

## **Moving Mountains: Industrial and Environmental Transformations in the Rise and Recession of “China’s Detroit”\***

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Hubei 湖北 is a topographically divided province. Located in Central China, at the core of the Yangtze River Basin, it has an eastern half made up mostly of undulating hills cut through with gorges and gentle plains marked by hundreds of freshwater lakes. Moving westward, one encounters a shift in terrain. The area ascends in altitude, becoming decidedly mountainous, with elevated ancient forests and peaks of varying heights.<sup>1</sup> Nestled in the province’s northwest, amidst these inhospitable highlands, lies the city of Shiyan 十堰, a seemingly unexpected onetime contender for the title of “China’s Detroit.”<sup>2</sup>

Until about two decades ago, Shiyan was home to the Dongfeng Motor Corporation (东风汽车集团有限公司), one of China’s leading automakers today. Dongfeng had its origins here in the 1960s and 1970s as the Second Automobile Works (第二汽车制造厂; hereafter, the SAW), and Shiyan was in fact built up over that period specifically to house that statist automotive manufacturing enterprise. City and industry grew in step into and through the 1980s. But while Dongfeng continued its rise in the years that followed, Shiyan steadily slid into a slump. In 2003, Dongfeng moved its headquarters to the provincial capital of Wuhan after over a decade of developing sites of production outside of Shiyan. While many commercial vehicles are still manufactured here, this city that once branded itself as “China’s

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<sup>1</sup> Shunwu Zhou, *China Provincial Geography* (Beijing: Foreign Language Press, 1992), 264–267.

<sup>2</sup> “Zhongguo de Ditelü—Shiyan shi” 中国的底特律—十堰市 [China’s Detroit: Shiyan], *Lanzhou xuekan* 兰州学刊 [Lanzhou Academic Journal] 5 (1990), 50.

Detroit” appears to have gone the way of the American original.



Figure 1. Map of Hubei province, with Shiyang, Wuhan, and Xiangfan marked out.

The rise and recession of Shiyang reflects a pair of contradictions. The first is why and how a major hub for producing automobiles, a technology that is often regarded as embodying mobility and accessibility, would be built in this highly inaccessible region. As we shall see, the siting of Shiyang in the mountains of northwest Hubei was a direct product of strategic considerations China’s leaders made at a particularly tense point in the Cold War. The second contradiction concerns the environmental harm that Shiyang would visit upon the landscape on which it was raised. The high socialist period when the city was built is frequently associated with episodes of environmental devastation that arose from the hubris of radical overreach.<sup>3</sup> There is no doubt that Shiyang’s construction greatly altered the mountains and gorges in which it sits. Yet it was in the more recent decades, after China underwent a reorientation toward the market economy, that we witness what is in all likelihood Shiyang’s most deleterious impact on the surrounding environment. During this period, municipal and provincial authorities, in the hope of overcoming the limitations of land they take as having hamstrung the city’s economic growth, have pursued the creation of new industrial zones through the leveling of mountains.

<sup>3</sup> A work representative of this position is Judith Shapiro, *Mao’s War against Nature: Politics and Environment in Revolutionary China* (Cambridge: Cambridge University Press, 2001).

In examining these contradictions, our essay foregrounds the environmental dimensions of urban development in China across a stretch of history marked by oftentimes staggering transformations. The environmental history of cities, as an area of inquiry, has long been championed by scholars such as Martin Melosi and Joel Tarr. Dissatisfied that environmental history by the end of the twentieth century still seemed preoccupied with wilderness and tilled land, they made a case for cities as worthy subjects of study for historians of the environment. At the most fundamental level, the primary interest in the urban environmental history they promoted has been in the ways that cities shaped the natural environment and the natural environment, in turn, shaped cities.<sup>4</sup> The case of Shiyang highlights, in particular, how atomic anxieties at the height of the Cold War could have enduring effects on the interplay between city and environment. Here was a site chosen primarily for its presumed defensibility, including against nuclear attack. After the location was set, workers, engineers, and planners then grappled with this choice and its attendant geographical, environmental, and resource constraints over successive decades, as they strove to turn it into a hub for automobile manufacturing. Amid the city's rise and recession, the particular nature of this site prompted leaders who oversaw its development to undertake several unexpected or extreme measures, ranging from the planting of large vegetable fields around the expanding industrial urban space to the bulldozing of mountains.

### **“Close to the Mountains, Dispersed, and Hidden”**

The city of Shiyang was founded on Cold War concerns.<sup>5</sup> Like many other cities across the world raised or remade in those decades dominated by Soviet-American tensions, it was imprinted by worries about warfare in general and nuclear warfare in particular. If the Second World War had shown the sheer destruction that could be visited upon cities by aerial bombardment, the development of the nuclear bomb—dropped by the Americans on Hiroshima and Nagasaki to murderously devastating effect in 1945 and successfully tested by the Soviets a few years later—

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<sup>4</sup> Martin V. Melosi, “The Place of the City in Environmental History,” *Environmental History Review* 17:1 (1993), 1–23; Joel A. Tarr, “The Metabolism of the Industrial City: The Case of Pittsburgh,” *Journal of Urban History* 28:5 (2002), 511–545. See also William Cronon, *Nature's Metropolis: Chicago and the Great West* (New York: W. W. Norton, 1991).

<sup>5</sup> For some work on the environmental history of the Cold War, see J. R. McNeill and Corinna R. Unger, eds., *Environmental History of the Cold War* (New York: Cambridge University Press, 2010); Kate Brown, *Plutopia: Nuclear Families, Atomic Cities, and the Great Soviet and American Plutonium Disasters* (New York: Oxford University Press, 2013); Joseph Masco, *The Nuclear Borderlands: The Manhattan Project in Post-Cold War New Mexico* (Princeton, N.J.: Princeton University Press, 2006); and Gabrielle Hecht, *Being Nuclear: Africans and the Global Uranium Trade* (Cambridge, Mass.: MIT Press, 2012).

brought to the fore fears of devastation several times greater in magnitude. These fears were to influence the planning and organization of urban space in what architect and historian Richard Brook and others term “atomic urbanism.”<sup>6</sup> Such was certainly the case for Shiyan, which had been built up as part of the Third Front campaign, a massive military-industrial initiative grounded in the anxieties that China’s leaders held toward potential conflict with the nuclear-armed Soviet Union and United States.<sup>7</sup>

Before the establishment of the SAW, Shiyan consisted of a series of villages peopled by the descendants of migrants who, in the late imperial period, had traveled up the Yangtze River and settled in this site.<sup>8</sup> The name “Shiyan” literally means “ten weirs,” purportedly in reference to the dams that the people in the area constructed for irrigation in the Ming dynasty. It is uncertain when exactly the villages took on that name, but they entered the historical record as “Shiyan” by at least the reign of the Kangxi emperor (r. 1661–1722) of the succeeding Qing dynasty.<sup>9</sup> Geographically and administratively, Shiyan came under Yunyang 鄖陽, a district which sat south and east of the provincial border with Shaanxi and southwest of the one with Henan. Were we to liken the shape of China’s territorial expanse to a chicken—a common enough comparison—this district would be the “chicken’s heart.”<sup>10</sup> While such a characterization may convey a notion of centrality, Yunyang and Shiyan were, in terms of economic geography, a backwater.

It was, however, not entirely unusual for an automotive city—a city centered primarily on the production of automobiles—to arise from such modest foundations, as it did here. Detroit, the iconic automotive city par excellence, may have been a flourishing urban manufacturing hub before Henry Ford and other industrialists turned it into the metropole of their automobile empires, but a number of other great automotive cities of the twentieth century, such as Wolfsburg, Germany’s “Autostadt,” too, were established, as Shiyan was, upon smaller towns and villages.<sup>11</sup> What is unusual

<sup>6</sup> Richard Brook, Martin Dodge, and Jonathan Hogg, “Cold War Cities: Spatial Planning, Social and Political Processes, and Cultural Practices in the Age of Atomic Urbanism, 1945–1965,” in Richard Brook, Martin Dodge, Jonathan Hogg, eds., *Cold War Cities: Politics, Culture, and Atomic Urbanism, 1945–1965* (London: Routledge, 2021), 2.

<sup>7</sup> On the Third Front campaign, see Covell F. Meyskens, *Mao’s Third Front: The Militarization of Cold War China* (Cambridge: Cambridge University Press, 2020).

<sup>8</sup> Kuang Yucong 匡裕从, *Shiyan yimin shi* 十堰移民史 [Shiyan’s Migrant History] (Wuhan: Changjiang chubanshe, 2010), 158–174.

<sup>9</sup> Liu Zuolin 劉作霖 and Yang Tingyao 楊廷耀, *Hu-Guang Yunyang fu zhi*, 湖廣鄖陽府志 [Gazetteer of Yunyang Prefecture in Hu-Guang (Provinces)], vol 3, Chengchi 城池 (1685).

<sup>10</sup> Yunyang qu qing jian jie 鄖陽區情簡介 [An Introduction to Yunyang District]: [http://www.hbyx.gov.cn/dmyy/yygk\\_43674/](http://www.hbyx.gov.cn/dmyy/yygk_43674/), accessed on June 6, 2021.

<sup>11</sup> For one delineation of traits of an automotive city, see Martina Heßler, “Crisis in Automotive Cities: The Ambivalent Role of the Car Industry in the ‘Autostadt’ Wolfsburg and ‘Motor Town’ Detroit,” in Clemens Zimmermann, ed., *Industrial Cities: History and Future* (Frankfurt: Campus Verlag, 2013), 167–172.

in the case of Shiyang was just how remote it was as compared to its contemporaries. This is striking given how automobiles require an inordinate number of parts and materials to assemble, most of which have to be transported to automotive plants from suppliers elsewhere, as well as how automakers often focus on minimizing the distance between the two.<sup>12</sup> For Shiyang, this relative isolation would be one expression of atomic urbanism.

The Third Front campaign under which the SAW was established—and, with that, Shiyang transformed—would be launched in 1964. The idea for such an enterprise, however, was by then already over a decade old. In 1953, the new socialist state broke ground for the construction of the First Automobile Works (第一汽车制造厂; hereafter, FAW), what was to be China's first automotive manufacturing facility. Located in the northeastern city of Changchun, the FAW was modeled after *Zavod imeni Stalina*, a huge truck factory in Moscow that Mao toured when he visited the Soviet Union a few years earlier. As part of the aid that Mao secured from Stalin during that trip, Soviet experts helped in the Chinese factory's design.<sup>13</sup> Just as the building of the FAW was getting underway, the central government reached out to its Soviet allies to seek additional support in establishing another such facility in central or southern China. The completed FAW, massive as it was going to be, could not by itself meet the nation's automotive needs, or so the argument went.<sup>14</sup>

Chinese planners and their Soviet counterparts began scouting for a suitable site soon after. They initially proposed that the next automobile facility be located in Wuhan, but this plan was opposed by officials from the First Ministry of Machine Industry (第一机械工业部), which oversaw the nation's heavy industrial sector. According to these officials, the city's central position made it vulnerable to attack by air. They suggested that the plant be set up farther inland in Sichuan province instead. Still, before things could take off, the central government shut them down. Concerns had arisen by 1956 that the preceding years of intensive industrialization had been proceeding much too rapidly, and top leaders Chen Yun 陈云 and Zhou Enlai 周恩来 endorsed a slowing down of economic expansion. Plans for the second automobile facility were shelved accordingly.<sup>15</sup>

<sup>12</sup> On geographic dimensions of the automobile industry as drawn from the American case but applicable beyond, see Thomas Klier and James Rubenstein, *Who Really Made Your Car? Restructuring and Geographic Change in the Auto Industry* (Kalamazoo, MI: W. E. Upjohn Institute for Employment Research, 2008).

<sup>13</sup> On the establishment of the First Automobile Works, see Victor Seow, "Socialist Drive: The First Auto Works and the Contradictions of Connectivity in the Early People's Republic of China," *Journal of Transport History* 35:2 (2014), 145–161.

<sup>14</sup> Dongfeng qiche gongsi shi zhi bangongshi 东风汽车公司史志办公室, ed., *Dier qiche zhizao-chang zhi (1969–1983)* 第二汽车制造厂志 (1969–1983) [Gazetteer of the Second Auto Works (1969–1983)] (2001), 5.

<sup>15</sup> *Ibid.*, 5–6; Huang Zhengxia 黄正夏, *Jiannan licheng: Huang Zhengxia caifang shilu* 艰难历程: 黄正夏采访实录 [A Difficult Journey: An Interview with Huang Zhengxia] (Beijing: Xinhua chubanshe, 2007), 15–19.

In 1958, at the beginning of the Great Leap Forward campaign, which Mao had initiated in a recommitment to speed and breakneck industrial development, the Chairman tasked the First Ministry of Machine Industry to once again look into this matter of establishing an automotive plant in south China. However, as the Great Leap Forward gave way to calamity and a famine that claimed tens of millions of lives, so too was this project once again abandoned.<sup>16</sup>

In the end, it would be shifting geopolitical dynamics that turned the SAW into a reality. By 1964, when Mao began speaking of the need to build up a Third Front in China's interior, relations between China and the Soviet Union, which had been deteriorating since the 1950s, were at an all-time low. Moreover, with the Gulf of Tonkin incident, in which American naval forces based in Southeast Asian waters dispatched bombers to attack China's ally and neighbor North Vietnam upon accusations that North Vietnamese boats had fired on their destroyers, the threat of open conflict with the United States that had long loomed seemed, to Chinese leaders, more likely than ever. Fearing that China's industries, concentrated as they were along the coast, were easy targets in the event of war, Mao insisted that a military-industrial base be set up in the more defensible interior region. In a tripartite division of the country into strategic zones, with the First Front being the coast, the northeast, and the northwest and the Second Front the area in eastern China right behind the coast, this inland region to the southwest would be the Third Front. As historian Covell Meyskens, who has recently chronicled the construction of the Third Front in considerable detail, writes, this campaign "reduced coastal development, intensified consumer austerity, and militarized Chinese developmental strategy" and, in so doing, "dramatically altered the economic trajectory of the People's Republic of China."<sup>17</sup> The SAW would be a priority in the push to develop the Third Front. In discussions with Yu Qiuli 余秋里, who headed the committee planning the campaign, Mao made it a point to stress that they "definitely have to build an automobile works [in the southwest]."<sup>18</sup>

Appointed to head the SAW project was Rao Bin 饶斌 (1913–1987), a then middle-aged veteran of socialist China's automobile industry. Born in the northeast not long after the fall of the Qing dynasty, Rao got involved with the Chinese Communist Party during his student years and carried out propaganda and organizational

<sup>16</sup> Cui Longhao 崔龙浩, "'Beizhan' yu 'yundong' xia sanxian qiye xuanzhi: yi Erqi chang zhi wenti weili de kaocha" "备战"与"运动"下三线企业选址:以二汽厂址问题为例的考察 [The Site Selection of Third-Line Enterprises under "War Preparation" and "Movement"], *Lishi jiaoxue wenti* 历史教学问题 [History Research and Teaching] 2021:1 (2021), 72–78.

<sup>17</sup> Covell F. Meyskens, *Mao's Third Front*, 2–3.

<sup>18</sup> "Mao Zedong tingqu Yu Qiuli huibao 'san-wu' jihua he sanxian jianshe shi de chahua" 毛泽东听取余秋里汇报 "三五" 计划和三线建设时的插话 [Mao Zedong's comments on Yu Qiuli's report on the Third Five-Year Plan and Third Front Construction], in Chen Xi, ed., *Zhongguo gongchandang yu sanxian jianshe* 中国共产党与三线建设 [The Chinese Communist Party and the Construction of the Third Front] (Beijing: Zhonggong dangshi chubanshe, 2014), 136.

work for the Party in the Second Sino-Japanese War (1937–1945). As that war ended and the Chinese Civil War (1946–1949) began, Rao returned to the northeast, where he was shuffled around from one leadership position to another as needed, an apparent recognition of his managerial talents. This trend continued after the revolution. In 1952, the First Ministry of Machine Industry made him the manager of the soon-to-be built FAW, and he saw the facility through its completion and early years of operation. Rao came to be nicknamed “the great king of cars” (汽车大王). Mao would even remember him as “that guy who does automobiles” (那个搞汽车的). In 1959, Rao was made vice minister of the First Ministry of Machine Industry.<sup>19</sup> If Rao seemed an obvious choice to lead the construction of the SAW, his appointment also spoke to just how invested the central government was in the success of this automotive enterprise.

The first order of business for Rao Bin was to figure out where to establish the SAW. To this end, he put together a preparatory group that traveled through the provinces of Sichuan 四川, Guizhou 贵州, Hunan 湖南, Hubei, and Shaanxi 陕西 in search for a suitable site. Among the main things the group took into consideration as it went about this task was the stipulation by vice premier and minister of national defense Lin Biao that Third Front sites be “close to the mountains, dispersed, and hidden” (靠山、分散、隐蔽). Several seemingly promising picks were dismissed when it became clear that they would not meet these criteria. The logic here was that such conditions would best ensure security by either preventing attacks or at least minimizing their impact. The group ended up taking the stipulation quite literally. After much deliberation, it settled on Shiyán. Nestled as it was amid gorges just north of the famed Wudang Mountains, this was among the most mountainous of sites the group would survey.<sup>20</sup>

At the same time, although military concerns had been central to the selection of site and, as such, to the SAW being built in the middle of mountains, the preparatory group was also mindful throughout of factors pertaining to production. For one thing, while it may have seemed that a major appeal of Shiyán from a strategic standpoint was its inaccessibility, it was also, on the flip side, attractive because of its anticipated connectivity. From the start, the preparatory group had been on the lookout for a location that would be along a railway line so that materials could be more easily moved to the SAW, first for its construction and then for its operations. When it

<sup>19</sup> Zhang Mao 张矛, *Rao Bin zhuanji* 饶斌传记 [A Biography of Rao Bin] (Beijing: Huawen chubanshe, 2003), 35–50, 150, and 179.

<sup>20</sup> Huang Zhengxia, “Erqi san ci choujian ji jianshe chuqi de ruogan lishi qingkuang huiyi” 二汽三次筹建及建设初期的若干历史情况回忆 [Memories of the Three Preliminary Attempts and the Early Years of Construction of the Second Automobile Works], in *Zhongguo renmin zhengzhi xieshang huiyi Hubei sheng Shiyán shi weiyuanhui wenshi he xuexi weiyuanhui* 中国人民政治协商会议湖北省十堰委员会文史和学习委员会, ed., *Shiyán wenshi* 十堰文史 [Historical and Literary Materials on Shiyán], *Erqi chuangye zhuanji* 二汽创业专辑 [Special Issue on the Establishment of Second Automobile Works] (2008), 54.

began its surveys, state planners were drawing up plans for a railway line that would cut across Hunan, and so the group searched for sites along that province's mountain ranges. Within a year, the central government decided that the new line should be moved to the north and laid between Xiangfan in Hubei and Chongqing 重庆 instead. Accordingly, the group shifted their attention northward, seeking potential sites in northwest Hubei, where this new Xiang-Yu 襄渝 railway would pass and where Shiyan lay.<sup>21</sup> Furthermore, the presence of an old highway near Shiyan that was laid almost three decades earlier under the Nationalist regime further added to the accessibility of this site and, as such, contributed to the preparatory group deeming it desirable.<sup>22</sup>

Once it had its eyes set on Shiyan, Rao Bin's group initiated several investigations and discussions before confirming its choice. One issue that came up early on and that called for immediate resolution concerned potential earthquakes. According to geological records, there was a major fault running through the area, which might endanger the plant were it to be raised there. Rao and his colleagues swiftly reached out to experts across a range of national and local bodies, from the Institute of Geophysics and the Institute of Geology at the Chinese Academy of Sciences to the Hubei Provincial Geological Bureau. Not long after, these experts descended upon Shiyan with their seismographs and other tools and equipment. After surveying the site, they marked out a zone that they concluded would be sufficiently unaffected by seismic activity upon which factories might be built without additional reinforcements.<sup>23</sup>

Another issue that arose at the time was the layout of the SAW's factories and workshops amid the uneven mountainous terrain. This turned out to be the subject of some debate. On one side, there were those who wanted to stick close to the letter of "close to the mountains, dispersed, and hidden." They recommended that the factories be located within the smaller gorges and that these buildings be kept modest in size and low in height, all in the interest of concealment. On the other side, there were others who argued that more thought be given to production processes, which the arrangements that their more military-minded counterparts put forward seemed to have downplayed or disregarded. Following half a year of back and forth, the planners finally agreed on a compromise. The SAW's twenty-three factories would be divided and grouped by function into four distinct zones that were spread out across the area and connected to one another by roads. For instance, the assembly and punching plants for vehicle bodies, frames, wheels, and dies were to the east of the industrial district and the plants for engines and transmission cases to the west.

<sup>21</sup> Cui, "Beizhan' yu 'yundong' xia sanxia qiye xuanzhi," 73.

<sup>22</sup> "Shiyan gonglu shi" bianshen weiyuanhui 十堰公路史编审委员会, ed., *Shiyan gonglu shi* 十堰公路史 [A History of Shiyan's Roads] (Wuhan: Wuhan chubanshe, 1995), 47–87.

<sup>23</sup> Li Xueshi 李学诗, "Erqi xuanzhi lishi shisi nian" 二汽选址历时十四年 [The Fourteen Years It Took to Select the Site for the Second Automobile Works], in *Zhongguo renmin zhengzhi xieshang huiyi Hubei sheng Shiyan shi weiyuanhui wenshi he xuexi weiyuanhui*, ed., *Shiyan wenshi, Erqi chuanyue zhuanji*, 76.

This arguably made the site more defensible while not completely compromising production.<sup>24</sup>

The decision to build the SAW in the midst of mountains may seem like an example of the hubris or folly that has often been associated with the statist projects of China's high socialist years. For example, Judith Shapiro, in examining the case of another massive Third Front project, the iron mill city of Panzhihua 攀枝花, concludes that the campaign overall "was premature and came at an unnecessarily high economic and environmental price."<sup>25</sup> The environmental impact of constructing Shiyang as an automotive capital would be, as we will soon see, considerable. But this pattern of dispersed development was not unique to 1960s China. Under the climate of atomic fear, many countries adopted similar strategies, building satellite towns and urban sites in defensible locations, including, in one extreme case, under sheets of ice.<sup>26</sup> Given both the widespread fear of nuclear attack during the Cold War and the considerable effort that Rao Bin and his preparatory group put into balancing security considerations with ones about the feasibility of production, it would be too hasty to write off the Chinese planners' decision to site Shiyang where they did as completely irrational.

Purely by historical happenstance, Shiyang, as a proper noun, when voiced, is a homonym for the word "experiment" (实验). This proved all too apt given how it would be, over the next few decades, a site of much experimentation with forms of industrialization and urbanization amid shifting political winds and economic currents.

## Building the Automobile Works, Constructing the City

To build the SAW, the Chinese socialist state moved scores of people and material resources to Shiyang. Under directives from the central government, construction was to proceed by the principle of "old factories undertaking the comprehensive construction of new factories" (旧厂包建新厂), that is, the setting up of this new plant was supposed to be entirely reliant on established enterprises committing personnel,

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<sup>24</sup> Liang Wanrui 梁万瑞, "Laoying huiyi qian de xuan chang gongzuo" 老营会议前的选厂工作 [Site Selection Work Before the Laoying Conference], in Zhongguo renmin zhengzhi xieshang huiyi Hubei sheng Shiyang shi weiyuanhui wenshi he xuexi weiyuanhui, ed., *Shiyang wenshi, Erqi chuanyue zhuanji*, 87–91.

<sup>25</sup> Shapiro, *Mao's War Against Nature*, 158.

<sup>26</sup> See, for example, Kristian Nielsen, "Atomic Urbanism Under Greenland's Ice Cap: Camp Century and Cold War Architectural Imagination," in Brook, Dodge, and Hogg, eds., *Cold War Cities*, 182–199. For other accounts of how urban planning was influenced by Cold War military technologies and atomic anxieties, see Jennifer S. Light, *From Warfare to Welfare: Defense Intellectuals and Urban Problems in Cold War America* (Baltimore: Johns Hopkins University Press, 2003); and Matthew Farish, *The Contours of America's Cold War* (Minneapolis: University of Minnesota Press, 2010).

equipment, and capital to key construction projects. To that end, the First Ministry of Machine Industry got the FAW to take on seventeen projects and the Beijing Automobile Works and the Nanjing Automobile Works, two smaller facilities that mainly manufactured automobile parts, to each take on two.<sup>27</sup> A considerable number of workers and engineers from each of these enterprises would be ordered to pack their bags and head to Shiyan upon short notice.<sup>28</sup>

But just as people and materials started flowing into Shiyan and the construction of the SAW was about to get off the ground, the Cultural Revolution broke out, shaking things up here as it did across the country. Questioning established authority was a defining feature of the early Cultural Revolution, and it was in this spirit that dissenting voices arose both on the ground in Shiyan and at the FAW in Changchun against the existing plans for the SAW. Writing on several occasions to vice premier Li Fuchun 李富春 and National Construction Committee (国家建设委员会) director Gu Mu 谷牧, these critics called out what they regarded as fundamental flaws in those plans, beginning with site selection. On that front, they contended that the plans for building the SAW in Shiyan went against Mao's directives, with the proposed layout of factories representing "more concentration, less dispersal" (大集中、小分散), running counter to the logics of defensibility. At the height of this dissent, Rao Bin and other members of the preparatory group were recalled to the FAW for rounds of criticism by cadres there. By late 1968, premier Zhou Enlai would personally step in to issue an order reiterating that the SAW was to be established in Shiyan. Early the next year, the central government assigned the oversight of the SAW's construction to the Wuhan Military Command (武汉军区领导), which then set up the Second Automobile Works Construction General Headquarters (二汽建设总指挥部), under whose direction the building of the automobile plant finally began in earnest.<sup>29</sup> To secure the labor for this endeavor, the Ministry of Construction (建筑工程部) created a commission that mobilized around 40,000 workers from throughout the country to come and contribute to the construction of the SAW.<sup>30</sup>

This initial stage would be marked by resource constraints. Part of the problem

<sup>27</sup> "Erqi yaoqiu baojian xiangmu (gong zuo cankao)" 二汽要求包建项目(供作参考) [On the Second Automobile Works Requiring Comprehensive Construction (for Reference)], Shiyan Municipal Museum.

<sup>28</sup> "Huigu guojia jianwei '102' gongcheng zhihui bu" 回顾国家建委 "102" 工程指挥部 [Remembering the National Construction Committee's Project Command No. 102], in Zhongguo renmin zhengzhi xieshang huiyi 中国人民政治协商会议 and Hubei sheng Shiyan shi weiyuanhui wenshi he xuexi weiyuanhui 湖北省十堰委员会文史和学习委员会, eds., *Shiyan wenshi* 十堰文史 [Historical and Literary Materials on Shiyan], vol. 15, *Sanxian jianshe, 102 tuan (shang)* 三线建设: 102团(上) [Third Front Construction: The 102 Regiment (First Volume)] (Wuhan: Changjiang chubanshe, 2016), 2–3.

<sup>29</sup> Huang, *Jiannan licheng*, 62; Liang, "Laoying huiyi qian de xuan chang gongzuo," 92–99.

<sup>30</sup> "Huigu guojia jianwei '102' gongcheng zhihui bu," 3.

was getting necessary supplies to Shiyan. Although the SAW preparatory group had factored transportation into its site selection and although there was the railway and the highway that connected Shiyan to areas beyond, ferrying in materials and equipment still posed a challenge. Given the limited local resources, such inflows were imperative. For example, aside from sand and gravel, which could be sourced nearby, steel, cement, wood, and other raw materials had to be brought in. Almost all the machinery, too, came to Shiyan from elsewhere. In this period, the railway only reached Danjiangkou 丹江口 to the east. While Danjiangkou is not far from Shiyan, the route was circuitous, and poor road conditions meant that roundtrips took around three days—longer if it rained or snowed and the vehicle got stuck on the muddy mountain road. Chen Xueli 陈学礼, a former truck driver, recalled the cold and hunger he experienced one winter when the convoy of vehicles he was part of stalled along this route for two days.<sup>31</sup> The sorry state of the roads in and around Shiyan would inspire a local ditty: “It is faster to walk than to drive; if you are carrying an umbrella when it rains, [be sure to] point the head outward [to shield yourself from the flying mud]” (汽车没有走路快, 下雨打伞头朝外). Road conditions further deteriorated as construction proceeded and heavy trucks wore down surfaces, leaving potholes and troughs all over the place, which, in turn, made the flow of resources ever more halting.<sup>32</sup>

Facing resource limitations, the military-dominated leadership in Shiyan would back adjustments to design that supposedly minimized waste. In 1970, the SAW Construction General Headquarters ordered that, in putting together the buildings, “the four heavies be switched to the four lights” (四重改四轻), with the “four heavies” being heavy foundations, heavy support beams, heavy frames, and heavy roofing and the “four lights” being the less weighty versions of these key structural elements. This measure was advanced as part of a “design revolution” (设计革命), which, advocates averred, would lead to reduced costs and accelerated speeds. By promising something almost too good to be true, the engineering experts who came up with such a scheme were, as one production team leader later reflected, likely trying to curry favor with the military representatives who ran Shiyan by appealing to those leaders’ anxieties about overcoming resource shortages and starting production.<sup>33</sup>

<sup>31</sup> Chen Xueli 陈学礼, “Nanwang sanxian jianshe jingli” 难忘三线建设经历 [The Unforgettable Experience of Third Front Construction] in Zhongguo renmin zhengzhi xieshang huiyi and Hubei sheng Shiyan shi weiyuanhui wenshi he xuexi weiyuanhui, eds., *Shiyan wenshi*, vol. 15, *Sanxian jianshe, 102 tuan (shang)*, 176.

<sup>32</sup> “Shiyan gonglu shi” bianshen weiyuanhui, *Shiyan gonglu shi*, 84; Guo Shouyu 郭守玉, “Wudang shan xia shisan qiu” 武当山下十三秋 [Thirteen Years under Wudang Mountain], Zhongguo renmin zhengzhi xieshang huiyi and Hubei sheng Shiyan shi weiyuanhui wenshi he xuexi weiyuanhui, eds., *Shiyan wenshi*, vol. 15, *Sanxian jianshe, 102 tuan (shang)*, 223.

<sup>33</sup> Guo, “Wudang shan xia shisan qiu,” 243.

A notable feature of Shiyan's construction that was in line with this "design revolution" was the use of a rammed-earth method for raising walls known as *gandalei* (干打垒). In *gandalei*, a builder typically placed two wooden boards parallel to one another, with the distance between them determining the thickness of the wall to be constructed. They would go on to fill the space with earth, which they then pounded from the top to pack it tightly enough to hold its form. The process could be repeated upwards and to the sides to complete the wall to desired dimensions. As a method, it had a long history and was commonly used in rural areas to make houses out of mud, grass, and other materials. In the socialist era, *gandalei* became popularized for industrial construction after it saw widespread use in the building of the model enterprise at the Daqing oilfield in the early 1960s.<sup>34</sup>

In August 1970, the SAW held a conference on *gandalei* at which planners called for applying this method to "all aspects of construction" while branding other methods as materializations of "slavish foreign thinking." For example, at one unit of the SAW, there was an entrance way laid with red bricks, and critics would label it a "revisionist factory" upon the claim that red bricks were capitalist building blocks.<sup>35</sup> Ideological justifications gave form to material constraints. As Ji Shaojian 季少建, a former builder who participated in the SAW's construction, put it: "In a time of such material deficiency, any notion that we could have had enough wooden frames to meet the massive demand (not to say steel ones) was but fantasy [lit. *The Arabian Nights* (天方夜谭)]." To planners, the prospect of being able to build mostly from locally available materials without inputs like these frames that were in such short supply held great appeal. Across Shiyan, workers pounded into being *gandalei* buildings one after another in quick succession.<sup>36</sup>

The "design revolution" and the dearth of resources that inspired it hence shaped Shiyan's built landscape and, in so doing, the environment in which workers would labor. *Gandalei* buildings were lauded by proponents not only because they saved on scarce materials but also because they could be swiftly put together. According to a worker whose team built the crankshaft and connecting rod workshop, it took them just ten days to raise the walls: for an exterior wall with a perimeter of 450 meters, this was 1,000 square meters of *gandalei*, which his team was able to produce at a rate of 100 square meters a day.<sup>37</sup> In some cases, the urgency of production was such that even this quick completion time was deemed too slow. Qiu Shuntai 邱顺泰, who had worked at one of the repair workshops, remembered that his superiors had

<sup>34</sup> Hou Li, *Building for Oil: Daqing and the Formation of the Chinese Socialist State*, (Cambridge, Mass.: Harvard University Press, 2018), 51–53.

<sup>35</sup> Dongfeng qiche gongsi shi zhi bangongshi, ed., *Dier qiche zhizao chang zhi, 1969–1983*, 77–79.

<sup>36</sup> Ji Shaojian 季少建, "Gongzuo zai Zhoujiagou de er san shi" 工作在周家沟的二三事 [Two or Three Occurrences while Working in Zhoujiagou], in *Zhongguo renmin zhengzhi xieshang huiyi and Hubei sheng Shiyan shi weiyuanhui wenshi he xuexi weiyuanhui*, eds., *Shiyan wenshi*, vol. 15, *Sanxian jianshe, 102 tuan (shang)*, 74.

<sup>37</sup> Guo, "Wudang shan xia shisan qiu," 260.

demanded that they start production even before the construction of the workshop had been finished or the necessary equipment all installed. The expectation was that they would concurrently build and produce. He recalled working in the workshop before the roof had even been put in place, holding an umbrella to fend off the rain while using an electric hammer to beat some metal into shape.<sup>38</sup>

The people in Shiyan began speaking about the construction of buildings in three stages, as “wearing shoes, donning a hat, and putting on undershorts” (穿鞋、戴帽、穿裤衩) (“wearing shoes” referring to preparing the foundation; “donning a hat” to raising pillars and installing the roof; and “putting on undershorts” to fastening support beams). It was a somewhat casual characterization that belied the fact that most if not all of these structures were too hastily and poorly made. Even after they were completed, *gandalei* buildings still posed challenges to production and to the workers engaged in it. For one thing, many of the finished workshops could not keep out the elements, and workers within had to shut off machines and cover them on rainy days and wear gloves while they worked on cold winter ones.<sup>39</sup>

The first vehicles the SAW churned out reflected all too well the conditions under which the enterprise was established. In October 1969, before most of the buildings were built, the Wuhan Military Command telephoned the general headquarters at Shiyan to order the SAW to produce a hundred vehicles by May 1 (Labor Day) and five hundred vehicles by October 1 (National Day) the following year. After some negotiation, representatives from Shiyan secured an adjustment in timeframe and a lowering of targeted output so that the SAW was expected to produce by October 1 a hundred vehicles that would then be rolled out on display at a National Day parade in Wuhan. Even then, this proved to be a scramble.<sup>40</sup>

One additional problem was that even if the machines had all been installed, there was not enough electricity to run them. While there were several mobile generators on site, these were not enough to support all activities. Many workers had in fact been going about their construction work without lighting or power. At the time, the building of the Huanglongtan reservoir 黄龙滩水库 to the west of Shiyan had just begun. An alternative was the hydropower station at Danjiangkou, which had been recently established. Workers would labor for two months to run transmission lines from there to Shiyan. Still, it was only after capacity was increased at Danjiangkou

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<sup>38</sup> Qiu Shuntai 邱顺泰, “Erqi choujian yu jianku jian chang” 二汽筹建与艰苦建厂 [Preparing and Working Hard for the Construction of the Second Automobile Works], *Zhongguo renmin zhengzhi xieshang huiyi Hubei sheng Shiyan shi weiyuanhui wenshi he xuexi weiyuanhui*, ed., *Shiyan wenshi, Erqi chuanguye zhuanji*, 158–159.

<sup>39</sup> Guo, “Wudang shan xia shisan qiu,” 244–259; “Shiyan jianshe zhi” bianzuan weiyuanhui 十堰市建设志编纂委员会, ed., *Shiyan jianshe zhi* 十堰建设志 [Gazetteer on Shiyan’s Construction] (1998), 96.

<sup>40</sup> Huang, *Jiannan licheng*, 63.

with the installation of additional generators in 1973 and Huanglongtan was completed a year later that Shiyan was said to have enough power for its operations.<sup>41</sup>

In light of the incomplete facilities and lack of power, the vehicles that the SAW ended up producing for the 1970 National Day parade were largely pieced together from available parts and literally hammered into shape by workers wielding hand tools. While the SAW was able to complete this task, its leaders had been so worried about the low quality of the vehicles that they dispatched workers to Wuhan to hide behind the main podium during the parade in the event that one or more of these vehicles suddenly broke down and needed fixing. As Huang Zhengxia 黄正夏, one of the SAW's former managers, noted: "Only after these 'political vehicles' (as they were nicknamed) passed the main podium could everyone heave a sigh of relief." In the two plus years that the SAW was under military leadership, the SAW put out two hundred 2.5 tonner trucks, but these were of such low quality that they would be jokingly called "crooked 2-5's" (二五歪), with each vehicle said to "wag its head and tail from afar, bare its teeth up close, and leak oil and water when it ran."<sup>42</sup>

Early in the fall of 1971, shocking news jolted the nation. In its aftermath, the SAW and Shiyan would redirect their course of development. Lin Biao, a military top brass who had been, up to that point, Mao's presumed successor, was accused of planning to assassinate the Chairman. He died in a plane crash while allegedly trying to flee to the Soviet Union. The military, which had been Lin's power base, lost influence in government following this incident. By the end of 1972, all military representatives were withdrawn from the SAW and Rao Bin was allowed to come back from the FAW to once again direct this automotive enterprise.<sup>43</sup>

For Rao Bin and the SAW's new leadership, one pressing challenge was the shoddy quality of the buildings raised during the preceding era of military control. It soon became apparent that most of them had to be torn down and rebuilt. As Huang Zhengxia put it: "In these production workshops, once the machines start vibrating [as they were expected to while in operation], the walls would begin to crack, compromising production safety."<sup>44</sup> For instance, at the Maojian 茅箭 power station, established in an attempt to supplement the hydroelectric power from Danjiangkou and Huanglongtan, all fifteen buildings were demolished because their foundations were sinking. According to one figure, the cost of pulling down the *gandalei* buildings and reconstructing them was over thirty-six million yuan, ultimately "incurring a great loss for the country."<sup>45</sup>

Throughout the period of construction, concerns over access to material inputs

<sup>41</sup> "Dianli chu zhi" bianzuan lingdao xiaozu 《电力处志》编纂领导小组, ed., *Dianli chu zhi* 电力处志 [Gazetteer of the Electric Power Division] (1985), 1–2.

<sup>42</sup> Huang, *Jiannan licheng*, 63.

<sup>43</sup> *Ibid.*, 65.

<sup>44</sup> *Ibid.*, 64.

<sup>45</sup> *Ibid.*, 64; Dongfeng qiche gongsi shi zhi bangongshi, ed., *Dier qiche zhizao chang zhi*, 1969–1983, 79–80.

extended beyond what was needed to establish factories and produce automobiles to the food necessary for sustaining the large, transplanted workforce, which, along with their families, numbered 200,000 in 1970. As with the laborers who built the SAW, almost all the grains they ate had to be brought in, for the locale did not have enough arable land let alone cultivated fields for the staples required to feed this population. Rice and wheat were transported to Shiyan from the Jiangnan Plains where Wuhan was located. In 1970, over 150,000 tons of these grains would be carried up the mountains.<sup>46</sup> There was also a seasonality to this flow of food that added urgency to facilitating transport at certain times of the year. Given the comparative inaccessibility of the site and length of supply lines, it was important, the Yunyang district rations bureau wrote in the fall of 1971, to “do all one can to secure rations before the mountains are sealed off by heavy snow.”<sup>47</sup> Although there was a drop in the volume of grain Shiyan received by 1978, when the SAW was finally finished and many of the workers who had come to take part in its construction departed, the city remained dependent on external sources of staples in the coming years.<sup>48</sup>

Shiyan’s urban landscape would nevertheless be shaped directly by food provision. This was, however, less in terms of the grain that would mostly come from elsewhere as vegetables. Across Third Front projects, the supply of vegetables to workers had been an issue of concern.<sup>49</sup> In Shiyan, local leaders long agonized over how to get vegetables for a population that, by 1970, reached over two hundred thousand. On the one hand, the building of the SAW had, as mentioned earlier, taken up a considerable amount of land that could be farmed. On the other hand, the construction project also actively attracted and absorbed much of rural labor, and many peasants in and around the locale gave up agricultural production to become workers, drawn as they most likely were to the latter’s higher wages.<sup>50</sup>

Furthermore, Shiyan’s leaders recognized, sourcing vegetables from other places, as they did with grain, was difficult because of issues of transshipment. With limited or no refrigeration, there were instances in which as much as half of such produce

<sup>46</sup> Yunyang geming weiyuanhui shengchan zhihui zu 郧阳地区革命委员会生产指挥组, “Guanyu sanxian minbing shenghuo wuzi gongying de tongzhi” 关于三线民兵生活物资供应的通知 [Notice on the Supply of Daily Necessities for the Third Front Militia] (October 8, 1970), S036-W-01-002-154, Shiyan Municipal Archives.

<sup>47</sup> Hubei sheng Yunyang diqu geming weiyuanhui liangshi ju 湖北省郧阳地区革命委员会粮食局, “Guanyu xiada 71-72 niandu sanxian jianshe liangshi diaobo jihua de tongzhi” 关于下达71-72年度三线建设粮食调拨计划的通知 [Notice on the Issuance of the Food Allocation Plan for Third Front Construction, 1971-1972] (October 10, 1971), Y067-W-01-0024-193, Shiyan Municipal Archives.

<sup>48</sup> Zhang, *Rao Bin zhuanji*, 384; Xuan Min 旋敏, “Jianqu chuangye jian che cheng” 艰苦创业建车城 [The Hardship of Establishing the Enterprise and Building the Automobile City], in Zhongguo renmin zhengzhi xieshang huiyi Hubei sheng “Shiyan shi weiyuanhui” bianji weiyuanhui 中国人民政治协商会议湖北省十堰市委员会《十堰文史》编辑委员会, ed., *Shiyan wenshi* 十堰文史, vol. 3 (1999), 1-7.

<sup>49</sup> Meyskens, *Mao’s Third Front*, 111, 132, and 136.

<sup>50</sup> Huang, *Jiannan licheng*, 66-67.

brought in from beyond went bad en route. While pickling may have been an option and people here, as in other Third Front areas, consumed preserved vegetables, Shiyan's leaders seemed committed to securing fresh vegetables, the price of which was often more than meat.<sup>51</sup> According to one local saying, Shiyan was a "strange" place in that locals ate the leaves of sweet potatoes as vegetables (although these leaves may in fact be legitimately considered so, they were not in popular understanding, and this saying was meant to highlight a somewhat pitiful state of affairs).<sup>52</sup>

Shiyan's leaders pushed hard for the local cultivation of vegetables. "Whether or not we can allow everyone to eat good, fresh vegetables is not a small, quotidian matter but an issue concerning the [positive] feelings we have for the working class," Wen Ruisheng 温瑞生, the SAW's deputy Party secretary, claimed.<sup>53</sup> In the summer of 1967, local leaders began directing units of workers to devote their labor to growing vegetables such as Chinese cabbage, radish, and spinach. Cadres also went around trying to persuade peasants already engaged in agricultural work to switch from sowing grain to planting vegetables.<sup>54</sup>

These efforts intensified in the aftermath of the Lin Biao incident. The economic plans of the previous few years that had been pushed forward by the military and that had privileged the speed and volume of industrial production above all were rolled back and portions of land that had been given over to industry were returned to agriculture. As Wen would describe it, "We put away our sieves [for sifting earth—presumably for *gandalei*], extinguished the fires in our kilns, and turned sites of extraction and production into vegetable fields."<sup>55</sup> In 1973, following a few years of mobilizing workers to level out dozens of acres of uneven mountainous land and to convert hundreds of small parcels of desolate, potholed land into several large vegetable fields, Shiyan would yield around 12,000 tons of vegetables, a manifold increase from just several years before.<sup>56</sup>

When Deng Xiaoping, then China's paramount leader, visited the SAW in the summer of 1980, one of the people he met on site would remark, "Shiyan is quite a strange place. There is no clear distinction between the urban and the rural. If we say it is a city, [we see] melons and vegetables grown [all around]. If we say it is a village, [we see] industrial plants built in the mountain ravines..." Deng reportedly smiled

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<sup>51</sup> Wen Ruisheng 温瑞生, "Gaohao shucai shengchan, jiasu sanxian jianshe gongxian liliang" 搞好蔬菜生产, 加速三线建设贡献力量 [Ensure Vegetable Production and Accelerate the Construction of the Third Front] (September 11, 1975), S035-W-01-0001-042, Shiyan Municipal Archives.

<sup>52</sup> Huang, *Jiannan licheng*, 66–67.

<sup>53</sup> Wen, "Gaohao shucai shengchan, jiasu sanxian jianshe gongxian liliang," S035-W-01-0001-042, Shiyan Municipal Archives.

<sup>54</sup> Li Jingxian 李经先 and Li Jingshu 李经书, "Shiyan shi diyi ge shucai shengchan dadui de jianli jingguo" 十堰市第一个蔬菜生产大队的建立经过 [The Establishment of the First Professional Vegetable Production Brigade in Shiyan], in *Shiyan wenshi*, vol. 3, 62–66.

<sup>55</sup> Wen, "Gaohao shucai shengchan, jiasu sanxian jianshe gongxian liliang," S035-W-01-0001-042, Shiyan Municipal Archives.

<sup>56</sup> Li and Li, "Shiyan shi diyi ge shucai shengchan dadui de jianli jingguo," 66.

and agreed that this was indeed interesting.<sup>57</sup> As an industrial city, Shiyan was certainly unusual, within the Chinese context and beyond. For while this automotive capital boasted sizeable industrial districts and areas where workers and their families resided, these would be interspersed between large vegetable fields (see figure 2).

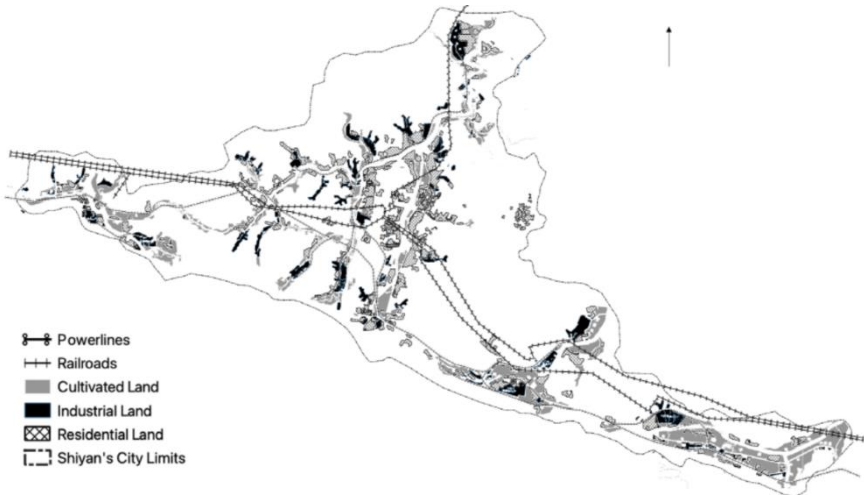


Figure 2. Bird's eye view map of Shiyan in 1981 showing how industrial and residential areas were cut through with cultivated land, most of which consisted of vegetable fields. This figure is based on details from Hubei sheng renmin zhengfu, ed., *Shiyan chengshi guihua* (1981).

## The Limits of Growth

Constructed as it was for the sake of the SAW, Shiyan's fate would be closely linked to the fortunes of that automotive enterprise from the start. This was, for one thing, reflected in its administrative status. In the early 1970s, the provincial government thought it necessary to create a distinction between Shiyan and the SAW, giving Shiyan a new, elevated, and ostensibly independent administrative status as a provincially administered city in 1972. By 1975, the governance of city and enterprise were once again brought together under a program of "enterprise-city integration" (厂市和一). The idea that the two were intended to be inseparable was perhaps most

<sup>57</sup> "Deng Xiaoping shicha Erqi" 邓小平视察二汽 [Deng Xiaoping's Inspection of the Second Automobile Works], *Zhongguo renmin zhengzhi xieshang huiyi* Hubei sheng Shiyan shi weiyuanhui wenshi he xuexi weiyuanhui, ed., *Shiyan wenshi, Erqi chuanguye zhuanji*, 43.

evident in the arrangement that the director of the SAW concurrently served as mayor of Shiyan.<sup>58</sup> Rao Bin would be the first but not the last to concurrently wear both hats.<sup>59</sup> Shiyan and the SAW were once again detached from one another in 1982, but the connections proved difficult to truly sever. As sociologist Shamus Mok has observed, prior to 1989, Shiyan's mayor was always a former SAW department head or workshop manager.<sup>60</sup> The performance of the enterprise had direct bearing on the state of the city. As the SAW began to see economic gains into and through the reform era, Shiyan, too, prospered. It was in this period that it would lay claim to the title of "China's Detroit." There would, however, be limits to this mutual benefit, bound as it was to the SAW being sited in this automotive city, with the challenges and constraints of its mountainous terrain.

But if the SAW was a success story, it was a relatively unexpected one.<sup>61</sup> In at least two instances in its first decade, the enterprise almost went belly up. The first was not long after the military authorities who had headed the project since 1969 pulled out in 1972. In accordance with the idea that the SAW should primarily cater to military needs, it was outfitted to produce each year 25,000 of the rough, 2.5-ton cross-country trucks favored by military interests. When facilities were in place to meet this capacity in 1975, the much-diminished role of the military in national affairs meant that there was now little demand for the trucks that rolled off its assembly line. By the end of 1977, the SAW's management reckoned that they needed to drastically reorient production or have the enterprise be crushed by the losses it was accruing. After some deliberation, they decided to shift to manufacturing 5-ton trucks made for civilian use. By the middle of the following year, the SAW was ready to produce these heavier trucks, which soon become its main product. In this process, it received a great deal of state support. The central government put 350 million yuan toward this transformation. Thanks in part to Rao Bin, who was once again appointed vice minister of the First Ministry of Machine Industry in 1977, the SAW also managed to obtain generous ministerial allotments of raw materials. In 1978, the SAW turned a profit for the first time, and over the next two years, the number of vehicles it put out expanded almost sixfold, from 5,120 to 31,500.<sup>62</sup>

The SAW would, however, be dealt another blow just as it was on the ascendency.

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<sup>58</sup> Chung-Yuk Mok, "China's Motor Cities: Industrialization and Urban Development under State Socialism, 1948–90" (Ph.D. dissertation, Michigan State University, 1994), 288.

<sup>59</sup> Zhang, *Rao Bin zhuanji*, 347–348 and 354–355.

<sup>60</sup> Mok, "China's Motor Cities," 289.

<sup>61</sup> Our account of the economic performance of the SAW from the late 1970s to the early 1990s draws much from William Byrd, "The Second Motor Vehicle Manufacturing Plant" in William Byrd, ed., *Chinese Industrial Firms under Reform* (Oxford: Oxford University Press, 1992); and Mok, "China's Motor Cities."

<sup>62</sup> Mok, "China's Motor Cities," 253–257; Byrd, "The Second Motor Vehicle Manufacturing Plant," 78.

In 1980, the central government announced that it would stop investing in the enterprise. Among the reasons were its commitment to redirecting attention from heavy industry to agriculture and light industry and its depleted finances due to payouts for other developmental and military endeavors. The argument here, those who pushed for this measure contended, was that the SAW may be profitable, but it was only so because it was being propped up by the state. While this turn of events seemed to spell a certain doom for the enterprise, it came at the same time as an experimental opportunity for profit retention that the SAW's leaders would, after some struggle, secure. In 1980, the SAW retained about 20 percent or 33 million yuan of its profits, remitting the rest to the central government. In 1985, under the new profit retention scheme, it held back profits of more than 70 percent or almost 450 million yuan. This allowed the enterprise to reinvest heavily in its own operations and to vie for a sizeable share of the automobile market, right at a time when state controls on output targets and product prices were also being relaxed.<sup>63</sup> By 1987, the SAW would be the eighth largest industrial enterprise in the country in terms of its output value, revenue, and profits. That year, its output exceeded 107,000, making up more than a third of total national production. It had become China's biggest truck producer.<sup>64</sup>

The growth of the SAW facilitated a transformation in Shiyan. In 1981, the municipal government put together a comprehensive urban plan based on the understanding that the city needed to adapt to the ascendant enterprise. "Shiyan is a rising auto industrial base within the mountains and should be built up into a motor city with a high degree of both material civilization and spiritual civilization," the drafters of the plan asserted. What this meant concretely was undertaking moves such as setting aside more land for the automobile industry, supporting the development of auxiliary industries like that for vehicular parts, and improving transport infrastructure in and around this site of production.<sup>65</sup> Both city and enterprise poured considerable funds into such municipal construction projects. In 1981, the total amount invested into Shiyan was 78 million yuan. This figure climbed and remained often well above that over the rest of the decade, with a notable spike in 1985 at 242 million yuan.<sup>66</sup> The components industries, in particular, flourished. In 1980, automotive subcontracting made up 17 percent of Shiyan's non-SAW industrial production. A decade later, its share was over 80 percent.<sup>67</sup> The built landscape visibly changed over the 1980s, as the city erected across its expanse tall residential blocks and other

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<sup>63</sup> Mok, "China's Motor Cities," 257–269; Byrd, "The Second Motor Vehicle Manufacturing Plant," 378.

<sup>64</sup> Byrd, "The Second Motor Vehicle Manufacturing Plant," 371 and 374.

<sup>65</sup> Hubei sheng renmin zhengfu 湖北省人民政府, ed., *Shiyan chengshi guihua* 十堰城市规划 [Shiyan's Urban Plan] (1981), 50.

<sup>66</sup> Mok, "China's Motor Cities," 295.

<sup>67</sup> *Ibid.*, 300.

new constructions in the commercial, service, and public sectors.<sup>68</sup>

The 1980s into the early 1990s became for many of Shiyan's residents a period they would later look back on as the best of times. To begin with, urban wages were high. Between 1978 and 1989, the annual income of SAW workers grew yearly by 15.3 percent and that of workers in other industries within the city by 16.4 percent. This then affected on consumption patterns. According to figures from 1985, Shiyan had the highest concentration of urban households in the province with color television sets (33 out of every 100) and refrigerators (26 out of every 100). Many people also possessed other consumer goods like electric fans, washing machines, and cassette recorders.<sup>69</sup> The homes in which they housed these gadgets, too, got larger. In 1978, urban residents had, on average, 48 square feet of living space per person. In 1990, they each had 125 square feet.<sup>70</sup> Moreover, the municipality shouldered the bulk of expenses related to healthcare and education, so that city dwellers paid close to nothing on these fronts. Li Ming, a former teacher at the SAW-affiliated high school whom we spoke to in 2016, would describe this as the "golden age." Recounting the various benefits people in Shiyan had enjoyed in that period, he wistfully told us: "Now that was true socialism."<sup>71</sup>

Yet, even amid these good times, there were warning signs that they would not last. From early on, many who recognized that there would be limits to growth. Shiyan's 1981 comprehensive urban plan, for instance, stipulated that the goal was to reach and maintain an annual production of around 100,000 vehicles while keeping the city's population, which, at that time, was already 290,000, below 300,000. "Because of constraints in terms of factors such as land, water, energy, and transport, the scale of urban development cannot help but be affected," it reasoned.<sup>72</sup>

At the time, the SAW was certainly looking to expand its influence farther afield. That same year, it formed the Dongfeng Automotive Industry Corporation (东风汽车工业联营公司), which brought under it an assortment of firms around the country that specialized in producing vehicular parts or in assembling vehicles, including special ones (standard SAW trucks refitted to serve as fire engines or garbage trucks, for instance).<sup>73</sup> The SAW also started its own manufacturing operations beyond Shiyan. Seeking to ensure that production was not contained to just this one city, with all its constraints, and that there would be room for further growth, its leaders launched a project in 1983 to establish a new truck facility in Xiangfan, just

<sup>68</sup> Shiyan difang zhi bianzuan weiyuanhui 十堰地方志编纂委员会, ed., *Shiyan shi zhi* 十堰市志 [Shiyan City Gazetteer] (Beijing: Zhongguo wenshi chubanshe, 2014), 314.

<sup>69</sup> Mok, "China's Motor Cities," 310–313.

<sup>70</sup> Shiyan difang zhi bianzuan weiyuanhui, ed., *Shiyan shi zhi*, 314.

<sup>71</sup> Interview with Li Ming 黎明, January 18, 2016.

<sup>72</sup> Hubei sheng renmin zhengfu, ed., *Shiyan chengshi guihua*, 50.

<sup>73</sup> Mok, "China's Motor Cities," 272–273. For more on the Dongfeng Automotive Industry Corporation, see William Byrd, "The Second Motor Vehicle Manufacturing Plant," 407–418.

over a hundred miles to the east.<sup>74</sup>

A few years later, the State Council approached the SAW to encourage it to start producing passenger vehicles too. The volume of automobiles China was importing had been rapidly escalating to the point that the central government started expressing concern, since this placed a drain on foreign reserves. It hence sought to foster local alternatives. In 1988, the SAW entered a joint venture with French automaker Citroën to manufacture these passenger cars, with the target of 300,000 units a year. While the Sino-French collaborators decided to site automobile assembly in the centrally located provincial capital, Wuhan, the SAW's taking up of the project nevertheless contributed to planners in reflecting on Shiyang's potential role in this endeavor and, with that, the challenges the city indubitably faced.<sup>75</sup>

Late in the summer of 1989, the Hubei Department of Urban and Rural Construction (湖北省城乡建设厅) hosted a meeting in Shiyang to discuss plans for the city's overall development. Attendees numbered over a hundred and fifty and included municipal leaders, SAW managers, representatives from the Ministry of Construction, and leading experts and scholars from the fields of urban planning, construction, geology, and geography. It was eight years since the comprehensive urban plan of 1981, and it was time, the organizers insisted, to return to the drawing board given changes since: "The city's continuous economic and social advancements, especially Shiyang becoming 'the trial district for the opening up of the automotive industry' [汽车产业开发开放试验区] and the SAW's project for manufacturing 300,000 passenger cars a year, have become a new driving force for municipal development."<sup>76</sup>

On the table were three proposals. The first was to not factor the new 300,000-cars project into plans for Shiyang's future and to accept that the city would not experience large developments after 1990. The second was to expand manufacturing in vehicular parts to support the 300,000-cars project, building upon the infrastructure laid in the years prior to 1990. And the third was to count not only on the generative impact of 300,000-car project but also on anticipated increases in investments due to the relaxation of governmental policy and the attraction of foreign capital, with the expectation that Shiyang's various industries (certainly automotive components, but others as well) would rapidly grow as a result. Given that Shiyang was the SAW's home base, its involvement in the 300,000-cars project was taken to be a

<sup>74</sup> Mok, "China's Motor Cities," 279–283.

<sup>75</sup> *Ibid.*

<sup>76</sup> Shiyang shi zongti guihua (xiubian) pingyi hui huiyi jiyao 十堰城市总体规划（修编）评议会会议纪要 [Council Meeting Minutes for Shiyang's Urban Master Plan (Revision)], in Shiyang chengxiang jianshe guanli weiyuanhui 十堰城乡建设管理委员会 and Shiyang chengxiang jianshe guihua guanli ju 十堰市城乡建设规划管理局, eds., *Shiyang chengshi zongti guihua pingyi zhuanji* 十堰城市总体规划评议专辑 [Special Issue on Shiyang's Urban Master Plan] (1989), 4.

foregone conclusion, municipal authorities argued. At the same time, they acknowledged that “many unfavorable factors remain regarding Shiyān’s development” and that “to be overly optimistic would not be conforming to reality.” As such, they would settle on the second proposal.<sup>77</sup>

This second proposal may not have accounted for as extensive growth as the third, but it still counted on a good measure of development. This then prompted planners to confront the problem of there being only a limited amount of land within the boundaries of the city that could be developed. In order to create more space for industry, they needed to expand the city itself. Here, they considered two main options: to extend farther along the gorges or to extend, instead, up the mountains. The existing city had been constructed almost entirely within gorges, and the first option involved continuing in this vein, opening up new areas upriver and turning stretches of current farmland and vegetable fields over to industrial use. The second option called for construction into hitherto unused areas up surrounding mountainous inclines. Planners recognized that the latter option was the more costly one. But they also found it appealing on at least two counts. It did not involve taking over agricultural land and it would supposedly minimize problems with flooding that had long troubled the city. About two-thirds of the SAW’s factories rested in parts of the gorges where the rivers met and where the threat of flooding was particularly pronounced. There was, for instance, a bout of heavy rainfall in 1973 that resulted in the overflowing of the rivers, the flooding of fifty-four SAW workshops on or near their banks, and losses of over a million yuan.<sup>78</sup> Because of elevation, areas built up on the slopes would be able to avoid the reoccurrence of such disasters.<sup>79</sup>

To Zou Deci 邹德慈, the president of the Chinese Academy of Urban Planning and Design (中国城市规划设计研究院) and an important voice at the meeting, it was inevitable that development here proceeded up the mountains: “Under Shiyān’s specific conditions, it is essentially impossible to not make use of the mountain slopes. Because its level ground is limited and because vegetable fields are still very precious, there is no choice but to utilize the mountain slopes in the future, and hence it is worth it to open up a few small plots at present.”<sup>80</sup> According to Wang Fan, a

<sup>77</sup> Zhongguo chengshi guihua sheji yanjiuyuan 中国城市规划设计研究院 and Shiyān guihua ju 十堰规划局, ed., *Hubei sheng Shiyān shi chengshi zongti guihua xiuding shuomingshu* 湖北省十堰市城市总体规划修订说明书 [Revised Urban Master Plan of Shiyān, Hubei Province] (1989), 7–8.

<sup>78</sup> Hubei sheng Shiyān shi shuili shuidian ju 湖北省十堰市水利水电局 and “Shiyān shi shuili zhi” bianzuan weiyuanhui 十堰市水利志编纂委员会, eds., *Shiyān shi shuili zhi* 十堰市水利志 [Gazetteer on Shiyān’s Water Management] (2002), 204; Shiyān jianshe zhi bianzuan weiyuanhui ed., *Shiyān jianshe zhi*, 96.

<sup>79</sup> Zhongguo chengshi guihua sheji yanjiuyuan and Shiyān guihua, ed., *Hubei sheng Shiyān shi chengshi zongti guihua xiuding shuomingshu*, 22.

<sup>80</sup> Zou Deci 邹德慈, “Zhongguo guihua yuan yuanzhang Zou Deci tongzhi zai bimushi shang de jianghua” 中国规划院院长邹德慈同志在闭幕式上的讲话 [Speech by Zou Deci at the Closing

senior planner with the Ministry of Urban and Rural Construction (城乡建设部), building on the mountains around Shiyan was even more challenging than in most mountainous regions because of the steepness of the incline (averaging 30 degrees) and the presence of multiple hillocks all about. Such a difficult terrain apparently required drastic measures to truly master. “It might work,” he contended, “only if we use a large bulldozer and flatten one square kilometer by one square kilometer.”<sup>81</sup> To use the mountains, they had to extensively level them. Extreme as this might have sounded then, even to Wang, who seemed to have floated the idea more to emphasize its near impossibility than to encourage its uptake, this would in fact be Shiyan’s fate.

## Conclusion

Following the 1989 meeting, the Shiyan municipal government began modest efforts at leveling mountains to create the Shiyan Economic Development Zone (十堰市经济开发区), intended for new industries to establish themselves or existing ones to expand their operations. Still, this did not seem to have yielded sufficient space for Shiyan to grow as its planners believed it should. Between 2000 and 2004, the city purportedly missed out on over a hundred investment projects because “there was no place to place them” (无地安放) and more than three hundred local businesses had to forego plans to increase capacity because of limitations of land.<sup>82</sup>

In 2004, the Dongfeng Motor Corporation, whose establishment as the SAW had made Shiyan into the automotive capital that it was, relocated its headquarters to Wuhan. Given the developments of the preceding years, particularly the fact that operations for the company’s leading 300,000-cars project were based primarily in the province’s capital, this was perhaps not too surprising a move. It was, nonetheless, a blow to Shiyan, a confirmation that it had already past its economic prime. Space was the leading consideration behind this decision. As Miao Wei 苗圩, the former Dongfeng general manager who went on to head the Ministry of Industry and

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Ceremony] (August 8, 1989), in Shiyan chengxiang jianshe guanli weiyuanhui and Shiyan chengxiang jianshe guihua guanli ju, eds., *Shiyan chengshi zongti guihua pingyi zhuanji*, 21–22.

<sup>81</sup> Wang Fan 王凡, “Chengxiang jianshe bu guwen gaoji guihua shi Wang Fan tongzhi de fayan” 城乡建设部顾问高级规划师王凡同志的发言 [Speech by Wang Fan, Planning Consultant, Ministry of Urban and Rural Construction], Shiyan chengxiang jianshe guanli weiyuanhui and Shiyan chengxiang jianshe guihua guanli ju, eds., *Shiyan chengshi zongti guihua pingyi zhuanji*, 49.

<sup>82</sup> Heng Xiufang 恒秀芳, “Xun xin cheng: huanyuan Shiyan xiaoshan zaocheng de zhenxiang” 寻新城：还原十堰削山造城的真相, *Xin chu shang* 新楚商, April 1, 2013. [http://hb.sina.com.cn/news/magazine/2013-04-01/223164135\\_2.html](http://hb.sina.com.cn/news/magazine/2013-04-01/223164135_2.html).

Information Technology (工业与信息化部), would put it, “Dongfeng had left because it could not even find a five-square-kilometer plot in Shiyan.”<sup>83</sup>

If it was the shortage of land that had driven Dongfeng from Shiyan and placed a check on the city’s growth more generally, then it was pressing, the municipal government concluded, to pick up the pace and carve out even more new land from the mountains. Chen Tianhui 陈天会, who had been appointed mayor in 2002, was particularly enthusiastic about this undertaking. His superiors in the provincial government even more so. In 2007, Chen contacted provincial authorities to ask for approval: “May we set a target to obtain [from the mountains] 5,000 mu 亩 of level ground?”<sup>84</sup> When reviewing this request, then vice governor Zhou Jianwei 周坚卫 reportedly replied, “5,000 mu is too little! Can’t we make it 10,000 mu? Shiyan has so many mountains. If we just collapse a few mountain tops, wouldn’t that give us 10,000 mu of flat land?” To some, this measure was not only about the city’s growth but its very survival. As Zhou Ji 周霁, the municipal Party secretary, saw it: “If we do not start digging up the mountains now, Shiyan will truly become a waste city [废城].”<sup>85</sup>

Between 2007 and 2012, Shiyan’s leaders oversaw the bulldozing of over a hundred mountain tops, through which 15,000 mu of land was recovered for development.<sup>86</sup> The full environmental impact of this drastic transformation of the landscape still remains to be seen. It has, however, already had some visible adverse effects. To proponents of leveling mountains, this was supposed to help minimize flooding. It would, instead, trigger “a great flood unlike any before.” During the rainy season in 2012, the Maota river that flows through Shiyan became blocked when earth that presumably had been loosened or removed by mountaintop removal washed into it. The river then overflowed its banks and completely inundated a village in the city’s vicinity, resulting in massive losses.<sup>87</sup> And yet, the leveling of mountains continued, redirecting water courses and causing more floods and landslides while bringing about pollution to both air and water.<sup>88</sup>

Chinese hydrogeology and environmental science experts have been sounding warning bells. In a 2014 article in *Nature*, Li Peiyue, Qian Hui, and Wu Jianhua of

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<sup>83</sup> *Ibid.*

<sup>84</sup> 6.07 mu  $\approx$  1 acre.

<sup>85</sup> Heng, “Xun xin cheng: huanyuan Shiyan xiaoshan zaocheng de zhenxiang.”

<sup>86</sup> Liu Daocai 刘道彩, “‘Xiaoshan zaocheng’ de fengxian shui lai dan “削山造城”的风险谁来担? [Who Foots the Bill for the Risks Involved in “Leveling Mountains to Build the City?”], January 30, 2013. [https://zqb.cyol.com/html/2013-01/30/nw.D110000zgqnb\\_20130130\\_4-02.htm](https://zqb.cyol.com/html/2013-01/30/nw.D110000zgqnb_20130130_4-02.htm).

<sup>87</sup> Peng Kefeng 彭科峰, “Xiaoshan zaocheng: xuanxiao xia de shengtai touzhi” 削山造城: 喧嚣下的生态透支 [Leveling Mountains to Build the City: The Ecological Overdraft beneath the Clamor]. <http://news.sciencenet.cn/sbhtmlnews/2014/6/288736.shtm>.

<sup>88</sup> Peiyue Li, Hui Qian, and Jianhua Wu, “Environment: Accelerate Research on Land Creation,” *Nature* 510 (2014), 29–30. <https://www.nature.com/articles/510029a>.

the School of Water and Environment at Chang'an University, expressed much concern over campaigns to level mountains in Shiyang and other cities located in mountainous regions such as Chongqing, Lanzhou 兰州, and Yan'an 延安. To Li and his colleagues, the problem was partly of scale and partly of precedence. While mountaintop removal had been done in other contexts, such as, they pointed out, in strip mining in the United States, "it has never been carried out on this scale" in which "dozens of hills 100–150 meters in height are being flattened over hundreds of kilometers." At the same time, the land created through this practice had never been used for urban construction as it was now in places like Shiyang, and there was insufficient prior work done, they cautioned, in understanding how this act, which they likened to "performing major surgery on Earth's crust," might unsettle the complex geology and hydrology of such mountainous areas.<sup>89</sup>

When talking about their mountain moving endeavors, Shiyang's leaders were fond of citing the fable of "The Foolish Old Man Who Removed the Mountains" (愚公移山). As the story goes, there was once an elderly man who wanted to move a pair of mountains that were in his way and set out to do this all by himself using the most basic of tools. His determination and effort were to so move the gods that they ended up moving the mountains for him. This was a tale that Mao himself liked to reference as a call to persevere against seemingly unbeatable odds with the promise of success beyond. Bringing up this fable, Li and his colleagues offered a different take, focusing on the fact that the old man was deemed "foolish": "earth-moving on this scale without scientific support is folly."<sup>90</sup>

The story of Shiyang's industrial and environmental transformations through its rise and recession may be framed as one of historical irony. Shiyang had been selected as a site for the construction of the SAW mainly because of the difficulty of its terrain, which, in the military logics that governed the times, translated into defensibility. Working against the many challenges of this landscape, particularly in terms of securing resources, multitudes of workers helped build it up into a city that would serve as a major base for China's automotive industry. And yet, the very reason why the SAW would be situated in Shiyang was the reason why it would finally move away from it.

At the same time, the history of "China's Detroit" gives us a glimpse into how the Cold War and the shadow of the bomb shaped local natural and built environments and how the decisions made and infrastructure laid in that time of atomic urbanism continued to exert an influence on those environments after. Into the 1980s and beyond, many of Shiyang's planners recognized that what they were confronted with were the legacies of a more militarized past, even as they tried to ensure that the city would continue to have a place in the market economy of the present and future. The

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<sup>89</sup> *Ibid.*

<sup>90</sup> *Ibid.*

environmental costs have been considerable. For as much as constructing an industrial city in the midst of mountains may have altered natural conditions here, it appears that attempts to halt Shiyang's decline would yield the most damaging effects on the surrounding environment, as ongoing efforts at leveling mountains seem all too painfully clear.

## Abstract

In this article, we examine the history of Shiyan, a city located in the midst of mountains that had once been a major center of China's automobile industry and, in that capacity, a contender for the title of "China's Detroit." In particular, we focus on the interplay of environmental conditions and industrial aspirations that undergirded Shiyan's rise and recession. We begin with the question of how a city built primarily for the manufacturing of automobiles, which of all the technologies of the twentieth century best represented mobility and access, came to be situated in such an inaccessible place. The short answer to that question is that this was a confluence of Cold War concerns and strategic considerations. But we show how the emergence of this city involved the mobilization of considerable labor and materials under conditions of resource scarcity, which then had bearing on the shape that this urban space would take. But while the building of the city, like the building of cities in general, reshaped the surrounding environment, it would be less in its rise than in its recession that we witness the greatest environmental devastation, as mountains began to be leveled in hopes to creating industrial opportunities amid ongoing economic decline.

**Keywords:** China, Cold War, Third Front, city building, mountaintop removal, automobile industry