Uri Gordon

Anarchism and the Politics of Technology

2009

Contents

Prometheans and Primitivists 4
Technology and Power 8
Practical Implications 13
References 17

Contemporary anarchists' practical attitudes toward technology seem highly ambivalent, even contradictory. Our proverbial antiauthoritarian could pull up genetically modified crops before dawn, report on the action through e-mail lists and websites in the morning, fix her or his community's wind-powered generator in the afternoon, and work part-time as a programmer after supper. Thus, on the one hand, we find anarchists involved in numerous campaigns and direct actions where the introduction of new technologies is explicitly resisted, from bio- and nanotechnology to technologies of surveillance and warfare. On the other hand, anarchists have been actively using and developing information and communication technologies (ICTs), as well as engaging in practical sustainability initiatives that involve their own forms of technological innovation.

To briefly survey the field: resistance to new technologies was prominent on both sides of the Atlantic from the 1970s on, in the activities of the antinuclear and radical environmental movements — both important progenitors of contemporary anarchist networks (Epstein 1993; Wall 1999; Seel, Patterson, and Doherty 2000; Gordon 2007). Experimental growing of genetically modified crops was also met with widespread resistance, primarily in Western Europe, with anarchist groups often taking the lead (SchNEWS 2004; Thomas 2001). More recently, there has been active anarchist involvement in campaigning against the introduction of biometric identification cards in the UK (Anarchist Federation 2008a), against bogus "techno-fixes" to climate change such as geo-engineering and carbon capture and sequestration (Fauset 2008), and against the emergent industrial strategy of technological convergence on the nano scale (ETC Group 2003; Plows and Reinsborough 2008). Anarchist action repertoires can thus safely be said to contain a strong antitechnological element.

At the same time, however, anarchists make extensive use of mobile phones, e-mail, and Internet websites in their organizing and have themselves developed a number of ICTs. The most celebrated example is open publishing software, by now a staple of Internet communication, pioneered in Australia by the Catalyst collective of anarchist hackers and used to run the first Indymedia website during the 1999 anti-World Trade Organization (WTO) protests in Seattle (Indymedia 2004; Meikle 2002). Many activists are also talented programmers, playing an important role in the development of GNU/Linux operating systems and other open-source, free software applications. In Western Europe there currently operate over thirty HackLabs — radical community spaces offering Internet access and training in programming while also serving as hubs for political organizing (Barandiaran 2003).

A third form of engagement with technology is to be found in the widespread anarchist attraction to innovative sustainability applications. Permaculture design (Mollison 1988), organic farming techniques, eco-architecture and construction

with natural and recycled materials (Alexander 1977), and solar and wind energy — all of these have been drawing a great deal of interest from activists and are employed in many eco-villages, community gardens, and urban projects with an explicit or implicit anarchist ethos (Anarchist Federation 2008b; Bang 2005; O'Rourke 2008; Roman 2006). These technologies of practical sustainability embody, in their various ways, a combination of traditional knowledge with the latest insights from ecological science and systems theory.

Do these various tendencies simply demonstrate incoherence at the heart of anarchist technological politics? Or can an anarchist theoretical perspective be offered from which they all essentially make sense, albeit with some reservations? In this article I argue that such a perspective is indeed available, only that it is not provided by either of the two competing outlooks prevalent in anarchist literature — what I refer to as the Promethean and primitivist approaches. The substance of opposition between these two tendencies turns out to be less about technology and more about theWestern humanist ethos of progress. To refocus the debate, I turn to the work of Langdon Winner, which supplies a more promising point of departure for a broad-based anarchist politics of technology. In the space available here I examine these claims and discuss their practical implications.

Prometheans and Primitivists

Anarchist writers from the mid-nineteenth century on were all too well aware of the negative consequences of technological proliferation: the displacement of workers by machines with its resultant unemployment and falling wages; the erosion of producers' autonomy and dignity, as mass production replaced household and artisan economies; frequent deaths and mutilations in work accidents; and degraded working and living environments. Yet these observations did not lead the leading lights of anarchist literature to question the prevailingWestern cultural ethos of progress. Quite the opposite: scientific and technological development continued to be seen in a strongly positive light, as an expression of the triumph of human creativity and ingenuity over an essentially hostile natural world. Thus for Proudhon (1972) in The Philosophy of Poverty,

> With the introduction of machinery into economy, wings are given to liberty. The machine is the symbol of human liberty, the sign of our domination over nature, the attribute of our power, the expression of our right, the emblem of our personality. Liberty, intelligence — those constitute the whole of man. (179)

Yet only a few pages later Proudhon (1972) could write

> The ruinous influence of machinery on social economy and the condition of the laborers is exercised in a thousand ways, all of which are bound together and reciprocally labeled: cessation of labor, reduction of wages, over-production, obstruction of the market, alteration and adulteration of products, failures, displacement of laborers, degeneration of the race, and, finally, diseases and death. (196)

There is an evident tension here, but I would like to argue that it makes sense within a particular ideological framework. Anarchists — like their Marxist counterparts — constructed a contradiction between technology's positive nature in principle and its dominating nature in practice, that is, once inserted into capitalist relations of production. The essence of technology is seen as intrinsically positive: it is a purveyor of freedom, removing impediments to human activity and expressing qualities unique to the human experience (innovation, creativity). Yet the effects of technology — in particular under capitalism — are harmful and degrading. I refer to this approach as Promethean anticapitalism.

In the Greek mythology, Prometheus was the titan who stole fire from the gods and gave it to humankind, releasing humanity from its previously brutish state. Yet in doing so he incurred the wrath of Zeus, who had him chained to a mountain where a giant eagle would daily eat at his regenerating liver. Marx (1972) lauded Prometheus as "the most eminent saint and martyr in the philosophical calendar," who rebelled "against all heavenly and earthly gods who do not acknowledge human self-consciousness as the highest divinity," whereas Marcuse (1998, 161) identifies him as the "predominant culture-hero" of Western civilization, "the trickster and (suffering) rebel against the gods, who creates culture at the price of perpetual pain. He symbolizes productiveness, the unceasing effort to master life, but, in his productivity, blessing and curse, progress and toil, are inextricably intertwined."

Although perhaps not inextricably — for, as we learn from Hesiod, Prometheus was also eventually unbound by Heracles, who on his quest to find the apples of the Hesperides slew the bird "and delivered the son of Iapetus from the cruel plague, and released him from his affliction" (Hesiod 1914, ll.526–8).

The Prometheus myth thus encapsulates a progressive and anticapitalist attitude to technology — human ingenuity and its products are goods in themselves, whereas the heavy cost they carry is imposed from the outside — with class relations standing in for the wrath of the patriarch Zeus. It is the critique of capitalism that serves as a prism for reconciling the tension between the ethos of progress and its evidently malignant effects. At the same time, the myth in its Herculean

conclusion also contains an element of redemption and reconciliation — with its real-life parallel in the expectation of technology eventually being released from its chains through the communistic reconstruction of social relations.

This attitude has prevailed in the anarchist tradition. Anarchists have by and large seen mechanized industrial processes as dominating under capitalist conditions, but not inherently so, and were confident that the abolition of the class system would also free the means of production from their alienating role in the system of private ownership and competition. Rudolf Rocker (1990:11), at the outset of Anarcho-Syndicalism, writes that industry "should only be a means to ensure to man his material subsistence and to make accessible to him the blessings of a higher intellectual culture. Where industry is everything and man is nothing begins the realm of a ruthless economic despotism." Industry is a means that can be fitted to good or ill ends, and the progress of (Western) higher intellectual culture is an unproblematic good. It is only industry's contingent eclipse of human freedom and dignity.

Kropotkin (1910) for his part cited "the progress of modern technics, which wonderfully simplifies the production of all the necessaries of life" as a factor reinforcing what he saw as a prevailing social tendency toward no-government socialism. After the revolution, "factory, forge, and mine can be as healthy and magnificent as the finest laboratories in modern universities," with mechanical gadgets and a centralized service industry relieving women of their slavery to housework, as well as making all manner of repugnant tasks no longer necessary (Kropotkin 1916, chap. 10)

The most recent major representative of this anarchist commitment to humanism and progress was Murray Bookchin. Rooted in his Marxist background, Bookchin's optimism for technology led him to state that it carried "the prospect of reducing toil to a near vanishing point," if only a new balance was reached between society and nonhuman nature (Bookchin 1971). While to his critics, in his comprehensive theories of Social Ecology Bookchin's statements on issues specific to technology are contradictory and vague (Watson 1998), he clearly sought to defend the Promethean ethos against the rise of what he saw as dangerous biocentric and antienlightenment tendencies in the anarchist movement (Bookchin 1987, 1995)

Bookchin was right in identifying these tendencies, if not in rebuffing them. This brings us to the major anti-Promethean approach in anarchism today, the primitivist discourse. As a vein of literature that clearly opposes Western commitments to high culture, rationality, and progress, it is often identified with magazines such as Fifth Estate and Green Anarchy and a number of books and essays (e.g., Jensen 2000; Moore 1997; Perlman 1983; Watson 1998; Zerzan1999)

As a wider phenomenon in anarchist culture, it possibly expresses a particular intersection of subcultures in U.S. environmental direct-action networks. Anarcho-primitivist expression couples strong antagonism toward industrialism and hyper-modern society with a love of the wild and a rejection of dominant Western forms of thinking and consciousness. Another prominent opposition is that between the long period of human life in classless, stateless hunter-gatherer and horticulturalist communities and the recent 10 millennia of civilization.

The term civilization is identified not with high culture but with institutions such as domestication, rationalized production, social classes, standing armies, partriarchy, and organized religion. Perlman's (1983) imagery of civilization is of "a rust or halo on the surface of a human community," an accident that eventually grew into the earth-wrecking Leviathan, "a dead thing, a huge cadaver" (3). Civilization is understood as a destructive social meme that has come to engulf the world not by voluntary adoption but with blood and fire. Thus for John Zerzan:

> The expanding crisis, which is as massively dehumanizing as it is ecocidal, stems from the cardinal institutions of civilization itself. . . If civilization's collapse has already begun, a process now unofficially but widely assumed, there may be grounds for a widespread refusal or abandonment of the reigning totality. (Zerzan 2007)

We thus find a deliberate anti-Promethean emphasis in primitivist writing. In Aeschylus' Prometheus Bound, the titan attributes to himself not only the gift of fire, but through it all of symbolic thought, domestication, and culture:

> By me they were roused to reason. . . I found Number for them, chief devise of all, groupings of letters, Memory's handmaid that, and mother of the Muses. And I first bound in the yoke wild steeds, submissive made. (Aeschylus 2001, ll.484, 500–3)

Primitivist literature has explicitly opposed this more comprehensive account of Prometheus's gifts. Many of John Zerzan's essays in particular portray a process rooted in primeval error, whereby authority, through abstraction, was imprinted on human consciousness throughout the ages. Linear time, numbers, and writing are all questioned by this critique (Zerzan 1988), as is symbolic thought itself:

> We seem to have experienced a fall into representation, whose depths and consequences are only now being fully plumbed. In a fundamental sort of falsification, symbols at first mediated reality and then replaced it. At present

> we live within symbols to a greater degree than we do within our bodily selves or directly with each other. (Zerzan 2008, 8–9)

Whatever our assessment of the primitivist critiques as a comprehensive package, I would argue that both the primitivist and the Promethean approach that it opposes are not adequate sources of reference for discussing an anarchist politics of technology. As should be clear by now, both have much more to do with the ongoing ideological battle over Western civilization's ethos of progress, enlightenment, and high culture than they do with technology specifically. Both approaches tend to take technological development as an independent variable rather than go into the finer-grained account of the social forces and interests that shape it.

The approach to technology in Proudhon, Kropotkin, and Bookchin usually presents technological development as either the result of individual inventors in eureka moments or else as the product of an undifferentiated "humanity." However, the accelerating series of technological waves in history were backed by powerful economic and political interests (Perez 2002; Spar 2001). Navigation, printing, steam, steel, automobiles, chemicals, semiconductors — there were powerful interests who promoted, financed, and defended these technological waves, from Iberian and Protestant princes to weaving-mill entrepreneurs and multinational corporations.

Primitivist critiques of technology, for their part, are impossible to disentangle from the much broader ideological themes of primitive anarchy and the rejection of the West. While explicitly opposing Promethean biases, primitivist accounts themselves also tend to be vague on deep structure of relations between technology and society. Technology is usually viewed fatalistically as an independent protagonist, echoing Camatte's imagery of the "flight of capital" and Ellul's account of the autonomous and unstoppable reign of Technique (Camatte 1995; Ellul 1964).

In order to disentangle the discussion of technology from any necessary association with more comprehensive Promethean or primitivist assumptions, a more succinct analytical approach is required — one that focuses matter-of-factly on issues of power and the social relations inscribed in technological systems through design, ownership, and structure.

Technology and Power

Anarchists would probably be surprised to learn that contemporary, mainstream academic writing on the politics of technology is highly politicized and

goes against the grain of techno-optimism that prevails in capitalist society. Among contemporary writers on the politics of technology, "little needs to be said concerning the 'neutrality' of technology. Since the social-political nature of the design process has been exposed by Langdon Winner and others, few adhere to the neutrality of technology thesis" (Veak 2000, 227). The neutrality thesis has been rejected because it disregards how the technical or from-design structure of people's surroundings delimits their forms of conduct and relation. As Winner (1985) argues , "technologies are not merely aids to human activity, but also powerful forces acting to reshape that activity and its meaning":

> As technologies are being built and put into use, significant alterations in patterns of human activity and human institutions are already taking place . . . the construction of a technical system that involves human beings as operating parts brings a reconstruction of social roles and relationships. Often this is a result of the new system's own operating requirements: it simply will not work unless human behavior changes to suit its form and process. Hence, the very act of using the kinds of machines, techniques and systems available to us generates patterns of activities and expectations that soon become "second nature." (11–12)

Winner's approach focuses the discussion of technology on issues of power — a perspective usually ignored in policy debates (1985). It argues that technologies both express and reproduce specific patterns of social organization and cultural interaction, drawing attention "to the momentum of large-scale sociotechnical systems, to the response of modern societies to certain technological imperatives, and to the ways human ends are powerfully transformed as they are adapted to technical means" (21).

Winner gives several examples of technologies employed with intention to dominate, including post-1848 Parisian thoroughfares built to disable urban guerrilla, pneumatic iron molders introduced to break skilled workers' unions in Chicago, and a segregationist policy of low highway overpasses in 1950s Long Island, which deliberately made rich, white Jones Beach inaccessible by bus, effectively closing it off to the poor. In all these cases, although the design was politically intentional, we can see that the technical arrangements determine social results in a way that logically and temporally precedes their actual deployment. There are predictable social consequences to deploying a given technology or set of technologies.

Technological development is an accumulative process that fixes social relations into material reality. As opposed to tool use, which solves one problem, technology is a recursive application in which the result of the application is (re)utilized on the same space, a synergetic "meta-machine" (Barandiaran 2003).

New technologies must be integrated into an existing socio-technological complex and as a result are imprinted with its strong bias in favor of certain patterns of human interaction. This bias inevitably shapes the design of these technologies and the ends toward which they will be deployed. Because of the inequalities of power and wealth in society, the process of technical development itself is so thoroughly biased in a particular direction that it regularly produces results that favor certain social interests.

What this adds up to is what Winner calls the "technical Constitution" of society — deeply entrenched social patterns that go hand in hand with the development of modern industrial and postindustrial technology (1985). This constitution includes a dependency on highly centralized organizations; a tendency toward the increased size of organized human associations ("gigantism"); distinctive forms of hierarchical authority developed by the rational arrangement of socio-technical systems; a progressive elimination of varieties of human activity that are at odds with this model; and the explicit power of socio-technical organizations over the "official" political sphere (47–8).

Multinational corporations spend billions on research and development — whether in-house, through funding for universities, or in public — private partnerships. Academia is also encouraged to commercialize its research, in a combination of funding pressures created by privatization and direct government handouts. In policymaking on technological development, official corporate representatives often sit in committees of bodies such as the UK academic Research Councils, which allocate huge amounts of funding. Unofficially, there are industry-funded lobby groups and a revolving door between the corporate world and senior academic and government posts relevant to science and technology policy (Ferrara 1998; Goettlich 2000). This is "an ongoing social process in which scientific knowledge, technological invention, and corporate profit reinforce each other in deeply entrenched patterns, patterns that bear the unmistakable stamp of political and economic power" (Winner 1985, 27).

A society biased toward hierarchy and capitalism generates the entirely rational impetus for the surveillance of enemies, citizens, immigrants, and economic competitors. In such a setting, technologies such as strong microprocessors, broadband communication, biometric data rendering, and face- or voice-recognition software will inevitably be used for state and corporate surveillance, whatever other uses they may have (Lyon 2003). It should not be surprising, then, that the decision on the viability of a technological 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" (Noble 1993, 63).

Meanwhile, technological literacy becomes all but a prerequisite for membership in society — which itself has come to depend on the stability of largescale

infrastructures that allow systemic, society-wide control over natural variability. While infrastructure breakdowns are treated either as human error or as technological failure, few will

> question our society's construction around them and our dependence on them . . . infrastructure in fact functions by seamlessly binding hardware and internal social organization to wider social structures . . . To live within the multiple, interlocking infrastructures of modern societies is to know one's place in gigantic systems that both enable and constrain us. (Edwards 2003, 188–91)

In an even stronger sense, many technologies can be said to possess inherent political qualities, whereby a given technical system by itself requires or at least strongly encourages specific patterns of human relationships. Winner (1985, 29–37) suggests that a nuclear weapon by its very existence demands the introduction of a centralized, rigidly hierarchical chain of command to regulate who may come anywhere near it, under what conditions, and for what purposes. It would simply be insane to do otherwise. More mundanely, in the daily infrastructures of our large-scale economies — from railroads and oil refineries to cash crops and microchips — centralization and hierarchical management are vastly more efficient for operation, production, and maintenance. Thus the creation and maintenance of certain social conditions can happen in the technological system's immediate operating environment as well as in society at large.

On the other hand, some technologies would seem to have inherent features that are strongly compatible with decentralization because of their availability for deployment at a small scale and because their production and/or maintenance require only moderate specialization. Solar- and wind-powered generators are often mentioned in this context, although they could also operate on a centralized model. Besides scale and intelligibility, some technologies encourage community more than others — consider the two-way telephone compared to the one-way television.

The evaluation of any particular technology on these grounds requires both factual and political assessment of the specific case. Still, Winner (2002, 606) offers a few general maxims: technologies should be given a scale and structure of the sort that would be immediately intelligible to nonexperts, be built with a higher degree of flexibility and mutability, and be judged according to the degree of dependency they tend to foster (less is better). Yet while these may be desirable qualities, "the available evidence tends to show that many large, sophisticated technological systems are in fact highly compatible with centralized, hierarchical managerial control" (1985, 35).

These critiques of technology provide more useful markers for anarchists than accounts entangled in either Promethean or primitivist backgrounds. With their focus on power they clearly indicate the often inherently hierarchical and exploitative nature of the socio-technological complex while providing criteria for judging particular technologies on their political merits. Where these critiques are weaker is in their attached proposals for change.

Winner suggests a process of "technological change disciplined by the political wisdom of democracy," which would give citizens a true opportunity to approve or reject new technologies. Apparently forgetting everything he knows about the state and capitalism, Winner expects a reform of the present system to include "institutions in which the claims of technical expertise and those of a democratic citizenry would regularly meet face to face" (1985, 56). Can such concessions be expected? At a time of a general trend away from democracy in advanced capitalist societies, the prospects for the democratization of an entirely new sphere appear very unlikely. Rather than a modification of the existing regime, the move to human-scale technologies and participatory decision making about them requires thorough decentralization — an increase in the number of centers, their accessibility, relative power, vitality, and diversity. Yet Winner (1985) is skeptical about this option:

> any significant attempt to decentralize major political and technological institutions . . . could only happen by overcoming what would surely be powerful resistance to any such policy. It would require something of a revolution. Similarly, to decentralize technology would mean redesigning and replacing much of our existing hardware and reforming the ways out technologies are managed . . . retro-fitting our whole society. (96)

That technological decentralization indeed requires "something of a revolution" should not bother anarchists so much — it is, after all, no less achievable than the rest of the sweeping political decentralization that anarchists propose. Yet when push comes to shoveWinner is too committed to industrial modernity to countenance the option. Unlike in Kropotkin's time, he argues, it is no longer possible to "imagine an entire modern social order based upon small-scale, directly democratic, widely dispersed centres of authority" or that "decentralist alternatives might be feasible alternatives on a broad scale."

In the final analysis on technological progress, anarchists are going to have to bite the bullet where Winner fails to. For he has a point in saying that a modern social order is incompatible with thorough decentralization. Can a society based on neither profit nor command even maintain modern infrastructures on their

present scale, let alone engineer technological leaps? It is certainly hard to imagine how the levels of coordination and precision needed for high technological exploits from biotech to space exploration could be achieved in a society that lacks both centralized management and the incentives and threats of capitalism. Political and technological decentralization may indeed require a significant slowdown, halt, and/or roll-back of technological capabilities. Decentralization also appears increasingly inevitable in the long run, if climate change and peak oil are recognized as realities. As capitalism meets the ecological limits of its expansion, global industrial civilization may face fragmentation and decay whatever anarchists do (Gordon 2009).

Where does such a scenario leave the anarchists in their politics today? In the remainder of this article I look at the actualization of the critique offered earlier, which suggests three dimensions for an anarchist politics of technology: abolitionist resistance, disillusioned adoption, and active promotion.

Practical Implications

Anarchists who express critical positions on technology often find themselves on the defensive against the caricature of "wanting to go back to the caves":

> We are not posing the Stone Age as a model for our Utopia, nor are we suggesting a return to gathering and hunting as a means for our livelihood . . . Reduced to its most basic elements, discussion about the future sensibly should be predicated on what we desire socially and from that determine what technology is possible. All of us desire central heating, flush toilets, and electric lighting, but not at the expense of our humanity. Maybe they are possible together, but maybe not. (Fifth Estate 1986, 10)

However, speaking of technology in such terms really misses the point. While the jury may still be out on flush toilets, it is clear that according to the Fifth Estate's own rule-of-thumb there are at least some technologies that are clearly not "possible" given what all anarchists "desire socially."

Whatever one's vision of anarchist r/evolution or a free society, it would seem beyond controversy that anarchists cannot but approach some technological systems with unqualified abolitionism. Just to take the most obvious examples, anarchists have no interest whatsoever in advanced military technologies or in technological systems specific to imprisonment, surveillance, and interrogation — the stuff of the state (cf. Rappert 1999). Additionally, some technological systems such as nuclear power or the oil industry would appear far too hopelessly

centralizing and destructive to be hoped-for features of a postcapitalist future. As a result, it should be acknowledged that some forms of technological abolitionism are essential to anarchist politics. How extensive a technological roll-back is envisioned is beside the point: the relevant question from an anarchist perspective is not where to stop but where to start. In other words, you do not have to be a primitivist to be a Luddite.

As Mooney (2006) notes,

> every new technological wave further destabilizes the precarious lives of the vulnerable. While those with wealth and power are usually able to see (and mould) the technological wave approaching and prepare themselves to ride its crest, a period of instability (created by the technological wave) washes away some parts of the "old" economy while creating other economic opportunities . . . Each artificial technology wave begins with the depression or erosion of the environment and the marginalized who are dragged under. As the wave crests, it raises up a new corporate elite. (14)

The Luddite campaign of sabotage against new machinery in the weaving trade did not confront dislocated instances of technical change but a technological wave produced to benefit more powerful interests than their own (Sale 1996). Just as capital accumulated itself in the first industrial revolution through the immiseration of the lower classes, so do anarchists have every reason to expect the newest waves of technology — atomics, biotechnology, and nanotechnology — to expand state control and corporate wealth by massive dislocation, deskilling, and deprivation.

While the technological systems monopolized by the state are mostly out of reach for now, and others (the motorway system or the coal-/oil-/nuclearpowered energy grid) are so deeply entrenched in everyday life that dismantling them would require a much wider consensus, many new technologies that anarchists would clearly reject are still in the process of being developed and implemented and thus more vulnerable. This form of resistance can be seen to encompass many existing forms of direct-action — from destruction of genetically modified (GM) crops through the sabotage of manufacturing facilities and laboratories and on to the disruption of the everyday economic activities of the corporations involved in the development of new technologies — all backed by public campaigning to expose not only the potential risks and actual damage already caused by new technologies but also the way in which they consolidate state and corporate power to the detriment of livelihoods and what remains of local control over production and consumption.

Returning now to the ambivalence mentioned in the outset, I want to apply the critique offered here to assess the Internet and its anarchist attractions. Although it is an anomaly in comparison to most technological systems, there is something to be said for "libertarian and communitarian visions based on the Internet's technology, particularly its nonhierarchical structure, low transaction costs, global reach, scalability, rapid response time, and disruption-overcoming (hence censorship-foiling) alternative routing" (Hurwitz 1999).

Although there is another side to this coin (e-consumerism, surveillance, mediation of social relationships), it can at least be said that the structure and logic of the Internet as a technology are also highly compatible with decentralization and local empowerment. The basic platform that the Internet is based on — the Transmission Control Protocol/Internet Protocol (TCP/IP) — is thoroughly decentralized from the start because it is computed locally in each client node. This enables a distributed network of computers to exchange packets of information with no centralized hub.

Ironically, this is one of the cases where a technology escapes the intentions of its makers. The precursor and backbone of today's Internet, ARPANet, was created in the late 1960s with the immediate objective of enabling communication between academics but more broadly as part of a strategy to enable U.S. military communications to survive in the event of nuclear war. Decentralization was introduced to prevent decapitation. However, the enduring result of ARPANet was the decentralized peer-to-peer network it created. It was TCP/ IP's reliability, easy adaptability to a wide range of systems, and lack of hierarchy that made it appealing for civilian use. The hard-wiring of decentralization into the Internet's technological platform created unintended consequences for the U.S. government — as far as enabling groups that threaten it also to enjoy communication networks that cannot be decapitated.

The Internet is also attractive to anarchists because its architecture enables a communistic informational economy. The collaborative production of free software or of Wikipedia is for the most part not even a form of exchange. Rather, information is effectively held in a common pool. This makes large parts of the Internet effectively an electronic commons, where information is subject to "peer production" and "group generalized exchange" (Yamagishi and Cook 1993; Kollock 1999; Benkler 2002). The Internet's logical structure is the technological foundation for the cultural codes associated with the "hacker ethic" of free manipulation, circulation, and use of information (Himanen 2001).

Furthermore, the immateriality and copyability of digitized information can only acquire exchange value under a regime of intellectual property rights, where institutional arrangements confer a degree of monopoly power on its owner (cf. Morris-Suzuki 1984). Thus the anti-capitalist logic of expropriation can easily be

attached to the space of illegality created by peer-to-peer file sharing. Electronic piracy not only provides gratis, high-quality products stolen from the monopolist software economy, but steadily eats away at the regime of intellectual property by rendering its laws unenforceable.

Yet the celebratory attitude toward the Internet does encounter its limits. What is often missed is the nature of the Internet's material infrastructures, whose qualities are far from decentralizing and anticapitalist. The systems of computers, fiber-optic cables, and satellites that enable Internet communication are advanced military-industrial technologies, and as such tend to be centralizing, large scale, growth dominated, and resource and pollution intensive. Any significant move away from capitalism would inevitably slow down the manufacture of new computers and certainly halt the current acceleration of microelectronics development. This calls for a disillusioned approach to the Internet — employing it as a tool for subversion while remaining aware of its being a temporary anomaly.

Finally, what could be said about the constructive aspect of an anarchist politics of technology? Based on a critique of the inherent politics of alternative technological designs, I would suggest that such a politics would encourage manifold low-tech innovations in areas like energy, building, and food production. Traditional plant knowledge, artisanship, and craft could be revived for any number of everyday-life applications. The recycling and recombination of decaying technological systems may give rise to an "open-source hardware" movement of salvagers, repairers, and rebuilders, which could have its seeds in the direct-action ethic of do-it-yourself and self-organization.

The fragmentation and decay of global industrial civilization could also encourage the revival of apocryphal technologies — inventions like the Stirling engine or the electric car, discarded along the path of capitalist development but highly applicable on a small scale. These considerations could inform the construction of the alternative material and social spaces that anarchists construct in the present tense — from eco-farms and occupied factories to urban squats and community gardens. While it is likely that technology, in its bare sense as the recursive application of knowledge through machines, will remain a feature of human life for a long time, the question now becomes one of resistance to the governance of industrial decay. Thus we can end with Barandiaran (2003), who calls for a "subversive micropolitics of techno-social empowerment" that experiences it "in an open and participatory process that seeks social conflict and technical difficulty as spaces in which to construct ourselves for ourselves."

References

Aeschylus. 2001. Prometheus bound. In The harvard classics, Vol. 8 pt. 4, ed. C.W. Eliot; trans. E. H. Plumptre. New York: P.F. Collier & Son. **www.bartleby.com** (accessed June 1, 2009).

Alexander, C. 1977. A pattern language: Towns, buildings, construction. New York: Oxford University Press.

Anarchist Federation. 2008a. Defending anonymity: Thoughts for struggle against identity cards. London: Anarchist Communist Editions.

———. 2008b. Creating common ground: A squatted community garden as a strategy for anti-capitalists. Organise! 69:4–6.

Bang, J. M. 2005. Ecovillages: A practical guide to sustainable communities. Gabriola Island, BC: New Society Publishers.

Barandiaran, X. 2003. Hacklabs: Ensamblaje colectivo de la. tecnopolítica como realidad social. http://www. **sindominio.net** (accessed July 1, 2009).

Benkler, Y. 2002. Coase's Penguin, or, Linux and The Nature of the Firm. The Yale Law Journal 112:369–446. Bookchin, M. 1971. Post-scarcity anarchism. San Francisco: Ramparts.

———. 1987. Social Ecology versus "Deep Ecology": A Challenge for the Ecology Movement. Green Perspectives 4–5.

———. 1995. Social Anarchism or Lifestyle Anarchism: AnUnbridgeable Chasm. San Francisco: AK Press. Camatte, J. 1995. The world we must leave and other essays. New York: Autonomedia.

Edwards, P. N. 2003. Infrastructure and modernity. In Modernity and technology, ed. T. J. Misa, P. Brey, and A. Feenberg, 185–226. Cambridge, MA: MIT.

Ellul, J. 1964. The technological society. New York: Vintage Books.

Epstein, B. 1993. Political protest and cultural revolution: Non-violent direct action in the 1970s and 1980s. Berkeley: University of California Press.

ETC Group. 2003. The big down—Technologies converging on the nano scale. Ottawa: ETC Group.

Fauset, C. 2008. Techno-fixes: A critical guide to climate change. London: Corporate Watch.

Ferrara, J. 1998. Revolving doors: Monsanto and the regulators. The Ecologist 28:280–1.

Fifth Estate. 1986. Renew the earthly paradise. Fifth Estate 322:10.

Goettlich, P. 2000. The revolving door. In The green revolution: A critical look. **www.mindfully.org** (accessed July 1, 2009).

Gordon, U. 2007. Anarchism reloaded. Journal of Political Ideologies 12:29–48.

———. 2009. Dark tidings: Anarchist politics in the age of collapse. In Contemporary Anarchist studies, ed. R.Amster, A. DeLeon, L. A. Fernandez, A. J. Nocella II, and D. Shannon, 249–58. London: Routledge.

Hesiod. 1914. Theogeny, trans. H. G. Evelyn-White. Cambridge, MA: Loeb Classical Library. **www.sacred-texts.com** (accessed July 1, 2009).

Himanen, P. 2001. The hacker ethic and the spirit of the information age. New York: Random House.

Hurwitz, R. 1999. Who needs politics? Who needs people? The ironies of democracy in cyberspace. Contemporary Sociology 28:655–61.

Indymedia. 2004. The IMC—A new model. Walcot, UK: Hedonist Press. **www.hedonistpress.com** indymedia/ (accessed July 1, 2009).

Jensen, D. 2000. A language older than words. New York: Context Books.

Kollock, P. 1999. The economies of online cooperation: Gifts and public goods in cyberspace. In Communities in cyberspace, ed. M. A. Smith and P. Kollock, 161–84. London: Routledge.

Kropotkin, P. 1910. Anarchism. Encyclopaedia Britannica.

———. 1916. The Conquest of Bread. London: Putnam.

Lyon, D. 2003. Surveillance technology and surveillance society. In Modernity and technology, ed. T. J. Misa, P. Brey, and A. Feenberg, 161–84. Cambridge, MA: MIT Press.

Marcuse, H. 1998. Eros and civilization: A philosophical inquiry into Freud. London: Routledge.

Marx, K. 1972. The difference between the democritean and epicurean philosophy of nature. Collected Works v.1. Moscow: Progress Publishers.

Meikle, G. 2002. Future active: Media activism and the internet. London: Routledge.

Mollison, B. 1988. Permaculture: A designers manual. Tyalgum, Australia: Tagari.

Mooney, P. 2006. Breaking waves: Technology tsunamis, globalisation and dismemberment. Uppsala: Dag Hammarskjöld Foundation.

Moore, J. 1997. A primitivist primer. Green Anarchist 47:18–19.

Morris-Suzuki, T. 1984. Robots and capitalism. New Left Review I/147:109–21.

Noble, D. 1993. Progress Without People. Chicago: Charles H. Kerr.

O'Rourke, R. S. 2008. Transition towns: Ecotopia emerging? Masters Thesis, London School of Economics.

P. M. 1985. Bolo'bolo. New York: Autonomedia.

Perez, C. 2002. Technological revolutions and financial capital: The dynamics of bubbles and golden ages. Cheltenham: Edward Elgar.

Perlman, F. 1983. Against his-story, against Leviathan! Detroit: Black and Red.

Plows, A., and M. Reinsborough. 2008. Nanobiotechnology and ethics: Converging civil society discourses. Philosophy and Medicine series v.101. Dordrecht: Springer.

Proudhon, P. J. 1972. The philosophy of poverty. New York: Arno Press.

Rappert, B. 1999. Assessing technologies of political control. Journal of Peace Research 36:6.

Rocker, R. 1990. Anarcho-syndicalism. London: Phoenix.

Roman, L. 2006. Cre8 Summat: Planting a garden of activism. In Shut them down: The G8, Gleneagles 2005 and the movement of movements, ed. D. Harvie, K. Milburn, B. Trott, and D.Watts, 235–41. London: Dissent! and Autonomedia.

Sale, K. 1996. Rebels against the future: The Luddites and their war on the industrial revolution. London: Quartet Books.

SchNEWS. 2004. Short sharp crop: How GM crop farming was killed in Britain. In SchNEWS at ten, 171–6. Brighton: SchNEWS.

Seel, B.,M. Patterson, and B. Doherty, eds. 2000. Direct action in British environmentalism. London: Routledge.

Spar, D. 2001. Ruling the waves: Cycles of discovery, chaos, and wealth, from the compass to the internet. New York: Harcourt.

Thomas, J. 2001. Princes, aliens, superheroes and snowballs: The playful world of the UK genetic resistance. In Redesigning life: The worldwide challenge to genetic engineering, ed. B. Tokar, 337—50, London: Zed Books.

Veak, T. 2000. Whose technology? Whose modernity? Science, Technology and Human Values 25:226–37.

Wall, D. 1999. Earth first! and the anti-roads movement: Radical environmentalism and comparative social movements. London: Routledge.

Watson, D. 1998. Social ecology and the problem of technology. In Social ecology after Bookchin, ed. A. Light, 211–39. London: Guildford.

Winner, L. 1985. The whale and the reactor: A search for limits in an age of high technology. Chicago: Chicago University Press.

———. 2002. Luddism as epistemology. In Philosophy of technology: The technological condition, ed. R. Scharff and V. Dusek, 606–11. Oxford: Blackwell.

Yamagishi, T., and K. Cook. 1993. Generalized exchange and social dilemmas. Social Psychology Quarterly 56:235–48

Zerzan, J. 1988. Elements of Refusal. Seattle: Left Bank Books.

———. 1999. Elements of refusal. New York: Autonomedia.

———. 2007. Breaking point? Green Anarchy 24:5–6.

———. 2008. Running on emptiness. Port Townsend, WA: Feral House.

The Anarchist Library
Anti-Copyright
May 21, 2012

Uri Gordon
Anarchism and the Politics of Technology
2009

Article originally appeared in WorkingUSA: The Journal of Labor and Society.
anarchyalive.com