

prometheus wired

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THERE IS A MANTRA among those invigorated by the emergence of network technology. John Perry Barlow, formerly a songwriter for the Grateful Dead and co-founder of the Electronic Frontier Foundation, expresses it this way: “Everything we know is wrong.”¹ Recently, I appeared as a guest on a television show to discuss the question “Are we becoming cyborgs?” and, after referring to *Frankenstein* as a potential source of instruction about the perils of dabbling in human creation, I was upbraided by a learned colleague and co-panellist for being mired in “old narratives” that were “useless” in the present context. Similarly, after putting forward my considered criticisms of the “teledemocracy” program developed by one of Canada’s major political parties, a party MP informed me that “most of what you have been taught about traditional politics will be of little value in the years ahead ... The old ways don’t work any more.”² What follows is based on nearly the opposite assumption to these – namely, that a great deal of what we already know is *not* wrong, and is therefore still useful. Even if the advance of network technology fundamentally alters social, economic, and political structures, and even if it radically affects the way we communicate and perceive ourselves or our world, this does not necessarily mean that our amassed knowledge – in particular, what we already know about technology and politics – is an unsound basis for understanding or forming judgments about these changes. In short, we know quite a bit, and it can’t all be wrong. In the chapters that follow, I will attempt to bring some of what we already know about technology and politics to bear on a number of the questions facing us as we head into the age of networks.

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The movement of digitized information over computer networks is, according to Barlow, “the most profound technological shift *since the capture of fire*.”³ Judging by the many volumes heralding the onset of a new “information society,” the rush of governments to dispense public resources in developing digital infrastructure, the reconfiguration of education systems in observance of perceived technological imperatives, and the sustained buzz emanating from mainstream media, Barlow is not alone in thinking so. Predictions such as this capture our attention because of their audacity, but the comparison of computer networks to fire is interesting for another reason. Fire, of course, is at the very heart of the modern technological mythology.

The myth of Prometheus the fire-giver is an ancient one, but the drama it depicts illuminates much about the modern technological spirit.⁴ Basically, the story is as follows: After being insulted by Prometheus, Zeus exacted revenge by punishing his rival’s human children. Zeus “hid the livelihood of men ... hid the bread of life ... and hid fire.” Seeing the toil this deprivation caused, Prometheus concealed a flame in a fennel stalk and “stole again for men” the instrument that had been taken from them.⁵ The theft did not concern Zeus enough for him to punish Prometheus directly, and he worried so little about humans possessing fire – after all, humans had used fire instrumentally well before the gods starting playing games with them – that he did not bother to retrieve it. Instead, out of spite, he visited evil upon men in the form of Pandora, the “all-gifted” female who released among the Titans all the grievous gifts of her pestilence jar, save one: “Only hope abode within her unbreakable chamber under the lips of the jar, and flew not forth.”⁶ Deprived of hope, human beings could make little use of the fire that had been restored to them. It was at this point that Prometheus – whose name translates literally as “forethought” – was moved to commit the crime that ultimately brought the wrath of Zeus upon him:

Prometheus: I caused mortals no longer to foresee their own doom.

Chorus: Of what sort was the cure thou didst find for this affliction?

Prometheus: I caused blind hopes to dwell in their breasts.⁷

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For this, Prometheus was chained to a rock, his ever-regenerating liver to be devoured in perpetuity by an insatiable eagle.

Why was this such a heinous crime – indeed, more heinous than the theft of fire itself – and what does it have to do with the modern technological spirit? Fire illuminates the physical world, but it is hope that relieves people of their spiritual limits and entices them to impose themselves, blindly, on the future. When beings who are mortal by nature no longer foresee their own death, they begin to regard themselves as *immortal*: as having no natural limits, like gods, which they are not. Hope thus seduces human beings into overestimating and overreaching themselves, with tragic consequences. Beings who recognize their limits can use instruments such as fire (or computer networks) in a healthy and responsible way; but instrumental, hopeful beings who believe themselves to be free of limits are dangerous to themselves and, ultimately, to their gods. Fire was a significant instrument, but without the added fuel of hope its flames could be contained. With hope in their breasts, and brandishing a fiery torch, human beings thought themselves free to light the way to their own destiny, and would act accordingly. The dominion of Zeus was doomed.

Hope enlightens, but it also blinds. It lights the way to the future but, unmoderated by reason, it renders progress toward our self-made destiny reckless, delusional, and dangerous. Just as hope causes us to regard ourselves as *more* than we are, it also thrusts us into the future as irrational, that is, as *less* deliberative and reasonable than we are capable of being. Blindness is an extreme condition: blind hope is an immoderate, feverish, and desperate substitute for prudent, thoughtful, responsible deliberation. We *hope* for the best when we are unable or unwilling to *think* about what is best. Despair – the absence of hope – has its own pathological consequences for human agency in the world, but this does not mean that blind hope is the best, or even a good, disposition for beings in a world that gives them access to very powerful technical instruments. Far better would be a modest appreciation of the abiding human appetite for a good life, and prudent deliberation about appropriate means for achieving that end.

Nevertheless, it is hope that has consistently animated humanity's collective and public approach to the development of technology. It is not without reason that the Prometheus myth has been so resonant for

those who have thought about the technological spirit of the modern age. Francis Bacon, the father of modern science, felt the need to recast Prometheus as a hero rather than a warning; Karl Marx, the great “progressive,” invoked the Promethean creed in his earliest work; Mary Shelley, the romantic, subtitled her cautionary tale “The Modern Prometheus”; Friedrich Nietzsche, who saw clearly into the heart of modernity, found Prometheus waiting there.⁸ It comes as no surprise that one of the most influential studies of the Industrial Revolution – the cradle of technological development in the West, referred to by the author as a “new age of promise” – bears the title *The Unbound Prometheus*.⁹ In the modern era, Prometheus has been released from his chains, his spirit set free. The story of modern technology is the story of Prometheus’s people writ large: the story of humanity blindly wielding instruments to command and transcend that which is given, in the hope of creating its own future. It is my contention that network technology is part of, rather than a departure from, this trajectory. In the age of digital networks, Prometheus is certainly *unbound*, but he is also *wired*. It is, I would suggest, imperative that we subject our hopes for this technology to the sort of thoughtful consideration that, in moderating hope, befits our nature as rational beings.

Technologies of Hope and Fire

To begin, I would like briefly to situate networks historically, in relation to the technologies that have preceded them. If, for heuristic purposes, endowment is divided into that which is given in space, time, matter, biological life, and the capacity for consciousness, it becomes possible to identify certain prominent modern technologies as emblematic of the human desire for transcendence, command, or creativity in relation to these categories. It is telling that this spirit has been equally present both in the technologies that inaugurated modernity, and in those that attend its culmination. The transcendence of sensory spatial perceptions was initially a function of the development of glass technologies: spectacles in the thirteenth century, mirrors and microscopes in the sixteenth, mass-produced clear glass windows and the telescope in the seventeenth – all extended humanity’s view beyond what it could see with its own eyes alone. Fantastic dreams about expanses imagined and unimaginable were replaced by a conscious desire to command

space by travelling over distances seen, which drove the continued development of transportation technologies such as the steamboat in the eighteenth century, the railway in the nineteenth, and the airplane and rocketship in the twentieth. Even the modern city itself can be understood in these terms – the aggregation of human labour required for early, large-scale, industrial production necessitated an overcoming of the distances separating those labourers, and so the urban city was born as a technology of spatial concentration. And as urban space threatened to grow too large for efficient enterprise, a civic reorientation around technologies of transit such as the automobile, superhighway, bus, and subway provided late modernity with its own basis for an obsession with the command of space.

Prior to its conquest by technology, time was more or less conceived of as a boundless eternity, punctuated only by organic rhythms beyond the control of human beings. External rhythms such as the falling of night, the rising of the sun, and the turning of the seasons were clearly beyond human competence, and even those cadences that were internal – the beating of hearts, the welling of hunger, the ageing of bodies – defied human command. The introduction of regularized time in the fourteenth century via the mechanical clock represented an attempt to transcend the organic necessities of time by applying a technology that rendered it subject to human regulation.¹⁰ As David Landes describes, mechanical time emerged in Benedictine monasteries to regulate the ringing of bells marking canonical hours. Though such clocks established a liturgy independent of natural cycles, they were not impious: time belonged to God, and the clock ensured it would not be wasted. It was not until time was secularized, and the clock was enlisted to habituate newly urbanized labourers to the cycles of industry and commerce, that this instrument became emblematic of modernity's conquest of Nature itself.¹¹

In a sense, modern humanity transcended time by creating it in a form that could be commanded; the mysteries of Eternity were evaded with help from the mathematics of infinity. Few modern inventions have achieved the near-universal generality of mechanical time, which perhaps explains the privileged place enjoyed by considerations of speed in the design of most technologies developed since its adoption. It also perhaps explains the ease with which the World Congress standardized

chronometric measurement across a revolving and rotating planet in 1885, by simply drawing lines on a map to create time zones that allowed for the coordination, in time, of activities separated by vast spaces and political priorities.¹² The unpredictability and sluggishness of pre-modern transportation meant that coordination had been previously unnecessary – things simply arrived when they arrived. The increasing speed of modern transport, rooted as it was in time’s mechanization, necessitated its standardization as well. Waiting was simply no longer an option.

This spirit of human ingenuity is also in evidence with regard to modernity’s relationship to matter. The difficulties of creating and destroying matter have not deterred modern humanity from setting out to transform it in ways deemed productive and profitable, through the use of technology. The generalization of the clock as a definitive attribute of modernity is matched only by the proliferation of industrial technologies, particularly from the mid-eighteenth century onward, designed and engineered to transcend the limitations imposed on the transformation of matter by human labour. Three principles guided the Industrial Revolution – mechanization of production, increased power generation, and enhanced exploitation of a greater variety of raw materials – and in combination they set the course for the period’s technological development.¹³ Mechanization came to the textile industry in the late eighteenth century with the invention of the spinning jenny and cotton gin; proceeded through the nineteenth century with the development of a variety of milling, reaping, drilling, lifting, sewing, and pressing machines; and culminated in the twentieth with the arrival of automated robotics. Reliance on animate sources to drive the great machines defeated their very purpose, and so industrialists turned instead to a series of technologies of motive power, the succession of which from the eighteenth to the twentieth century can be followed as if it were the bouncing ball of modernity: from the steam engine to the dynamo, to the internal combustion engine, to the turbine, to the nuclear reactor.

Much like humans and horses, these machines required fuel, and the pursuit of energy has been one of the dominant themes of the modern desire to command raw matter by turning it into something else. For the most part, this pursuit has entailed an extension of the

dominion that God granted men over the earth to include dominion *under* it as well. The art of mining pre-dates the Industrial Revolution, but it was the escalating demand for coal that accompanied steam-driven production and transport, and the smelting of ore that established the mine as a key seam in the fabric of modern industrialism. The ascendancy of the internal combustion engine, augmented by the mass production and consumption of automobiles, brought with it a return to the ground – only with great drills and pumps this time, instead of shovels and hammers – to suck petroleum from its hidden natural stores. Electric power called for similar interventions. Unable to defy gravity, humans proved that they could, at least, harness it for their own ends by enlisting it to cause a vast volume of water to cascade over turbines and create hydro-electricity. And when the efficiency or supply of coal, gas, and water came into doubt, the realm below was once again scoured for unleashable energy. It finally yielded plutonium and uranium – substances whose atoms could be split with powerful results, including some that would ultimately be returned to the ground, whence they came.

The exploitation of raw materials has thus been intimately linked with the search for power throughout modernity. However, it would be wrong to suggest that the modern transformation of matter was concerned solely with the fuelling of machines, and did not also involve the use of raw materials to create objects or things. The shift from organic animal and vegetable matter to inorganic minerals as the primary material of production is a key marker of the modern industrial age.¹⁴ The replacement of wood, in particular, by metals smelted from ores – primarily iron and copper – that had been dug from the earth characterized the material preoccupation of the early modern industrial era. By the beginning of the twentieth century, these metals were to be replaced, to a degree but not entirely, by metal alloys and lightweight, strong, and plentiful aluminum. But the penultimate modern century also brought with it perhaps the most modern of materials: inorganic synthetics, also known as plastics. Plastics had been around since the invention of celluloid in 1868, but it was not until the synthetic resin known as “Bakelite” was patented in 1909 that they become the modern material of choice and began to find their way into everything from tableware to clothing. Not only was plastic about as

close to being truly artificial as anything could be, it was also seemingly impervious to other “natural” forces, due to its impermeability, electrical resistance, and flexibility. Plastic was a material sign of human creativity and durability achieved by technological means: “Here in unexpected form was a surrogate for the long-sought secret of transmuting and creating matter.”¹⁵

The matter of transcending, commanding, and creating the biology of human life has proved more difficult for modern humanity. Human beings have always been able to reproduce by copulating, but this method has become a distraction to the modern scientific spirit, which seeks to transcend the role Nature provides in the ongoing generation of living beings and instead investigates the means of creating life itself. It is this obsession that drove Dr. Frankenstein, who could easily have produced a child by natural means with his admiring and presumably fertile Elizabeth, but instead pursued an obsessive desire to become “capable of bestowing animation upon lifeless matter ... the creation of a human being,” through technology.¹⁶ Dr. Frankenstein succeeded where real modern scientists have thus far failed, although the sophisticated new genetic and reproductive technologies appearing at the close of the millennium suggest the possibility of an impending meeting between fact and fiction. This is still not the case at the other end of the biological cycle of human life. The ancient healing arts have given way in modernity to a medicalization of the human body that has had as its express purpose the extension of human life – indeed, acceptable rates of mortality and life expectancy have become a required attribute of a fully “modernized” society – but we have yet to isolate the elixir that will do so indefinitely. The most concerted efforts to secure the conditions of everlasting life have been exerted in the area of cryogenics. Ironically, it was an early investigation in this field that cut short the life of Francis Bacon, whose Promethean fire was apparently not quite so hot that it could melt away the fatal escalation of a common cold.

However, as Dr. Frankenstein observed, “to examine the causes of life, we must first have recourse to death.”¹⁷ Human beings have never been at a loss to devise creative ways of killing themselves and their enemies, and the modern era has certainly featured its share of technological leaps in this regard. In fact, it is probably fair to say that, next

to profit, the more effective waging of warfare has been the chief stimulant of modern technological development. The impact of militarism was felt far and wide in modernity, with technological spin-offs in sectors including manufacturing, engineering, and even industrial organization itself.¹⁸ However, it was in the development and deployment of weaponry that the technological hand of modernity turned toward the snuffing out of human lives. Firearms in the form of powder-fired guns and cannons began to appear in the fourteenth century, and were followed in the fifteenth by numerous embellishments from the hand of Leonardo da Vinci. The sixteenth century brought with it the first mobile tanks, which led to advances in fortification technology in the seventeenth. Guns continued to merit technological attention, with the bayonet appearing in the seventeenth century, the mass-produced musket in the eighteenth, and Gatling's machine-gun in the nineteenth. The twentieth century contributed its own share of killing technologies. Some, such as the submarine boat, the warship, the fighter plane, various types of missiles, and the mechanized tank, were simply improvements on old designs, while others, including a variety of poisonous gases and chemical defoliants, were entirely new. However, the discovery of a quintessentially modern killing technology was to come very late in the game, with the development in the mid-twentieth century of the atomic bomb. Up to this point, weapons technology had developed along a trajectory of increasing efficiency in terminating larger numbers of individual lives. Through efforts to direct the energy produced by splitting atoms toward destructive ends, the ability to eliminate life itself – all life – was finally realized. In lieu of God-like powers of creation, modern humanity had discovered, and settled for, those of ultimate wrath.

Fortunately, transcendence achieved through the exercise of such wrath would leave nothing of Nature left to command, and so that exercise has been generally avoided. In the modern era, the command of human minds has proved to be a far less catastrophic option than the obliteration of human bodies. This is not to suggest that modernity has suffered from a lack of slaughter. It is merely to point out that, when the limitations of annihilation and brutality have been reached, for one reason or another the technological seizure of consciousness has presented itself as a quite sustainable and fruitful alternative. The

success of the modern technologies of consciousness – often referred to as “communications” technologies – is attributable, in part, to the ways in which they have complemented efforts to transcend time, command space, and transform matter through industry. For example, the arrival of the printing press in the late fifteenth century is widely credited with smashing the monopoly on knowledge previously held by the clergy, and in so doing facilitating the birth of both modern individual consciousness and the nation-state.¹⁹ However, it also instigated a re-orientation of people’s relationship to time and space, in that the printed word was more permanent than speech, and the book easier to transport than previous storage media.²⁰ It is for this reason that Rousseau described printing as “the art of immortalizing the errors and extravagances of the human mind,” whereby the “pernicious doctrines” of would-be philosophers could be made to “last forever.”²¹ The technologies of the nineteenth century would far surpass printing in their ability to transcend space and time: telegraphy and telephony liberated communication from questions of transportation, allowing instantaneous conversation across vast distances; audio recording and photography facilitated the timeless registration and collection of images and sounds that previously would have been condemned to the uncertainty of memory. In concert, these technologies contributed to the modern perception of the unique position occupied by the individual self in both time and place.

However, it was not until the twentieth century that technologies of consciousness would appear that were able to meet the idiosyncratic requirements of the maturing modern era. These were the broadcast technologies and, with the possible exception of the Holy Bible, their effectiveness as instruments for shaping human minds was unprecedented. By this time, the influence of the clergy had been eclipsed in the West by that of various secular authorities and, though the army, prisons, and asylums provided disciplinary support for the state, the church had yet to be replaced with a satisfactory institution of primary and deep socialization. Furthermore, while the Industrial Revolution enabled the production of vast quantities of an increasing variety of goods, the question remained as to how their consumption could be incited on an equivalent scale. Having recognized the integrity of the free individual, and having developed means to manufacture a surfeit

of commodities, the powerful interests of modernity had reached the point of requiring technologies to facilitate the manufacture of consent, and the manufacture of needs. Able to instantly transmit complex aural, and eventually visual, messages from a central source to a multitude of distant receivers simultaneously, broadcasting emerged as the perfect technological solution to both these distinctly modern problems. As the lives of modern individuals became increasingly isolated and private, radio and television provided one-way information conduits directly into their homes. Here were powerful technological means by which large numbers of individual citizens could be assembled into a great mass, ready to receive political instruction in the form of “news,” and basic socialization in the form of “entertainment.”²² Additionally, these technologies were perfect media for the stimulation of consumption. Not only were they platforms for advertising particular products, they also enabled the promotion of consumptive behaviour itself, and regularized a climate of need by routinely presenting images of lives made happy, normal, and fulfilling through the possession of consumer goods.²³

Ultimately, the “product” of broadcast technologies was neither programming nor advertising, but, rather, the audiences that could be gathered and delivered to advertisers – be they political or commercial – in the form of a saleable commodity like any other.²⁴ It is at this point that the socialization and commercial roles of broadcast technology dovetail to evoke one of modernity’s great ironies: the paradox of mass pluralism, in which millions of consumers are convinced they can assert their essential individuality by purchasing the same running shoes in the same shopping malls as millions of other people. The discourse of radical individualism was necessary to shake loose the grip of pre-modern organic collectivism, but, if manifested socially in the form of *genuine* pluralism, it would be simply unable to meet the socialization requirements of powerful, modern political and economic elites. The broadcast technologies were configured to assist in this regard, but only if the plurality of modern individuals could be collected into relatively undifferentiated masses, via the cultivation of a sameness that was antithetical to the modern spirit of individuality. It is precisely this interest, common to political elites seeking to manufacture consent, industrialists seeking to manufacture consumers, and broadcasters

seeking to manufacture audiences, that accounts for the clock-rivalling success of television among modern technologies.

Networks as Postmodern Technology?

As noted above, the prophets of the network revolution believe we are on the cusp of a new world in which the spark is being replaced bit by bit.²⁵ If the modern technological world was driven by the alchemy of fire *and* hope, claims about the revolutionary nature of network technology force us to ask whether we might also be in the midst of a parallel shift in mythology that will sustain an entirely new way of being, predicated on the use of these instruments. That is, if bits come after fire, then what comes after hope?

One set of answers to this question has been offered by what is known loosely as “postmodernism.” Postmodernists, especially those who write explicitly about information and communications technology, tend to agree with network gurus when they proclaim that nothing we already know can be of much use to us: “the political metanarratives of emancipation from the eighteenth and nineteenth centuries that have served as frames and reference points for the disciplines of history, literature, philosophy, sociology, anthropology and so forth now appear to be losing their powers of coherence, their ability to provide a groundwork of assumptions that make it appear natural to ask certain questions, and to think that the answers to those questions define the limit and extent of the problem of truth.”²⁶ Postmodern writers such as Mark Poster believe that the “mode of information” characteristic of the “second media age” requires that we “propose new questions that the old ones subordinate.”²⁷ Poster, for example, looks to Michel Foucault for new questions about the panoptic tendencies of database surveillance, to Jacques Derrida for new questions about electronic writing, to Jean-François Lyotard for new questions about computer science, and to Jean Baudrillard for new questions about electronic advertising. In a similar spirit, George Landow informs us that “we must abandon conceptual systems founded upon ideas of center, margin, hierarchy and linearity and replace them with ones of multilinearity, nodes, links and networks.”²⁸ This exhortation represents only the very thinnest edge of the postmodern wedge when it comes to the terms in which contemporary technology is often

discussed. Along with those terms singled out by Landow, one could list the following as common to the discourse animating both postmodernism and network technology: discontinuity; simulation/virtuality/hyperreality; decentred, unstable, multiple and dispersed identities; pastiche, play, and gaming; the demise of authority/authorship; sovereignty as an anachronism; contingency, uncertainty, and irreferentiality; decentralization; intersubjectivity/intertextuality; irony; and radical democracy. Thus, there is much to suggest that postmodernism and network technology go together. As Ronald Deibert has observed, there is a certain “fitness” between postmodern social epistemology and the hypermedia communications environment.²⁹

However, because this is an examination of the politics of network technology, I will refrain from engaging in a comprehensive critique of postmodernism *as theory*. In the first place, the world does not suffer from a lack of commentaries on this subject. Postmodernism is everywhere, and there are enough people rushing ahead either to embrace or to vilify it that I think it is probably safe for some of us to stay back and pick over what is being left behind. Second, I am more interested in the politics that network technologies – sometimes in conjunction with certain aspects of postmodern discourse – inspire, and in coming to grips with these, using the resources of political philosophy, than I am in critiquing postmodern theory on its own. This means that I will also refrain from using postmodernist theory to understand network technology and its politics. Instead, I opt for a few ancient and modern tortoises over the postmodern hare. It is true that postmodernism has something to tell us about many aspects of emerging computer and network technologies, in so far as it provides a lexicon of “therapeutic redescription” for naming new phenomena and for renaming old, but changed ones.³⁰ The utility of this lexicon is enhanced when it is used in conjunction with other resources drawn from the tradition of critical theory.³¹ It does not necessarily follow, however, that we have nothing left to learn from that which was thought and written in the long period before Baudrillard’s “ecstasy of communication” allegedly supplanted meditation on the substance of a good life.³² Therapy becomes necessary when the possibility of understanding through the use of established resources has been exhausted. I am not convinced we have reached that point vis-à-vis the politics of technology.

At the very least, we should sort carefully through the piles of theoretical rubbish before we consign them to the postmodern recycling bin.

Political judgment places a premium on caution and is wary of enthusiasm. My choice to employ the resources of traditional political philosophy to understand the politics of network technology and the discourse accompanying it, rather than to use postmodernism to simply describe their appearance, reflects the caution proper to reasoned judgment. A reluctance to embrace the “newness of the new” championed by Poster and others is appropriate in this case precisely because so much of what passes for postmodern “theory” sounds so much like the technology and politics it is meant to be theorizing.³³ Take, for example, this statement about hypertext: “[postmodern] critical theory promises to theorize hypertext and hypertext promises to embody and thereby test aspects of theory.”³⁴ I am not sure what the words “test” and “promise” are intended to mean in this sentence, but it is clear that the fitness between theory and the theorized presented here – that of a convergence – is perhaps too snug for honest comfort. It is not a sin to write enthusiastically about the manner in which a technology vindicates one’s perspective, but it may not be theory either.

“Theorist” is from the Greek *theōros*, meaning “spectator.” Sometimes, postmodern interventions appear to have too much invested in what they are supposed only to observe. According to Baudrillard, “it is not enough for theory to describe and analyze, it must itself be an event in the universe it describes. In order to do this *theory must partake of and become the acceleration of this logic.*”³⁵ This is why it is easier to say “postmodernism” than it is to say “postmodern *theory*.” From vantages closer than any spectator’s, postmodernism can provide descriptions (therapeutic or otherwise), and even participate, but it cannot gain the distance that is crucial for judgment. The issue of the conditions and practice of judgment is a complicated one. However, as Ronald Beiner writes in his effort to articulate a philosophy of political judgment that respects both the Kantian and the Aristotelian traditions, “political judgment must embrace the standpoint of both the spectator and the actor: it calls for both distance and experience.”³⁶ Judgment requires theory to “clarify what is at stake, and disclose the conditions that render efforts towards a satisfactory resolution possible”; it also requires prudential reflection upon direct experience, because questions of

judgment “can only be resolved in the concrete, when confronted with particulars.”³⁷ In so far as it is immersed in the very technology it describes, postmodernism can and does provide close-up accounts of the various particularities of digital networks. However, what postmodernism gains in proximity, it lacks in critical, theoretical distance. Indeed, for the most part, postmodernists reject the idea that distance of this sort is even possible. Fredric Jameson, in one of the definitive statements of postmodernism, concluded that “distance in general (including ‘critical distance’ in particular) has been very precisely abolished in the new space of postmodernism ... our now postmodern bodies are bereft of spatial coordinates and practically (let alone theoretically) incapable of distantiation.”³⁸ Network technology and the postmodern are, as Chris Gray describes, thoroughly *embedded*: “As a weapon, as a myth, as a metaphor, as a force multiplier, as an edge, as a trope, as a factor, and as an asset, information (and its handmaidens – computers to process it, multimedia to spread it, systems to represent it) has become the central sign of postmodernity.”³⁹

If information technology is so central to postmodernity – if the latter cannot exist without the former – then postmodernism, on its own, cannot be expected to provide the tools for a disinterested understanding and judgment of this technology. For this, we require theories that, from a distance, help us “clarify what is at stake” in committing ourselves to this particular technology. To their credit, postmodernists such as Poster admit that postmodernism is a “fledgling position” capable only of “registering changes” in society.⁴⁰ The registration of particularity is an indispensable element of judgment, and while postmodern writers certainly contribute to this process, they do not enjoy a monopoly over it. Part of this book involves a discussion of the particularities of network technologies, and in some instances I draw on the work of postmodernist writers who have paid attention to these. For the second, crucial aspect of the foundation for judgment – the distance that accrues to theory – I rely on spectators of past technologies in the hope they can help us clarify what is at stake in our own.

Network Technology and the Discourses of Change and Democracy

Curiously, network technology taps into the most stubbornly modern

aspects of the postmodern narrative – namely, the popular discourses of irresistible change and ineluctable democracy. The valorization of change over endurance – in particular, change that is deemed progressive – is a hallmark of modern politics. Change is the ground upon which modern political actors bearing a variety of ideologies meet: liberals believe change expresses freedom; socialists believe change is necessary before freedom can be won; and even so-called neo-conservatives, who resist changes in public morality and domestic life, believe external limits on market freedom – the freedom to fluctuate or change – should be avoided. Modern political subjects not only desire change but also are certain that change is within their grasp and theirs to make.

Network technology has escalated, but not altered fundamentally, the fetishization of change that characterizes modernity. According to two recent heralds of the new age, “there is no disagreement on the essentially revolutionary nature of the forces unleashed by the new technology. And there can be no doubt that the Digital Revolution is going to change the way knowledge is gained and the way wealth is created.”⁴¹ Celebrated futurists Alvin and Heidi Toffler agree: “what is happening now is nothing less than a global revolution, a quantum leap ... we are the final generation of an old civilization and the first generation of a new one.”⁴² From former banker Walter Wriston we hear that “the rules have been changed forever” by network technology;⁴³ and George Gilder is certain that the possibilities for change are “bounded only by the reach of the mind and by the span of the global ganglion of computers and cables, the new world wide web of glass and light.”⁴⁴ The government of the United States has determined that “a seamless web of communications networks, computers, databases and consumer electronics ... will change forever the way people live, work, and interact with each other.”⁴⁵ The chair of Canada’s Information Highway Advisory Council concurs: “As Adam and Eve left the Garden of Eden, one said to the other, ‘We are in a period of profound change.’ So are we today ... Today’s information revolution will be as deep and momentous as any other scientific movement in history.”⁴⁶ If there is one thing that network technology has left intact, it is the abiding faith that change is immanent, and that things will never be the same.

There also appears to be what one might call a *marginal* consensus among the technology's proponents about the character of the changes that will be wrought by digitization and computer networks. It is only a marginal consensus because, while the vast majority of people who have written about this technology agree that it necessarily portends change, most of them are less willing to make a case for what kind of change this will be, preferring instead to trot out ambivalent platitudes about the commingling of peril and promise, danger and delight, or benefits and detriments. There are certainly exceptions, but the account of change that seems to have captured the public discourse about networks is one that suggests the change this technology instigates will be revolutionary in the truest sense: it is believed that networks will fundamentally alter relationships of power in society.⁴⁷ So we are assured that "the information revolution is *profoundly threatening* to the power structures of the world."⁴⁸ More specifically: "The force of microelectronics will blow apart all the monopolies, hierarchies, pyramids, and power grids of established industrial society."⁴⁹ And this view is not simply an indication that the users of networks harbour revolutionary intentions. Instead, rebellion is said to inhere in the essence of the technology itself: "There appears, in fact, to be a *core conflict* between the *basic nature* of the Internet and the demands of organized, large-scale commerce," due to "digital technology's natural tendency to promote decentralized, non-hierarchical social relations and organizational forms."⁵⁰ If this is true – if network technology is *inherently* revolutionary – it leads one to wonder why existing governmental, bureaucratic, corporate, and financial elites are so enthusiastic about, and so heavily invested in, the success of this technology.

Perhaps the key article of faith concerning the essentially revolutionary series of social, economic, and political changes promised by digital networks is the conviction that these are democratic media par excellence, a faith augmented by an anticipation that the democracy of networks will be contagious and impossible to quarantine. The mythologies of democracy constitute the dominant elements in the narrative accompanying the proliferation of network technology. I use the plural "mythologies" because democracy – the great empty vessel of contemporary political discourse – means different things to different

people. To some it means consumer capitalism; to others it means anarchy. To some it means liberalism; to others it requires socialism. To some it means voting; to others it means deliberating. For some it is based on rights; for others it evokes the duties of citizenship. The point is that digital networks appear amenable to presentation in ways that capture the imagination of nearly every kind of democrat and, as a result, democracy has figured prominently in the discourse that names not only the essential characteristics of this technology, but also the wider societal changes it promises to precipitate.

This is hardly surprising. In the modern era at least, developments in communications technology, including the telegraph, telephone, and television, have characteristically inspired renewed democratic aspirations.⁵¹ Examples of how the narrative of network technology has been colonized by the mythologies of democracy are harder to miss than they are to find, but nowhere have I found a more expressive articulation of this dynamic than in a book titled *The Electronic Republic*, by Lawrence Grossman, formerly a leading citizen in the world of television.⁵² According to Grossman, telecommunications networks “make it possible for our political system to return to the roots of Western democracy as it was first practiced in the city-states of ancient Greece,” and will also facilitate “a modern-day extension of Jeffersonian participatory democracy.”⁵³ Network technology has created a situation whereby “members of the public are gaining a seat of their own at the table of political power,” and in which they are becoming “increasingly involved in day-to-day decision-making alongside the President and Congress.”⁵⁴ Crucially, network technology promises to overcome the obstacles of scale that have traditionally thwarted vigorous democratic participation by providing for “keypad democracy”: “Time and distance will be no factor. Using a combination telephone-video screen computer, citizens will be capable of participating in audio- and videophone calls, teleconferences, tele-debates, tele-discussions, tele-forums and electronic town meetings.”⁵⁵ Also, networks are credited with the potential to obliterate the correspondence between economic means and political participation because, as Walter Wriston puts it, “information has always been society’s great equalizer.”⁵⁶

This perception of the likely impact of network technology has been bolstered by political actors at the governmental level who – hoping to

catch the wave and trying to avoid being stigmatized as anti-democratic – have joined the rush to digitality by placing themselves and at least part of their work “on-line.” Typically, this has taken the form of making government documents and services available via computer networks; maintaining party, ministerial, and departmental Web sites; and assigning electronic-mail addresses to elected representatives.⁵⁷ In some cases, it includes the facilitation of on-line discussion groups and electronic plebiscites, and the provision of a variety of information resources.⁵⁸ Our political leaders have been no less enthusiastic about the potential of network technology than the captains of industry, the futurists, and the pundits have been. Preston Manning, the leader of the Reform Party of Canada, can barely contain his enthusiasm in announcing, “We’re building the Athens of the twenty-first century.”⁵⁹ Newt Gingrich, as Republican leader of the House of Representatives, christened the US Congress’s new on-line document system with the name “Thomas,” after Thomas Jefferson. Even those who are wary of the corporate bogeyman lurking among the wires nevertheless maintain an enduring faith that this is primarily a democratic technology. Howard Rheingold, a proponent of “virtual communities” and a high-profile member of the Whole Earth ’Lectronic Link (WELL), expresses this faithful hope in more measured terms than those favoured by the partisans noted above when he says: “The political significance of computer mediated communication lies in its capacity to challenge the existing political hierarchy’s monopoly on powerful communications media, and perhaps thus revitalize citizen-based democracy.”⁶⁰ Rheingold, and others like him, recognize the possibility that digital networks could be colonized by the same commercial interests that dominate other communications media. Nevertheless, their implication is that this would represent a corruption of what is *originally* and *essentially* a democratic medium. Therefore, the consensus is clear: the new technology is a democratic technology as surely as we are democrats. Like any other consensus, this one cries out for scrutiny.

A Standard of Democracy

Notwithstanding the aforementioned variety and contention concerning the meaning of democracy, conducting an investigation such as this requires that one adopt a particular understanding of what the

word means. The popular currency and bastardization of the term have reached the point where attempts to establish any one standard of democracy as definitive are basically futile. Nor is this the place to undertake a review of the considerable breadth of definitions, descriptions, and categorizations available in the tradition of democratic political theory.⁶¹ Nevertheless, it is important when discussing democracy that one at least specify what one means. Accordingly, in the present investigation, “democracy” refers to a form of government in which citizens enjoy an equal ability to participate meaningfully in the decisions that closely affect their common lives as individuals in communities.

I adopt this definition because it captures three elements that are essential in *any* serious definition of democracy: equality, participation, and a public sphere from which sovereignty emanates. Recognizing that most conflicts over the nature of democracy stem from differences regarding the specific content of these three elements, I have also tried to indicate in this definition something of what I consider their content to be. For example, this definition suggests that the equality that is an essential attribute of democracy refers to an equality of *ability* to participate, rather than simply to an equal *opportunity* to do so. Equality of opportunity is an attribute of liberalism that denotes an absence of formal or legal constraints preventing participation, and it is often substituted for democracy’s more demanding standard of equal ability. However, the absence of formal or legal barriers is only a necessary, and not a sufficient, condition for the equal ability to participate: citizens who are not constrained from doing so by law may nevertheless be unable to participate equally with their fellows for other reasons. In a situation where resources such as wealth or expertise provide access to crucial sites and modes of civic participation, those who are deprived of these resources (i.e., the poor and uneducated) cannot participate equally with those who possess them. The absence of practical, as distinct from legal, barriers to equal participation is a condition of full democracy. It is for this reason that all liberal states are not necessarily democratic. It is also why the word “equality” in the definition of democracy must refer to ability, rather than merely opportunity. This being said, it should be noted that this definition of democracy does not require that people *in fact* participate equally; it simply requires that they have an equal ability (which

includes, but is not exhausted by, equal opportunity) to do so should they so desire.

The definition adopted here also stipulates that citizen participation must be *meaningful* in order for it to qualify as democratic. Admittedly, the adjective “meaningful” is somewhat indefinite. However, it is meant to suggest that a political arrangement cannot be called democratic if the participation it allows is frivolous, or merely symbolic. Democratic participation must be clearly and decisively connected to the political decisions that direct the activity of the participants’ community. By this definition, polities in which citizens’ participation is limited to legitimizing deliberations and decisions made without their participation is not a democracy. Thus, democracy requires that citizen participation be specifically linked to policy outcomes, rather than relegated to the general role of system legitimation.

Finally, this definition insists that democracy denotes a form of governing the public and common affairs of individuals in communities. Again, this stipulation is meant to distinguish the requirements of democracy from those of liberalism. The latter is not a system of government, it is an ideology whose chief concern is to assert those areas of individual human endeavour from which public government should be forever absent. Democracy is defined by the constitutionalized practice of gathering together the private individuals who make up a particular community to decide publicly on courses of action and inaction regarding their common affairs. This means that democracy is not constituted wholly by freedom of consumer choice in a market or the freedom to do privately whatever one lists. Instead, democracy is about the public taking of collective decisions that are to govern the common and public practices of the members of a community. This is not to say that every decision taken by a democracy must be unambiguously in the general interest. Aristotle defined “democracy” as rule by the many in their self-interest – a definition that is not hostile to the one I am advancing here. Democracy does not require that the interests brought before it as a system of governing are public; what is essential is that these interests contribute to decisions that are binding on the public and common life of individuals in the community, via a process in which each of them has an equal ability to participate in a meaningful way.

This definition is not intended as a shorthand theory of democracy, but simply to specify what I mean when using the word. The definition I have articulated is almost certainly not the one employed by all those who have placed their hopes in the democratic potential of network technology. In most cases, what I mean by democracy is not what they mean. To conduct an investigation of their claims about the technology against this measure is somewhat unfair, in so far as it demands they live up to a standard to which they do not profess to ascribe. Nevertheless, the popular discourse surrounding this technology is long on inflammatory rhetorical claims about its political potential (i.e., that it is the instrument of a democratic revolution), but short on definitional substance (i.e., what constitutes a democracy? what qualifies as a revolutionary change?). Thus, some common definition must be brought to bear in assessing the political claims of network proponents. The claims being made by the technology's prophets suffice to raise the questions that will direct this investigation, but finding the answers requires the technology be assessed in light of more demanding standards. Ultimately, what is at issue here are the politics of network technology as manifest in current tendencies and practices, not the political rhetoric of those amazed by it. The latter is merely a convenient starting point for the journey toward discovering the former.

Admittedly, this definition of democracy entails criteria of qualification that are quite exacting. Indeed, most contemporary governments that call themselves democratic would fail to meet them. However, it is a standard that I think honours, rather than ignores, the long history of this name in the tradition of political philosophy. To the charge that the requirements of this definition of democracy are *exceedingly* stringent, and that network technology – or any other technology, for that matter – simply has no hope of meeting them, there is only one defence: network technology and its various manifestations are either democratic or they are not, and, if they are not, they tend either toward democracy or away from it. A clear, if demanding, definition can only help us in the very important task of deciding which is the case.

Finally, I would like to point out that, while this definition posits democracy as something that is very difficult to achieve, it does not necessarily imply that it is the best, or even a good, form of human government. It may be the case that democracy is the best way we can

govern ourselves, and it just as well may be that it is the worst; it is more likely that it is better than some ways and worse than others. Whatever the case may be, this is not the question to which the present investigation is addressed – this is an examination of the politics of network technology, not a work of democratic theory. Despite their consistent inattention to its substance, most of those who see a political revolution among the wires believe democracy to be an unambiguous and unquestionable good. Indeed, it often appears that their primary rhetorical strategy is to throw the considerable discursive weight of democracy's near-universal popular appeal upon the scales that will measure the desirability of a continued proliferation of network technology. When one commands such an unalloyed good as democracy, the progression is simple: democracy is undeniably good; network technology is democratic; therefore, network technology is also good. To avoid falling into this sort of dubious argumentation, the definition adopted here acknowledges that democracy is a technical, rather than a normative, designation. The question is whether its technicalities complement, or conflict with, those of networked computers.

In the chapters that follow, I examine the political implications of network technology with a view to determining whether this technology and the world it makes are likely to live up to the hopes for change and democracy suggested by the discourse supporting it. This discussion is predicated on the understanding that technology and democracy share a relationship that is essentially ambiguous in character. In some respects, there is a strong affinity between technology and democracy: the technological urge arises from the human appetite for mastery and control of the future; genuine democracy does not specify any content to what is considered good, beyond that which people decide for themselves, as sovereign masters of their own future. Thus, in hope, technology and democracy seem to share common ground. However, there is also a crucial antagonism between democracy and technology: democracy does not require substantial expertise as a qualification for participation in decision making, and so it allows for government by mass ignorance; technology, as it becomes increasingly complex, requires for its control and deployment levels of expertise that exceed the capacity of most citizens and, thus, it defies democratic governance. As Ronald Beiner has put it, “the possibility looms that

technological society makes a nonsense of democratic theory. We are mocked by our own technical powers, while the very idea of democracy lingers on only as an embarrassing recollection.”⁶² Apparently, though both democracy and technology spring from the hope for mastery, somewhere along the way their respective hopes cause them to collide. In what follows, I attempt to sort out where computer networks are situated in terms of the complementary and contradictory aspirations of democracy and technology, and to determine whether the present situation represents a significant change from previous technologies.

I begin by exploring the writing of five political philosophers – Plato, Aristotle, Marx, Heidegger, and Grant – all of whom thought deeply about the relationship between technology and politics. Blind hope attached to technology is essentially an opinion about what the outcome of our encounter with that technology might be; since its origins in ancient Greece, political philosophy has always presented itself as a means for proceeding from belief to understanding by asking questions of opinion. If understanding is our goal, the questions asked by these philosophers about politics and technology are the questions we should ask of the opinion that the politics of network technology are, and will continue to be, democratic and revolutionary.