In his last and arguably bleakest novel, *Hard Times*, Charles Dickens offers a soot-smudged portrait of Coketown, an industrial dystopia where the cold and calculating rationality of Victorian utilitarianism has perverted all aspects of life by subjecting all to the unyielding efficiency of the factory model. Nothing material or immaterial exists in Coketown that cannot be reduced to a set of measurements and facts. The McChoakumchild school, named after its cruel and exacting headmaster, is not only vulnerable to this tyranny of facts and efficiency, it is the means by which the ideology of the factory is instilled, or rather installed, in the next generation. “The McChoakumchild school was all fact,” Dickens writes,

and the school of design was all fact, and the relations between master and man were all fact, and everything was fact between the lying-in hospital and the cemetery, and what you couldn’t state in figures, or show to be purchaseable in the cheapest market and saleable in the dearest, was not, and never should be, world without end, Amen.¹

That educators in Coketown cannot conceive of an educational aim outside of economic profitability and market efficiencies is hauntingly familiar. Every public school teacher today is charged, above all else, with a similarly utilitarian form of workforce preparation: college and career readiness. The distinction between college and career is superficial. The overarching goal of both is career readiness, and STEM careers are the darlings of the “readiness” discourse. The early twentieth century exaltations of manual training as integral to vocational education have their post-Fordist equivalent in the widespread faith that robust STEM education is a panacea for public education’s systemic failures and the intractable poverty to which these failures are discursively linked. Within the STEM reform narrative and the discourse of college and career readiness more broadly, there is an unmistakable preference for skills over facts, yet the end goals of increased economic productivity and capital accumulation are largely unchanged. In the case of industrial cable manufacturer Southwire’s “12 for Life” program, the Department of Education’s Investing in Innovation (i3) fund incentivizes not so much a STEM-powered race to the top as a profit-driven race to the bottom. Like the early twentieth century’s social efficiency reformers, 12 for Life seeks to align public education with the ideology of capital accumulation

through exploiting alienated factory labor. Accelerating automation in commodity production and a decimated labor movement, however, expose 12 for Life and the state and federal education bureaucracies that provide such programs material and ideological support as instruments of class discipline rather than earnest attempts to prepare young people for their economic futures.

In drawing on the historical antecedents of the current neoliberal social efficiency regime, I highlight the failures of vocational education that sought only to integrate students into the relations of capital reproduction. I conclude by discussing the sort of education that the current working class would need in order to be a force of resistance against the precarity and exploitation that threaten it.

**Human Resource Extraction**

Begun in 2007 in Carrollton, Georgia, the 12 for Life program is a public-private partnership that targets “at-risk” high school students for work in one of Southwire’s specially designed factories outfitted with classrooms. Through Georgia’s Work-Based Learning program, the students receive high school credit for working four-hour shifts in entry-level positions. When not on the factory floor, students are in the factory classrooms learning what Southwire CEO Stu Thorn describes as “a traditional curriculum supplemented by life-skills training (for example, why their paychecks were smaller than they expected – taxes).”

Thorn’s antipathy toward taxes would seem misplaced considering that the taxpayer-funded schools of Carroll County provide the program with teachers and transportation for participating students in addition to the legal framework that allows the labor of public school students to generate private profits under the guise of “coursework.” Further, “life-skills training” that positions taxes rather than capitalists as the cause of diminished earnings for the low-wage workers in highly profitable companies teaches precious little about who actually exploits their labor. Lessons on topics such as organizing labor, cooperative economics, and participatory democracy would provide far more useful instruction in how to raise (or eliminate) wages. The idea that such lessons would come from Southwire is, of course, absurd but no more so than the degree to which Southwire obscures the surplus value it extracts from its student workers by locating the explanation for their meager earnings in taxation rather than capitalist appropriation.

Southwire has profited substantially from its venture-philanthropy. CEO Thorn boasts that the program pays students “well above minimum wage,” and while $8.00/hour is certainly above the federal minimum wage of $7.25/hour, it is considerably below the $10.00-$14.00/hour average wage it

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3 When absent, students must make up shifts on Saturdays.
pays its adult workers for similar jobs. In addition to having their wages undermined by high school students, the adult employees volunteer as mentors who train the students and oversee their factory work. The 12 for Life workers’ classification as students is, therefore, an enormous benefit to Southwire. It allows the company to pay some workers (the students) less and other workers (their mentors) not at all, which would, in fact, be illegal if the trainers and the trainees were all adult employees. Southwire’s $4 million initial investment in the 12 for Life program has generated lucrative returns, with 2014 profits at $1.7 million before taxes. Although this is petty cash for a company with $5.4 billion in revenue for 2014, it is a strong indicator that philanthropy pays off, especially when “at-risk youth” are involved. During their four-hour shifts, the students have a higher rate of productivity than the adults at Southwire’s other facilities. According to Thorn, “You need to think of the school system the way you think of your supply chain.” Only Dickens could have said it better.

For its efforts, the Carroll County school district is well-compensated. To get 12 for Life up and running, the school district received $1 million of Georgia’s Race to the Top funds, and in 2013 it received a five-year, $3 million grant from i3. The purpose of the funds is improving STEM learning opportunities for 12 for Life students and replicating the 12 for Life model on a national scale, something in which Arne Duncan expressed strong interest while touring the factory school in September of 2014. Henry Giroux captures the federal government’s public school reform agenda, and Duncan’s philosophy in particular, in saying:

Duncan . . . appears to have no language for addressing problems, values, issues, and goods that cannot be measured and quantified or are not subject to the profit-making dictates of the market . . . Increasingly, students are being subjected to a stripped-down notion of schooling, making it more difficult for them not just to think critically but also to imagine a world

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beyond the gospel of competition and profit and the economic calculus of financial gain and loss.10

Duncan’s impoverished vision of school reform calls for economic as well as ethical scrutiny. Southwire boasts that over 1,100 students who were at risk of dropping out have graduated its program since 2007, but only 710 of those students are from the Carroll County School District. The rest were from 12 for Life’s expansion efforts, which include a similar manufacturing site in Florence, Alabama, and a partnership between Monroe County School District and the Georgia Department of Corrections. Coupled with Southwire’s $4 million “contribution” to the district (more than three-quarters of which was spent in purchasing the factory site and building the classrooms) and the paid and unpaid labor invested in the program since 2007, the $4 million in federal grants would be more than enough to improve STEM courses and establish and maintain a variety of less commercial, on-site intervention programs for students at risk of dropping out. Doing so would, however, make “investing” in education far less immediately profitable.

Both Southwire and the Carroll County schools maintain the program’s benefits are irreducible to financial profitability. Their primary goal is mitigating the deleterious social and financial consequences associated with dropping out of high school. Avoiding these consequences, of course, demands articulation of their causes. Although 12 for Life is a public-private partnership, it frames private sector interests and techniques as solutions to problems created by public sector inefficiency and ineptitude. Southwire discursively constructs the problem of low graduation rates as the public school system’s inability to understand and address the root causes of the phenomenon. Pointing to poverty, low academic performance, and lack of support as reasons students leave school before graduation, Southwire presents the 12 for Life program as an innovative approach that simultaneously addresses all three. Listing common stresses for students who grow up in poverty, the 12 for Life website states that many students “leave school to get a job” and ease their family’s economic burdens,11 an odd explanation of the problem considering the 12 for Life program demands that students do this very same thing. The word for an institution that manufactures goods and generates profits by capturing its workers’ labor and discounting that labor as wages is factory not school. Calling a factory a school because it has a few classrooms is no more justified than calling a school a factory because it has a few shop classes.

As for the problem of low academic performance, 12 for Life’s website explains, “Students who are falling behind, who have learning disabilities not properly addressed, or who ‘don’t fit in,’ are also at high risk of failing to finish

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10 Henry Giroux, Education and the Crisis of Public Values: Challenging the Assault on Teachers, Students, & Public Education (New York: Peter Lang, 2012), 51.
high school with a diploma.”\textsuperscript{12} Exactly how a factory can address a student’s learning disabilities or issues pertaining to identity and socialization in a manner superior to a school system is left entirely unclear. It seems sufficient in Southwire’s view to suggest that because these issues exist in the context of a traditional public school, they would not exist within the context of the 12 for Life program.

Lastly, there is the matter of support. The website argues that role models and mentors are invaluable in increasing motivation and self-esteem, especially when the student “is the child of a young, single, unemployed mother.”\textsuperscript{13} In this sense, Southwire positions the 12 for Life program as the solution to both the problems of the school and the home. Not only does this statement elide the role of teachers, coaches, administrators, and counselors as mentors to their students, but it positions Southwire’s own employee-volunteers who act as unpaid mentors as superior to professional educators or even the students’ families. Further, it reductively locates the explanation for poverty in the poor choices of irresponsible young women. Social problems, on this view, are the products of a public that lacks entrepreneurial imagination as well as workforce discipline rather than the inevitable consequences of uneven capitalist development. Public schools, as institutions unaccustomed to “free market” competition, are deemed comparatively deficient when it comes to meeting the needs of the twenty-first century economy.

\textbf{THE HISTORICAL ROOTS OF STEM-BASED SOCIAL EFFICIENCY}

There is nothing new about the manufacturing industry’s distrust of the public school system. In many ways, the 12 for Life program reflects similar suspicions held by social efficiency school reformers of the early twentieth century. Foremost among these concerns was whether it was possible to reform the public school system from within in order to meet the needs of the new age of industry, or if these demands merited the creation of a separate school system. As Leonard Ayers argued in \textit{Laggards in Our Schools}, no serious man of industry would allow a factory to be run at the same degree of inefficiency as the public school system. Schoolmen were too idealistic and impractical to provide the “scientific” solutions the age demanded: “The fact is that, despite the hundreds of thousands of trained workers in education and the millions of treasure spent freely each year, we still base our actions in education largely on opinion, guess work, and eloquence.”\textsuperscript{14} What was needed to direct reforms was not fuzzy headed ideals but cold, hard facts.

Accompanying the problem of overly idealistic and unscientific school management was the problem of specification. Even if schools could provide

\textsuperscript{12} Ibid.
\textsuperscript{13} Ibid.
state of the art manufacturing facilities for one trade, they certainly could not do so for all of them. At best, they could provide a shop environment that addressed general manufacturing skills in what, according to John Franklin Bobbitt, were “play situations, not work situations.”\textsuperscript{15} The schools were fine for preliminary vocational training, but “the culminating portions of the educative process are to be found out in the world of responsible industry.”\textsuperscript{16} Since the Committee of Ten, schools had largely been organized around a liberal, college-preparatory curriculum. Maintaining that track while also fully investing in authentic trade schools seemed both ideologically and logistically incompatible. The school system itself was not both college and career ready.

The National Association of Manufacturers (NAM) was among those who had doubts about the public schools’ aptitude for vocational education, and because of those doubts, the organization was an early advocate for establishing a separate system of trade schools. However, the enormity of the costs associated with such an undertaking soon became apparent. According to Herbert Kliebard, “That such a major undertaking could not succeed without major federal support was becoming clear in NAM councils, but . . . such federal intervention in educational affairs ran contrary to longstanding American traditions of local control and financing of education.”\textsuperscript{17} At the time, the issue of funding seemed an insurmountable obstacle. Even a trade organization as powerful as NAM was unwilling to take on the financial burden of creating and maintaining a massive schooling infrastructure, even one designed especially to suit its purposes. By 1911, NAM had switched gears from advocacy for a separate system of trade schools to advocacy for sweeping reforms that gave vocational education a prominent, even commanding, position of authority over the curriculum of the existing public school system.\textsuperscript{18} Avoiding the funding trap, however, meant that organizations like NAM had to come up with solutions to the very problem a separate trade schooling infrastructure sought to remedy: the inability of the existing public school system to satisfy the manufacturers.

As the paragon of social efficiency and manufacturing prowess, Germany provided one such solution in its continuation schools. There, working students between fourteen and sixteen years of age supplemented their employment with at least five hours a week spent learning a curriculum designed around their specific industry. Employers paid the students for their time in class, which allowed them to benefit from a curriculum tailored to their trade without the expenses associated with operating their own full-time school system.\textsuperscript{19} Because the students’ time outside of class was spent at their respective

\textsuperscript{15} John Franklin Bobbitt, \textit{The Curriculum} (Boston: Houghton Mifflin, 1918), 35–36.
\textsuperscript{16} Ibid.
\textsuperscript{17} Herbert M. Kliebard, \textit{Schooled to Work: Vocationalism and the American Curriculum, 1876-1946} (New York: Teachers College Press, 1999), 30.
\textsuperscript{18} Ibid., 31.
manufacturing sites, the German model also provided a solution to the problem of the public school system’s failure to sufficiently replicate the manufacturing process. Despite solving some of the funding and logistical issues, ideological contentions persisted.

One of the strongest voices opposing the German model of trade training in U.S. schools was John Dewey’s. Dewey believed instituting a fixed educational hierarchy in the U.S. amounted to the negation of the American common school movement, not its improvement. For Dewey, talk of the German model was “a cloak, conscious or unconscious, for measures calculated to promote the interests of the employing class.”

By masking their profit motives with rhetoric of improving the future of the student, the school, the community, and the country, employers were able to unloading considerable portion of their labor costs onto public finances. Dewey instead called for protests against “any use of the public school system, which takes for granted the perpetuity of the existing industrial regime and whose inevitable effect is to perpetuate it, with all its antagonisms of employer and employed, producer and consumer.”

That the school system desperately needed reformation was certain, but on no account should a capitalist ruling class direct those reforms toward meeting their own needs over the needs of the broader population, particularly those living in poverty. In other words, it was not simply education but the entire exploitative and undemocratic capitalist economy in need of drastic reformation.

Dewey faced opposition from David Snedden, who, like Ayers, had little confidence in the abilities of the schoolmen to understand the realities of the industrial age. Snedden challenged Dewey’s belief that vocational education was purposefully tailored to the interests of the employers rather than the employees. As if baffled by the need to explain basic economics, Snedden argued, “If vocational education does not result in greater productive capacity, and if greater productive capacity does not result in a larger share to the laborer, then, indeed, are the times very much out of joint.”

Rather than demonstrating Dewey’s ignorance of economics, Snedden demonstrated his own naivety. Social efficiency reforms had increased laborers’ wages, but the increased profits accrued disproportionately to those of the employers. Precisely for this reason, organized labor wished to keep vocational education within the public school system rather than under the direction of the manufacturers. Not only would

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21 Ibid.


23 Frederick Winslow Taylor’s time and motion studies are exemplary illustrations. Taylor determined that the “scientific” worker could handle 47.5 tons of pig iron in a ten-hour shift instead of the average of 12 tons. Under this new system, workers would earn a 60% pay increase. See Raymond E. Callahan, Education and the Cult of Efficiency (Chicago: University of Chicago Press, 1962), 36.
manufacturer control deprive workers of a general education, it would increase their rate of exploitation.  

Dewey challenged Snedden’s view of vocational education by claiming that the jobs given to teenagers had no justifiable claim to the word *vocation* since they required only obedience to authority and the basic skills required to feed and maintain the machines of production. Such vocational education was merely “narrow trade-training” of the sort in which profits accrue for the employers while the students are subject to a form of “social predestination.” Instead, Dewey advocated for vocational education that would cultivate “industrial intelligence” characterized as “the development of such intelligent initiative, ingenuity, and executive capacity as shall make workers, as far as may be, the masters of their own industrial fate.” Vocational education, on this view, was not successful when it produced workers that merely met the needs of the existing economic system. On the contrary, it would be successful only when it produced the workers who could democratize the workplace, and in doing so, bring the economy in line with the needs of society.

**Masters of Their Own Post-Industrial Fate**

The last several decades of increasing productivity and stagnant wages substantiate Dewey’s concerns, but it is certainly a pyrrhic victory. Snedden may have lost the argument, but his misplaced faith that what benefits the employer benefits the employee is entirely consistent with the current paradigm of STEM-based social efficiency reforms that seek to open up public institutions to private profiteering in the name of technological and social progress. In spite of the rhetoric of economic empowerment through STEM education, neither the U.S. Department of Education nor its partners in the world of corporate education reform have any desire to foster anything resembling Dewey’s radical vision of vocational education. Instead, those who develop and implement STEM initiatives prefer to integrate students into the employer-employee class antagonisms of late capitalism. The Bureau of Labor Statistics (BLS) projects that STEM occupations will grow at a faster rate than most other occupations, yet the important and often ignored caveat is that this rate is relative to a given occupation’s employment size. Absent from the STEM reform rhetoric is the projection that the low-wage, semi-skilled occupations of the health and service sector will account for over 90% of jobs added to the economy between 2012 and 2022, while the number of manufacturing jobs is expected to decline. Despite the chorus of employer warnings about imminent human capital crises

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26 Ibid.
resulting from unskilled and undereducated workers, eight of the fifteen occupations with the highest projected job growth through 2024 require no educational credential whatsoever. The STEM education exemplified by Southwire’s 12 for Life program appears to be preparation for the jobs of the future only in the sense that it prepares “at-risk” students for work in low-skilled or unskilled jobs for poverty wages while their corporate employer accumulates billions in profits.

The acceleration of economic recessions in the U.S. and the growth rate of low-wage jobs suggest that the overwhelming majority of “at-risk” youth targeted by programs like 12 for Life will enter precarious employment conditions regardless of how much the Department of Education or venture-philanthropists “invest” in STEM education initiatives. Education should aim higher than the successful integration of students into the hierarchies of a failing economic system. While public education is neither the cause of nor the cure for macroeconomic issues, it can and should provide a space where educational aims and corporate profitability are distinct. In Dickens’s novel, the problem is not the factory itself; rather, the problem is the ideology that makes all of Coketown’s other institutions indistinguishable from the factory: “The jail might have been the infirmary, the infirmary might have been the jail, the town-hall might have been either, or both, or anything else.”

If, in this new era of neoliberal social efficiency, educational success is marked only by integration into an alienating and highly exploitative economic system, then there is no reason why the school should not be the factory and the factory the school. That a solution to educational issues is inseparable from its benefits for corporate capital is proof that educational policymakers, like Dickens’s characters, exhibit imaginations stunted by the commercial imperative of efficient returns on investment. In order to move beyond these hard times, schools must do as Dewey argued a hundred years ago: stop training students to adapt to the existing economic system and begin educating them to imagine a new one.

What might a public school that educates students for participatory democracy rather than authoritarian capitalism look like? At its most basic level, such an education would require abandoning neoliberalism’s aims of cultivating homo oeconomicus—the apolitical unit of human capital whose educational concerns center only on how best to market itself as a labor commodity—in favor of fostering robust education for democratic citizenship. Such an education must transcend neoliberalism’s vacuous notions of citizen as mere voter—even worse, taxpayer—and embrace forms of freedom and self-actualization that are achieved through (rather than wrested from) one’s commitments to the public.

30 Dickens, Hard Times, 31.
31 Wendy Brown contrasts at length the shared power of democratic citizenship with the shared economic sacrifices of neoliberal citizenship in Undoing the Demos: Neoliberalism’s Stealth Revolution (New York: Zone Books, 2015), 201–22.
It must reject the shallow and jingoistic patriotism that elites have used to mask the horrors of U.S. imperialism abroad and the unconscionable brutality of domestic racism and wealth inequality for the purpose of making oppressed peoples enemies of each other rather than allies. Public schools must stop educating atomized rational utility maximizers who are minimally proficient in literacy and numeracy and redirect their efforts toward notions of cognitive and social development that recognize humans as beings with and for others. Contrary to educational standardization, democratic schools would embrace complexity and nuance as essential components of a healthy pluralistic society. Criticality and discernment would replace conformity and passivity as desired and reinforced student dispositions. Creative, thoughtful, and effective communication would be paramount as students engage in individual and collaborative forms of inquiry, and ethics would be matters of debate and discovery rather than arbitrary dictates of school disciplinary codes. In short, democratic education would require educating the demos for the power it holds in common.