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21 June 2024

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"The End of Technicized Work"

Abstract: I mean "end" in three senses: (1) where is the technicizing of human work going in practice, where is it taking us, where, if at all, will it end? (2) what are the ends/purposes of this technicizing movement as it replaces not just manual tasks but intelligence itself (innovation, leadership, management, etc)? How can these ends/purposes be evaluated, challenged, modified, or replaced? (3) what lies (or could lie) outside and beyond totally technicized work?

Note to IJES Conference Registrants: this text is twice as long as time permits me to read at the conference. I plan to summarize Parts One & Two by little more than reading the call-out summaries on pp. 4 and 10. (Parts Three & Four are also each followed by brief summaries).

1: Work: From Tools to Technopoly

As Jacques Ellul never tired of arguing and illustrating, *la technique* is pervasive, universalistic, and even totalitarian in its rule over people and planet. Technique respects no boundaries in its virtual autonomy and self-augmentation in all aspects of our existence. In *Technological Society* Ellul showed in detail how Technique has invaded and conquered economics, politics, and communications. My interest is in how Technique plays out in the arena we call *work*—where it is and where it is going, why it is happening, and how it might be modified, side-stepped, resisted, or perhaps even reformed. While the impacts of human work on customers, clients, owners, the natural environment, economies, families, and communities are extremely important, my main focus will be on workers themselves. In *The Technological Society*, Ellul addresses the subject most directly in his Chapter Five on "Human Technique." Ellul's further comments on human work in *The Technological System* (1977), *Technological Bluff* (1989), and other writings show an amazing prophetic insight and continuing relevance.¹

Work. Let me begin by defining human work as "effort, in thought, word, or deed, to make some thing or provide some service." It is about making and doing. Historically, most work is about survival, about necessity, about meeting human needs, including your own. Some work, of course, is about luxury, about human wants and flourishing beyond basic survival. Along the same lines, some people choose to work more than necessity seems to require of them. Work can be contrasted to rest (non-work) and to play

¹ Jacques Ellul, *Pour qui, pour quoi travaillons-nous?* ("For whom and for what reason do we work?"), (edited by Michel Hourcade, Jean-Pierre Jezequel, & Gerard Paul) (La Table Ronde, 2013) gathers several of Ellul's essays on work.

(unnecessary, gratuitous, making and doing). Work is, for most but not all people, related to financial (or material) compensation, to paid employment. Individuals, families, and communities without adequate financial income-producing work are on a path to poverty and to dependence on the benevolence of governments and charities. Work can certainly be cruel, dangerous, and dehumanizing but people without decent, meaningful work are also fundamentally dehumanized.

From natural and social necessity to technical necessity. Ellul argued that work has always been of the “order of necessity.” From the beginning work is a *natural necessity*—finding essential food and water, making clothing and shelter, overcoming darkness, difficult weather patterns, disease, injury, and so on. In my view (perhaps not fully shared by Ellul), there is also an *internal natural necessity* to work. A human being is not reducible to *homo faber* (man the maker) but I believe experience shows (and theology argues) that the expression and flourishing of our humanity entails some meaningful making and doing, i.e., work. Without this, we are dehumanized.

Soon enough, human work was also guided and constrained by *social necessity*. What kind of work was socially mandated or prohibited, how, when, and where people worked—these factors were as decisive for the work life as the influences of nature and were codified into laws, regulations, traditions, and taboos. Over the centuries, most of this traditional social necessity has been rejected or marginalized in our secularized and atomized modern cultures. Nature itself still imposes survival needs but is disenchanted and treated largely as a utility or commodity to be invaded, exploited, bought and sold. The primary driver of these radical changes has been *Technique*, classically defined by Ellul as “the totality of methods rationally arrived at, and having absolute efficiency . . . in every field of human activity.”² Technique is not just about tools and devices but about a method of thinking and acting—rationalistic, materialistic, and quantitative—that privileges the artificial over the natural and aims at efficiency, the “one best way” to maximum, measurable output from the minimum input.

To be sure, as Ellul points out in *Technological Society*, “Technical activity is the most primitive human activity . . . hunting, fishing, food gathering, weapons, clothing, building”—and so on. The core of that primordial activity is invention.³ This “technical operation” involved the invention of tools for building and farming, and methods for grazing, crop management, and food preparation. While we must not imagine some idyllic past without mistakes and misuse, these tools and methods augmented the effectiveness of human work while also being constrained by nature and by social values and traditions. This an important point: *work has usually been enhanced by the use of tools and technologies*. That is true today. We do not dream of giving up helpful tools and technologies insofar as they serve as improved “means” and

² Jacques Ellul, *The Technological Society* (hereafter abbreviated as *TS*), (Knopf, 1964). Trans. by John Wilkinson from the original French, *La Technique, ou l'enjeu du siècle* (Paris: Amand Colin, 1954). p. xxv.

³ *TS*, p. 23.

“methods” to our human needs, ends, and purposes. Each technique deserves to be assessed in terms of its appropriateness and its possible negative effects, but the argument is not against all tools and techniques.

From tools and techniques to Technique. A further critical historical development was the invention of machines powered not just by humans but by animals, water, wind, coal, oil, and other fuels. “A new machine of great productive power put into circulation ‘releases’ a great quantity of work; it replaces many workers. This is an inevitable consequence of technique.”⁴ This mechanizing and centralizing “industrial revolution” of the 18th and 19th centuries fundamentally changed the character of work for the masses. Small-scale family enterprises gave way to impersonal factory experiences separated from family, community, and natural relationships. Work for growing masses of people then followed the rhythms and requirements of machine industry rather than those of nature, social custom, and individual decision. It is commonplace, of course, to point out that the progression, for example, of man-pushing-wheelbarrow, to man-driving-horse-and-carriage, to man-driving-flat-bed-truck represents some real progress—and that those wheelbarrow makers and horse and buggy caretakers found other work, perhaps in the trucking industry. Later, we can ask what follows if robots build and drive those trucks in response only to artificial intelligence.

In broad terms, we have a history which begins with workers inventing and using tools to extend their capacities to achieve their survival (and sometimes their flourishing) goals—subject to natural and social necessity. Sometimes that work is individual or small scale; sometimes it is collectivized, often in undesirable circumstances such as slavery. Then comes the machine-age in which workers not only *use* machines but even more often are *used by* the machines and their owners. The worker must be adapted to the machine—as well as to the products and impacts of industrialization. Neil Postman helpfully describes this era as that of “technocracy” when technique became not the only but the most powerful force guiding our culture and work.⁵

From technocracy to technopoly. A further major modification came as automation and computerization massively entered the world of human work over the past fifty years. This trend is moving toward the complete takeover of work and worker by technicians and their advanced tools and methods. Even earlier, Frederick Winslow Taylor’s 1911 classic, *The Principles of Scientific Management*, argued that not just machines but the organization and management of human workers themselves should be guided by technical logic, methods, and values (rationality, quantification, efficiency, etc.).⁶ Neil Postman describes the shift as from *technocracy* to *technopoly*—in which technique is not just the most powerful

⁴ TS, p. 103.

⁵ Neil Postman, *Technopoly: The Surrender of Culture to Technology* (Vintage, 1992)

⁶ Frederick Winslow Taylor, *The Principles of Scientific Management* (1911). Daniel Cérézuelle’s essay “Organization as Technique” brilliantly explores this subject. Pp. 29-53 in.....

but virtually the *only* driver and ruler. In this paper I am using the terminology of “technicized work” but I am really concerned with “technopolized” work.

Each specific technical or technological intervention deserves careful, thoughtful analysis in terms of its real and potential impacts on work and worker. But the fundamental issue raised by Ellul is the unquestioned rule of Technique, capital T—the ensemble, the system—as it invades and controls every aspect of work and life and every corner of the world. The impacts on nature, society, and the economy—and on the worker him- or herself—cry out for deep and honest assessment. Seventy years ago, Ellul wrote:

“It is a commonplace to say that the machine replaces the human being. But it replaces him to a greater degree than has been believed. . . . The worker, no longer needed to guide or move the machine in action, will be required merely to watch it and to repair it when it breaks down. . .

“It is scarcely necessary to dwell on the astounding growth of automation in the last ten years”

“Freeing man from toil is in itself an ideal. Beyond this, every intervention of man, however educated or used to machinery he may be, is a source of error and unpredictability.”

““Machines no longer perform merely gross operations. They perform a whole complex of subtle ones as well. And before long---what with the electronic brain---they will attain an intellectual power of which man is incapable.”⁷

To say that Ellul was prophetic, seventy years ago now, is indisputable.

Work is an essential activity of human life. It has always involved the invention and use of tools and techniques. Work has been constrained and guided by nature’s reality—and by social traditions and values. The development and linking together of tools, machines, and ever more powerful technologies now not only serves work but has become the environment, the milieu, even the master of human work. The servant has become the master. Thoreau’s worry that “we might become the tools of our tools” has largely come true.

2: The End of Technicized Work: Where Is it Going and What Are Its impacts?

So we need to ask about the end of this progression, the future toward which this technicization (or technopolization) of work is headed. What is the future of work in our technological society—and what questions does it raise? Ten years ago now, Martin Ford, a twenty-five-year veteran computer design and software developer based in California’s Silicon Valley published *Rise of the Robots: Technology and the Threat of a Jobless Future*—a *New York Times* best-seller and the 2015 *Financial Times* and McKinsey Business Book of the Year.

⁷ TS, pp. 134, 136, 137.

Over the past century and more, Ford argues, the growth of machines and technology have pretty reliably brought about increased productivity, job growth, and rising worker incomes—which, in turn, stimulated increased production to provide for growing populations and meet consumer demands. Masses of jobs moved from farms to factories and from factories to services. Technologies served as tools to increase the productivity of workers. But since the 1970s, and today more than ever, technology is not just a worker's *tool*, it is replacing the worker himself/herself.

Ford abundantly illustrates this automation and robotics trend with examples from the auto industry (far fewer workers, far more robots on production lines), retail (online replacing brick-and-mortar), medicine and health care, and education. Driverless cars are in the news almost every day (so long taxi and delivery drivers, not to mention independent commuters and vacation travelers!). Today it is not just robots “manufacturing stuff” and doing the physical grunt work, it is artificial intelligence programs custom managing investment portfolios and outperforming (in stock market terms) brilliant investment managers at Charles Schwab or Vanguard. It is computerized legal research going farther, deeper, faster than hotshot attorneys. Robots, Ford argues, will take over most of the jobs (manufacturing, customer service, etc.) that were out-sourced and off-shored, and most of the coal mining and farm worker jobs. Much of media “news” is already selected or written and distributed to social media consumers based on computer algorithms, not on flesh-and-blood editorial team discretion as in the old days. You get the news and propaganda you have been “tracked” to indicate that you or the market want. Examples can be multiplied in all industries and all parts of the world.

What Ford described in 2015 has developed and accelerated without pause and with no effective opposition. A McKinsey Global Institute report in May 2017 studied 2000 work activities in 46 countries representing 80 percent of the global workforce.⁸ It concluded that

“automation, digital platforms, and other innovations are changing the fundamental nature of work” resulting in “growing polarization of labor market opportunities between high- and low-skill jobs, unemployment and underemployment especially among young people, stagnating incomes for a large proportion of households and income inequality.” “The impact will be felt not just by factory workers and clerks but also by landscape gardeners and dental lab technicians, fashion designers, insurance sales representatives, and even CEOs.” “We find that about 60 percent of all occupations have at least 30 percent of activities that are technically automatable.” “The adaptation of currently demonstrated automation technologies could affect 50 percent of the world economy, or 1.2 billion employees.”

⁸ *McKinsey Global Institute*, “Technology, jobs, and the Future of Work.” Executive Briefing by James Manyika (May 24, 2017).

More recently, the World Economic Forum of May 2023 issued a report on “The Future of Jobs.”⁹

“Employers predict a structural labor market churn of 23% of jobs” over the next five years with 44% of workers’ skills disrupted. “Across industries, 75% of organizations are planning to introduce AI over the next five years.” “It will change everything.”

As jobs change, employees who retain jobs will find that there is increasing pressure to demonstrate “a different kind of talent . . . associated with keeping up with change . . . perform[ing] well in intense periods of change and uncertainty.” “Nearly half the skills that people . . . are using every day in the workplace are going to have to change in the next 4 or 5 years alone.”

The authors acknowledge that interpersonal skills and the ability to work with others in a global economy in ferment will be valuable but the major trend is programs to adapt workers to technology..

In a companion World Economic Forum article on the “Fastest Growing and Fastest Declining Jobs” by Johnny Wood, the World Economic Forum predicts the reduction if not the total elimination of jobs like bank teller, post office clerk, cashier, ticket seller, data entry clerk, administrative and executive secretary, bookkeeper, insurance clerk, sales, news, and street vendor, and so on. On the bright side, they see growth in green jobs across all sectors and industries motivated by “global efforts to decarbonize in response to the climate crisis.” This of course, assumes a social/political will to acknowledge and combat climate change which can hardly be guaranteed in the face of epic denialism.¹⁰ They also predict job growth for autonomous and electric vehicle specialists. They downplay the importance of traditional university education and stress the future of specific skill training for work within the technological economy.

As a final example, an *Atlantic Magazine* dialogue recently interviewed economist Erik Brynjolfsson “On AI, Society, and What Comes Next.”¹¹ Brynjolfsson has argued that “what we called skill-based technological change . . . complemented more-skilled workers and substituted for less-skilled workers.” But AI may actually narrow the gap between the more skilled and experienced and the less skilled and experienced by replacing the slowly-learned tacit knowledge with AI, making the less-skilled able to take on roles that previously required more extensive training, experience, and ability. He gives radiologists and call center workers as examples. If costs are reduced, users may increase leading to more jobs for these technologically dumbed-down (my phrase) jobs. “Let’s say my shoulder is a little bit sore right now,”

⁹ *World Economic Forum Report* ‘The Future of Jobs: Two Experts Explain How Technology is Transforming ‘Almost Every Task’ by Andrea Willige and Gayle Markovitz, May 1, 2023.

¹⁰ The evidence appears every day: as I wrote these lines on May 10, 2024, the *New York Times* arrived reporting that the Republican congress has passed its “Hands Off Our Appliances Act” and further bills including the “Liberty in Laundry Act” and “Refrigerator Freedom Act” will soon follow. President Biden, on his first day in office in 2020, reinstated or strengthened more than 100 environmental regulations President Trump had weakened or removed. Another story reports on Trump’s Mar-a-Lago dinner with oil executives seeking \$1 Billion in donations. A “green revolution” with lots of new jobs? I wouldn’t bet on it.

¹¹ Erik Brynjolfsson, “On AI, Society, and What Comes Next,” *Atlantic Magazine* dialogue, 2023. Pp. 94-99.

Bjornjolfsson writes, “It’s probably too expensive for me to get an MRI, but if the cost went down, I and millions of people in the United States, India, and Africa would love to get more access.”

Artificial Intelligence (AI) has been much ballyhooed in recent months and years and its potential for workplace disruption is massive. A recent *New York Times* article was headlined “If A.I. can do your job, maybe it can also replace your CEO.”¹² Nearly half of a sample of hundreds of executives “said they believed that ‘most’ or ‘all’ of the chief executive role should be completely automated or replaced by AI.” This trend comes not without warnings about “Silicon Valley’s AI Hype Machine” which ignores the reality that “it’s looking less like an all-powerful being and more like a bad intern whose work is so unreliable that it’s often easier to do the task yourself.”¹³ Workers, being human, are fallible, but so is advanced technology as Cade Metz illustrated in his article “AI-powered Chatbots May ‘Hallucinate’ More Often Than Many Realized.”¹⁴ Caution is certainly in order even though the trend seems certain.

Impacts on Workers. The most obvious “end” or consequence for workers is job churn and change as existing occupations change. Periodic or long-term employment will increase as machine technologies replace workers. Some jobs will be “dumbed down” as workers merely tend or accompany “intelligent” machines. For sure, this could be in some cases be welcome relief from dangerous or arduous tasks. Some workers will find opportunities to entrepreneur their own small businesses with the help of computers and internet resources. Engineers and technicians will often thrive as part of the growing techno-economy. But most workers will need to be re-trained for the jobs that remain in the technology-dominated economy. Educational institutions will need adapt and focus increasingly on STEM instruction (science, technology, engineering and math), scaling up their own technicized pedagogy.

It is at this point that we must point out the *ambivalent* character of all technology. Technology can, of course, be used for good or bad purposes. But deeper than that question of usage is the point that all technologies involve both positive and negative effects, costs and benefits, trade-offs. Technology is never truly neutral or all-good or all-bad; it is always both. A GPS navigation system may serve us well to get us where we want to go—but it undermines our own sense and knowledge of location and direction. Search engines may provide quick information—but undermine learning and memory.

Technologies are never perfect. The recent PBS series “Mr. Bates versus the Post Office” provides a case-in-point account of a twenty-year fight to correct gross financial errors and their human costs resulting from a defective computer system.¹⁵ All of us have experienced the infuriating replacement of

¹² David Streitfeld, “If A.I. can do your job, maybe it can also replace your CEO,” *New York Times*, May 29, 2024, pp. B1-B3.

¹³ Julia Angwin, “Silicon Valley’s AI Hype Machine,” *New York Times*, May 19, 2024. Pp. 8-9.

¹⁴ Cade Metz, “AI-powered Chatbots May ‘Hallucinate’ More Often Than Many Realized” *New York Times*, November 7, 2023.

¹⁵ <https://www.pbs.org/wgbh/masterpiece/shows/real-story-mr-bates-vs-the-post-office/>

human customer service systems with endless computerized menus that don't resolve our questions and issues. Just try to get through to Uber after being stranded and risking missing a flight at the airport (twice for me!). Of course, Zoom and other online conferencing technologies have often brought extraordinary benefits to the workplace and well beyond it. The list of beneficial technologies is long. That is not in question. The basic issue is the failure to acknowledge its ambivalence and possible unanticipated "revenge" effects, the uncritical embrace, and finally the complete surrender to Technique.

The point is not to reject technologies but to recognize the trade-offs and either reject/limit them and come up with compensations. The challenge is exacerbated by the unpredictability of the longer-term effects. Historian Edward Tenner's *Why Things Bite Back: Technology and the Revenge of Unintended Consequences* and Neil Postman's *Technopoly: The Surrender of Culture to Technology* provide dozens of examples.¹⁶ Their messages remain on target twenty years after publication. The point here is that this ambivalence applies to technicized work. Let's look at two major issues; the economic and human sides.

Economic Consequences for Workers. Bjornjolfsson acknowledges that in this accelerating disruption of traditional work *income equality will suffer* and "we're going to have to rethink how we compensate people and how we reward people and their job security."

"What we need to do is put in place not just safety net and training mechanisms, but one that is very nimble and flexible and can adjust on the fly." "And frankly our existing training, job matching, and safety nets are not nearly nimble enough." "We can use AI to imitate humans . . . [but] if you imitate a human, in economic terms . . . a substitute tends to drive down wages and value. . . I would love to steer technologists, entrepreneurs, managers, and policy makers all toward thinking How can we create more complements and fewer substitutes? If we do that, we're more likely to get shared prosperity—not just a bigger pie but a more evenly distributed pie, because everybody will be needed and contributing. Conversely, if we go down the path of using AI to substitute for or to imitate humans, I think the tendency will be to concentrate wealth and power in a small number of people or organizations that have control of the capital."

McKinsey's report also worried some about growing income inequalities as profits from increased productivity disproportionately go to the wealthiest, the investors and top executives. They mention proposals for radical political solutions like "universal basic income" and improved social safety nets for displaced workers—but their main concerns for the future are to help the unconnected 50% of the world's population get online, promote creative individual online business initiatives, and develop STEM-oriented education systems and learning to help people adapt to the technological work milieu.

¹⁶ Edward Tenner, *Why Things Bite Back: Technology and the Revenge of Unintended Consequences* (New York: Knopf, 1996); Neil Postman, *Technopoly: The Surrender of Culture to Technology* (New York: Vintage, 1992).

What all of these analysts have in common is the conclusion that the complete technicization of human work is inexorable, inevitable. Workers must adapt or go on unemployment. Despite Bjornjolfsson's plea to technologists, entrepreneurs, managers, and policy makers, the Machine rolls on, not just complementing but replacing the human worker, not just following human direction but leading via generative AI and propaganda. Their primary concern (even Bjornjolfsson's) is with the urgent need to train and adapt the worker to this vast machine. Their secondary concern is with the diminishing or lost sources of income for workers—though no mention is made of tax increases on the winners to fund a safety net for the masses of losers. The economic/financial impacts of the nearly total technicization of work are of critical importance. How will the unemployed and underemployed have the means to purchase the products their robots are making?

Human Consequences for Workers. The impacts of technicized work on the humanity of workers are deeper and more ominous than the economic impacts. Seventy years ago Ellul wrote:

"In the coupling of man and machine, a genuinely new entity comes into being ["L'homme machine," "machine-man"]. Most writers still insist on the modern tendency, which they profess to discern, to adapt the machine to the man. Such adaptation no doubt exists and represents a great improvement; but it entails its counterpart, the complete adaptation of the man to the machine. This last does not lie in a remote future.¹⁷

Broader than simply the work life but including it, Nicholas Carr's *The Shallows: What the Internet is Doing to Our Brains*, Matthew Crawford's *The World Outside Your Head: On Becoming an Individual in an Age of Distraction*, Evgeny Morozov's *The Net Delusion* and *To Save Everything, Click Here*, and Doug Hill's *Not So Fast: Thinking Twice About Technology*, are examples of a deeper, serious questioning of the impact of the massive adaptation of people to the technological machine and its ways of working, thinking, and acting.¹⁸ Mathew Crawford's *Why We Drive: Toward a Philosophy of the Open Road* explores how self-directed human mobility is hard-wired into human being, health, and flourishing—a brilliant critique of the impact of GPS and self-driving cars.¹⁹ (By the way, has anyone thought about the potential traffic chaos created by jay-walkers stepping out into traffic, assuming that driverless cars will all stop? (versus taking your life in your hands in front of angry drivers).

Again, Ellul saw it coming seventy years ago and I quote him at length:

"The tempo of man's work is not the traditional, ancestral tempo; nor is its aim the

¹⁷ TS, p. 395.

¹⁸Nicholas Carr, *The Shallows: What the Internet is Doing to Our Brains* (New York: Norton, 2010); Matthew Crawford, *The World Outside Your Head: On Becoming an Individual in an Age of Distraction* (New York: Farrar, Straus, & Giroux, 2015); Evgeny Morozov, *The Net Delusion* (New York: Penguin, 2011), and *To Save Everything, Click Here* (New York: Public Affairs, 2014); Doug Hill, *Not So Fast: Thinking Twice About Technology* (University of Georgia, 2016).

¹⁹ Mathew Crawford, *Why We Drive: Toward a Philosophy of the Open Road* (HarperCollins/Custom House, 2021).

handiwork which man produced with pride, the handiwork in which he contemplated and recognized himself . . . Today's work/labor no longer has anything in common with what was traditionally called work; . . . [Today's work] calls for different qualities in man. It implies in him an absence whereas previously it implied a presence." "Man was made to do his daily work with his muscles; but see him now, like a fly on flypaper, seated for eight hours, motionless at a desk . . . The human being was made to breathe the good air of nature, but what he breathes is an obscure compound of acids and coal tars. . . He was created for a living environment but he dwells in a lunar world of stone, cement, asphalt, glass, cast iron, and steel . . . Man was created to have room to move about in, to gaze into far distances, to live in rooms which, even when they were tiny, opened out on fields."

"Technique has penetrated the deepest recesses of the human being. The machine tends not only to create a new human environment but also to modify man's very essence. . . . He must adapt himself as though the world were new, to a universe for which he was not created. . . He was created with a certain essential unity and he is fragmented by all the forces of the modern world. . . Admittedly the machine has enriched man as it has changed him. . . He has been liberated little by little from physical constraints but he is all the more the slave of abstract ones. . . This has occasioned profound mental and psychic transformations which cannot yet be assessed."²⁰

"Work is an expression of life. . . History compels the judgment that it is in work that human beings develop and affirm their personality." "When the human being is no longer responsible for his work, and no longer figures in it, he feels spiritually outraged. . . if the human being can develop his personality only in the cultivation of leisure, what we are denying to work is an element of personality fulfillment, or of satisfaction, or of happiness." "The individual has always found self-expression both in work and in leisure; the two exist in a mutual relationship and express two consubstantial aspects of the human being. It is idealistic to expect leisure to replace the functions of both work and leisure or to epitomize and take upon itself the whole of life."²¹

The "end" for those who become narrow-focused technicians is a shrinking of thought and life. The "end" for the unemployed and underemployed may be poverty but also a terrible loss of opportunity to express themselves in meaningful, creative, sustaining, redemptive work. Whatever its benefits, the total technicization of work ends in significant dehumanization, a profound change in human existence. The fundamental problem is that the ensemble and the spirit of technological means have become the

²⁰ *TS*, quotations passim from pp. 319-325.

²¹ *TS*, pp. 395-402 passim.

unquestioned End in our work life (and far beyond).²² The end of technological work—not to mention its economic repercussions in income inequality and poverty—may look like Aldous Huxley’s *Brave New World* (recall that Huxley said Ellul’s *Technological Society* “made the case” he was describing in *Brave New World*). Or it may disintegrate into a massive rebellion by the dehumanized, impoverished and oppressed.

The trajectory of the technicization of work is leading toward massive change in the way work gets done, with technologies replacing the initiative and labor of vast numbers of workers. The technician class should thrive but most other jobs will be as the re-trained and adapted servants and appendixes of machines. Income inequality will continue to vastly increase. Unemployment and underemployment will rise. Workers will be dehumanized by technically-mediated relationships and the loss of opportunity to engage in creative meaningful work.

3: The End(s) of Technicized Work: Why Is This Happening?

The end of technicized work, in the sense of where its development is leading, is pretty clear—unless there is a true rebellion (or awakening or catastrophe) and revolution in our society’s direction and values. For such a revolution to have any chance, we need to shift our inquiry to an exploration of the end or ends of technicized work in the sense of causes or the motivating purposes and goals. Why is this wholesale technicization of work happening? Who asked for the replacement of human agents (bank tellers, post office workers, taxi drivers, customer service humans, etc., etc.)? Who asked for more computer apps, endless updates, and more personal-info-based, algorithm-generated junk messages assaulting us?

It is certainly true that today’s technologies (including personal computers, the internet, etc.) have enabled an amazing burst of creativity and entrepreneurship. Countless individuals and companies have been enabled to embrace socially-positive purposes and deliver good products and services: technology in service of human survival and flourishing. It seems *possible* for individuals and companies to set ethical limits on their uses of technology and keep it to a human scale—even while their technological infrastructures are ruled by the larger players and their arrested set of values. But the megamachine rolls on, storming through workplaces like everywhere else. Why?

A couple decades ago at a conference I attended, Neil Postman told of a personal experience trying to buy a new car to replace his old beater. In the showroom, the salesperson proudly showed him the new

²² Jacques Ellul, “End and Means,; chapter 3 in *Presence in the Modern World* (1948; ET by Lisa Richmond, Eugene OR: Wipf & Stock, 2016.), pp. 39-62.

automatic window controls. Neil asked for a model with traditional manual window cranks but was told they no longer were available. Neil then asked “what is the problem I have for which this is the solution?” The salesperson, of course, had no answer. Neil had no choice but to accept this technological “advance”—and I joked to him that its side effect would be a weaker left bicep! We all have experienced innumerable technological changes, often called “upgrades” but not all experienced as such. Postman’s observation was about the phenomenon he called “technopoly” and his question about “why”—for what reason or purpose?—begs to be placed before all technological development.

Safety, Health, and Human Flourishing. Many technological developments are justified by a genuine concern for human safety, for increased food production and distribution, for easier research or communication, for the care and cure of disease and injury, for the provision of shelter, for the preservation of knowledge and cultural artifacts, and so on. These are worthy ends and purposes—but we must still ask questions about effectiveness (not necessarily the efficiency) and possible or actual costs and side effects. And we must also question what Ellul called the “technological bluff” of humanism in the discourse about technology.²³

“All techno-discourse either is or seeks to be discourse about humanity, about human primacy and objectives. . . Its theme is true human fulfillment, which it rates very highly. . . The more technocratic the author, the higher the rating of humanity.” “All technical activity orients us to a greater humanity. It is not just a matter of supplementing but of achieving.” . . . “All technical progress is said to correspond to a basic desire of the race from the very first.” . . . “All technique has human well-being as its end, allowing us fully to realize and express ourselves.”

So yes, some technological progress does contribute, sometimes mightily, to our health and flourishing. But as Ellul asks, who gets to define what human well-being and flourishing consist of? Are the architects of Silicon Valley the illuminati who best understand this? Hardly. Beware the rhetoric, the “bluff” of technological discourse which over-promises the upside and overlooks or deliberately buries the downside.

Productivity and Efficiency. For the “jobs and the future” analysts quoted earlier, the justification is “higher productivity . . . increased efficiencies, safety, and convenience . . . workers achieving more in terms of output and productivity . . . higher levels of output, better quality and fewer errors, and capabilities that surpass human ability. . . companies that are digital leaders in their sectors have faster revenue growth and higher productivity . . . their profits and margins can increase three times as fast” (McKinsey). The primary goals are quantifiable productivity and efficiency, resulting in increased company revenues. No doubt the use of tools and technologies throughout history has often resulted in productivity gains. But the questions remain: At what cost and by whom are these productivity gains achieved? Who are the winners and losers? What are the impacts on the earth, the (global and local) populations, the

²³ Jacques Ellul, *The Technological Bluff* (1990); 125-131.

workers? What are the long-term consequences of short-term and narrowly-defined productivity? Short-term productivity may turn out to be massively inefficient in the longer term. “Growth” is an idol needing to be challenged by the “*decroissance*” (un-growth) movement spreading from France as well as Doug Hill’s excellent book *Not So Fast*.²⁴

Profits. Jacques Ellul famously argued that not capital but technique was itself the main driver of technical growth. We will return to that point but I think it is inescapable that greed and the unqualified quest for personal and corporate profits drives much of the development and marketing of technology. Ellul himself shows how money serves as an idol and one of the demonic “principalities and powers” against which the Bible warns.²⁵ Adrienne LaFrance’s recent essay in *The Atlantic*, “The Despots of Silicon Valley,” provides a withering critique of how the leaders of FaceBook, Google, Meta and the other tech giants drive technological development out of greed, the quest for power, and disregard for negative or unpredictable human and social impacts.²⁶ What can be done, will be done. What can be marketed will be marketed. Any attempts to regulate or reign in technology are fiercely opposed (in the name of freedom—another instance of a “technological bluff”) with the demand for unqualified, unrestricted technological development and its increased profits.

The Technological Zeitgeist: The superstar leaders of “tech world” must not be let off the hook. But they are riding on the tsunami of what Ellul called “Technique”—the dominating spirit and mindset of our age. Its characteristics are rationality, artificiality, quantification, the quest for the “one best way” (efficiency), networking and universalization. Even without conscious intervention, Technique acts as an autonomous mega-force, self-augmenting as technical problems and opportunities automatically lead to more technology ad infinitum. Technophile leaders insist it is all inevitable. Ellul acknowledges that it is, at least on the broad scale —*unless* there is a catastrophe or a mass revolt of some sort.

In his 1977 book, *The Technological System*, Ellul devotes a chapter to “Causal Progression and the Absence of Finality.”²⁷

“Technology develops not in terms of goals to be pursued but in terms of already existing possibilities of growth.” “We must ask whether technology obeys a finality, whether it pursues an objective. . . No doubt finalities emerge in the progression of the technological system. But the point is that these finalities appear during the very course of the process; in other words, they in no way direct it, they are adventitious. . . They are merely justifications that are tacked on because man is unwilling to lose face, unwilling to appear subjugated to causalist mechanisms, and always wanting to affirm himself as master of the situation.”

²⁴ Doug Hill, *Not So Fast: Thinking Twice About Technology* (University of Georgia, 2016).

²⁵ Jacques Ellul, *Money and Power* (1954; ET InterVarsity Press, 1984).

²⁶ Adrienne LaFrance, “The Despots of Silicon Valley,” *The Atlantic* (March 2024), pp. 11-14.

²⁷ Jacques Ellul, *The Technological System* (1977; New York, Continuum, 1980), pp. 256-282

Ellul goes on to challenge even the espoused motivations of wealth, national grandeur, human flourishing, and other “finalities” as either secondary or merely vague propaganda. The real motor is prior causation in the sense that technicians respond to existing technical problems and opportunities and develop further technologies. Technology is a universal “world view,” an unchallenged paradigm, a milieu and a system whose characteristics are, seen broadly, autonomy and self-augmentation. There is a real inevitability, a necessity, in the technicization of work, leisure, and society.

Ellul observed 70 years ago in *Technological Society*,

“it is necessity which characterizes the technical universe. Everything must accommodate itself to it with mathematical certainty. Every successive technique has appeared because the ones which preceded it rendered necessary the ones which followed. Otherwise, they would have been inefficacious and would not have been able to deliver their maximum yield.” “The complete separation of the goal from the mechanism, the limitation of the problem to the means, and the refusal to interfere in any way with efficiency . . . lies at the basis of technical autonomy. Autonomy is the essential condition for the development of technique.”²⁸

And over and through the whole enterprise is an absence or marginalization of critical analysis—and the presence of an endless justifying, often deceitful, propaganda activating the idolatry of technology and the fantasies of the people.

Why is virtually all work being technicized? It is usually justified by a quest for productivity, efficiency, and profits. It is sometimes justified by concerns for health, safety, and even human flourishing. But in Ellul’s convincing analysis the progress, growth, and expansion of technology is driven—caused—by problems and opportunities which arise in existing technology. This process is unchallenged by the more or less global acceptance of Technique as inevitable and good. Autonomy and self-augmentation are its characteristics.

4: Beyond Technicized Work: What Might Be the Options?

Ellul has a rather bleak assessment of the fate of the worker in today’s workplace.

“There is no absolute obligation for the individual to conform to the type. He can, if he will, despise it. But then he will always find himself in an inferior position vis-a-vis the type. . . “the constant exercise of impersonal labor has resulted in the total depersonalization of the laborer. He has been shaped by his work, used by it, mechanized, and assimilated. . . “Our personal adaptability is limited. There are circumstances in which men as we know them cannot live at all. .

²⁸ TS, pp. 116, 133.

. There are conditions in which they can indeed continue to exist, but only with the loss of everything which makes them peculiarly human.... We are entitled to ask what adaptation will really be like in the man-machine complex. . . .²⁹

Once again, let's be clear: even in the gloom we Ellulians see, some technicizing of human work and workplaces has brought benefits that we can welcome and others we can at least tolerate. Some adaptation of our work thinking and experience to our technical milieu is understandable and acceptable. *It is the total submission of work and worker to Technique that is the grand problem.* All work, of course, is technicized to one degree or another. We are not looking for "tool-less" or "machine-less" or "technology-free" work. What we search for are ways of resisting or escaping the total, unquestioned domination of Technique over our work. It is dehumanizing and environmentally/socially damaging to continue with "Technique as usual." How can we respond?

Ellul is not optimistic: "If man does not pull himself together and assert himself . . . then things will go as I describe" The trajectory will continue, Ellul wrote, unless there is (1) a general war, (2) God intervenes...or (3) "an increasing number of people become fully aware of the threat the technological world poses to man's personal and spiritual life, and if they determine to assert their freedom by upsetting the course of this evolution."³⁰ I would only add that the technological system and global network is itself increasingly vulnerable to breakdowns and dysfunctions arising either internally or from outside hacking, and sabotage. The impacts on climate, water, soil, and air threaten major disaster. But are "cataclysm" or a major movement of aware, critical-constructive people the only options? Not real optimistic. Ellul has argued that if we try to overcome Technique by mobilizing technical means, we will only reinforce the grand technological platform and zeitgeist.

Starting Points. On the other hand, remember Ellul's project: a realistic understanding of the world in which we live—over against a dialectical stance of hope and freedom in this difficult reality—a rediscovery not only of a renewed way of thinking and a grasp of truth but with a daily incarnation of that truth in a lifestyle of hope and freedom. But where do we start? Ellul stresses over and over in his writings the importance of *awareness*—(1) open, clear-headed awareness of Technique and its reality and (2) awareness of the reality of our essential, lived humanity, not just ourselves but "my neighbor Mario."³¹ Next comes "*saying No*" which Ellul says is "the first act of a free person." We must say No to Technique as the Savior, Lord, and God of our life and work. Technogod must be profaned and desacralized, put in the helpful but humble place it deserves.

²⁹ *TS*, pp. 395-402 passim

³⁰ *TS*, p. xxx.

³¹ *Presence in the Modern World*. Not just statistics and images but specific, concrete daily lives.

But, third, humans cannot live without something sacred and central to our story and meaning. We need a *powerful alternative story*, what anthropologists would call a “myth,” a motivating, meaning, purpose, and value giving world “hypothesis” which includes a worldview and a commensurate life-style, shared in some kind of community. Neil Postman’s brilliant books *Technopoly* and *The End of Education* make this case in insightful ways.³² The old myths, including Christianity and Marxism, have in our culture been marginalized at best, debunked and desacralized by secularization—and by the rise of Technique to take their place. Our resistance is impoverished if not futile without a critical, constructive place to stand that is exterior to Technique. For Ellul, as we all know, that place to stand is in a thoughtful, steadfast relationship with the Wholly Other God incarnated in Jesus Christ.

In an interesting note on resilience, Ellul argues that resistance requires community identity and participation. “In our culture the person who is not consciously adapted to his group cannot put up adequate resistance. . . . [In the face of Holocaust] Zionist groups with their collective psychology were able to withstand persecution much more readily than were the organized Jews who had retained an individualistic mentality.”³³ The implication for those resisting technicized work, is that partnership based in a strong mission-driven, values-embedded community will be essential.

We can’t and don’t want to return to the European Middle Ages, but Ellul points out that Christianity played a critical role that is missing today. In the medieval period one element of Christianity

“was opposed to technical development: the moral judgment which Christians passed on all human activities. Technical activity did not escape moral judgment. The question ‘Is it righteous?’ was asked of every attempt to change modes of production or organization. That something might be useful or profitable to men did not make it right and just. It had to fit a precise conception of justice before God.”

Is it possible that people will become historically and critically aware of our “technopoly” and re-appropriate a different, humanistic (if not theological) sense of purpose and the values associated with it? That gets at the fundamental problem even if, as Ellul says, such a movement is not visible at present, at least not on a significant scale.

Resistance Within the Technological System. After reading Ellul’s devastating analysis of the technological system our first reaction is often to flee, to attempt to drop out as much as possible. Short of that, it may seem like there is no option but to grimly accept technical necessity at work and beyond. But despite the iron cage and the necessity of technicized work, Ellul implies that we should *not* just roll over and conform. Wherever we work, whatever our job, Ellul says, “Each of us, in his own life, must seek

³² Neil Postman, *Technopoly: The Surrender of Culture to Technology* (Vintage, 1992), 172 ff.; *The End of Education* (Knopf, 1995), pp. 8 ff.

³³ *TS*, p. 408.

ways of resisting and transcending technological determinants . . . in every area of life, in his profession and in his . . . relationships.” “We must look at it dialectically, and say that man is indeed determined but that it is open to him to overcome necessity and that this act is freedom. . . It is not a question of getting rid [of the technological phenomenon] but of transcending it. . . It is learning how to say “No”, of setting limits---but also to introduce signs of hope, freedom, and humanity.³⁴

We do not, therefore call on all workers to drop out of technicized workplaces, not even the giants like Google, Apple, Facebook, Amazon, and Microsoft. We want voices and activists of resistance and reform within these organizations, not just lobbing criticism into these workplaces from outside (though we want that also!). As Ellul argues, this means raising questions of limits, of honest communications to customers and the public, of consideration of long-range impacts and possible side-effects.³⁵ We want people in the technological system who will show respect and genuine care for colleagues and customers in otherwise brutally competitive and impersonal environments. These small acts of freedom may not be measurably effective but whoever said effectiveness and efficiency should rule over freedom in our choices?

Vocation Outside of Work. If our efforts and “witness” within the technological system are repressed or simply denatured and integrated into the system, this would not be the first time. Historically, even prior to technological necessity, work was always, in Ellul’s view, of the order of necessity (natural and social) and not an arena of freedom. For that reason, people needed to find a *vocation outside their work* arena through which they could express their freedom. Ellul viewed his own vocation as his volunteer activities with Bordeaux youth through juvenile delinquency prevention clubs, his efforts with the local church, and his participation in the regional environmental protection movement.³⁶ So one of our responses to technicized work may be to work more or less dutifully within that system but find freedom in vocations outside the technicized workplace. This is certainly possible and may be the path for some of us.

My argument, in conversation with Ellul, was that we should also bring our sense of vocation—our “calling” from God and humanity—*into* our workplace. I, for one, refuse to yield completely to the technological reality favored by my employers—leaving them and their organizations unchallenged. Ellul smiled, nodded, and admitted that even in his work as a professor in the bureaucratic university he experienced some freedom in his thinking and in his relations with students. The other side of this topic, of course, is that even in the best of non-work vocations we sometimes experience the necessity and fallenness of work. The dialectic of necessity and freedom cuts through all human effort.

³⁴ *TS*, xxxii, xxxiii.

³⁵ See Ellul’s *Theology and Technique* (2024) for a discussion of limits, pp. 134-141.

³⁶ Ellul, “Work and Vocation”; David W. Gill, “Interview with Jacques Ellul on Vocation & the Ethics of the Workplace,” *Radix Magazine*, 22.4 (Summer 94): 10-13, 28-29.

Boutique Work on the Margins. Ellul's own prognosis was pretty grim but, while he is bleak about the whole, he notes that "In writing this, I have of course omitted innumerable facets of our world. There are still artisans, petty tradesmen, butchers, domestics, and small landowners. But theirs are the faces of yesterday, the more or less hardy survivals of our past. . . . In the complexity of the present world, residues do exist, but they have no future and are consequently disappearing."³⁷ I see the broad trend but do not agree with Ellul that they have no future. I believe we need an explosion of creative small, local enterprises, using, but not being used by, technology. There are modest signs of such life in most of our communities.

Martin Ford's *Rise of the Robots* asked what kind of jobs are conceivable in the coming era when robots do nearly everything we now are doing? For a while anyway, he writes, there will be room for some "boutique" enterprises for grizzled hold-outs like me who prefer imperfect cooks, wait-staff, and live musical entertainment in neighborhood gathering places over technologically-perfected industrial food prepared by robot chefs and delivered to the table by Stepford staff. Probably a few of us elderly will continue to prefer smaller, imperfect congregational life over multi-screen mega-pastor "perfection" while sipping Starbucks cappuccinos delivered to pews by usher-bots in neat uniforms.

Maybe some aspects of personal and relational counseling will remain in demand. Maybe personal fitness trainers and Geek Squad-type technology-assistants will find employment. Human ingenuity is still incredible and many people will find or create new kinds of jobs. Various different "black market" economies could arise on the fringes of the Brave New World. My own urban neighborhood in Oakland is densely populated by small, independent businesses across a large number of industries and specialties.

Political & Labor Initiatives. Despite the "political illusion" which Ellul described at length both in *Technological Society* and *Political Illusion*, I continue to believe that we should participate as possible and appropriate.³⁸ This means advocacy and support for environmental stewardship, accessible health care, housing availability, minimum wages if not also universal basic income, worker and union protections, and social safety nets. We need to support data privacy initiatives, the restraint of monopolistic enterprises, regulatory wisdom, affordable education, and free enterprise. Progress in these areas may be mediocre, slow, and even ineffective but at the very least we are acting in solidarity with our neighbors—and who was it, by the way, who said we should not be ruled by "efficiency"?

A vast "unionization" of workers could leverage change among the wealthy elites and the technological system from which they profit so handsomely. Drive too many workers into unemployment, poverty, and

³⁷ *TS*, p. 147.

³⁸ *TS*, chapter four, "Technique & the State," pp. 229-318; Jacques Ellul, *The Political Illusion* (New York: Knopf, 1967); see my essay "The Political Theology of Jacques Ellul" in David W. Gill & David Lovekin, eds., *Political Illusion & Reality: Engaging the Prophetic Insights of Jacques Ellul* (Wipf & Stock, 2018), pp. 67-88.

despair and they will eventually rebel against that system. Better to support worker organization and unionization than wait for “the fire next time.”

Conclusion: Revolution from the Bottom. In conclusion, both within and outside the technopolized work we have been considering, the world is waiting for people who study and understand both technology and work realistically and in depth. We are waiting for workers who understand their primary identity outside the technicized work milieu—in humanistic if not also theological terms. We are waiting for workers who are educated broadly, beyond the STEM obsessions of our age, workers who adhere to a robust mission and purpose and are sustained in a vibrant value-embedded community, however small.

Let me close by reminding us all that it is not just the powerful in our society who always have the last word. Here are a few examples: (1) back in the 1950s and 1960s San Francisco Bay was a stinking, toxic mess with factories and cities dumping their raw sewage and filling the edges of the bay with municipal dumps before building more factories and some luxury home developments. The bay was both dying and disappearing. Today the bay is clean, fish are edible, walking, bike paths, and restored wetlands flourish. How did this happen? Not by technological initiatives, not corporate benevolence, not political sensitivity. It was three Berkeley women who launched a “Save the Bay” movement that succeeded because it awakened enough consciences, stirred enough imaginations, mobilized enough voters, and became irresistible.

(2) A true “coffee revolution”—in terms of quality, availability, and congenial social context—has actually changed American culture. It did not start from the coffee industry (Hills Brothers, MJB, etc.) but from small coffee shops in Berkeley and Seattle and grew from there. There is no going back.

(3) Hip hop music and dress, like it or not, began not in the big music and fashion houses but among youth on street corners in economically depressed neighborhoods. It captured imaginations and became irresistible.

(4) The Civil Rights movement did not begin in Congress but in small Black churches, local restaurants, transportation systems, classrooms, and jazz clubs where people expressed justice and freedom with their bodies and lives. It did not begin in Congress and never would have happened. It succeeded because it was true and right. Our lives have all been changed.

(5) And one final example I love, Christianity did not start with Jesus running for king or emperor or founding a big organization, but with a handful of disciples, brothers, and sisters embracing and demonstrating a radically-new way of life and thought. Yes, there was a lot of pain and suffering along the way but they stuck with it and within two centuries this movement was rocking the Roman empire.

Do not be discouraged. Awareness, resistance, purpose, creativity, and community. In work as in all other aspects of life, let us “Think globally, but act locally.”

What could be next? Beyond acquiescence and necessity, we need to cultivate and promote awareness of technological reality, find ways of resisting, setting limits, and acting in freedom and compassion even within technologically-dominated work organizations. We might find creative outlets for our vocations outside our workplaces—or create independent “boutique” workplaces. For what it’s worth, we can initiate and support political measures to limit technological damage and support worker organization. We can find and sustain hope in God and a robust narrative that replaces the Technique-myth of our time. We can take courage from the unexpected successes of many cultural changes that started small but eventually succeeded because of their truth, perseverance, and community.