his visit in 1914, carefully evaluating

their effectiveness and profit margin. What attracted him were the two different mining methods being used. With tens of surface mines and tunnel mines scattered through the mining areas, the native method yielded more than 95% of Gejiu's total tin output. Ore was dug in the dry season, washed by hand in the wet season to remove impurities, and subsequently delivered to downtown smelters where the smelting process was performed in brick-made furnaces using charcoal (Ding, W., 1932b, pp. 16-20). The new method was only adopted by the semi-official Gejiu Tin Company, inaugurated in 1909 and equipped with machinery bought via the German trading firm Carlowitz & Co. Ding wittingly narrates how the costly machines were unproductive in the first few years since the company actually held no mines and failed to purchase ores from suspicious local mine owners. Besides, the company also faced a lack of suitable coal and gas. It was only in 1920 that the company re-erected its cableway to the Malage tunnel mine, securing a stable source of ores, though fuel shortage still posed a huge problem (Ding, W., 1932c, pp. 18-20).

Appreciating the success so far realized by the native method, Ding Wenjiang was a whole-hearted supporter in popularizing the new, i.e. mechanized method. He listed several rationales, including higher efficiency, better quality, capacity to open large deep mines, etc. In addition, the use of charcoal had already depleted the surrounding forests. The unavailability or high cost of fuel would soon hinder the application of the native method, making it imperative to opt for the new method. The new method also enabled using electric or magnetic devices to reliably discover new mines and implement lifts and rails inside the mines to speed up transportation (Ding, W., 1932d, pp. 17-19).

However, Ding highlighted that the most important rationale for adopting the new method was to ease the hardship of miners. Most of the miners worked as carriers, transferring tin ores from the furthest end of the mines to the ore-washing plants on the ground. Inside the narrow and twisting walkways, collapses and death were not unusual, and those who survived typically got pulmonary diseases. Having spent a night in a shanty dwelling with miners, Ding vividly remembers how he was unable to sleep due to the noise of people coughing one after another, a "distressing music" echoing their heavy panting during the day. He believed that if machines were used, workers' loads would be released and a single worker's productivity could be increased tenfold (Ding, W., 1932d, pp. 19-20).

Ding Wenjiang did notice that people were willing to come to Gejiu to be employed under such miserable conditions because it was even more difficult to sustain their livelihoods in rural Yunnan (Ding, W., 1932d, pp. 20). However, he did not dig further to discover what was the last straw that undermined the formerly self-sufficient rural economy. Nor did he consider what would ensue from a wholesale mechanization, which would render a great number of workers into unemployed surplus population. His confidence in the new method epitomized this era's indiscriminate enthusiasm for machinery and technological advancements. Not all enthusiasm, of course, arose out of consideration for the workers. Quite often, the lure of machinery was rooted in the awe at its sheer image (Figure 3). For many visitors to Gejiu, especially in its flourishing 1930s, the mechanized mining operations using minimal manpower in the Gejiu Tin Company were indeed the most fascinating sight:

> "Wheels rotate, iron blocks stir, water runs, and tin is separated from red mud. The process is far more efficient than manual labor using wooden ladle. On top of the roof is erected the famous architecture to transport tin ores – four iron wires travel over several mountain peaks all the way to Malage located 10 km away where mines are found. Iron-made buckets carry tin ores and move along the wires, taking approximately 40 mins per trip. The buckets are all dyed red by the mud and resemble flying flames when looked at from a distance. The view is very impressive" (Zhou, 1939, p. 161).

The spectacular cableway was then famed for ranking second worldwide. Some visitors even took a ride inside it from downtown Gejiu to the Malage mine (Zhang, S., 1947, pp. 13-14). Visitors who ventured down the Gejiu Tin Company's mines also spoke highly of the lifts inside the multi-level tunnel mines, "as if in a department store," (Ding, N., 1938, p. 604) and all the necessary equipment, including electric light and telephone 1,000 m below ground level (Zhou, 1939, pp. 55-56; Li, Q., 1937, p.132). These technologies offered material instances of industrialization and eventually symbolized the very imagery of being modern. These images sufficed to stage a showcase of a booming industrial town and to entice curious visitors. Equally importantly, the high profile of modern technologies made it convenient to put the blame for workers' suffering on mines using the native method. As the ills were attributed to "pre-modern" practices, the inconvenient fact of child laborers infected with silicosis could be eliminated from the imagination of industrial modernity (Zhang, S., 1947, p. 17).

Figure 3. Yunnan adopts scientific mining

Source: Zhang Zijun 張梓駿 (photo) (1935). "Yunnan xikuang [Tin mines in Yunnan] 雲南錫礦." *Liangyou* 良友, no. 107, p. 26

The proliferation of travel writings related to Gejiu in contemporary publications, especially in the latter half of the Republican era, might indicate a heyday of industrial tourism, albeit still at a small scale. As Meng Xianmin illustrates, "not only geologists go there. Even those who go to Yunnan to survey education, transportation, hygiene, etc. always manage to visit Gejiu. People definitely think highly of the tin industry in Gejiu and all want to pay a personal visit" (Meng, X., 1936, p. 339). Many visitors also mention in their travelogues that the name of Gejiu was stamped in their minds since

their high school geography class (Zhong, 1939, pp. 601). They normally arrived at the county seat by the narrow-gauge railway running from Bisezhai station to Gejiu, which opened in 1920. In the thriving Nanjing decade (1928-1937), the downtown area struck visitors as almost a modern metropolis, with wide streets, western-style multi-story houses and shops of all kinds. Revisiting Gejiu, the Yunnanese writer Li Qiao, found himself surprised by its advanced "material culture," referring to the sound of the gramophone and the availability of running water and electricity (Li, Q., 1935, p. 90). Yet in Li Qiao's opinion, the atmosphere of "modern civilization" was only half-truth. Whilst mine owners went to restaurants and paid effortlessly with buckets of tin ores, miners' daily meals contained only rice and soybean soup. Water shortage in the mining district compelled them to choose between drinking soup or washing their face. Contrasting the life of mine owners and that of miners, he concluded that "if downtown Gejiu is heaven, then the mining district must be hell" (Li, Q., 1935, p. 92).

4. Seeing like a state

The above discussion traces two ways to envisage a landscape of boom by ignoring the landscape of ruination. Instead, one's gaze was diverted to either the geological imagination of mineral resources or to the phantasm of all-powerful machinery. However, the landscape of ruination was never entirely out of sight and could not always be comfortably shrugged off. To begin with, the blatant exploitation of workers met with different forms of resistance from the grass-roots level. The difficulty of hiring sufficient workers was experienced from early on (Le chemin de fer du Yunnan, 1908). Since few people voluntarily went to Gejiu, mine owners commonly dispatched recruiters to travel around nearby counties and persuade peasants into mining. About half of the workers were under 15 years old. To recruit them, their parents would be paid 10-30 local dollars and these children's status was comparable to serfdom (Zhang, X., 1931, pp. 1912-1913). Because the promise of getting rich did not meet reality, resignation and desertion were frequent. There were even rumors that some mine owners bought captives from bandits and kept them in shackles to prevent them from fleeing (Xinbo, 1940, p. 26).

The workers who remained were described to be rebellious and unruly. In 1938, a riot occurred in a new-style plant recently founded by the National Resources Commission. A schoolteacher named Ding Nianyun happened to be visiting Gejiu at that time and narrated in his travelogue his meeting with an official of the county party committee. The latter explained that people were discontented with the unequal treatment of the 500 unskilled local workers and 300 skilled workers from other provinces, and the county had to send 25 armed soldiers to suppress their fight. Later, when Ding Nianyun stopped by the County Bureau of Education, the director told him apologetically that this region was almost "outside of civilization (*huawai*)," with a belligerent, uneducated and highly mobile population that made a census of the population impossible (Ding, N., 1938, pp. 601-604). Curiously, his remark echoed the conviction made by a French explorer three decades ago, who called the workers "savages" and envisioned transforming this region with Europeans directly in charge (Jonery, 1907, p. 193).

The successful management of mining, in this light, necessitated using the technological systems of modern industry to cultivate disciplined workers. Accordingly, initiatives to ameliorate labour conditions were taken not only as a response to the nationwide labour movement escalating in the 1930s, but also as a strategy of governance. In 1935, Dr. Andrija Štampar, a Yugoslav health expert of the League of Nations, was sent by the provincial public health authorities to investigate the semi-official Yunnan Tin Corporation (former Gejiu Tin Company) (Sidanba boshi qingban diansheng weisheng shiye, 1935). His report was covered by the *North China Herald*, an English newspaper based in Shanghai, in an article calling attention to the labour conditions in Gejiu. As the title of the newspaper article suggests, he exposed the "terrible handicaps" under which child laborers were forced to work, though his observations were based already on the workshop with relatively high living standards in the mining district. Štampar's principal occupation was health and hygiene. In his perspective, laborers commonly had "a green complexion and swollen legs," having to carry a heavy load and climb up and down underground tunnels all day long. Many suffered from inflammation of the eyes, skin disease, as well as diseases of the respiratory system and of the digestive tract. To make things worse, Štampar discovered that the tin ore at Gejiu contained toxic arsenic oxide, but workers handled them without protection, which might account for an estimated annual mortality as high as 30% (Appalling Conditions in Tin Mines, 1937). His proposal helped the Health Department to secure a fund to improve the situation and accomplished some moderate progress in modernizing the health facilities. As an accompanying but no less important effect, the Yunnan Tin Corporation, which still only held a small share of the market, could consolidate support from the Government and the public by claiming to be a model factory providing a lot more social welfare than other private mine owners.

The wartime retreat to the southwestern interior following Japan's full-scale invasion of eastern China in 1937 exposed those inland mountainous provinces to the eyes of a greater public. Concurrently, the bombardments committed by the Japanese air force and the blocked traffic to Vietnam cost Gejiu, once again, sweeping urban and industrial destruction.[6] The situation was in many ways like that during the First World War, where the significantly lowered price made tin mining a loss-making business. In 1914, many plants went bankrupt and laid off tens of thousands of workers, vainly soliciting aid from the government (Yan, Y., 1917, p. 717). This time, too, the previously flourishing city was devastated and the laborers were the first to suffer.[7] In a petition to Chiang Kai-shek in 1944, Lin Jing, an official charged with inspecting the administration in Yunnan and Guizhou provinces, reported that the number of miners had decreased from more than 100,000 to 3,000-4,000, many among

6. The mining facilities suffered bombardments at least twice, in 1940 and 1941. As French Indochina fell to the Japanese in 1940, the Yunnan-Vietnamese railway was also cut off.
7. The scene was depicted in several travel writings. See Shi, H., 1944, p. 53; Xu, 1947; Zhang, S., 1947, p. 12.

them reduced by banditry or suicide. He proposed governmental financing and a master plan to sustain local industrial production, safeguard national defence and keep public order (Jingjibu buzhang Weng […], 1944). In this case, a landscape of ruination was also seen as a chance for the sovereign power to step in, designing local development and advancing priorities of security and social stability. The pro-state attitude foreshadowed the vigorous implementation of economic planning in the socialist period.

5. The sociological imagination

Governmental voices were, to a large extent, echoed and amplified by social sciences. In the late 1930s, research in sociology, a burgeoning discipline in major universities, was also relocated to southwestern China together with its faculty predominantly trained in the West. Whilst ethnic minorities in southwestern provinces stimulated new research agendas, conventional methods and topics of industrial labor, rural livelihood, demography, etc., were tested in new research fields. Gejiu stepped into the picture because the National Southwestern Associated University – an assemblage of Beida, Tsinghua and Nankai, three prominent universities – had a campus in Mengzi County. In August 1938, a National Survey Institute was set up by Tsinghua, selecting Gejiu's tin industry as one of its major research projects. The task was primarily undertaken by Su Rujiang, a faculty member, and Shi Guoheng, then a senior student. They resided in the county seat for one month and in the mining district for two months, and their cumulative results were summed up in a report published in 1942.

Both researchers strived to paint a complete picture of labour conditions, a core concern for sociologists since the emergence of this discipline in Europe in the nineteenth century. In the preface, Chen Da, head of the Institute and specialist on labour, brought up the issue by recalling his experiences when visiting tin mines in British Malaysia and the Dutch East Indies in 1935, where most miners were immigrants from southern China. He was glad to find out that large-scale tin mining in these tropical areas had been mechanized to "ease the strenuous manual labo[u]r and enhance workers' health." When he and his colleague Li Jinghan visited Gejiu, however, he found the situation far worse. Given his research experiences among laborers for more than 20 years, his statement that miners in Gejiu lived in the poorest conditions was revealing (Chen, 1942, p. 657). Chen Da hoped that the report could awaken people's awareness of the complicated problems faced by Gejiu's tin industry, and to achieve this, a systematic survey of the Durkheimian "social facts" was sociologists' main strategy.

Su Rujiang and Shi Guoheng collected an agglomeration of facts from their fieldwork. They gathered up available statistics about miners' hometowns, ages, desertion and death dates, etc. They also conducted a survey among 100 workers and interviewed 20 workers, trying to understand their life history. In addition, Shi Guoheng documented several miners' folk songs, convinced that this genre could convey the truth about miners' lives in a way far more powerful than textual evidence sorted out by intellectuals (Su, 1942, pp. 776-778). His interest in folk songs probably derived from the folklore movement, which triggered scholarly engagement with oral literature since the 1910s (Hung, 1985). The movement turned the attention of Chinese intellectuals toward common people. Seen through the medium of folk songs, the predicament of workers was all too pronounced.

Besides the plight of workers, both researchers also witnessed the landscape of ruined nature. In their words, "all mountains in the mining district were barren without trees. One can only see a bleak and desolate scenery. Even bushes are sparse. The land is divided up by canals and ditches, decorated by fragmentary rocks and broken pits" (Su, 1942, p. 675). Despite the lamentable tone, they did not further talk about the degradation of nature or consider it a serious problem. Perhaps they only found it problematic because the scenery signified a serious lack of fuel, which led people to cut down trees. By no means did their unearthing of the landscape of ruination mean to suggest a radical denunciation of the tin industry. Rather, the aim was to fix problems so that development would endure with new momentum. To conclude the report, Su Rujiang demanded the mine owners modify their operations to meet the Labor Law, transform workers' living and working quarters and provide adequate social welfare (Su, 1942, pp. 786-789). His conclusion sounds practically identical to those made by governmental agents and was soon endorsed in state regulations to enhance laborers' welfare (Banli gejiu kuangqu laogong fuli, 1942-1943).

Nevertheless, confronted with the ruination of a mining city, sociologists made the remarkable move to not simply attribute the landscape of ruination to wartime-blocked transportation, lowered prices or air raids. Shi Guoheng explicitly directed his critique toward sweating labor, the fundamental institution of industrial modernity (Shi, G., 1944, p.120). Acknowledging that Gejiu was renowned as the "tin capital" by supplying most of the tin output in China, he highlighted the fact that this city produced nothing else but tin. Foodstuff and everything else had to be imported. Yet the tin market was predominantly international, which left the industry, and consequently the city, in constant peril. To remain competitive in the market, Gejiu's mining plants opted for decreasing costs and increasing productivity, a goal basically obtained through the laborers' exploitation. However, with the mechanization of Southeast Asia's mining industry and the invention of other materials to replace tin, Gejiu's tin was bound to be ruled out of the market (Shi, G., 1944, pp.119-120).

The dilemma was nearly insoluble. Shi Guoheng's proposal was twofold. On the one hand, he advocated for mechanization and rationalization of the organizational principles, so that costs could be reduced without compromising the laborers' welfare. On the other hand, he placed his hopes on the Soviet Union market as well as a future domestic market once light industry was developed (Shi, G., 1944, p.121). Gejiu should no longer be a place where greedy mine owners hunted for fortune, leaving behind a landscape of ruination. But as a remedy, the landscape of boom had to be perpetuated to replenish the national treasury, solidify the frontier defence and create job opportunities (Shi, G., 1944, p.122). Now that the iron cage of modernity was placed, the development treadmill would be trod on by the generations of workers to follow. Upon its inescapable collapse, the landscape of ruination was to resurface, and today, the mining city remains captivated by the so-called "resource curse."

Conclusion

Tracing narratives about Gejiu, China's "tin capital", over more than a hundred years this article proposes a revisionist historical perspective to debates around extractivism. Conventional accounts of resource-based development often follow a fixed teleological pattern, starting from the excitement of discovery, climaxing with the prosperity brought by resource extraction, and concluding with inevitable exhaustion. In late-developing countries and nation-states under the threat of colonization, in particular, the extraction and utilization of mineral resources was further promoted as a stepping stone to industrialization and a way to strengthen territorial sovereignty. As tin mining burgeoned in Gejiu in the early 20th century, experts and technocrats placed high hopes on this inland town, anticipating its rise to increase China's industrial prowess and leverage on the global market. However, historical archives ranging from experts' investigations to newspaper reports attested to the fact that appalling exploitation of land and labour existed throughout the lifespan of the mining town.

This article uses "the politics of seeing (and not seeing)" as an analytical tool to reveal how the "objective eye" of geologists and sociologists explained (away) a landscape of ruination through imaginations of machinery power and state planning. Accounts of the landscape of ruination re-emerged as tin resources became depleted in the early 21st century, accusing the post-planning era (from the 1980s onward) of haphazard mining practices and consequent negative results. However, ruined land and wasted labour have been part and parcel of industrial development based on resource extraction. This article does not extend to the Socialist period (1949-1978). Historians have variously argued that the socialist industrial development walked a difficult balance between the need for the accumulation of capital and the promise of the end of exploitation (Eyferth, 2006). Did experiments of socialist industrialization provide a possible solution to eliminating landscapes of ruination, or is wasted labour and land internal to the logic of capital even under a state-planned socialist system of production? Further case studies might help enrich the critique of extractionism and developmentalism, while suggesting alternative imaginations to foster landscapes of collective well-being for both humans and the lands that they inhabit.

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