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# TECHNOLOGY'S

POLITICS

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## Present Tense Technology

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PART ONE

**T**here is a war on, but only one side is armed: this is the essence of the technology question today. On the one side is private capital, scientized and subsidized, mobile and global, and now heavily armed with military-spawned command, control, and communication technologies. Empowered by the second Industrial Revolution, capital is moving decisively now to enlarge and to consolidate the social dominance it secured in the first. In the face of a steadily declining rate of profit, escalating conflict, and intensifying competition, those who already hold the world hostage to their narrow interests are undertaking once again to restructure the international economy and the patterns of production to their advantage. Thus, with the new technology as a weapon, they steadily advance upon all remaining vestiges of worker autonomy, skill, organization, and power in the quest for more potent vehicles of investment and exploitation. And, with the new technology as their symbol, they launch a multimedia cultural offensive designed to rekindle confidence in "progress." As their extortionist tactics daily diminish the wealth of nations, they announce anew the optimistic promises of technological deliverance and salvation through science.

On the other side, those under assault hastily abandon the field for lack of an agenda, an arsenal, or an army. Their own comprehension and critical abilities confounded by the cultural barrage, they take refuge in alternating strategies of appeasement and accommodation, denial and delusion, and reel in desperate disarray before this seemingly inexorable onslaught—which is known in polite circles as "technological change." What is it that accounts for this apparent helplessness on the part of those whose very survival, it would seem, depends upon

resisting this systematic degradation of humanity into mere disposable factors of production and accumulation? To be sure, there is a serious imbalance of power between the opposing forces, and perhaps an immobilizing fear on the weaker side in the face of so awesome an assault. But history is replete with examples of how such weaker forces have valiantly defied, and even triumphed over, the stronger. Why then this striking lack of resolve against the new technological offensive?

In search of an explanation for this apparent paralysis, and a cure for it, this essay explores beyond the constraints of the current crisis to focus upon older and more fundamental handicaps. Rather than examining the well-known enemies without—the tactics and threats of multinational corporations that are daily reported in the press and chronicled by a spectrum of specialists—this analysis examines the enemies within—the opposition's own established patterns of power and inherited habits of thought that now render it so supine and susceptible. These internal foes, at once political and ideological, can only successfully be overcome by means of direct and frank confrontation, which is the task begun here.

In outline, the opposition suffers from a fatalistic and futuristic confusion about the nature of technological development, and this intellectual problem is rooted in, and reinforced by, the political and ideological subordination of people at the point of production, the locus of technological development. This twofold subordination of workers, not alone by capital but also by the friends of labor (union officials, left politicians, and intellectuals), has hardly been accidental. Rather, it has served the interests of those who wield control over labor's sources and ideas. For the political subordination of workers has disqualified them from acting as subjects on their own behalf, through their own devices and organizations, and thus has minimized their challenge to the labor leadership. And the ideological subordination of the workers has invalidated their perceptions, knowledge, and insights about what is to be done, and has rendered them dependent upon others for guidance, deferential to the abstract and often ignorant formulations of their absentee agents.

Such subordination has handicapped the opposition to the current technological assault in several ways. First, and perhaps most obvious, it has eliminated from the battle those actually on the battlefield of technological innovation, those best situated to comprehend what is happening and to fight effectively. Second, in denying the possibility of people at the point of production participating on their own behalf in the struggle, the opposition has lost as well its understanding of what is actually happening—an appreciation that arises only from daily confrontation, extended experience, and intimate shopfloor knowledge. Finally, the political and ideological subordination of people at the point of production has entailed a removal of the technology question from its actual site and social context, with serious consequences.

While this removal of the technology question has perhaps strengthened the position of the friends of labor, vis-à-vis the workers themselves, it has weakened them vis-à-vis capital. For without any power rooted in the self-activity of the workers at the point of production, the friends of labor have become more susceptible to the power of others. And without a firm grasp of reality based upon experience, they have become abstract in their thinking, and more vulnerable to the ideas of others. (It must be emphasized that this is not a matter of individual integrity or weakness but rather a powerful cultural phenomenon that has influenced everyone.) The impotence and ignorance resulting from the double disqualification of people at the point of production, moreover, have manifested themselves in profound intellectual confusion about the nature and promise of technological development itself. Abstracted from the point of production, and therefore from the possibility of a genuinely independent point of view, the opposition's own notion of technological development has come to resemble and ratify the hegemonic capitalist ideology of technological necessity and progress. For it too has become a mere ideological device, an enchantment, and an opiate. The idea of technology has lost its essential concreteness, and thus all reference to particulars of place and purpose, tactics and terrain. And without moorings in space the disembodied idea has wandered adrift in time as well. Technological development has come to be viewed as an autonomous thing, beyond politics and society, with a destiny of its own which must become our destiny too. From the perspective of here and now, technological development has become simply the blind weight of the past on the one hand, and the perpetual promise of the future on the other. Technological determinism—the domination of the present by the past—and technological progress—the domination of the present by the future—have combined in our minds to annihilate the technological present. The loss of the concrete, the inevitable consequence of the subordination of people at the point of production, thus has resulted also in the loss of the present as the realm for assessments, decisions, and actions. And this intellectual blindspot, the inability even to comprehend technology in the present tense, much less act upon it, has inhibited the opposition and lent legitimacy to its inaction.

This essay examines the origin of this paralysis and the ideas that sanction it, looking in turn at the first and second Industrial Revolutions. The aim is to regain the concrete by affirming the perceptions of those at the point of production, thereby to reclaim the present as a locus of action—while there is still time to act. For people at the point of production were the first to comprehend the full significance of the first Industrial Revolution and to respond accordingly. And, they have been the first to see the second Industrial Revolution for the devastating assault that it is—not because of their superior sophistication at dialectics but because of what it is already doing to their lives—and to respond accordingly. The purpose here is to acknowledge, endorse, and encourage their response to

technology in the present tense, not in order to abandon the future but to make it possible. In politics it is always essential to construct a compelling vision of the future and to work toward it, and this is especially true with regard to technology. But it is equally essential to be able to act effectively in the present, to defend existing forces against assault and to try to extend their reach. In the absence of a strategy for the present, these forces will be destroyed and without them all talk about the future becomes merely academic.

**N**o one alive today remembers firsthand the trauma that we call the first Industrial Revolution, which is why people are now able so casually to contemplate (and misunderstand) the second. What little we actually know about those earlier times—perhaps the only adequate antecedent to our own—has filtered down to us through distorting lenses devised to minimize this calamity and justify the human suffering it caused in the name of progress. The inherited accounts of this period were formulated by and large in response to the dramatic actions of those who fought for their survival against this progress. They constituted a post hoc effort to deny the legitimacy and rationality of such opposition in order to guarantee the triumph of capitalism. The Luddites were not themselves confused by this ideological invention. They did not believe in technological progress, nor could they have since the alien idea was invented after them, to try to prevent their recurrence. In light of this invention, the Luddites were cast as irrational, provincial, futile, and primitive. In reality, the Luddites were perhaps the last people in the West to perceive technology in the present tense, and to act upon that perception. They smashed machines.

The effort to reconstruct this earlier period of the first Industrial Revolution might help us to deconstruct our inherited perceptions of technology, because they date in large part from this historical watershed. Fortunately, during the last several decades social historians have made great strides toward just such a reconstruction in an effort to understand the opposition to progress in its own terms. In particular, they have sought to redeem those who belatedly have seemed so irrational and wrongheaded, and have discovered that their resistance was in fact quite rational, widely supported, and indeed successful—in both buying time for reflection and strategizing (something today's labor movement would surely welcome) and in awakening a far-reaching political consciousness among workers. According to these revisionist interpretations, the Luddites who resisted the introduction of new technologies were not against technology per se but rather against the social changes that the new technology reflected and reinforced. Thus, the workers of Nottingham, Yorkshire, and Lancashire were not opposed to hosiery and lace frames, the gig mill and shearing frames, larger spinning jennies or even power looms. Rather, in a post-war period of economic crisis, depression, and unemployment much like our own, they were struggling against the efforts of capital to restructure social relations and the patterns of

production at their expense, using technology as a vehicle. During the first three decades of the nineteenth century, the workers in manufacturing trades united in opposition to unemployment, the lowering of wages, changes in the system of wage payments, the elimination of skilled work, the lowering of the quality of products, and the factory system itself, which entailed an intensification of work discipline and a loss of autonomy and control over their own labor. Similarly, the agricultural workers who participated in the Swing riots of the 1830s were not opposed to threshing machines per se but rather to the elimination of winter work, the threat of unemployment, and the overall proletarianization of agricultural labor. In short, during the first half of the nineteenth century workers were reacting against the encroachment of capitalist social relations, marked by domination and wage slavery, and were well aware that the introduction of new technologies by their enemies was part of the effort to undo them. Unencumbered by any alien and paralyzing notion of technological progress, they simply tried to arrest this assault upon their lives in any way they could. They had nothing against machinery, but they had no undue respect for it either. When choosing between machines and people, or, more precisely, between the capitalist's machines and their own lives, they had little problem deciding which came first. As historian Eric Hobsbawm reminds us, unlike their twentieth-century descendants, the nineteenth-century "machine breakers were not concerned with technical progress in the abstract." Thus, they were able to perceive the changes in the present tense for what they were, not some inevitable unfolding of destiny but rather the political creation of a system of domination that entailed their undoing. They were also able to act decisively—and not without success when measured in terms of a human lifetime—to defend their livelihood, freedom, and dignity.

"The machine was not an impersonal achievement to those living through the Industrial Revolution," historian Maxine Berg has noted, "it was an issue." In her valuable study of the machinery question in the first half of the nineteenth century, Berg emphasizes that "in the uncertainty of the times, it still seemed possible to halt the process of rapid technological change." Such rapid change, which is in itself destabilizing and thus has been used again and again to force labor on the defensive, was not at this time viewed as inevitable. Thus, as Berg notes, "the working class challenged the beneficence of the machine, first by its own distress then by its relentless protest." They "criticized the rapid and unplanned introduction of new techniques in situations where the immediate result would be technological unemployment." Moreover, "technological innovation was challenged in everyday struggle in the workplaces of most industries throughout the period. Workers and their trade unions were not ashamed to denounce the type of progress which brought redundancy, speed-up, and loss of freedom. They exposed the reality of the technology, challenged its uses, demanded equitable distribution of gains if there were to be any, and sought

greater control over the direction of technological development itself.

"The chief advantage of power looms," the Bolton weavers declared in 1834, "is the facility of executing a quantity of work under more immediate control and management and the prevention of embezzlement and not in the reduced cost of production." The weavers recognized, as Berg points out, that the power loom "was profitable only for certain fabrics and required a very large investment in fixed capital." "It was quite clear to many that the productivity of the power loom was not its greatest asset," she maintains. The weavers recognized that so-called economic viability, the presumed reason for introducing a new technology, was not in reality an economic category but a political and cultural one. Capital invested in machines that would reinforce the system of domination, and this decision to invest, which might in the long run render the chosen technique economical, was not itself an economic decision but a political one, with cultural sanction. Other technologies, equally uneconomic but preferable for other reasons, might have been chosen for further investment and perhaps in the long run have been rendered economic. (J.H. Sadler, for example, proposed such an alternative, the pendulum handloom, on behalf of the weavers. It was designed to preserve the skills and jobs of the weavers and enable them to avoid the degrading conditions of factory life.)

In short, the weavers raised "a powerful and impressive critique of machinery, a critique that carried a genuine belief that technical change was not a 'given' but could be tempered and directed to match the requirements of social ideals." They "consistently drew attention to piecerates, home competition, and the specific technical and market conditions for the introduction of power looms." Above all, and again consistently, they demanded a social policy on technology. (They proposed, for example, a tax on power looms and a host of other legislative measures to protect the lives of the weavers.)

But the weavers did not rely solely upon such formal tactics to achieve their ends. Central to their effort was a strategy of highly organized direct action, the machine breaking for which they are still remembered today. Between 1811 and 1812, for example, manufacturing workers marching under the banner of the mythical Ned Ludd destroyed over one thousand mills in the Nottingham area. A decade later, the machine breaking spread across the midlands and, as Pierre Dubois, a historian of industrial sabotage, has described the experience, "in some cases, it had a definitely revolutionary character, involving a confrontation between two armed forces." Workers smashed machines selectively, but deliberately, and this act more than any other characterized the workers' movement of the period.

The precise significance of machine breaking in the context of the workers' movement is open to interpretation. The paucity of historical evidence makes a fair measure of extrapolation and conjecture inevitable. Most of the revisionist social historians who undertook to reconstruct the movement in the workers'

own terms have argued convincingly that the workers were not opposed to the machines per se, as has already been mentioned. They knew who their real (human) enemies were. These historians suggest, therefore, that selective machine breaking was simply one tactic among others used to cripple and intimidate their foes and win concessions. Rooted in such traditional forms of protest as food riots and incendiarism, machine breaking also constituted a form of early trade unionism (during a period when such organizations were outlawed)—a form of collective bargaining by riot, as Hobsbawm described it.

A more recent interpretation, by Geoffrey Bernstein, rejects this minimization of machine breaking to the status of mere tactic. His analysis suggests that perhaps the social historians are themselves still too bound up in the ideological reverence for technological progress and that in order to redeem the Luddites as rational historians they somehow had to minimize the centrality of machine breaking. Bernstein suggests instead that machine breaking was indeed central, that it constituted a strategy of mobilization for the workers. Such an interpretation appears to be more consistent with the available evidence. All contemporaries, Luddites and those opposed to machine breaking alike, consistently emphasized that machine breaking was the hallmark of the movement, its distinguishing characteristic. George Beaumont, a man sympathetic to the workers' plight but opposed to the destruction of machinery, observed that the phrase "I have a good mind to Ned Ludd it" required little explanation at the time. The Luddites themselves, of course, made no secret of the centrality of machine breaking and, as Bernstein suggests, "expressed aims tend to be determined by strategic considerations." According to this interpretation, machine breaking served well to mobilize people with disparate immediate concerns, in different geographical regions, in different trades. It lent a coherence to the movement, encouraged loyalty to a unifying strategy, identification with a few mythical figures (General Ludd and Captain Swing), and it gave the workers a sense of solidarity that magnified their power in their own eyes as well as in those of their contemporaries, including their enemies. Machine breaking was never the whole of the movement but it was certainly central, and the success of the strategy is apparent. Rather than isolated acts of resistance soon forgotten, there emerged a movement of great proportions with lasting consequences that is remembered still today.

But the way we evaluate Luddism today has not been shaped by the Luddites themselves. Instead we have inherited the views of those who opposed machine breaking and who succeeded in removing the technology question from the point of production, from the workers themselves, from the present that was the first Industrial Revolution. In the place of that traumatic reality, they constructed technological myths about the power of the past and the promise of the future. And in the light of these myths the courageous Luddites were made to seem mistaken, pathetic, dangerous, and insane.

The plight of the workers, made all the more visible by their dramatic protest, shattered the illusion of the beneficence of the emerging capitalist order and discredited once and for all the notion that this society was a realm of shared values and human ends. It is thus not mere coincidence that at this same time society was "discovered" to be a thing apart from the people who comprised it, and that it had a logic of its own that was distinct from and dominated the purposes and aspirations of people. Society as a human artifact, a human endeavor, composed of people, was lost in the wake of capitalism, only to be reinvented as an automatic, self-regulating mechanism in which people were simply "caught up." The hard logic of the market and the machine surfaced supreme, replacing human inspiration, as Lewis Mumford observed, with "the abstractions of constant technological progress and endless pecuniary gain." Henceforth would "the belief in technological progress, as a good in itself, replace all other conceptions of desirable human destiny." Political notions of justice, fairness, freedom, equality, reason—the hallmarks of enlightened statecraft and the bourgeois revolutions themselves, now gave way to mechanical notions of social betterment. As capitalism revealed its inhuman core, its champions vanished, to be replaced by invisible hands. And social progress became identified with impersonal intermediaries: manufactures, industry, goods, machinery. As human society and people became variables (i.e., commodities, factors of production) capital became the constant, not alone the tangible sign of progress but also the imagined engine or cause of progress. And capitalism, opposed by the workers as a system of domination, exploitation, and alienation, now emerged as simply a system of production that was identified with progress itself. Such progress, moreover, was viewed as natural and necessary; social prosperity and human happiness would inevitably flow from this automatic process, so long as people allowed it to follow its own natural course, so long as they yielded to the requirements of free competition and untrammelled technological development. If *laissez-faire* became one manifesto of capitalism, *laissez-innovate* became the other. "In my opinion, machinery ought to be encouraged to any extent whatsoever," wrote George Beaumont. Ultimately, he believed, such development would fulfill the dreams of the workers because the inventors of machinery were after all the "true benefactors of mankind."

This emergent ideology of technological progress served capitalist development well in the name of material prosperity, and diverted attention away from the exploitation entailed. At the same time, it shaped all subsequent critiques of capitalism. Even socialists, sworn enemies of capitalist aggrandizement and the profit system, were hereafter compelled to accommodate this new cultural contrivance, to adopt the faith in technological deliverance that had become hegemonic. Indeed, these critics eventually challenged capitalists on the grounds that they alone were the true champions of technological progress and that capital-

ism merely retarded the development that was possible only under socialism. Thus, a half century later, Jack London could sum up the socialist creed in a paean to machinery: "Let us not destroy these wonderful machines that produce efficiently and cheaply. Let us control them. Let us profit by their efficiency and cheapness. Let us run them by ourselves. That, gentlemen, is socialism." Where capitalists maintained that unilinear technological progress, spurred by the competitive spirit and guided by the invisible hand, would usher in a new day of prosperity for all, socialists insisted that such progress would have a double life: moving behind the backs of capitalists, without their knowledge and in defiance of their intentions, the automatic process of technological development would create the conditions for the eclipse of capitalism and the material basis for prosperity under socialism. Both capitalists and their critics, however, had come to worship at the same shrine and, as a result, to reject any opposition to technology in the present tense. How did this happen?

As has already been suggested, such fantasies about technological development arose inescapably as a consequence of the flight from the concrete and the present, which itself reflected the removal of the technology question from the point of production, out of the reach of the unmovable workers. The apologists of capitalism were intent upon fabricating an abstracted world view that would justify further capitalist development. For them, it was necessary to explain that whatever the all-too-apparent social and human costs of such development in the here and now, social progress was nevertheless being made, with capitalists serving as mere agents of this larger, inevitable, and beneficent process. Political economy emerged to meet this need, largely in response to the workers' actions. As Berg recounts, "the disruptions caused by mechanization brought in train a legacy of fear" and this led to "the expression of doubts," on the one hand, and "a polemical optimism," on the other — an optimism "based on ignorance." During the first half of the nineteenth century, in the wake of the machine-breaking movement, middle class-apologists and optimistic economists "were missionaries come to spread the gospel of the machine in a land of heretical anti-machinery attitudes."

Middle class economic and political perspectives actively eulogized the progress of science and technology. But, challenged on both sides, by Tory and radical working class opinion, the middle class had to find an explanation for the economic and social impact of the machine. Expressions of wonder at the technical perfection of the machine were not adequate. It was thus that the middle class took to itself a "scientific" theory, political economy. . . . It was not mere coincidence that industrialization and the emergence of political economy occurred at the same time.

The political economists "above all others," Berg insists, were "either optimistic or blind, and possibly both, to the conditions of the working classes."

They issued "long and turgid justifications of the introduction of machinery," and insisted upon the ultimate beneficence of technological progress. "Their defense of existing patterns of economic development became in the political setting of the 1830s a strident polemic in favor of capital and machinery," almost a secular religion.

Not all political economists, of course, were so easily swept up in such praise of the technological panacea; some, like David Ricardo and John Stuart Mill, recognized full well the legitimacy of the workers' opposition. Thus, Ricardo, in the 1821 edition of his *Principles* insisted "that the opinion entertained by the labouring class, that the employment of machinery is frequently detrimental to their interests, is not founded on prejudice and error, but is conformable to the correct principles of political economy." Ricardo was attacked by his colleagues for lending encouragement to the workers' opposition to machinery, but he held his ground. He did, however, support unrestricted innovation out of the fear that, if such innovation proved more profitable, foreign competitors would innovate and lure capital out of England, leaving even less employment. (For the workers who were displaced in either case, of course, it was in effect a choice of being shot or being hanged, and they remained opposed to the cold logic of competition and the inevitability of technological progress, to both the machines proper and the machinery of the market, and to political economy.)

In his own *Principles* of 1848, Mill too dismissed as spurious the claims of the apologists of the machine, that machine building itself would offset the loss of employment caused by machinery or that the introduction of "labor saving" devices would make work less onerous. "Hitherto it is questionable if all the mechanical inventions yet made have lightened the day's toil of any human being," Mill surmised. Rather, he suggested, "they have enabled a greater population to live the same life of drudgery and imprisonment and an increased number of manufacturers and others to make fortunes" and perhaps they have also "increased the comforts of the middle classes." Nevertheless, Mill insisted upon the ultimate benefit of technological development, not as any panacea but as a means of enlarging the overall wealth of nations.

Thus, even when they recognized the reality of the workers' situation, the economists, as Berg notes, "welded their perception of the advance of technology to their concept of economic development," which proceeded inexorably if not always so benignly through the mechanisms of market, competition, and profit accumulation. But the doctrine of technological progress was not promoted solely in the name of economics. Technological development was also defended in the name of science. The apologetics of capitalism, as Berg suggests, "reached beyond political economy to a far-reaching cultural sphere which took up the machinery question in political economy's terms and made a doctrine of technological progress. This cultural sphere was the scientific movement." The connection between economically-spurred technological development and sci-

ence, Berg explains, "was promoted both by scientists seeking wider markets for their research and by industrialists seeking some higher rationale for their technological choices and expanding enterprises." In reality, Berg points out, the connection between science and industrial technology hardly existed; "the relationship which was claimed between science and technology was rhetorical only" and, essentially, "the scientific movement of the early nineteenth century acted as a social context for political economy's efforts to demonstrate the benefits of the contemporary industrial transformation." But the cultural connection with science was crucial for the apologists of capitalism. It allowed them to argue that capitalism was a system not only of economic progress but of science as well, and that workers who opposed machinery showed not only their selfish contempt for the larger social good but their also ignorance.

And what political economy and the scientific movement failed to do, the true believers in the machine itself, the technical enthusiasts and mystics accomplished, attributing to machines the force of necessity itself. Thus Charles Babbage, inventor of one of the earliest computers, noted in the 1832 preface to his *Economy of Machinery and Manufactures*, that his book was but an application of the principles of his calculating engine to the factory system as a whole, to demonstrate the mathematical precision and predictability machine-based industry made possible. In the midst of the machine-breaking movement, Babbage contemplated the computer-run factory. At the same time, Andrew Ure, whose description of textile manufacturing served as Karl Marx's point of departure for a critique of modern industry, extolled the virtues of machinery for extending and ensuring total management-control over production (as the Luddites well understood). In Ure's mind, the factory took on "mystical qualities," as Berg puts it; he described the mill as a vast automaton, with all parts in concert, subordinated to the discipline of the self-regulating prime mover, the steam engine. And Ure's fantastic vision of the ultimate end of this new discipline, the fully automated factory, like Babbage's computer-run factory, pictured capitalist industry as the very embodiment of reason, against which worker opposition could not but appear to be futile and irrational. It was thus not the fantasists who were deemed lunatics but the quite realistic and all too level-headed workers who dared to stand in their way.

By the mid-nineteenth century, the intellectual dominance of political economy was irrevocably established and with it the hegemony of apologetics for unrestrained technological progress. A Darwinist view of technological and economic development had evolved that informed state policy and proved relatively immune to the criticisms of both the workers and their supporters. The Tory conservatives who decried the mechanization not only of industry but of society itself, and who insisted that the social and psychological costs of this progress far outweighed any gains from cheaper commodities, were more easily dismissed as romantic reactionaries. And the machine breakers themselves were

assailed with repression and ridicule. The hegemonic ideology of technological progress, moreover, left its mark on the developing workers' movement as its leaders struggled to be taken seriously in this new intellectual climate. For although they gained strength as a consequence of the workers' actions against machinery, the political champions of labor's cause were no more disposed to follow the workers' lead than were the apologists and agents of capital. They abandoned the workers' strategy not because it proved ineffective but because they believed they knew what was in the workers' best interest, and were becoming certain that opposition to technological progress was no part of it. Thus the social reformers of the day, whose power in political arenas derived directly from the controversy kindled by the workers' opposition to machinery, acknowledged anyway the inevitability and benefits of technological progress and viewed the workers' plight as the moral problem of poverty, to be solved outside the realm of the economy itself by means of enlightened philanthropy. And the political radicals viewed the problem in terms of the distribution of property and political power. They viewed machines simply as tools to be used for good or evil, depending upon who had the power to use them. They decried opposition to machinery as wrongheaded and worked to divert workers' attention and antagonism away from the machine and toward the political system. (The workers' critical perspective, as we know, embraced both.) According to Berg, these efforts to dispel the machinery issue were ultimately successful, and discussion of the machinery question and the nature and organization of production gave way eventually to discussions of political power and property distribution. "The real grievance," insisted one political radical in 1835, "is neither more nor less than the subjection of the labouring to the monied classes, in consequence of the latter having usurped the exclusive making of the laws. Rents, tithes, taxes, tolls, but above all profits. Here is our distress explained in five words, or to comprise all in one, it lies in the word Robbery. . . . Machines indeed."

The removal of the struggle from the point of production rendered matters of machinery and production secondary to the political issues that lay beyond the realm of actual production. One result of the political and ideological subordination of the workers by their leaders, then, was a minimization of the matters the workers themselves initially considered central, and the elimination of the types of direct action that the workers themselves had found to be most effective in their fight against capital. And this diminished debate over and opposition to the introduction of machinery had the effect of ensuring the continued and strengthened hegemony of the doctrine of technological progress, as well as the capitalist system. But not all of the champions of labor abandoned the industrial and technological arena. The socialists made it their central battleground. However, they too subordinated the workers to their own peculiar conception of labor's destiny and, in so doing, lost touch with both the concrete and the present. Thus, even though they retained technology as their focus, their percep-

tions of what technology was and meant became confused and mythological, and tended not only to reflect but actually to reinforce the ideology of technological progress. If the capitalists apologized for and rallied behind technological progress, the socialists revered it. For them, technological progress was not simply a means to economic ends and a convenient justification of domination, it was a historical vehicle of emancipation.

The early Owenite socialists viewed the machine in a positive light, as the means of liberation from capitalism and of future prosperity under socialism. They displayed what Berg calls "a wondrous excitement over the machine." Although they saw all too well that, under capitalism and a competitive system, technological innovation led to intensification of work and exploitation, they believed that the same technologies held "something in promise and prospect" in that they could be used to bring about cooperation "in the far time of the Millennium." The Owenites assumed that technological development under capitalism would lead inevitably to the calamities of overproduction, bankruptcies, and massive unemployment, and that these would so destabilize and weaken capitalist institutions that it would be necessary to abandon competition and private property in favor of a cooperative system and common ownership. At the same time, they believed that the technology would make possible the elimination of the division of labor and along with it classes, inequality, and domination, and that it would create the material conditions for leisure, education, and collective production in a cooperative socialist society. Thus, on both counts, because technology would undermine capitalism and because it would make cooperative socialism possible, the Owenites condemned antimachinery sentiment as essentially counterrevolutionary. The Owenite paean to the steam engine, published in the *New Moral World* in 1837, would no doubt have embarrassed even the most strident capitalist apologists: "At length, casting away his guise of terror, this much cursed power revealed itself in its true form and looks to men. What graciousness was in its aspect, what benevolence, what music flowed from its lips: science was heard and the savage hearts of men were melted, the scabs fell from their eyes, a new life thrilled through their veins, their apprehensions were ennobled, and as science spoke, the multitude knelt in love and obedience."

**T**he early socialist's enthusiasm for technological progress was echoed by the so-called scientific socialism of Engels and Marx. In *The Condition of the Working Class in England*, Engels brought together the Tory, Owenite, and political-radical critiques of capitalism. In addition, he introduced the concept of a unified working class, the product of the new machine-based mode of production of industrial capitalism. According to Engels, the new industrial technology, which arose out of the system of competition and exploitation, led inevitably at first to unemployment and the intensification of labor. Thus, in his

view, the antimachinery sentiment of the workers was understandable and justified. However, the new industrial system had also given rise to a coherent industrial working class, with its own organizations and political program of socialism, so that now such proto-unionist and prepolitical sentiments were no longer either necessary or desirable. According to Dubois, the historian of industrial sabotage, Engels believed that "sabotage was the youthful sin of the workers' movement." Now that the movement had become more mature—a direct consequence of technological and industrial progress—such primitive action was counterrevolutionary and had to be opposed. Engels's colleague Marx took this line of reasoning further, drawing upon the work not only of the Tories, the political radicals, the early socialists, the social reformers and Engels, but also the political economists and the philosophers and visionaries of modern manufacturing, Ure and Babbage. For Marx, technological progress was not only the means of capitalist competition, accumulation, and exploitation, but was also essential to the advance of modern industry itself—capitalism's contribution to human progress. Modern industry signalled the transition not only from hand to machine-based labor but also liberation from the drudgery of labor altogether. Technological progress under capitalism was at the same time progress toward socialism, creating the conditions for the demise of capitalism, the living vehicle of revolution (the proletariat) and the material basis for the classless society. Here too technological progress was seen as having a life of its own, with liberatory consequences for humanity. To oppose it in the present, therefore, was counterrevolutionary; all those who suffered in the present, in the wake of such progress, were encouraged to accept present technology and look for future deliverance.

By the close of the nineteenth century, then, the ideology of technological progress that had become hegemonic in society as a whole had come to dominate the criticism of that society as well. "Scientific" socialists were quick to disparage and abuse all those who refused to accept technological necessity and acclaim the onward rush of industrial progress. They were dismissed as romantic reactionaries or utopian dreamers. Those who continued to uphold the ideas of direct action at the point of production and who opposed the authoritarianism of scientific socialists—those who comprised the left socialists and anarcho-syndicalist tradition—were dismissed as infantile and irresponsible. The Marxists' ridicule of all who opposed capitalist-sponsored technological development thus simply seconded the hegemonic social taboo, and further marginalized those who tried to insist upon viewing such development in the present tense. "The worker will only respect machinery *on the day* when it becomes his friend, shortening his work, rather than as *today*, his enemy, taking away jobs, killing workers." Thus Pouget, the French anarcho-syndicalist, echoed the Luddites in 1900, in defiance of destiny and in the name not of some fabled future but a pressing present: "Workers have no systematic will to destroy apart from the aim of such destruc-

tion. If workers attack machinery, it is not for fear or because they have nothing better to do, but because they are driven by imperious necessity."

But such calls to reason, which surfaced in the syndicalist upsurge in turn-of-the-century Europe and among the followers of the Industrial Workers of the World in the United States, were difficult to sustain in a society now dominated by the romance of technological progress and technological deliverance. Already by the middle of the nineteenth century "progressive workers," such as the one portrayed by Elizabeth Gaskell in her novel *Mary Barton*, had abandoned such critical reason to become reasonable: "It's true it was a sore time for handloom weavers when power looms came in. These new fangled things make a man's life a lottery. Yet, I'll never misdoubt that power looms and railways and all such inventions, are the gifts of God. I have lived long enough, too, to see that it is part of his plan to send suffering to bring out a higher good." And a half century later a "disconsolate radical" could lament the fact that "one rarely finds anyone who ventures to deal frankly with the problem of machinery. . . . It appears to infuse a certain fear. Everybody sees that machinery is producing the greatest of all revolutions between classes, but somehow nobody dares to interfere."

**T**hus had the abstract doctrine of technological progress come to dominate industrial capitalist society. Removed from the concrete and the present, the abstract idea of technological development became simply a given from the past, saturated with the future: autonomous, unilinear, inevitable, and sacrosanct. For both apologist and critic, fatalism and futurism substituted for the present tense; they differed only in their expectations. The present, meanwhile—where people actually live—was reduced to a mere point in time through which the determining weight of the past and projected flight of the future had momentarily to pass—at best unchallenged and uninterrupted. And this became their legacy, and our inheritance: you can't stand in the way of progress, nor should you—even if it kills you.

Within this profoundly irrational framework, not only the act of opposition to technology in the present but even the mere mention of such opposition became taboo. Indeed, the idea of machine breaking became more threatening to the ideological edifice than the fact of machine breaking, which continued without acknowledgement. And this taboo was reinforced in the wake of scientific management, which amounted to a new testament of the old gospel, and the rise of science-based industry, which offered progress as its most important product. It was strengthened as well with further maturation and institutionalization of the labor movement—liberal, social democratic, and communist alike. Not that there was no longer any opposition to technology-based changes in working conditions. Such opposition continued and was at times quite dramatic. Yet it remained constrained within the larger ideological reverence for technological progress. And this belief, fueled by obvious economic expansion and

growing abundance, served above all to strengthen the capitalist relations of social domination against which the Luddites struggled. The material prosperity diverted the opposition's attention from the central problem of power—the Luddites' focus—and the fact that capital still had the prerogative to destroy jobs, communities, and lives in the pursuit of profit and in the name of technological progress.

It must be emphasized that this hegemonic ideological inheritance did not rule out opposition to technology in the present on the grounds that it was tactically misguided or strategically shortsighted. Rather, mention of such tactical or strategic possibilities was dismissed without a hearing, and their proponents dismissed as insane. Opposition to technology in the present tense called attention to technology in the present tense, but only for a moment, because the ideology of progress did not admit of such immediacy and fled from it at once, relying not upon evidence or argument but rather upon its power to define the bounds of sanity, of respectable discourse, of reasonable behavior. The Luddite strategy in the nineteenth century was not debated and found lacking. Rather it was condemned as dangerous and demented, as were all those who identified themselves with it. So too with all latter-day Luddites. To be taken seriously, to be listened to (or even to be heard), one had now to demonstrate allegiance to technological progress, wherever it led. Discussion of present tactics was begged by ideological insistence on this critical point. To violate the taboo was instantly to lose intellectual credibility.

Little wonder, then, that the leaders of labor, who strove so hard to be taken seriously in capitalist society, deferred so readily and totally to this ideology. With regard to technological change, they adopted an official posture of encouragement, accommodation, and acceptance. They were, after all, progressive, and no progressive is against progress. And besides, "you can't stop progress." So, boasting of their maturity and responsibility, they embraced this progress as their own and, in boom times, bellowed of its abundant beneficence.

This is not to say that everyone now actually believed in progress. People still continued to have their doubts about this peculiar and alien notion, and subtly expressed it whenever they talked about such progress: "That's progress, I suppose (isn't it?)" "Well, I guess that's progress (isn't it?)" "You can't stand in the way of progress, anyhow (can you?)" The elliptical questions could still be heard, addressed to some absent authority who presumably knows about such things. Yet, even with their barely audible doubts, and even when progress looked pretty grim in the present tense, people were encouraged by social pressure to be respectable, to try to be taken seriously, to look progressive. Those who were not disciplined by their superiors in the ways of progress learned to discipline themselves. For even displaced workers want to be taken seriously and want to make a contribution to society. Thus they must believe that their own sacrifices are suffered for a larger good—how else suffer them with dignity?

And so the Luddites were forgotten, their distant distress recalled only in order to affirm the primitiveness of their struggle and the insanity of those who dare to repeat it. The term "luddite" became an epithet, a convenient device for disparaging and isolating the occasional opponent to progress and a charge to be avoided at all costs by thoughtful people. For to be called a luddite meant that you were not really serious. It meant that you believed that you could stop progress. It meant that you thought progress could be stopped. It meant that you were crazy. It was not that people now knew something the Luddites did not know, nor merely (though this is part of it) that the Luddites knew something that they had forgotten. Rather, this ideological instinct continued to reflect, and be revitalized by, the sustained political and ideological subordination of people at the point of production by their own friends and leaders. At the same time it reflected the latter's own subordination to those who still command the rewards and control the ideas of society as a whole. And it reflected as well their distance from both the concrete and the present. Just how far they had traveled in space and time became abundantly clear once the people at the point of production again began to challenge capital on their own turf, in their own terms, and in the present tense—in the wake of the second Industrial Revolution.

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