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Land, Labor, and the Railroad in Industrial Appalachia: How the Baltimore and Ohio Railroad Engineered Space, 1843-1872

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Land, Labor, and the Railroad in Industrial Appalachia: How the Baltimore and Ohio Railroad Engineered Space, 1843-1872

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During the nineteenth century, the Baltimore and Ohio railroad reshaped the social, political, and physical environment of the mid-Atlantic around the needs of the industrial economy. The creation of industrial space, and the proliferation of communities to populate it, is seen retrospectively as an inevitable consequence of technological innovation, but engaging with contemporary corporate records reveals that this space, like the railroad, was engineered. In order to design a supply chain that would make industrialization economical, the railroad and coal industries engaged in political and social engineering to design the new locales of industrialism, exemplified in the Allegheny Mountains by the coal company town. As this new type of space was populated by the workers necessary to its function, the spatial practices of those workers and their families informed its evolution, defining its boundaries and informing the ways in which it transcended them. Using an environment as methodology, this paper explores the early history of American industrialism, the spatial inflection of corporate power, and the role of working class contestations in the construction of the built environment.

Introduction

When the Baltimore and Ohio (B&O) Railroad reached Cumberland, Maryland in 1843, the eyes of its investors and engineers were fixed on the great rivers to the West. The B&O's mission was to connect Baltimore to the Ohio River, enabling the quick and cheap shipment of goods from America's growing frontier to the Atlantic Ocean. Like other civic boosters of this era, the B&O's cheerleaders emphasized Baltimore's natural advantages: its proximity to the Ohio River Valley and the warm waters of its year-round harbor. In the eyes of the city's boosters, its competitors had usurped Baltimore's natural preeminence with the power of railroad and canal technology, and this unnatural state of affairs could only be reconciled by the incorporation of those same technologies into its trade network. "To regain her former advantages," they argued, "Baltimore must resort to the same artificial power by which they have been superseded… she must unite the power of steam on land with that on water, from New Orleans to this city."[1] The railroad was called upon to conquer the natural environment, but in the process of doing so, it also changed the physical and conceptual nature of the spaces through which it passed. The advent of the B&O was also the advent of Maryland's bituminous coal industry, and the relationship between these two entities created novel industrial spaces.

For the purposes of this paper, I am defining industrial space as a physically and socially constructed environment centered around the needs of machines. Using the relationship between the Baltimore and Ohio railroad and the bituminous coal industry as my through-line, I examine the creation of this type of space in the Allegheny Mountains. I discuss the mechanical and social engineering that facilitated the emergence of the coal industry, and ways in which industrial

[1] McLane, Louis. *Seventeenth Annual Report of the President and Directors to the Stockholders of the Baltimore and Ohio Rail-Road Company.* Baltimore: James Lucas, 1843. 12.

capitalists and politicians reorganized space around the needs of the railroad. Following this, I discuss working class resistances to industrial space, and the ways in which their spatial practices informed the evolution of industrial space. By centering the natural and built environment in the early history of industrialization, I produce a history of corporate power and working-class resistance rooted in the spatial relationships and practices of industrialism, and argue that the process of industrialization was defined by the tension between railroad's ability to warp space and the resistive spatial practices of the working class.

Contingencies Not at Present Foreseen: Engineering the Coal Trade

Commentators since the 19th century have heralded the railroad as an annihilator of space and time, but this conception divorces the railroad from its relationship with the land; it was prophesized that the B&O would "flatten" the Alleghenies, but it did not erase the mountains, but grow in relation to them. I therefore argue that the effect of the railroad on the environment is not to annihilate, but to reveal and reshape. The penetration of the railroad into the coal-rich mountain district created new paths around which people and capital were organized, and technological innovations birthed new economic incentives around which the conceived environment was structured. In retrospect, the developments wrought by the symbiotic relationship between the B&O and the Alleghany coal industry have been posited as inevitable, but studying the first decade of coal trade along the B&O reveals that they were anything but. The annual reports from the B&O Board meetings in the 1840s and 50s demonstrate that the supposedly inevitable transformation of the Alleghenies only became inevitable once technology revealed it to be so, and that the harnessing of the power of bituminous coal for the 19th century economic engine was as much a process of politics as it was one of nature.

The 1844 Annual Report captures a pivotal moment in the debate surrounding the coal trade in the B&O's early history. On one side, the State of Maryland, acting through the state legislature and its representatives on the B&O board, pushed for the railroad to offer favorable rates to Maryland coal dealers, while on the other, the executive leadership of the B&O argued that the coal trade was uneconomical. Through the 1844 Annual Report, the B&O leadership substantiated their argument against engagement in the coal trade by citing two economic considerations: the limited capacity of coal mines in Western Maryland, and the qualities of bituminous coal that made it less favorable than anthracite varieties. Influenced by the failure of the Maryland and New York Iron and Coal Company to follow through on a contract to provide 50,000 tons of coal for shipment to the Chesapeake and Ohio canal, B&O President Louis McLane issued an indicting assessment of the present state of the Cumberland coal industry:

> "[The C&O Canal Company] either greatly overrated the ability of the coal dealers, or the extent of demand; since from that time… less than four thousand tons of coal, and not any iron, has been offered for transportation in the manner contemplated by the arrangement… during the same period, no evidence was afforded that any capital had been obtained for working the mines, or any arrangements made towards the preparation of necessary transportation of the coal thence from Cumberland; except in the instance of a single company."[2]

McLane's comment highlighting the need for "capital" to work the mines explicated the factors limiting the coal industry. But what was required was not just capital, but networks of humans to work the capital that could transform the land into a commodity. Cumberland was sparsely populated, and the labor market limited: there simply was not enough manpower to furnish the contracts made by coal dealers with the railroad— workers needed to be impoerted. The project

[2] McLane, Louis. *Eighteenth Annual Report of the President and Directors to the Stockholders of the Baltimore and Ohio Rail-Road Company.* Baltimore: James Lucas, 1844. 10.

of creating a coal industry in the mountain would require as much social engineering as it did mechanical engineering.

The second argument made in the 1844 Annual Report concerned the fundamental properties of the coal itself. Trade in Cumberland coal, a commodity that fetched a low price at market relative to its weight and bulkiness, was constrained by the generalities of 19th century railroad economics. Because of "the character of the machinery generally in use upon rail roads," a general impression prevailed that "for heavy articles… these roads would not be a desirable mode of transportation." Furthermore, Cumberland coal was a bituminous variety of the mineral: when burnt, it left behind residue, and created unpleasant smog.[34] Pennsylvania anthracite, Cumberland bituminous' primary competitor, also had the advantage of being earlier to arrive to the market. The Reading Railroad, in tandem with the Lehigh Coal and Navigation Company, had thoroughly established a niche for the article in the 1820s, and because of this, early industrial machinery had oriented to the usage of anthracite coal. Because of this early adopter advantage, in 1844, "the consumption of bituminous coal had been gradually and regularly diminishing," and McLane concluded that "the introduction of the Cumberland coal, in any considerable quantity, could only be effected by superseding, to nearly an equal extent, the use of the anthracite."[5]

In the 1844 Annual Report, the qualities of bituminous coal that would lead it to become the favored fuel source of the B&O, and of American steam engines generally, remained invisible to the B&O Board because the technological frameworks around which bituminous coal

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[3] Schulman, Peter. *Coal & Empire: The Birth of Energy Security in Industrial America*. Baltimore: JHU Press, 2015. 47-48.
[4] *Eighteenth*, 10-11.
[5] *Eighteenth*, 13-14.

could be revealed as an industrial fuel source had not yet fully matured. Similarly, the second nature— the political geographies of human labor and capital— necessary to commodify the burning rock had not yet been implemented, because the built environment needed to be reorganized to retrofit the emerging technologies of industrial capitalism. It was not scientific constraints limiting the applicability of bituminous coal to the industrial sphere— there was no fundamental shift in the nature of steam power after 1844. The constraints that existed were engineered by people: the mechanical structure of the engines used by the B&O, and the political structures that organized people in space. And so, at the convergence of politics and technology, it was people that would engineer these constraints away.

This contextualizes the debate between the state of Maryland and the B&O leadership implicit throughout the 1844 Annual Report. Earlier in 1844, Benjamin Latrobe, the B&O's chief engineer, had been called before the Maryland State Senate to deliver a report on the lowest possible rate that could be offered to Maryland coal dealers on coal shipped from Cumberland. The actors representing the state institutions of Maryland, a significant stakeholder in the B&O, had a clear goal— the fostering of a domestic coal industry in the state's Western environs through the use of the railroad as a tool of state power. The B&O leadership, speaking through Latrobe, chafed under the subordination of the (largely publicly owned) business to state interests. Willing to engage in the coal trade purely under "experimental" terms, Latrobe claimed it was bad business, implicitly arguing that the B&O's obligations to its private shareholders should not be subordinated to the desires of the state. For the B&O's executive leadership, the prerequisite to any large-scale engagement in the coal trade were incentive structures that would make it advantageous. The state actors against whom the B&O executives argued were sympathetic to this, and, already committed to the railroad as a component of the built

environment, they were willing to further reorient geography in service of industry and prosperity.

Instead of a refusal to engage in the coal trade, President McLane's 1844 Annual Report was received as a call to action. McLane was, nominally, content to "[leave] the general trade in coals and iron from the Allegheny region, to others more ambitious of monopolising it," but the fallout of the B&O declaring that its dealings in the coal trade would only be profitable based upon "contingencies not at present foreseen," was the assemblage of those exact unforeseen contingencies.[6] And, while McLane's overt statements are politely dismissive of the coal industry, he did lean into the booster optimism surrounding Cumberland when it suited his purposes. In 1844, the B&O was not allowed to use steam engines in the city of Baltimore, transferring its freight to carriage by horses at the city limits. While the citizens of Baltimore saw this as a protection against the dangers and noise of the railroad, the B&O saw it as a massive cut into its profit margins. In this context, McLane argued that, "if the city authorities desire to … enjoy to any considerable extent the advantages of the transportation of coal, [the privilege to use steam power] will be indispensable."[7] Here, the implicit undercurrent of all McLane's denunciations of the coal trade is made explicit. To his audience of capitalist investors, state actors, and booster journalists, McLane is saying: if you want the coal trade to work, *make it work.* Every argument against the coal trade functioned also as a request: for stronger capital networks, for an environment oriented to the needs of the railroad, and for the social engineering of a machine, stretching from the coal pits of Mount Savage to the docks of the Inner Harbor, that could reveal the wealth of the Alleghenies.

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[6] *Eighteenth*, 20-21.
[7] *Eighteenth,* 8.

The shift in technological and social conditions that birthed the Cumberland coal industry from imagination to reality occurred in 1845. An innovation in engine construction by Ross Winans reoriented the B&O's economic calculations. In the 1845 Annual Report, McLane wrote: "The heavy engines, of 22 tons weight, built for the coal trade at the manufactory of Mr. Winans in this city, have proved themselves very valuable machines, of great power, and simplicity of construction, easily maintained in repair and burning the Cumberland coal in the most satisfactory manner; and, in this last particular, solving a question of much interest in the economy of the company's transportation."[8] Benjamin Latrobe, the B&O's chief engineer, who, in the previous year, had argued against the B&O's engagement in the coal trade before the Maryland State Senate, came around as well: "strange to say we commenced with anthracite at a time when people hardly thought it was stuff that would burn at all in anything." And it was not just the B&O that had come to this realization— experiments by the United States Navy showed that Cumberland bituminous evaporated 5.75 times more steam per volume than pine wood, the dominant fuel of the time, leading the Navy to propose contracts with Maryland coal dealers. Contextualized by the dominance of British coal in the international market, and the reliance of American steamers abroad on British coal dealers, the establishment of a supply chain for Cumberland coal became a matter of national security.[9]

The economic developments spurred by the Winans engine turned the rhetoric of Cumberland coal boosters into a self-fulfilling prophecy. The engine was designed to use Cumberland coal, revealing that the qualities which had made bituminous coal frustrating in previous engines could be morphed, through artifice, into economic power. By extension, the

[8] McLane, Louis. *Nineteenth Annual Report of the President and Directors to the Stockholders of Baltimore and Ohio Rail-Road Company.* Baltimore: James Lucas, 1845. 11.
[9] Schulman, 48-50.

Winans engine also revealed that the Allegheny Mountains, previously understood as an obstacle to be conquered, could be conscripted by the power of technology into a massive fuel source, providing the B&O with a constant source of chemical and economic energy, and granting American steamers the ability to cross the Atlantic. Coinciding with the reimagination of the natural environment was the assemblage of a human environment that could midwife this new industry. Coal companies prepared "lateral railways of their own to connect with [the B&O's main stem] at Cumberland," creating a mycelial network of railways directly connecting the B&O's primary line to the veins of coal in the mountains, economizing movement and enabling the constant flow of commodified coal. In the City of Baltimore, an April 1845 ordinance gave the B&O's engineers permission to begin surveying routes for a steam line through the city, further enabling "the transportation of this large tonnage… from the outer depot to tide water," and development began on the creation of a rail-to-water facility in South Baltimore.[10] The B&O was annihilating space in ways that it could only have dreamed before, turning Maryland, through public policy and capitalist infrastructure, into a gigantic proto-assembly line. It had taken millions of years for the decaying organic matter in the lightless depths of the earth to mature into bituminous coal, but only two decades for the B&O to turn that coal into fuel.

The endpoint of the B&O's coal supply chain was formally established in 1844 by a decree from the Baltimore City Council, in response to that year's Annual Report, that permitted the usage of steam engines by the B&O in a designated area outside the population center to tidewater at the south side of the Inner Harbor. The result was the creation of a branch line extending to a rocky peninsula formerly used only for pasture, renamed Locust Point in 1846, for the locust trees that grew there. While, for the remainder of the 1840s, the B&O fought pitched

[10] *Nineteenth*, 11.

battles with the citizenry and government of Baltimore over the privilege to use steam engines in the urban core, it simultaneously developed Locust Point into a new type of place: the coal pier. In 1848, the B&O completed tracks to the water, and Locust Point opened for business. Historian David Schley writes: "The B&O purchased much of the land in and around Locust Point, scooping up large lots for use as wharves, depots, and water stations. When extant acreage could not serve the company's needs, it reclaimed land on the waterfront to make room for shipping infrastructure. Developers added slim rowhouses to accommodate the area's growing workforce."[11] Locust Point was a neighborhood built for industry first and people second. It was a space for the rapid transshipment of freight, primarily coal, from rail to water, where trains ran at all times of day, much to the consternation of local residents— primarily B&O employees. It was the culmination of the B&O's desires to engineer an environment for their machinery, and by its creation, it inaugurated the built environment of industrial capitalism.

The consequences of the B&O's innovations in the economy of coal touched every part of life along the railroad. In 1843, the B&O shipped fewer than five thousand tons of coal. By 1845, this tripled. In 1848, the year Locust Point became active, the B&O moved 67,280 tons of coal. By 1850, this number increased to 132,534 tons. Ten years after the line to Cumberland opened, in 1853, the B&O was moving more than 300,000 tons of coal annually, a greater quantity than every other good, excluding flour, combined.[12] A third of this coal stayed in Baltimore, used at manufacturing facilities, to heat homes, and to create the gas that illuminated the city at night. Plumes of black smoke shooting into the air changed the color of the sky and

[11] Schley, David. *Steam City: Railroads, Urban Space, and Corporate Capitalism in Nineteenth Century Baltimore.* Chicago: UChicago Press. 2020. 118.
[12]Harrison, William G. *Twenty-Eighth Annual Report of the President and Directors to the Stockholders of the Baltimore and Ohio Rail-Road Company.* Baltimore: James Lucas, 1854. Table C.

taste of the air.[13] At every stop on the B&O's line, mines and coaling stations sprung up to feed the railroad's hungry engines, the tracks of industry reaching like tendrils into the mountains.[14] In 1852, President Thomas Swann, who would later go on to become Mayor of Baltimore and Governor of Maryland, declared: "No subject which has heretofore occupied the attention of this board, is of graver interest than that of the coal trade at the present time… The mineral region of Alleghany belongs to the State of Maryland; and the development of its wealth and resources is a matter which can never be lost sight of by those representing her interest in this road."[15] As the coal trade had grown, the reorientation of the environment around it had allowed the B&O to eclipse its city and state of origin in power and influence, creating, through social and mechanical engineering, a spatial basis for the power of industry.

***Steady Work and Comfortable Homes*: Cultivating Industrial Communities**

In the early 1870s, a child wakes up in the town of Piedmont, West Virginia. He is awoken not by the sunlight pouring through his window, or the sound of a rooster crowing, but by the ringing of the town's church bells. It is winter, and the darkness and chill tell him it is still night, but the clock tells him it is time for work. For breakfast, his mother is cooking cakes of flour and water on the griddle, served with a side of beans grown in the small garden of their company-owned house. Like his father, this boy is a coal miner. He is barely a man, but already he has been going into the mines for a year, and, before that, performing odd jobs around the mines to augment his family's meager income. His parents emigrated to America from Wales,

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[13] Schley, 120.
[14] Swann, Thomas. *Twenty-Fifth Annual Report of the President and Directors to the Stockholders of the Baltimore and Ohio Rail-Road Company.* Baltimore: James Lucas, 1851. 21.
[15] Swann, Thomas. *Twenty-Sixth Annual Report of the President and Directors to the Stockholders of the Baltimore and Ohio Rail-Road Company.* Baltimore: James Lucas, 1852. 13-14.

but this boy has never left the county he was born in: his life is structured around the mine, his family's home owned by the company, and his time dictated by the clockwork of the railroad. Excepting a brief return home on his lunch break, the boy will spend every hour until dusk in the mines, sweating to earn his keep. But even when confronted by the limits of his environment, the boy still forges his own path. At night, he sings, dances, even drinks, despite the town's morality codes. On Sunday, he goes to church— most of the time— and steals away moments in the woods, hunting and shooting with his friends, trying to impress the town's girls. His ways of existing in industrial space are not ancillary to its historical construction, but critical to understanding its development and evolution.

Until now, I have discussed the conception of industrial space as it was engineered in the minds of politicians and capitalists. But what of the coal miners, the firemen, the conductors, the stevedores, the porters, the steel drivers, and those countless others whose labor constituted the spatial practices of this new type of space? The 1840s saw the B&O marshal its clout to reorient geography around the needs of the coal supply chain, but even though these spaces were designed to meet the needs of machines first and people second, human labor remained essential to their function, and so the construction of industrial space also entailed the cultivation of human communities. The increased demand for labor that accompanied the growth of industry was a problem solved by the technology of the railroad, and its ability to move people to the places it created—but these laborers were not static economic inputs, but autonomous subjects. Even as the coal supply chain conscripted the bourgeoning proletariat into the network of the railroad, these laborers managed their own interactions with the natural and built environments, creating counterhegemonic spatial practices that defined the evolution of industrial space. Through this interaction, industrial space discovered its boundaries and expanded beyond them,

and by analyzing the resistances of the working class to the strictures of industrial space, we can better understand how industrial communities and industrial space grew in conversation with one another.

The tension between industrial space centered around the railroad and the usages of rural space that emerged in resistance to it is documented from early in the B&O's history. As the railroad worked its way towards the Ohio River in the 1850s, concerns of labor were paramount, and so managers called upon the power of the steam engine to move migrant workers from urban ports of entry to rural Appalachia. To their great frustration, though, these workers were not always willing to honor the terms of their contract. An 1853 document from the engineer's office gives an exasperated progress report:

> "The sparse native population, and the numerous body of foreigners introduced among them, with their old country feuds and intemperate habits, made necessary the early establishment of an armed police; and in the fall of 1850, when the extension of the work on this and other lines carried the demand for labor beyond the supply, it became requisite to strengthen the police for the protection of new hands, whose introduction upon the line was violently resisted by the factions then in possession. Upwards of 2,500 men were brought from New York in the winter of 1850-51, and distributed among the several contracts as far West as the Cheat River, 75 miles from Cumberland; and although every proper inducement was offered to retain them, more than half soon dispersed."[16]

The existence of this dispersed group of men in the historical record, and the persistent irritation that this caused B&O managers opens a line of inquiry. Who were these people, and where did they go? If the demographics of these vagabonds corresponded to those of the typical B&O laborer, it is easy to imagine them as recent Irish immigrants seeking escape from English

[16] Harrison, William G. *Twenty-Seventh Annual Report of the President and Directors to the Stockholders of the Baltimore and Ohio Rail-Road Company.* Baltimore: James Lucas, 1853. Appendix, 5.

colonialism and state-induced famine. It is unlikely that they would have joined with the existing "sparse native population" unless they had established familial connections, but Western Virginia was remote, and the mountains provided food: ramps, chicken of the woods, local game, and invasive species like wineberries or onion grass. B&O workers worked hard and were paid little, and for some group of young men, eking out survival in the mountains may simply have been preferable to industrial wage-work. The insertion of the railroad into the Allegheny Mountains dialectically constructed the surrounding rurality as a space where workers could escape from the tendrils of industry, necessitating the innovation of private security.

Private security functioned as a marker for the borders of industrial space, and reveals the social dimension in which this space had to be constructed. The labor economics of industry required its managers ability to determine how and when people could enter and exit. The addition of new hands, imported to drive down wages and break nascent strikes, met violent resistance, and so private security functioned to re-establish corporate authority over the space. Conversely, the issue of absconding workers revealed the practical limits of authority in the mountains, and the ways in which rural space could be used resistively by workers. The poor soil quality and geographic obstacles to movement entailed a dispersed lifestyle contradictory to the railroad logic that funneled goods and people along discreet pathways. When the B&O confronted this, it required the imposition of violent force, via private security, to counteract. Company towns that formed around the railroads, dense and discreet in comparison to their surrounding environs, evolved similar practices, similarly formed relationships with local sheriffs or maintained private security, à la B&O. The movement of the working class was shaped around the railroad, but also beyond its power to control, so, in order to define the limits

of rurality and maintain authority within industry, corporations of the 19th century adopted force as a spatial tool.

The B&O's policy of transporting exclusively male laborers is another noteworthy aspect of its strategy, especially in the contrast it draws with the contemporary practices of coal companies. Alongside the physical limits insinuated by private security, the sex of the laborers formed a temporal limit on the durability of their community and entailed the role of female labor in industrial communities. Through her surveillance of census records from this period, historian Katherine Harvey has excavated aspects of mining communities from this period. Groups of miners were "often related by ties of blood," and that the nucleus of the growing coal-mining class was formed by distinct ethnic communities— "Scots, Welsh, English, Irish, Germans, and Cornishmen,"[17] The relevance of blood ties and ethnicity to community formation in company towns reveals that, as coal miners came to the Alleghenies, they brought their families with them. Harvey interprets this texture of miners' migratory movement as a consequence of their specialized skills giving established workers greater priority, but, contextualized by the labor concerns of the B&O, it must also be understood as a policy choice on the part of mining companies to engineer a temporally durable workforce. At the nexus of intimate connection and labor economics, women and their labor were woven into the fabric of the industrial community.

The project of cultivating human communities for industrial space, and the necessity of women to the functionality of industry, is made explicit in an 1873 report from Consolidation Coal Co.:

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[17] Harvey, Katherine. *The Best Dressed Miners: Life and Labor in the Maryland Coal Region, 1835-1910.* Ithaca: Cornell University Press, 1969. 19.

> "In order to secure and retain good miners (men of family) it will be necessary to erect fifteen or twenty small tenements at one of our principal mines, the total cost of which will be from twelve to fifteen thousand dollars… By furnishing such tenements, skilled miners are secured, who become permanent residents of the region, while their sons as they grow up, become the faithful employees of the company which has given steady work and comfortable homes to their parents."[18]

In a town where a coal corporation claimed a monopoly on space, women who worked in the home, which was owned by the corporation, in essence, worked for the company. Women, as homemakers, were conscripted to provide reproductive and domestic labor essential to the maintenance of a community, creating future generations of coal miners and transforming their husbands' "tenements" into "comfortable homes." In doing so, women's labor became essential to the social production of a mining class, and the cross-generational collection of art, traditions, and ways of being that coagulated into miner culture. The gendered labor of women, knowingly deployed by mining corporations in the company town, ended the era of the itinerant miner and the seasonal miner-farmer that endured until the 1840s, and facilitated the formation of industrial communities in industrial space, creating a rural proletariat rooted to the locality of the company town.

The mining communities that emerged on the border between industrial and rural space were governed by the tension between the two. A microcosm of this conflict can be evinced from the competing foodways presented by the opposing visions of local geography. In the early history of Maryland coal towns, company stores were a constant source of consternation for coal miners, who correctly perceived them as a scam that allowed the company to recoup its wages. Even after the passage of an 1868 act by the Maryland General Assembly that forbade railroad

[18] Harvey, 79.

and mining companies from engaging in the practice, corporations simply found loopholes. An 1872 poem entitled "'Foolish Joe,' the Miner," succinctly captures how miners felt about these enterprises: "But now those licensed skinners look // Around with watchful eye, // And guard our little income so // No copper can go by."[19] As women in the mining town took charge of the domestic, it was they who had the most interactions with the "licensed skinners" at the company store, and who therefor had to pioneer alternate methods of finding or growing food. The most prevalent among these was the cultivation of a garden on one's plot, where one could grow staples like wheat, rye, or oats, or produce, in the form of "vegetables, grapes, pears, and small fruits," and sometimes even keep animals: a cow, a pig, or chickens.[20] Whereas the company store represented a discreet, centralized flow of goods and currency (or scrip), the garden was dispersed, and reliant on local ecology; but in the battle over space, no position was static.

In *Ramp Hollow*, historian Steven Stoll demonstrates that coal companies came to support these individual gardens as a form of "political ecology" that allowed them to enclose the commons. In West Virginia, mining companies would forgo charging rent on garden plots, or offer incentives for the most visually appealing or productive plots. In doing so, women's domestic labor and local ecology was conscripted in the web of the railroad. Through the garden "the entire family became deputized workers, contributing their labor without compensation to subsidize the male wage."[21] While the practice may have begun as a subaltern way by which miners' wives could produce their own food, by the 1880s, mine operators had caught onto the financial benefits that an enclosed garden could reap for the company and incorporated it into their schemes. The contestation over the garden plot provides an outline for the evolution of

[19] Harvey, 104.
[20] Harvey, 95.
[21] Stoll, Steven. *Ramp Hollow: The Ordeal of Appalachia*. New York: Hill & Wang, 2017. 222.

industrial space along the B&O: the practices of workers made the limits of corporate power visible, and in doing so outlined paths for its expansion and the further conscription of humans and environment into its web.

In 1872, the B&O commissioned a visual survey of their network, resulting in a group of photos dubbed the *Lakes to Sea* collection. As the collection's name implies, its photos depict the path of the B&O like a mechanical river, its headwaters trickling out of mines in the mountains and meeting the harbor at Locust Point. There is a consistent starkness, emphasized by the black and white medium, to the way the railroad cuts through the mountains, its tracks hugged by fallen trees and towns growing around its stops and deltas. It is both alien and integral to its environment. Working class people are depicted as part of the landscape, standing silently by the capital they worked, almost blending into the background of the mountain. For the photographer, these subjects were a component of the infrastructure, but reading the workers as in relation to their surroundings, we can peek into their lives.

Figure 1. Photographer unknown, "Piedmont Coal Mine," Lakes to Sea collection. 1872. Courtesy of B&O Archive.

In this collection of photographs, we return to the boy coal miner. A photo (*Figure 1*) of a boy riding a pony out of a coal mine captures a moment in the life of a miner; in this photo, we see industrial space, natural space, and the subject who straddling both. He is around twelve or thirteen, his face covered in soot, and expression dour. The mine itself is barely more than a burrow, framed by the trees and brush and supported by a scant apparatus of wood beams. Extending directly into the mine is minecart track, the mycelial appendage of the B&O's industrial network. On top of it, the biological capital, horses and children, that made it function.

Central to *Fig. 1* is the juxtaposition between the desultory, organic vegetation of the mountainside and mechanical guiding lines of the railroad, simultaneously reliant upon and in tension with the features of the mountain. The structures, human and mechanical, that turned the mountains into fuel, are made visible.

The contested history of industrial space contextualizes labor actions that used this space as a battleground. The mid-19th century saw the conception of industrial space and its evolution in conversation with the spatial practices of the working class, with the resistances of the proletariat revealing new ways in which the Allegheny Mountains could be conscripted into industrialization. The railroad's ability to orient economic geography could only be manifested as long as there was a working class for the railroad to organize, but the resistances of this class required social engineering to complement the physical structure of the railroad. Via armed security, reproductive labor, and enclosed commons, the managers of industrial space subdued subaltern uses of the mountain environment. The consolidation of power in the hands of industrialists at the end of the 19th century must be viewed as the culmination of their ability to organize geography around the needs of industrial space, and the contemporary built environment must be understood as their legacy. But the ultimate victory of industrial space as the dominant mode of social organization is not absolute. Grace Jackson, a survivor of the Matewan Mine Wars of the early 20th century, remembers the railroad being used to import strikebreakers, and the women of the community going to the train tracks and tearing them up.[22] As recently as 2019, miners in Kentucky blocked train tracks to prevent the shipment of coal

[22] Jackson, Grace. *Oral History Interview* by Anne T. Lawrence, July 25 1973. Mine Workers Oral History Collection. Via archive.org.

during a strike.[23] As long as industrial space exists, the spatial practices of workers will find the edges and weak points by which this space is defined.

Conclusion

When the B&O was first constructed, it burned pine wood and used horses to pull its rolling stock, and saw the Allegheny Mountains that stood between it and the Ohio River as its greatest obstacle. But after it reached the coal fields of the mountainous west, developments in technology shifted its economic calculations, and through the intervention of state power and construction of infrastructure capital, it became the center of an emerging trade in bituminous coal. The birth of the coal trade inaugurated industrial space, and the emergence of this new type of space warped existing physical and social environments, conscripting land and labor into a paradigm of transience and efficiency. The warping of the environment entailed the insertion of capital into rural space, but this capital required people to make it work, and so the creation of industrial space was also the creation of the industrial community. While the conceptual shifts that reoriented space around the railroad were imagined by the ruling class, it was working people who made up the quotidian spatial practices of the railroad and the coal mine. These workers who existed on the edge of industrialism and rurality used the geography of the mountains to resist the oppressive practices of their managers, and in doing so, prompted innovations in industrial space that allowed it to expand, conscripting the labor of women and the ecology of the mountainside into the network of industrial feudalism. The process of spatial industrialization around the B&O was a conversation between the warping effect of the railroad and the spatial practice of the working class.

[23] Michael Sainato. “Laid off and owed pay: the Kentucky miners blocking coal trains.” The Guardian, 18 September 2019. theguardian.com.

Connecting the history of industrialization in the city to its history in the countryside reveals that space was never annihilated, but reshaped; the spaces and communities that the railroad touched, created, passed through being conscripted into its logics. The downstream consequences of this process remain visible in the post-industrial gothic of Baltimore, and the hollowed-out coal towns of West Virginia. Like Chronos, the B&O was devoured by its own children: the railroad bought out by CSX, and Baltimore diminished to a branch town, increasingly warped around expanding industrial facilities, and left empty-handed after de-industrialization. But industrial space remains the governing mode of social and physical organization, and through this, the legacy of the B&O lives on in the warped environments of modernity.

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Figure 2. Photographer unknown, "Piedmont Coal Mine," Lakes to Sea collection. 1872. Courtesy of B&O Archive.

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