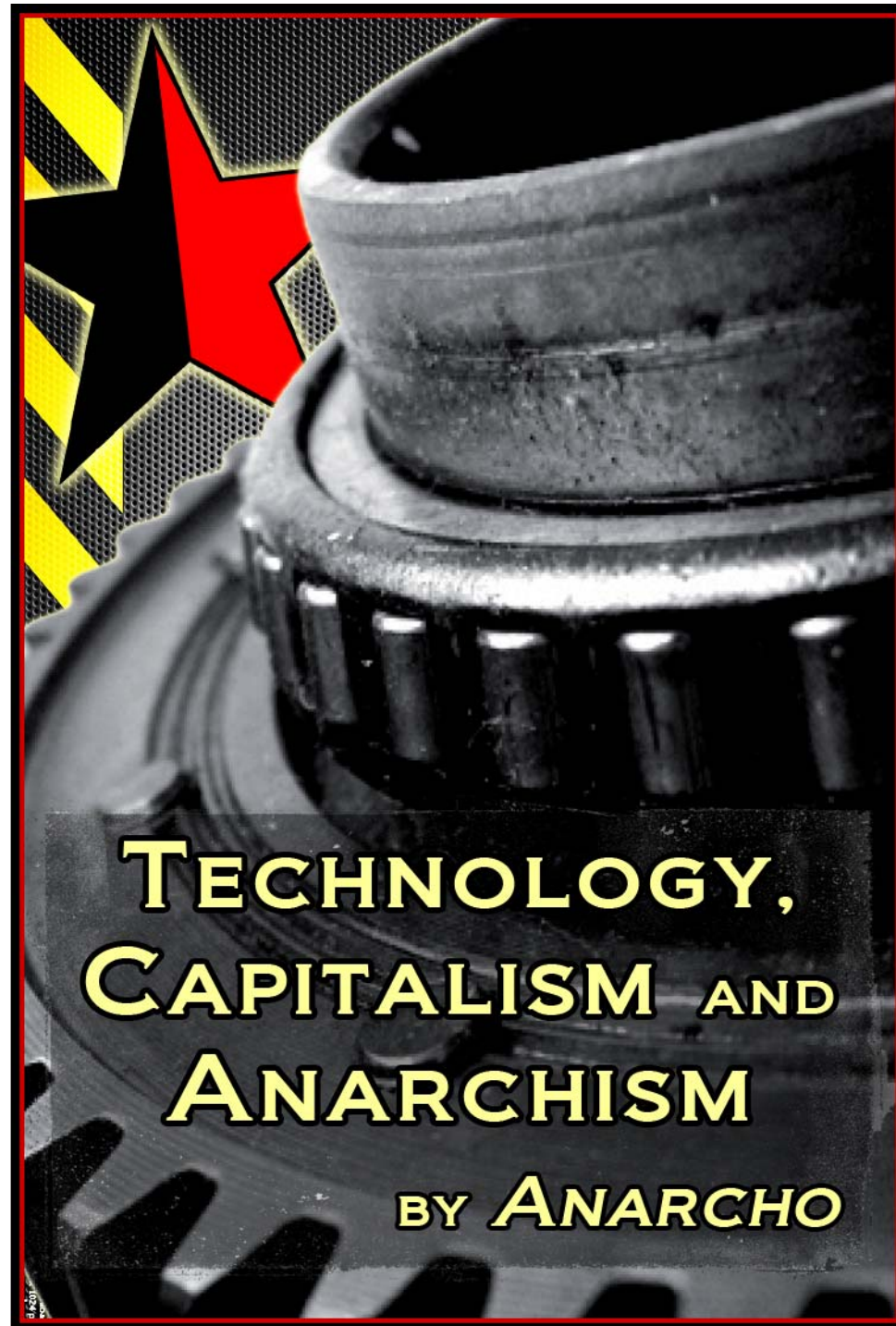




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workers “obtain... **collective** property in capital” and capital (and so technology) is no longer “concentrated in the hands of a separate, exploiting class” will they be able “to smash the tyranny of capital.” ²⁵

While, as far as technology goes, it may not be enough to get rid of the boss, this is a necessary first step in creating a technology which enhances freedom rather than controlling and shaping the worker (or user in general) and enhancing the power and profits of the capitalist. In the words of Cornelius Castoriadis, the “conscious transformation of technology will... be a central task of a society of free workers.” ²⁶

TECHNOLOGY, CAPITALISM AND ANARCHISM

BY ANARCHO

FOOTNOTES:

1. Pierre Joseph Proudhon, *System of Economical Contradictions*, p. 202
2. George Reitzer, *The McDonaldisation of Society*, p. 100
3. See also Harry Braverman, *Labour and Monopoly Capital: the Degradation of Work in the Twentieth Century*, Monthly Review Press, 1974
4. Max Stirner, *The Ego and Its Own*, p. 121
5. Peter Kropotkin, *The Conquest of Bread*. See chapter XV — “The Division of Labour”
6. Proudhon, *System of Economical Contradictions*. See chapters III and IV
7. David Noble, *Progress without People*, p. 63
8. Andrew Ure, *Philosophy of Manufactures*, pp. 336-368 — quoted by Noble, *Op. Cit.*, p. 125
9. *Ibid.*
10. Proudhon, *System of Economical Contradictions*, p. 189
11. *Op. Cit.*, p. 6
12. William Lazonick, *Organisation and Technology in Capitalist Development*, p. 273
13. Quoted by David Noble, *American By Design*, p. 268
14. David Noble, *Op. Cit.*, p. 272
15. Root & Branch (ed.), *Root and Branch: The Rise of the Workers’ Movements*, pp. 152-5
16. Quoted by Katherine Stone, *Op. Cit.*, p. 157
17. William Lazonick, *Competitive Advantage on the Shop Floor*, p. 218, p. 303
18. William Lazonick, *Organisation and Technology in Capitalist Development*, pp. 279-280
19. David Noble, *Progress Without People*, pp. 86-87 and p. 89
20. *Op. Cit.*, pp. 92-3
21. *Op. Cit.*, p. 95
22. See Jason Wehling, “‘Netwars’ and Activists Power on the Internet”, *Scottish Anarchist*, No. 2 for details
23. Quoted by David Noble, *Op. Cit.*, p. 15
24. Proudhon, *The General Idea of the Revolution*, p. 223
25. Michael Bakunin, *The Basic Bakunin*, pp. 90-1
26. Cornelius Castoriadis, *Workers’ Councils and the Economics of a Self-Managed Society*, p. 13



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forms of machinery that harmed themselves or society. Unlike those who smear others as “Luddites,” the labourers who broke machines were not intimidated by the modern notion of progress. Their sense of right and wrong was not clouded by the notion that technology was somehow inevitable or neutral. They did not think that **human** values (or their own interests) were irrelevant in evaluating the benefits and drawbacks of a given technology and its effects on workers and society as a whole. Nor did they consider their skills and livelihood as less important than the profits and power of the capitalists. Indeed, it would be tempting to argue that worshippers of technological progress are, in effect, urging us **not** to think and to sacrifice ourselves to a new abstraction like the state or capital. The Luddites were an example of working people deciding what their interests were and acting to defend them by their own direct action — in this case opposing technology which benefited the ruling class by giving them an edge in the class struggle. Anarchists follow this critical approach to technology, recognising that it is not neutral nor above criticism.

For capital, the source of problems in industry is people. Unlike machines, people can think, feel, dream, hope and act. The “evolution” of technology will, therefore, reflect the class struggle within society and the struggle for liberty against the forces of authority. Technology, far from being neutral, reflects the interests of those with power. Technology will only be truly our friend once we control it ourselves and **modify** it to reflect **human** values (this may mean that some forms of technology will have to be written off and replaced by new forms in a free society). Until that happens, most technological processes — regardless of the other advantages they may have — will be used to exploit and control people. Hence French syndicalist Emile Pouget’s argument that the worker “will only respect machinery **in the day** when it becomes his friend, shortening his work, rather than as **today**, his enemy, taking away jobs, killing workers.”²³

While resisting technological “progress” (by means up to and including machine breaking) is essential in the here and now, the issue of technology can only be truly solved when those who use a given technology control its development, introduction and use. Little wonder, therefore, that anarchists consider workers’ self-management as a key means of solving the problems created by technology. Proudhon, for example, argued that the solution to the problems created by the division of labour and technology could only be solved by “association” and “by a broad education, by the obligation of apprenticeship, and by the co-operation of all who take part in the collective work.” This would ensure that “the division of labour can no longer be a cause of degradation for the workman [or workwoman].”²⁴ Only when

technology can be utilised to maximise that effort as well as increasing the pool of potential replacements for an employee by deskilling their work (so reducing workers' power to get higher wages for their work).

But do not get us wrong, technological progress does not imply that we are victims. Far from it, much innovation is the direct result of our resistance to hierarchy and its tools. For example, capitalists turned to Taylorism and "scientific management" in response to the power of skilled craft workers to control their work and working environment (the famous 1892 Homestead strike, for example, was a direct product of the desire of the company to end the skilled workers' control and power on the shop-floor). In response to this, factory and other workers created a whole new structure of working class power — a new kind of unionism based on the industrial level. This can be seen in many different countries. For example, in Spain, the C.N.T. (an anarcho-syndicalist union) adopted the *sindicato unico* (one union) in 1918 which united all workers of the same workplace in the same union (by uniting skilled and unskilled in a single organisation, the union increased their fighting power). In the USA, the 1930s saw a massive and militant union organising drive by the C.I.O. based on industrial unionism and collective bargaining (inspired, in part, by the example of the I.W.W. and its broad organisation of unskilled workers). Thus technology and its (ab)uses is very much a product of the class struggle, of the struggle for freedom in the workplace.

With a given technology, workers and radicals soon learn to use it in ways never dreamed off to resist their bosses and the state (which necessitates a transformation of technology again to try and give the bosses an upper hand!). The use of the Internet, for example, to organise, spread and co-ordinate information, resistance and struggles is a classic example of this process.²² There is always a "guerrilla war" associated with technology, with workers and radicals developing their own tactics to gain counter-control for themselves. Thus much technological change reflects **our** power and activity to change our own lives and working conditions. We must never forget that.

While some may dismiss our analysis as "Luddite," to do so is to make "technology" an idol to be worshipped rather than something to be critically analysed. Moreover, to do so is to misrepresent the ideas of the Luddites themselves — they never actually opposed **all** technology or machinery. Rather, they opposed "*all Machinery hurtful to Commonality*" (as a March 1812 letter to a hated Manufacturer put it). Rather than worship technological progress (or view it uncritically), the Luddites subjected technology to critical analysis and evaluation. They opposed those



Technology has an obvious effect on individual freedom, in some ways increasing it, in others restricting it. However, since capitalism is a social system based on inequalities of power, it is a truism that technology will reflect those inequalities, as it does not develop in a social vacuum.

No technology evolves and spreads unless there are people who benefit from it and have sufficient means to disseminate it. In a capitalist society, technologies useful to the rich and powerful are generally the ones that spread. This can be seen from capitalist industry, where technology has been implemented specifically to deskill the worker, so replacing the skilled, valued craftsman with the easily trained (and eliminated!) "mass worker." By trying to make any individual worker dispensable, the capitalist hopes to deprive workers of a means of controlling the relation between their effort on the job and the pay they receive. In Proudhon's words, the "*machine, or the workshop, after having degraded the labourer by giving him a master, completes his degeneracy by reducing him from the rank of artisan to that of common workman.*"¹

So, unsurprisingly, technology within a hierarchical society will tend to re-enforce hierarchy and domination. Managers/capitalists will select technology that will protect and extend their power (and profits), not weaken it. Thus, while it is often claimed that technology is "neutral" this is not (and can never be) the case. Simply put, "progress" within a hierarchical system will reflect the power structures of that system ("technology is political," to use David Noble's expression, it does not evolve in isolation from human beings and the social relationships and power structures between them).

As George Reitzer notes, technological innovation under a hierarchical system soon results in "increased control and the replacement of human with non-human technology. In fact, the replacement of human with non-human technology is very often motivated by a desire for greater control, which of course is motivated by the need for profit-maximisation. The great sources of uncertainty and unpredictability in any rationalising system are

people... McDonaldisation involves the search for the means to exert increasing control over both employees and customers".² For Reitzer, capitalism is marked by the "**irrationality of rationality**", in which this process of control results in a system based on crushing the individuality and humanity of those who live within it.

In this process of controlling employees for the purpose of maximising profit, deskilling comes about because skilled labour is more expensive than unskilled or semi-skilled and skilled workers have more power over their working conditions and work due to the difficulty in replacing them. In addition it is easier to "rationalise" the production process with methods like Taylorism, a system of strict production schedules and activities based on the amount of time (as determined by management) that workers "need" to perform various operations in the workplace, thus requiring simple, easily analysed and timed movements. And as companies are in competition, each has to copy the most "efficient" (i.e. profit maximising) production techniques introduced by the others in order to remain profitable, no matter how dehumanising this may be for workers. Thus the evil effects of the division of labour and deskilling becoming widespread. Instead of managing their own work, workers are turned into human machines in a labour process they do not control, instead being controlled by those who own the machines they use.³

As Max Stirner noted (echoing Adam Smith), this process of deskilling and controlling work means that "When everyone is to cultivate himself into man, condemning a man to **machine-like labour** amounts to the same thing as slavery... Every labour is to have the intent that the man be satisfied. Therefore he must become a **master** in it too, be able to perform it as a totality. He who in a pin-factory only puts on heads, only draws the wire, works, as it were mechanically, like a machine; he remains half-trained, does not become a master: his labour cannot **satisfy** him, it can only **fatigue** him. His labour is nothing by itself, has no object **in itself**, is nothing complete in itself; he labours only into another's hands, and is **used**. (exploited) by this other" ⁴ Kropotkin makes a similar argument against the division of labour ("machine-like labour") in *The Conquest of Bread*, ⁵ as did Proudhon.⁶

Modern industry is set up to ensure that workers do not become "masters" of their work but instead follow the orders of management. The evolution of technology lies in the relations of power within a society. This is because "the viability of a design is not simply a technical or even economic evaluation but rather a political one. A technology is deemed viable if it conforms to the existing relations of power." ⁷

Of course the claim is that higher wages follow increased investment and technological innovation ("in the long run" — although usually "the long run" has to be helped to arrive by workers' struggle and protest!). Passing aside the question of whether slightly increased consumption really makes up for dehumanising and uncreative work, we must note that it is usually the capitalist who **really** benefits from technological change in money terms. For example, between 1920 and 1927 (a period when unemployment caused by technology became commonplace) the automobile industry (which was at the forefront of technological change) saw wages rise by 23.7%. Thus, claim supporters of capitalism, technology is in all our interests. However, capital surpluses rose by 192.9% during the same period — 8 times faster! Little wonder wages rose! Similarly, over the last 20 years the USA and many other countries have seen companies "down-sizing" and "right-sizing" their workforce and introducing new technologies. The result? While wages have stagnated, profits have been increasing as productivity rises and rises and the rich have been getting richer and richer — technology yet again showing whose side it is on. As David Noble notes (with regards to manufacturing):

"U.S. Manufacturing industry over the last thirty years... [has seen] the value of capital stock (machinery) relative to labour double, reflecting the trend towards mechanisation and automation. As a consequence... the absolute output per person hour increased 115%, more than double. But during this same period, real earnings for hourly workers... rose only 84%, less than double. Thus, after three decades of automation-based progress, workers are now earning less relative to their output than before. That is, they are producing more for less; working more for their boss and less for themselves." ²⁰

Noble continues:

"For if the impact of automation on workers has not been ambiguous, neither has the impact on management and those it serves — labour's loss has been their gain. During the same first thirty years of our age of automation, corporate after tax profits have increased 450%, more than five times the increase in real earnings for workers." ²¹

But why? Because labour has the ability to produce a flexible amount of output (use value) for a given wage. Unlike coal or steel, a worker can be made to work more intensely during a given working period and so

for the fear of losing control of the flow of work.”¹⁸ Given that there is a division of knowledge in society (and, obviously, in the workplace as well) this means that capitalism has selected to introduce a management and technology mix which leads to inefficiency and waste of valuable knowledge, experience and skills.

Thus the capitalist workplace is both produced by and is a weapon in the class struggle and reflects the shifting power relations between workers and employers. The creation of artificial job hierarchies, the transfer of skills away from workers to managers and technological development are all products of class struggle. Thus technological progress and workplace organisation within capitalism have little to do with “efficiency” and far more to do with profits and power.

This means that while self-management has consistently proven to be more efficient (and empowering) than hierarchical management structures, capitalism actively selects **against** it. This is because capitalism is motivated purely by increasing profits, and the maximisation of profits is best done by disempowering workers and empowering bosses (i.e. the maximisation of power) — even though this concentration of power harms efficiency by distorting and restricting information flow and the gathering and use of widely distributed knowledge within the firm (as in any command economy).

Thus the last refuge of the capitalist/technophile (namely that the productivity gains of technology outweigh the human costs or the means used to achieve them) is doubly flawed. Firstly, disempowering technology may maximise profits, but it need not increase efficient utilisation of resources or workers time, skills or potential (efficiency and profit maximisation are two different things, with such deskilling and management control actually **reducing** efficiency — compared to workers’ control — but, as it allows managers to maximise profits, the capitalist market selects it). Secondly, “when investment does in fact generate innovation, does such innovation yield greater productivity?... After conducting a poll of industry executives on trends in automation, **Business Week** concluded in 1982 that ‘there is a heavy backing for capital investment in a variety of labour-saving technologies that are designed to fatten profits without necessarily adding to productive output.’” David Noble concludes that “whenever managers are able to use automation to ‘fatten profits’ and enhance their authority (by eliminating jobs and extorting concessions and obedience from the workers who remain) without at the same time increasing social product, they appear more than ready to do it.”¹⁹

This process of controlling, restricting, and de-individualising labour is a key feature of capitalism. Work that is skilled and controlled by workers is empowering to them in two ways. Firstly, it gives them pride in their work and themselves. Secondly, it makes it harder to replace them or suck profits out of them. Therefore, in order to remove the “subjective” factor (i.e. individuality and worker control) from the work process, capital needs methods of controlling the workforce to prevent workers from asserting their individuality, thus preventing them from arranging their own lives and work and resisting the authority of the bosses.

This need to control workers can be seen from the type of machinery introduced during the Industrial Revolution. According to Andrew Ure, a consultant for the factory owners, “[i]n the factories for spinning coarse yarn... the mule-spinners [skilled workers] have abused their powers beyond endurance, domineering in the most arrogant manner... over their masters. High wages... have, in too many cases, cherished pride and supplied funds for supporting refractory spirits in strikes.... During a disastrous turmoil of [this] kind... several capitalists... had recourse to the celebrated machinists... of Manchester... [to construct] a self-acting mule.... This invention confirms the great doctrine already propounded, that when capital enlists science in her service, the refractory hand of labour will always be taught docility”⁸

Why is it necessary for workers to be “taught docility”? Because “[b]y the infirmity of human nature, it happens that the more skilful the workman, the more self-willed and intractable he is apt to become, and of course the less fit a component of mechanical system in which... he may do great damage to the whole.”⁹ Proudhon quotes an English Manufacturer who argues the same point:

“The insubordination of our workmen has given us the idea of dispensing with them. We have made and stimulated every imaginable effort to replace the service of men by tools more docile, and we have achieved our object. Machinery has delivered capital from the oppression of labour.”¹⁰

As David Noble summarises, during the Industrial Revolution “Capital invested in machines that would reinforce the system of domination [in the workplace], and this decision to invest, which might in the long run render the chosen technique economical, was not itself an economical decision but a political one, with cultural sanction.”¹¹

A similar process was at work in the US, where the rise in trade unionism resulted in “industrial managers bec[oming] even more insistent that skill

and initiative not be left on the shop floor, and that, by the same token, shop floor workers not have control over the reproduction of relevant skills through craft-regulated apprenticeship training. Fearful that skilled shop-floor workers would use their scarce resources to reduce their effort and increase their pay, management deemed that knowledge of the shop-floor process must reside with the managerial structure.”¹²

American managers happily embraced Taylorism (aka “scientific management”), according to which the task of the manager was to gather into his possession all available knowledge about the work he oversaw and reorganise it. Taylor himself considered the task for workers was “to do what they are told to do promptly and without asking questions or making suggestions.”¹³ Taylor also relied exclusively upon incentive-pay schemes which mechanically linked pay to productivity and had no appreciation of the subtleties of psychology or sociology (which would have told him that enjoyment of work and creativity is more important for people than just higher pay). Unsurprisingly, workers responded to his schemes by insubordination, sabotage and strikes and it was “discovered... that the ‘time and motion’ experts frequently knew very little about the proper work activities under their supervision, that often they simply guessed at the optimum rates for given operations... it meant that the arbitrary authority of management has simply been reintroduced in a less apparent form.”¹⁴ Although, now, the power of management could hide behind the “objectivity” of “science.”

Katherine Stone also argues (in her account of “The Origins of Job Structure in the Steel Industry” in America) that the “transfer of skill [from the worker to management] was not a response to the necessities of production, but was, rather, a strategy to rob workers of their power” by “tak[ing] knowledge and authority from the skilled workers and creating a management cadre able to direct production.” Stone highlights that this deskilling process was combined by a “divide and rule” policy by management, by wage incentives and new promotion policies. This created a reward system in which workers who played by the rules would receive concrete gains in terms of income and status. Over time, such a structure would become to be seen as “the natural way to organise work and one which offered them personal advancement” even though, “when the system was set up, it was neither obvious nor rational. The job ladders were created just when the skill requirements for jobs in the industry were diminishing as a result of the new technology, and jobs were becoming more and more equal as to the learning time and responsibility involved.” The modern structure of the capitalist workplace was created to break

workers resistance to capitalist authority and was deliberately “aimed at altering workers’ ways of thinking and feeling — which they did by making workers’ individual ‘objective’ self-interests congruent with that of the employers and in conflict with workers’ collective self-interest.” It was a means of “labour discipline” and of “motivating workers to work for the employers’ gain and preventing workers from uniting to take back control of production.” Stone notes that the “development of the new labour system in the steel industry was repeated throughout the economy in different industries. As in the steel industry, the core of these new labour systems were the creation of artificial job hierarchies and the transfer of skills from workers to the managers.”¹⁵

This process was recognised by libertarians at the time, with the I.W.W., for example, arguing that “[l]abourers are no longer classified by difference in trade skill, but the employer assigns them according to the machine which they are attached. These divisions, far from representing differences in skill or interests among the labourers, are imposed by the employers that workers may be pitted against one another and spurred to greater exertion in the shop, and that all resistance to capitalist tyranny may be weakened by artificial distinctions.”¹⁶ For this reason, anarchists and syndicalists argued for, and built, industrial unions — one union per workplace and industry — in order to combat these divisions and effectively resist capitalist tyranny.

Needless to say, such management schemes never last in the long run nor totally work in the short run either — which explains why hierarchical management continues, as does technological deskilling (workers always find ways of using new technology to increase their power within the workplace and so undermine management decisions to their own advantage).

This process of deskilling workers was complemented by many factors — state protected markets (in the form of tariffs and government orders — the “lead in technological innovation came in armaments where assured government orders justified high fixed-cost investments”); the use of “both political and economic power [by American Capitalists] to eradicate and diffuse workers’ attempts to assert shop-floor control”; and “repression, instigated and financed both privately and publicly, to eliminate radical elements [and often not-so-radical elements as well, we must note] in the American labour movement.”¹⁷ Thus state action played a key role in destroying craft control within industry, along with the large financial resources of capitalists compared to workers.

Bringing this sorry story up to date, we find “many, if not most, American managers are reluctant to develop skills [and initiative] on the shop floor