

James Carey

A Critical Reader

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2 / The Roots of Modern Media Analysis: Lewis Mumford and Marshall McLuhan

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Scholars live by fictions. It is a belief among them that scholarship is governed by its own inner logic of development, that it proceeds by inexorable sequences of advances on the truth, compelled along by hypotheses, evidence, and confirmation. Intellectual historians often compound this view by demonstrating the inevitable path of theoretical development in the work of Marx, Weber, or Durkheim. Such historians also attempt to demonstrate how scholarly work is addressed to the members of a professional body, the general public, or the readers of a particular journal. While I do not want to dismiss such a view, I would like to emphasize the ways in which scholarship is governed less by abstract logic than it is by the demands to sustain an argument. Scholarship is principally an insinuation into an ongoing discussion, and the structure of discussion is controlling.

Scholars write less for abstract audiences than for scholars with whom they are working in a cooperative and, more likely, a competitive way. To interpret a scholarly text, then, demands that one grasp the structure of the argument into which it is an entry and the identity of the combatants to which it is addressed. A text is an attempt to take account of a silent auditor's prior arguments and anticipated response. For a variety of plausible reasons, the intended auditors are frequently never mentioned in the argument: their positions are not explicitly described, their names never appear in footnotes or bibliographies. If the scholarship in question is written in our own time, we can often, though not always, provide the auditor and the argument: knowing the struc-

ture of debate in a field, we know who a writer is implicitly arguing against.

For texts that descend from the past, the problem of interpretation is particularly difficult because one cannot identify the unmentioned antagonists from the text itself. History is notoriously hard, by being decisively silent, on losers. As Quentin Skinner has demonstrated in his lively studies of Locke and Hobbes, any interpretation is likely to be faulty when one neglects to reconstruct the positions against which the argument is formulated. This failure, in turn, leads one to assimilate the text to a contemporary discussion, a move that misinterprets the text as it makes it more serviceable for current purposes. To reduce it to catch-phrases, the context of argument governs the context of interpretation, and, as with much else, it takes two to argue. Any scholarly work contains, therefore, but one half of the sentences necessary to interpret it. It omits, characteristically, though not always, many of the arguments that stimulate writing in the first place and the responses, real or imagined, that control the actual presentation.

All that is prelude to the purpose of this essay—to interpret some texts, to reconstruct a wider argument, and to supply an antagonist. The texts are those of Marshall McLuhan, the argument concerns the nature of electrical technology, and the antagonist is Lewis Mumford, and beyond him a certain tradition of speculation on electrical communication that Mumford represents.

The relationship between McLuhan and Mumford at one level is quite straightforward and open to easy inspection. McLuhan cited Mumford in virtually all his work, certainly in all his important publications. While the argument was generally rather one-sided, in his later publications Mumford devoted considerable and often savage space to McLuhan. However, the argumentative relationship between these two important figures in contemporary scholarship is both more subtle and more ambiguous than the pattern of citation suggests. The purpose of explicating the relationship is not merely the joy to be found in puzzling through texts or influencing reputations. There is bigger game. McLuhan and Mumford debated the consequences of electrical technology, in particular electrical communication, for contemporary culture and society. Not only can they teach us something of those consequences but they also illustrate, in a variety of ways, some of the conceptual and ideological pitfalls involved in trying to think sensibly about electrical communication.

There is now general agreement on the larger consequences of the growth of literacy and printing. "General agreement" may be too strong a phrase; there are incorrigibles. One of the important contributions of both Mumford and McLuhan has been to synthesize some of the consequences that were initiated or intensified by the characteristic forms of printing—the periodical, book, and newspaper—and the typical modes of printed expression—novel, essay, scientific report, and news story. To undress the matter and to emphasize only the "darker side" of printing, it can be argued with more or less confidence that printing centralized political power in the state and cultural power in the metropolis; intensified a spatial bias in communication favoring "remote control" and gave a differential advantage to long-distance communication over short-distance or proximate communication; transformed the word, the primordial symbol, from an *event* in the human world to a *record* for bureaucracies; demystified the symbol as a fiduciary relation among persons and transformed it into an analytic tool of thought; eroded the public sphere of discourse and led to the decline of "public man"; transformed speaking publics into passive audiences; privatized and mobilized the basic transactions of communication; led to the emergence of psychological "man" and the sciences devoted to understanding "him"; lent life a visual intensity and aesthetic preference for sight over sound; secularized knowledge and installed science as the major arbiter of truth and authority; created a tradition of the new and a bias toward the future; displaced corporate and communal forms of life in a world bifurcated between the state and the self; created a particular form of nationalism, at first parliamentary and linguistic, eventually imperial; and installed in cultural and political power the class championing most of these developments, the middle class. That sentence more than flirts with a discredited view of causality so let me quickly assert that those events did not occur simultaneously, nor did they take place in a vacuum. They are inseparably interlocked with additional technical and organizational changes and, above all, with the rise of markets and capitalism and the ideology of liberalism.¹

If these conclusions are assumed rather than debated, they lead to an intractable problem that has faced all students of media: did the growth of electrical communication from the telegraph through television and the emergence of electronic communication from simple servo-mechanisms through advanced computer information utilities re-

verse the general developments associated with printing, or did they merely modify and intensify the major contours of modern societies?

There is no easy answer to this question but around it have whirled virtually all the conceptual and ideological arguments concerning the relations of communications technology to culture. Briefly, Mumford has argued that electronics has intensified the most destructive and power-oriented tendencies of printing, whereas McLuhan has argued that electronics has produced or will produce a qualitative change in the nature of social organization and cultural life. There are not only large intellectual stakes in this argument, but social and political stakes as well, for its resolution will shape ideological discourse and social policy in the arena of communications in the decades ahead. To aid in thinking through this problem, let me reconstruct the positions of Lewis Mumford and Marshall McLuhan, particularly as they constitute addresses within a larger argument.

In 1965, with the publication of *Understanding Media*, the work of Marshall McLuhan burst beyond the narrow limits of the scholarly community and acquired a general audience. Early review articles by Harold Rosenberg in *The New Yorker*, Neil Compton in *Commentary*, and Richard Schickel in *Harper's* were devoted to bringing some order and coherence out of the diffuse and erratic and contradictory arguments of that work.² It was rather like watching someone attempt to put an elephant into pantyhose. There were three striking things about those early reviews. First, there was a presumption that McLuhan's arguments had emerged phoenixlike without intellectual parentage. Second, they noted that his arguments seemed to cast the media of communication in a new light, giving them an unprecedented importance in society that also conferred new status on the advertising and television industries. Third, independent of the complexities of that work, an unmistakable conclusion was seized upon: that electricity was the Great Reverser designed to undo the devastation of the past, dissolve the complexities of the present, and create a new world of peace and harmony. That attitude was not invented by McLuhan's analysts but coached by the book itself. "The electronic age," he argued, "if given its own unheeded leeway, will drift quite naturally into modes of cosmic humanism" and "the aspiration of our times for wholeness, empathy and depth of awareness is a natural adjunct of electric technology. There is a deep faith to be found in this new attitude—a faith that concerns the ultimate harmony of all being. Such is the faith with which

this book has been written." It may have been a faith, but it was a peculiarly priceless one for it was pinned to the automatic, irreversible, nonpolitical operation of the new machines.

To those of us who had closely followed McLuhan's essays in literary criticism, *The Mechanical Bride* and *The Gutenberg Galaxy*, the conclusions were startling, unexpected, and quite the reverse of his previous arguments. For example, in *The Mechanical Bride* he envisioned that "a single mechanical brain, of the sort developed at the Massachusetts Institute of Technology by Professor Norbert Wiener, when hitched to the telepathic mechanics of Professor Joseph B. Rhine, could tyrannize over the collective consciousness of the race in . . . science fiction style." And in that work and elsewhere McLuhan was sensitive to the threat of modern economies independent of the particulars of technology: "A power economy cannot tolerate power that cannot be centrally controlled. It will not tolerate the unpredictable actions and thoughts of individual men. That is plain from every gesture and intonation of current social and market research as well as from the curricula of our schools." Moreover, those who knew of his intellectual connection and indebtedness to his fellow Canadian Harold Innis were surprised to see how fundamentally he had revised Innis's position.

The ideological hinge of McLuhan's arguments was recognized by some of the more acute of his earlier reviewers. Harold Rosenberg noted, for example, that "while McLuhan is an aesthete he is also an ideologue—one ready to spin out his metaphor of the 'extensions' until its webs cover the universe. . . . The drama of history is a crude pageant whose inner meaning is man's metamorphosis through the media."³ But at the same time this ideological image of electricity as the Great Reverser was underplayed by Rosenberg and others because within McLuhan's work was a compelling historical argument and a significant methodological and intellectual advance.

From his Renaissance studies McLuhan absorbed Bacon's dictum that nature is a book to be read, although for the pioneers of modern science it was a text composed in obscure mathematical characters. McLuhan argued that social life could also be viewed as a book, a text, something composed, though written in the far more accessible characters of sound, gesture, and word. Consequently, technology did not have to be treated as a purely physical force but could also be viewed as a text. Technology was both an extension and an embodiment of mind and therefore contained and manifested meaning. It could be

read in an exegetical sense; its meaning could be unearthed from its material form in ways parallel to the treatment critics accorded literary texts. McLuhan's methodological advance, then, came through his attempt to break through the constraints of conventional North American social and communication theory with a new hermeneutic, a hermeneutic of technology and social life.

Intellectually the advance was contained in two remarkable insights that McLuhan pressed with the outrageous daring necessary to arrest the attention of modern audiences.

First, he argued that forms of communication such as writing, speech, printing, and broadcasting should not be viewed as neutral vessels carrying given and independently determined meaning. Rather, he proposed that these forms be considered technologies of the intellect, active participants in the process by which the mind is formed and in turn forms ideas. To put the matter differently, he argued that all technical forms are extensions of mind and embodiments of meaning. Technologies of communication are principally things to think with, molders of mind, shapers of thought: the medium is the message. In pressing this argument he opened a new avenue of historical scholarship and rephrased a large set of questions that had vexed scholars.

The second advance McLuhan pioneered, which set certain constraints upon his critics, grew directly out of his literary studies. Students of the arts are likely to examine communication with quite a different bias than that advanced by social scientists. The question of the appeal of art is essentially a question of taste, broadly of aesthetics. McLuhan recognized, earlier than most, that the new means available for producing and reproducing art would demand and create an entirely new aesthetic. He sensed that cultural forms operate not at the level of cognition or information or even effect. The media of communication affect society principally by changing the dominant structures of taste and feeling, by altering the desired forms of experience. The new and proliferating means of recording experience meant that the monopoly enjoyed by print was to be exploded and that no one means of experiencing the world would dominate as printing had among educated classes for centuries.

The new means of reproducing reality also meant that the historic barriers between the arts and other departments of life—art and science, work and leisure—would be driven down. Electronic communication would jumble experience, would creatively juxtapose ideas, forms,

and experiences previously disseminated in different and isolated ways. In turn this would create new patterns of knowledge and awareness, a new hunger for experience, in much the same way that printing—by assembling the sacred and the profane, the new and the traditional, the exotic and the mundane, the practical and the fanciful in the same printer's workshop—led to a decisive alteration in modern taste.

This erosion of barriers between the arts also meant the erosion of barriers between audiences. The division of culture into high and low, folk and popular, mass and elite, highbrow, lowbrow, and middlebrow—barriers and distinctions that were themselves the product of printing—would have to be discarded under the impact of new forms of communication that simply did not recognize these distinctions. The high arts were now often pirating mass and folk culture, and mass culture in turn was leaching the traditional arts. Thus, the ability to make things more widely available in graphic form, to reproduce at will sacred texts and treasured painting, to make reality itself in the drama of film and television, to record and freeze the most mundane of persons, scenes, and slices of reality that were historically convened in different and isolated ways signaled the existence of a new hunger for experience and a new means to realize it, and both of these demanded a new theory of aesthetics.

But what was critical in this argument is McLuhan's realization, a realization he shared with Walter Benjamin and derived from James Joyce and the symbolists, that the new desires realized in the impractical objects of art would be demanded as well in the practical objects of everyday life. McLuhan erased the distinction between art and utility, between aesthetic action and practical form. Everyday objects—cars, clothes, and lightbulbs—were governed less by utility than by aesthetics: their meaning was to be sought in a principle of taste rather than a principle of interest and action. Specifically, communications media were to be read less in terms of their potential to transmit information or to service the practical needs of persuasion and governance and more in terms of their insinuation of a desire to realize experience aesthetically in altered form.

Changes in technology, he came to conclude, offered the potential for redefining the aesthetic—that is, for altering taste and style, and through that alteration for redesigning the basic structures of social life. Technology does this at the most abstract level by offering the potential for reexperiencing time and space. Differing technologies of

communication have the capacity to expand or contract space, expand or contract time, changing the meaning of the fundamental coordinates of thought. This notion was obviously tied to Innis's earlier discovery of the spatial and temporal bias of media, though again McLuhan's discovery was not situated in the domain of practical action but at the level of aesthetic experience. His important argument about printing was not merely that it changed the dominant conception of space, but that it altered what we took to be an aesthetically satisfying pattern of spatial arrangement, whether this was the arrangement of a page, a city, a house, or a theory. Similarly, while printing altered our conception of time, it more importantly changed the dominantly pleasing patterns of rhythm. McLuhan was basically correct, then, in directing our consideration to the possibility that the new media of communication might be cultivating a taste for open rather than closed spaces, rimmed rather than axial patterns, historical and geologically modeled time rather than mechanical syncopation, or more generally a preference, in Mary Douglas's phrase, for group over grid.

The importance of the questions McLuhan asked lay in his implicit attempt to apply hermeneutic insights to material objects, his stress on the new combinations and juxtapositions of experience created by modern technology, and his emphasis on the central place of aesthetic experience in all human action. Yet his failure to influence contemporary thought derived from weaknesses in the way he framed and presented his arguments in answering these questions, weaknesses that gradually overwhelmed his more positive achievements. In particular, he gradually slipped into technological determinism, a determinism so thorough as to remind one of the very nineteenth-century precursors McLuhan presumably was attempting to transcend. Further, his basic arguments about technology were not delivered, as he averred, as probes that opened up scholarship but as conclusions that closed it down.

For example, his argument on the relation of print and nationalism, which should have opened up investigation of nationalism in many differing countries in relation to the time of the introduction of print, the class sponsoring it, the uses to which it was put, its relation to the oral tradition, and so on, has left us with a soggy conclusion rather than detailed scholarship. Similarly, his interests in a new hermeneutic and recognition of the role of aesthetics in human action were decisively compromised by two contrary and persistent tendencies of thought. His frequent focus on the direct effects of technology allowed him to be

assimilated to a behaviorist tradition and, perhaps with greater devastation, his tendency to invoke cybernetic metaphors cast the problem up in systems theory terms. This latter tendency, a marriage of the avant-garde in art with cybernetics, ultimately forced his work back into the position of an ideology of the late bourgeois era.

And that is where the critical move came. McLuhan managed to link hyperbole to metaphor, transforming the body into a metaphor for technology and assigning a characteristic quality to each of the senses: to the ear, sound and participation; to the tongue, taste and discrimination; to the eye, vision and privatization. He gave to Eliot's notion of the disassociation of sensibility a biological and technological root. And, in the critical move, he assigned to electrical communication the capacity for the reassociation of sensibility: the restoration of psychic life in a balanced sensorium, and social life in a global village. By such metaphors aesthetics, biology, and technology were converted into ideology.

But McLuhan's work did not spring entirely or perhaps even largely out of literary and aesthetic sources. The debt to Innis is known and acknowledged and his citations reveal a wide and wise reading in history, biology, and social theory. But there are ideological precursors of his arguments in the work of scholars earlier in the century who argued for the capacity of electricity to act as midwife to a new society. And it is here that Mumford enters the argument. Mumford not only anticipated McLuhan's arguments but also traced an intellectual evolution in precisely the opposite direction: Mumford changed from an electrical optimist to a soured prophet of doom.⁴

Over seventy years ago, Mumford—as a contributor to Charles Beard's symposium *Whither Mankind?*—had seen the bright promise of electrical technology. The Garden Cities movement as formulated by Ebenezer Howard was “the first adequate conception of the problem.” Mumford thought that “whatever the city of the future might be, we can now say with some confidence that it will not be the Leviathan of machinery.”

The utopian Mumford was optimistic: with the future development of the “telephone and radio and ultimately television all the inhabitants of the planet could theoretically be linked together for instantaneous communications as closely as the inhabitants of a village.” More recently, in *The Highway and the City*, he wrote: “All honor to Robert Louis Stevenson who back in the eighties foretold this mis-

carriage of technics; the word electricity now sounds the note of danger.” And in his most recent major work, *The Myth of the Machine*, Mumford completely reversed his judgment:

Their “city of the future” is one leveled down to the lowest possibility of active, autonomous, fully sentient life; just so much life as will conform to the requirements of the machine. To build any hopes for the future on such a structure would occur only to the highly trained but humanly underdimensioned “experts” who have contrived it.

This inversion of optimism and pessimism is not an unusual occurrence and should be instructive. And so I would briefly trace the roots of Mumford's ideas and his anticipation and ultimate rejection of McLuhan's position on electrical technology and communication.

In the decades after the American Civil War, when the structure of American communications was laid down, electricity as fact and symbol seized hold of the native imagination. It was seen as a precursor of a new form of civilization.

As technical fact, outside of history and geography, determined by the implacable march of American science, electricity promised to bring a new order out of the political and industrial disasters of the 1860s and 1870s. It promised the restoration of community, the spiritualization of labor, the spread of Anglo-Saxon dominance and hegemony, the reign of universal peace, the salvation of the landscape, the rise of productivity—all those contradictory dreams that fired American, though not only American, minds.

Moreover, electricity was pictured as classless, if not socialist. While lifting up communication it would erase those divisions of work, wealth, and power that assorted radicals saw as the denouement of the American dream. Electricity was a force invested with the power to transform the human landscape.

One of the attractions of electricity was its seeming fit with the new organic philosophy that arose upon a discredited mechanism. While standard intellectual history usually cites the impact of Darwinism and German idealism, particularly Hegelianism, as the route of organicism into American thought, for most persons and purposes electricity cut a more gilded passageway into the imagination. Darwinism conflicted with deeply held religious notions, while idealism remained Germanic and foreign except to a limited class trained abroad. Electricity supported religious ideas, as Josiah Strong makes clear and Perry Miller

demonstrated, and seemed not only natural but native: part of the American genius and inheritance from Franklin through Edison. Moreover, by a series of rhetorical transformations, some whimsical, some grounded in a metaphoric truth, electricity suggested the very essence of the organic process: the restoration of life and the human.

It was a new, natural phenomenon ideally suited to the American landscape, mind, and society, unlike the inherited patterns of mechanical Europe. It lent itself to speed, movement, distance, and decentralism. It imitated, as many commentators noted, the very action of the brain, and its modern products were automata of the graphically human: extensions not of the wheel but of ear, eye, voice, and finally the brain itself.

The idea of electricity, like that of community, crossed revolutionary lines: it symbolized what was desired and the means of attainment for groups on the left and right. Electricity became the central symbol in works as different as Edward Bellamy's influential projection of a new order in *Looking Backward* and standard tracts of the industrial right on the benefits of capitalist civilization.

All of the claims that have been made for electricity and electrical communication, down through the computer and cable, satellite television, and the Internet, were made for the telegraph with about the same mixture of whimsy, propaganda, and truth. Cadences change, vocabulary is subtly altered, examples shift, the religious metaphors decline, but the medium has the same message. The perfection of Morse's instrument in 1844, the rapid growth of telegraph companies and the erection of "lightning lines" during the 1840s and 1850s, and the first laying of the Atlantic cable in 1858 brought forth scores of paeans to the wonders of electricity.

The growth of electrical communication rejuvenated utopian social theory in America. It particularly changed the thought of a group of European and American scholars whose work revolved on the relationship of the city and countryside and who were pioneers in what has since been termed urban planning. The principal figures in this group were the Russian anarchist and geographer Peter Kropotkin, the Scot biologist Patrick Geddes, and, in America, Lewis Mumford. And their starting point was one of disappointment—disappointment in the nineteenth-century promise of industrialization and mechanical technology.

In *The City in History*, Mumford credits Kropotkin with the first

systematic statement of the view that electricity might rescue humans from the blight of machine industry and restore them to communal life. Kropotkin described regional associations of industry and agriculture made possible by electricity and with this new technology a reawakening of the traditions and handicrafts of an older period and the restoration of community life.

Kropotkin's faith was based on a valid perception. Electrical power, unlike steam, saved the landscape by utilizing water generation or lighter, more transportable fuel such as petroleum, which did less environmental damage than coal and "mining." Similarly, electricity promised a decentralist development by bringing work and power to the people rather than demanding that people be brought to the power and work. The telegraph similarly promised the distribution of information everywhere, simultaneously reducing the economic advantage of the city and bringing the more varied urban culture out to the countryside. No longer would people need to be physically in the city to partake of the advantages of art, commerce, and intellect that physical massing created. Finally, the small electric motor promised to lift the drudgery of work in small communities, dissipate the advantages of efficiency of the massed factory, stimulate and make more feasible handicraft production, and, as in the dream of William Morris, reclaim a more natural and older way of life. The symbol of electricity promised to many the dawning of a new age of decentralist rural production, communal life in small natural associations that would be economically viable and, with the growth of electronic communication, culturally viable as well.

On a speaking tour of England, Kropotkin influenced the young Scot Patrick Geddes. Geddes, perhaps more than anyone else, popularized the notion that there were two qualitatively different periods of industrialization, corresponding to the early and late Paleolithic periods. He termed these periods the paleotechnic and neotechnic, differentiated among many dimensions but principally by their reliance on different forms of energy: steam and electricity. Geddes used this distinction to found one of the most important traditions of urban planning, merging it with the earlier Garden Cities movement founded by Ebenezer Howard.

Howard had seen neotechnics as a means of escaping the traditional city. He proposed and founded two experimental communities distant from London, surrounded by green space, a new way of life

made possible by electricity. Geddes supported this growth of decentralization and naturalism and gave it a distinctively regionalist interpretation. His great contribution was in planning or better facilitating the refurbishment of the existing city. He saw the city as a network of ritual order and communication and utilized new forms of communication and refurbished old ones to bring the city back to life. The criterion that guided his work was the notion of the city and neighborhood as social organisms. He therefore attempted to let areas regenerate themselves rather than being replaced by new and imposed designs. He believed in conservative surgery: rather than raze an entire neighborhood, he would recommend clearance of a small pocket to help circulation or provide a place for congregation while the bulk of the buildings remained intact. Anything, however minute, that carried tradition, that signified the rootedness of time and culture, was left. He was a pioneer of the social survey, the detailed designation of an area's past, the exhibit, the permanent civic exposition, the motion picture and drama—all designed to bring the past continuously to bear on the present. He fostered new departures in education, attempting to break the rule of rote learning and wed education at one level to the natural habitat and at another to the restored cloister of learning.

The association between Kropotkin, Geddes, and Howard merged in Chicago in the years before and after Harold Innis studied there. Both Kropotkin and Geddes received their most enthusiastic American receptions in Chicago and felt most at home in the city. Howard most admired Chicago among American cities and based his work on that of the Chicago architect Daniel Burnham. Geddes influenced John Dewey's thinking on education and other matters. In turn, the idea of the electrical city became symbolized in Chicago architecture. Louis Sullivan built the first structures designed for the potential of electricity. Frank Lloyd Wright, Sullivan's student, conceived the skyscraper as a community within itself: its floors to be viewed as streets in the sky rather than as a collection of unintegrated functions or atomized units.

In his more bucolic moments Wright saw the city, as did Howard, as superfluous in the age of electricity. As Mumford has remarked, it never appears to have entered Wright's mind "that one might need or profit by the presence of other men within an area compact enough for spontaneous encounters, durable enough for the realization of long-run plans, and attractive enough to stimulate social intercourse." Wright

felt that the automobile, the airplane, and electrical communication made the city unnecessary. People could work and reside in small, decentralized communities and the nation still would be integrated through high-speed, flexible transportation and communication. Wright announced clearly a theme that has continued unabated to this day: the superfluousness of geographic contiguity with the dawn of high-speed transportation and communication.

It was mainly through the work of Lewis Mumford, however, that the ideas of Geddes, Howard, and Kropotkin and their attitudes toward electricity and technology entered the American scene. Mumford based his important work of 1934, *Technics and Civilization*, on Geddes's distinction between the paleotechnic (steam and mechanics) and neotechnic (electrical) phases of industry and communication. Mumford shared with Geddes the intellectual strategy of placing technological change at the center of the growth of civilization. In viewing the miscarriage of the machine he suggested that electricity had certain intrinsic potentials for producing a decentralized society, creating a new worker, and realizing a pastoral relation to nature. Only the cultural pseudomorph of capitalism, the housing of new forces in outmoded social forms, held back the latest advances in civilization. Throughout that work Mumford strikingly contrasted scenes of peace and order and cleanliness realized in the neotechnic world with the ugliness, exploitation, and disarray of the old world of mechanics. He recaptured in the photographic captions throughout *Technics and Civilization* some of the oldest dreams of the American imagination and remodeled them in terms of the potential of electricity.

First the central metaphor of the electrical grid had to replace the machine and the neat rows of mechanical type:

The principle of the electrical grid must be applied to our schools, libraries, art galleries, theaters, medical services; each local station though producing power in its own right must be able to draw on power, on demand, from the whole system.⁵

Second, decentralization:

But the efficiency of small units worked by electric motors utilizing current either from local turbines or from a central power plant has given many small-scale industries a new lease on life: on a purely technical basis it can for the first time since the introduction of the steam engine compete on even terms with the larger unit.⁶

Third, the creation of a new worker:

The qualities the new worker's needs are alertness, responsiveness, and intelligent grasp of the separate parts: in short, he must be an all around mechanic rather than a specialized hand.⁷

Fourth, on nature, the landscape, and the pastoral:

Electricity itself aids in this transformation. The smoke pall of paleotechnic industry begins to lift: with electricity the clear sky and clean waters of the neotechnic phase come back again: the water that runs through the immaculate discs of the turbine . . . is just as pure when it emerges.⁸

Mumford's demon is capitalism, the fetters that emasculate neotechnics, and *Technics and Civilization* ends with a plea for socialism. But in condemning paleotechnic civilization he saw it, as did Marx, in a different vocabulary, as the destruction of the temple: prelude to rebuilding.

While humanly speaking the paleotechnic phase was a disastrous interlude, it helped by its very disorder to intensify the search of order, and by its special forms of brutality to clarify the goals of human living. Actions and reaction were equal and in opposite directions.

The central redeeming feature that all commentators on electricity from Kropotkin through Mumford and McLuhan have seen in this technology is that it is decentralizing, that it will break up the concentrations of power in the state and industry and populations in the city. In *Technics and Civilization* Mumford argues that "the neotechnic phase was marked . . . by the conquest of a new form of energy: electricity. . . . [It] effected revolutionary changes: these touched the location and the concentration of industries and the detailed organization of the factory."⁹

The decentralizing effects of electrical power were matched by the decentralizing effects of electrical communication. Mumford argues that the giantism typical of paleotechnic industry was caused by a defective system of communication that antedated the telephone and telegraph. With electrical power, factories could be placed where they were wanted, not merely where the power source dictated they be. Factories could be rearranged without regard to the centralized shafts and aisles that a central power source like steam demanded. Similarly, the new means of communication dictated that people no longer had to be in physical contact in order to transact their business. Freed from reliance

on face-to-face communication and a slow and erratic mail service, industry could be decentralized in the countryside. As a result, neotechnics spiritualizes labor and reduces the human robot:

Here, as in neotechnical industry generally, advances in production increase the number of trained technicians in the laboratory, and decrease the number of human robots in the plant. In short, one witnesses in the chemical processes the general change that characterizes all genuinely neotechnic industry: the displacement of the proletariat.¹⁰

This is the essence of the general argument Mumford makes, on the great transition from paleotechnics to neotechnics, from steam power to electrical power, from capitalistic to postcapitalistic social forms. In describing electrical communication he saw its potential for transcending space—almost at times seeing it, as Frank Lloyd Wright did, as providing a complete substitute for social relations:

With the invention of the telegraph a series of inventions began to bridge the gap in time between communication and response despite the handicaps of space: first the telegraph, the wireless telephone and finally television. As a result, communication is now on the point of returning, with the aid of mechanical devices, to that instantaneous reaction of person to person with which it began; but the possibilities of this immediate meeting, instead of being limited by space and time, will be limited only by the amount of energy available and the mechanical perfection and accessibility of the apparatus. When the radio telephone is supplemented by television communication will differ from direct intercourse only to the extent that immediate physical contact will not be possible.¹¹

Mumford, always skeptical within his enthusiasms, always projecting the dark side of his hopes, recognized the paradox of electrical communication: that the media of reflective thought—reading, writing, and drawing—could be weakened by television and radio; that closer contact did not necessarily mean greater peace; that the new inventions would be foolishly overused; that human skills in the arts could be extirpated by easy entertainment. Nonetheless, he finally registered a reserved but positive judgment on electronic communication:

Nevertheless instantaneous personal communication over long distance is one of the outstanding marks of the neotechnic phase: it is the mechanical symbol of those world wide cooperations of thought and feeling which must emerge, finally, if our whole civilization is not to sink into ruin. The new avenues of communication have the

characteristic features and advantages of the new technics; for they imply, among other things, the use of mechanical apparatus to duplicate and further organic operations: In the long run they promise not to displace the human being but to refocus him and enlarge his capacities. . . . Perhaps the greatest social effect of radio-communication so far has been a political one: the restoration of direct contact between leader and a group. Plato defined the limits of the size of a city as the number of people who could hear the voice of a single orator: today limits do not define a city but a civilization. Wherever neotechnic instruments exist and a common language is used there are now the elements of almost as close a political entity as that which once was possible in the tiniest cities in Attica.¹²

I have here expunged the dark side of Mumford's prophecy to emphasize the essentially optimistic tone. To be fair it must be said, however, that he felt in the 1930s that at that moment the dangers of electronic communication seemed greater than the benefits. He guardedly but warmly embraced the resurgence of regionalism in the nineteenth century as "being a reaction against the equally exaggerated neglect of the traditions and historic monuments of a community life, fostered by the abstractedly progressive minds of the nineteenth century."

It would be grossly unfair to conclude that Mumford, in his early work, was an unambiguous champion of neotechnics and of electrical communication or felt that the impact of electricity was automatic. He concluded at one point that the neotechnic refinement of the machine, without a coordinate development of higher social purposes, has only magnified the possibilities of depravity and barbarism. And yet his habit of writing of neotechnics in the past tense, his tendency to imply that only the outmoded shell of capitalism retarded the emergence of a qualitatively new electrical world where we would have the cake of power to be consumed at the table of decentralized community, led to a wide adoption of his views. To put it more strongly, Mumford's essential vision of electrical power and communication became a litany of social redemption that infused most writing, popular and intellectual, on technology and the future, including that of Marshall McLuhan.

The influence of Mumford, at the level of both ideology and conceptual analysis, was not clear until the publication of *Understanding Media*. Even in *The Mechanical Bride*, however, McLuhan pointed to Mumford and his "effort to modify the social and individual efforts of technology by stressing concepts of social biology" as a road past the Marxist indictments of capitalistic civilization. Moreover, he cited Mum-

ford's analysis as an example of how "we may by a reasonable distribution of power and by town and country planning enjoy all the lost advantages" of countryside living without sacrificing any of the new gains of technology.¹³ But more importantly Mumford foreshadowed, where he did not make explicit, the central arguments—indeed, the slogans—we have come to identify with the heart of McLuhan's arguments.

The first, and perhaps most important, foreshadowing is Mumford's view that neotechnics was a reassertion of the organic principle in the face of mechanization. He emphasized that the new forms of communication were extensions of biological capacity:

The organic has become visible again even within the mechanical complex: some of our most characteristic mechanical instruments—the telephone, the phonograph, the motion picture—have grown out of our interest in the human voice and the human ear and out of knowledge of their physiology and anatomy.¹⁴

Mumford explicitly anticipated McLuhan's emphasis on technology as "extensions of man":

The automaton is the last step in a process that began with the use of one part or another of the human body as a tool. In back of the development of tools and machines lies the attempt to modify the environment in such a way as to fortify and sustain the human organism: the effort is either to extend the powers of the otherwise unarmed organism or to manufacture outside the body a set of conditions more favorable toward manufacturing its equilibrium and ensuring its survival.¹⁵

The growth of technology was in part an attempt to build an automaton: a machine that appeared to perfect human functions, that was, in short, lifelike. The movement from naturalism to mechanism was to remove the organic symbol: to take the mechanical player from the mechanical piano. Naturalism deeply affected us, however, even in the structure of our language. It is, of course, this same view of the computer that McLuhan proposes: the mind externalized in machine; an automaton, lifelike, yet stripped of the organic symbol that McLuhan's metaphors attempt to restore. And it is this reinsertion of the natural back into the mechanical that is the stylistic hinge of McLuhan's writing.

Mumford and McLuhan ascribe the same general deleterious effects to the rise of printing, particularly as it served as an agent of uniformity. Again, Mumford:

The printing press was a powerful agent for producing uniformity in language and so by degrees in thought. Standardization, mass-production, and capitalistic enterprise came in with the printing press.¹⁶

While Mumford makes the clock the central invention of paleotechnic times, he attributes to print the effects McLuhan was to amplify and make less ambiguous:

Second to the clock in order if not perhaps in importance was the printing press. . . . Printing was from the beginning a completely mechanical achievement. Not merely that: it was the type for all future instruments of reproduction for the printed sheet, even before the military uniform, was the first completely standardized product, manufactured in series, and the movable types themselves were the first example of completely standardized and interchangeable parts . . . abstracted from gesture and physical presence, the printed word furthered that process of analysis and isolation which became the leading achievement of the era.¹⁷

Moreover, Mumford clearly saw that the effect of printing was to unbalance the human sensorium:

Print made a greater impression than actual events, and by centering attention on the printed word, people lost that balance between the sensuous and intellectual, between image and sound, between the concrete and the abstract, which was to be achieved momentarily by the best minds of the fifteenth century. . . . To exist was to exist in print: the rest of the world became more shadowy.¹⁸

Mumford recognized clearly that the definition of media had to be extended to institutions and artifacts, much as McLuhan did in *Understanding Media*, and that printing was central to the perceptual and organizational form these objects took. Moreover, Mumford gave concrete examples for the effect of print, of paleotechnics generally, on the senses and on aesthetic perception:

With the starvation of the senses [during the paleotechnic period] went a general starvation of the mind: mere literacy, the ability to read signs, shop notices, newspapers took the place of that general sensory and motor training that went with the handicraft and agricultural industries. . . .

The eye, the ear, the touch starved and battered by the external environment took refuge in the filtered medium of print; and the sad constraint of the blind applied to all avenues of experience. The museum took the place of the concrete reality; the guidebook took the

place of the museum; the criticism took the place of the picture; the written description took the place of the building, the scene in nature, the adventure, the living act. This exaggerates and caricatures the paleotechnic state of mind but it does not necessarily falsify it.¹⁹

Only the qualification and the implicit ideological judgment differentiate the remark from one of McLuhan's analyses of print.

McLuhan's notion of forms of communications being a "rear view mirror" and of the "content of a medium being another medium" are also anticipated by Mumford's notion of a cultural pseudomorph. Mumford borrowed the idea in turn from geology. A rock will often be leached of its original composition yet still maintain its outward form. A cultural pseudomorph occurs when "new forces, activities, institutions, instead of crystallizing independently into their own appropriate forms may creep into the structure of an existing civilization."²⁰

Again and again Mumford comes back to the theme of communication, of the extensions of the biological organs and the feedback effect of technology. In neotechnics the human function again "takes on some of its non-specialized character: photography helps recultivate the eye, the telephone the voice, the radio the ear."²¹ And it was in art that the "vital organs of life which have been amputated through historic accident must be restored at least in fantasy as preliminary to their actual rebuilding in fact."²² He recognized as well the fusion of sense provided by the new technology:

If photography has become popular again in our own day after its first great but somewhat sentimental outburst in the eighties, it is perhaps because like an invalid returning to health, we are finding a new delight in being, seeing, touching, feeling; because in a rural or neotechnic environment the sunlight and pure air that make it possible are present.²³

What McLuhan and Mumford originally shared was the view that neotechnics restores the organic and aesthetic. As Mumford put it: "at last the quantitative and mechanical has become life sensitive."²⁴ For Mumford, the background scene is biological while for McLuhan it is aesthetic, though neither rejects what the other affirms: McLuhan cites the biologist J. Z. Young for support; Mumford refers to the new aesthetes. Mumford notes that from biology "the investigation of the world of life opened up new possibilities for the machine itself: vital interests, ancient human wishes influence the development of new inventions. Flight, telephonic communication, the phonograph, the motion

picture all arose out of the more scientific study of living organisms."²⁵ And he moves from biology to aesthetics: "This in living organisms does not stop short with machines that stimulate eye and ear. From the organic world comes an idea utterly foreign to the paleotechnic mind: the importance of shape."²⁶

Mumford recognized that the new forms of visual reproduction even affected the perception of the self, a phenomenon McLuhan would later publicize as a widespread abandonment of jobs in a search of roles:

Whereas in the paleotechnic phase one conversed with the mirror and produced the biographical portrait and the introspective biography, in the neotechnic phase one poses for the camera or still one acts for the motion picture. The change is from an introspective to a behavioristic psychology, from the fulsome sorrows of Werther to the impassive public mask of an Ernest Hemingway. Facing hunger and death in the midst of a wilderness a stranded aviator writes . . . "I must have looked good, carrying the big logs on my back in my underwear." Alone, he still thinks of himself as a public character, being watched: and to a greater or less degree everyone, from the crone in a remote hamlet to the political dictator in his carefully prepared state it is the same position. This constant sense of a public world would seem in part, at least, to be the result of the camera and the camera-eye that developed with it.²⁷

And finally, the same linkage of the aesthetic and technological underlie both their positions. As usual, Mumford puts it most clearly:

Every effective part in this whole neotechnic environment represents an effort of the collective mind to widen the province of order and control and provision. And here, finally, the perfected forms begin to hold human interest even apart from practical performances: they tend to produce that inner composure and equilibrium, that sense of balance between the inner impulse and the outer environment, which is one of the marks of a work of art. The machines, even when they are not works of art, underlie our art—that is, our organized perceptions and feelings—in the way that Nature underlies them, extending the basis upon which we operate and confirming our own impulse to order. The economic: the objective: the collective: and finally the integration of these principles in a new conception of the organic—these are the marks, already discernible, of our assimilation of the machine not merely as an instrument of practical action but as a valuable mode of life.²⁸

I do not wish to overemphasize the similarities between Mumford and McLuhan. Mumford is always more complex, balanced, and moralistic in judgment. What McLuhan did was to seize upon a similar linkage of art, perception, and the machine, a set of propositions about technology and culture, and amplify them through literary sources, stripping them of the complex context in which Mumford situated them. Above all, by setting technology outside of the density, the thickness, of history and culture, he produced out of this inherited material a modern drama. He made the electrical machine an actor in an eschatological and redemptive play.

The relationship between Mumford and McLuhan can be described as the inversion of a trajectory. McLuhan's earliest work was an analysis of the large cultural complexes that distinguish civilizations and an admiration for "the southern quality": the precapitalist features of southern culture that provided a decisive if not an effective critique of industrialism in terms of human and organic values. McLuhan ends in the embrace of a thorough technological determinism, a poet of post-industrial society and a prophet with one message: yield to the restorative capacity of the modern machine, throw off the cultural pseudo-morph retarding progress. As McLuhan increasingly projected a "rhetoric of the electrical sublime," increasingly saw in the qualitative difference of electrical technology a road past the authentic blockages and disruptions of industrial life, Lewis Mumford turned progressively in the opposite direction. While Mumford's early work was never completely trapped in technological determinism, the decision to hang his analysis of historical change on technological stages such as paleotechnics and neotechnics, an analysis he inherited from Patrick Geddes and in turn extended, centered technology as the critical factor in human and social development. Politics and culture entered derivatively as the housing, accelerator, retarder of technical potential. The trajectory of his work was away from this initial position. By midcentury he could see no difference between the capitalist and the socialist state, as both were dedicated to an extirpation of the past, total management of the present, and a future based solely on the mechanics of power and productivity.

In his later work Mumford adopted a stance almost precisely the opposite of McLuhan's. He attempted to systematically deflate the image of man as "homo faber," the toolmaker; to cut down the re-

ceived view of technology as the central agent in human development; and to emphasize the role of art, ritual, and language as the decisive achievements in human development. He diagnosed the central alterations in human development not in terms of technological complexes but rather in terms of a struggle of, in Stephen Pepper's terms, world hypotheses: mechanism versus organicism. Human history looks increasingly like a bad idea: the domination of a lifeless, devitalized image of nature imposed upon man.

By the 1960s he had abandoned the distinction between the paleo-technic and neotechnic eras. He saw then the trajectory of modern history as the recreation of the "myth of the machine" and the "pentagon of power." Whatever short-run gains and ameliorations had been introduced by electrical power and communication had been almost immediately sacrificed to a criminal and insane worldview: the vision of the universe and everything in it as a machine and, in the name of that machine, the extirpation of all human purposes, types, values, and social forms that did not fit within the limited scope of machine civilization. This in turn enthroned a pentagon of power: a community devoted to the uncritical development, without reason or control, of power (energy), political domination, productivity, profit, and publicity.

This frankly dystopian vision was hard won biographically and historically. Mumford always was suspicious, to put it mildly, of the military, and one of the fatal corruptions of technical advance has been, in his view, how much of it was fueled by militarism. This is true in particular of electronic communication, which is the offspring of World War II needs for radar and servo-mechanisms to direct artillery and the cold war odyssey into space. Mumford's only son, Geddes, was killed in the Italian campaign, and this not surprisingly deepened and soured his views of military adventure and technical advance. Moreover, he recognized, more clearly than most 1930s liberals, the active interdependence of the state, the military, and scientific and technological elites.

Mumford recognized in McLuhan's work a defense and legitimization, often implicit, of the very groups and agencies Mumford was attempting to excoriate. In *The Pentagon of Power* he turned direct attention on McLuhan and the "electronic phantasmagoria . . . he conjures up."²⁹ He accused McLuhan of proposing an "absolute mode of control: one that will achieve total illiteracy, with no permanent record

except that officially committed to the computer and open only to those permitted to this facility."³⁰ Mumford characterized McLuhan's appeal as a return to a preprimitive world where the "sole vestige of the multifarious world of concrete forms and ordered experience will be the sounds and 'tactile' images on the constantly present television screen or such abstract derivative information as can be transferred to the computer."³¹ McLuhan's goal was, he thought, total "cultural dissolution," a form of tribal communism, "though it is in fact the extreme antithesis of anything that can be properly called tribal or communistic. As for 'communism,' this is McLuhan's public relations euphemism for totalitarian control."³²

While McLuhan never, to my knowledge, directly answered Mumford, his colleague Edmund Carpenter used a front-page review of the first volume of *The Myth of the Machine* in the *Sunday New York Times* as an occasion to devastate Mumford, particularly for being in the literal and figurative sense "an old man." A case of parricide, I take it.

While Mumford's last work has many deficiencies—its attack is too broad-gauged, its moralizing finally tedious, and its gloomy prophecy encouraging of the very powerlessness it wishes to eliminate—he does offer a sounder diagnosis of the general currents of modern history. If we can forget for the moment large claims and transhistorical beatitudes, it seems reasonably clear that modern communications has aided in enlarging the scale of social organization beyond the nation-state to the regional federation of countries and bureaucracy. In doing so, electronics has furthered the spatial bias of print and increasingly centralized political and cultural power. Whatever tendency existed within electronics to cultivate a new aesthetic sense and a rejuvenated appreciation of the organic has been more than counterbalanced by the tendency of television to increase the privatization of existence and the overwhelming dependence of people on distant mechanical sources of art, information, and entertainment. For all the vaunted capacity of the computer to store, process, and make available information in densities and quantities heretofore unknown, the pervasive tendency to monopolize knowledge in the professions and the data banks continues unabated. The ability of television to involve us in depth in the lives of people around the world is more than offset by its equal tendency to imprison us within our own speechless, looking-glass world: the silent spectator as a mode of being.

If we consider this argument between Mumford and McLuhan in terms of the larger debate over electrical technology, it seems at the moment reasonable to conclude that electrical communication has up to this time largely served to consolidate and extend the cultural hegemony and social forms that first appeared in the wake of the printing press.

Notes

1. See, for instance, Elizabeth Eisenstein, *The Printing Press as an Agent of Change: Communications and Cultural Transformation in Early Modern Europe*, 2 vols. (Cambridge: Cambridge University Press, 1979); Jack Goody, ed., *Literacy in Traditional Societies* (Cambridge: Cambridge University Press, 1968); Harold Innis, *The Bias of Communication* (Toronto: Toronto University Press, 1951); Harold Innis, *Empire and Communications* (Toronto: Toronto University Press, 1972); and Richard Sennett, *The Fall of Public Man* (New York: Knopf, 1977).
2. See, for instance, Raymond Rosenthal, ed., *McLuhan: Pro and Con* (New York: Funk and Wagnalls, 1968), and Gerald E. Stearn, ed., *McLuhan: Hot and Cool* (New York: Dial, 1967).
3. Stearn, *McLuhan: Hot and Cool*, 202.
4. For more on Mumford's vision, see Lewis Mumford in *Whither Mankind: A Panorama of Modern Civilization*, ed. Charles Beard (New York: Longmans, Green, 1928), 308-9; Lewis Mumford, *The Highway and the City* (New York: Harcourt, Brace and World, 1963); and Lewis Mumford, *The Myth of the Machine*, 2 vols. (New York: Harcourt, Brace, Jovanovich, 1967-70).
5. Lewis Mumford, *City Development* (New York: Harcourt Brace, 1945), 185-86.
6. Lewis Mumford, *Technics and Civilization* (New York: Harcourt, Brace and World, 1963 [1923]), 225.
7. *Ibid.*, 227.
8. *Ibid.*, 255-56.
9. *Ibid.*, 221.
10. *Ibid.*, 229.
11. *Ibid.*, 239-40.
12. *Ibid.*, 241.
13. Marshall McLuhan, *The Mechanical Bride* (Boston: Beacon, 1951), 34, 76.
14. Mumford, *Technics and Civilization*, 6.
15. *Ibid.*, 10.
16. *Ibid.*, facing page 84.
17. *Ibid.*, 134-35.
18. *Ibid.*, 136.
19. *Ibid.*, 181.
20. *Ibid.*, 340.
21. *Ibid.*, 279.
22. *Ibid.*, 286.
23. *Ibid.*, 340.
24. *Ibid.*, 254.
25. *Ibid.*, 250.
26. *Ibid.*, 252.

27. *Ibid.*, 243.
28. *Ibid.*, 356.
29. Mumford, *Myth of the Machine*, vol. 2, 293.
30. *Ibid.*, 294.
31. *Ibid.*, 293-94.
32. *Ibid.*, 295.