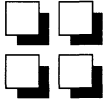


CHAPTER ONE



Technology and Modern Life

In 1926 the Knights of Columbus Adult Education Committee proposed that its group meetings discuss the topic “Do modern inventions help or mar character and health?” Among the specific questions the committee posed were

“Does the telephone make men more active or more lazy?”

“Does the telephone break up home life and the old practice of visiting friends?”

“Who can afford an automobile and under what conditions?”

“How can a man be master of an auto instead of it being his master?”

The Knights also considered whether modern comforts “softened” people, high-rise living ruined character, electric lighting kept people at home, and radio’s “low-grade music” undermined morality. The preamble to the questions declared that these inventions “are all indifferent, of course; the point is to show the men that unless they individually master these things, the things will weaken them. The Church is not opposed to progress, but the best Catholic thinkers realize that moral education is not keeping up with material inventions.”¹

Worry about the moral implications of modern devices was especially appropriate in 1926, for middle-aged Americans had by then witnessed radical material changes in their lives. Despite the awe that many express about today's technological developments, the material innovations in our everyday lives are incremental compared to those around the turn of the century. Major improvements in food distribution and sanitation lengthened life and probably lowered the birth rate. Streetcars brought average Americans easy and cheap local travel. Telephone and radio permitted ordinary people to talk and hear over vast distances. Electric lighting gave them the nighttime hours. Add other innovations, such as elevators, movies, and refrigerators, and it becomes apparent that today's technical whirl is by comparison merely a slow waltz.²

The questions the Knights pondered were widely addressed. Many, especially representatives of business, gave rousing answers: Modern inventions liberated, empowered, and ennobled the average American. The American Telephone and Telegraph Company (AT&T) issued a public relations announcement in 1916 entitled "The Kingdom of the Subscriber." It declared:

In the development of the telephone system, the subscriber is the dominant factor. His ever-growing requirements inspire invention, lead to endless scientific research, and make necessary vast improvements and extensions. . . .

The telephone cannot think or talk for you, but it carries your thought where you will. It's yours to use. . . .

The telephone is essentially democratic; it carries the voice of the child and the grown-up with equal speed and directness. . . .

It is not only the implement of the individual, but it fulfills the needs of all the people.³

Less self-interested parties made similar claims. In 1881 *Scientific American* lauded the telegraph for having promoted a "kinship of humanity." Forty years later a journalist extolled the radio for "achieving the task of making us feel together, think together, live together."⁴ The author of *The Romance of the Automobile Industry* declared in 1916 that the "mission of the automobile is to increase personal efficiency; to make happier the lot of people who have led isolated lives in the country and congested lives in the city; to serve as an equalizer and a balance." Many urban planners and farm women, to take two disparate groups, shared similar images of the automobile as a liberator.⁵

But others, notably ministers and sociologists—in those days not always distinguishable—warned that these inventions sapped Americans' moral fiber. In 1896 the Presbyterian Assembly condemned bicycling on Sundays for enticing parishioners away from church—a forecast of complaints about the automobile. Booth Tarkington's fictional automobile manufacturer in *The Magnificent Ambersons* reflects:

With all their speed forward they may be a step backward in civilization—in spiritual civilization. It may be that they will not add to the beauty of the world, nor to the life of men's souls. I am not sure. But automobiles have come, and they bring a greater change in our life than most of us suspect. They are here, and almost all outward things are going to be different because of what they bring. . . . I think men's minds are going to be changed in subtle ways because of automobiles; just how, though, I could hardly guess.

Robert and Helen Lynd, the former a cleric turned sociologist, claimed in their classic *Middletown* (1929) that the automobile and the enticements it brought within reach—roadhouses, movies, and the like—undermined the family and encouraged promiscuity. College administrators in the 1920s argued that automobiles distracted students from their studies and led many to drop out. Observers worried less often about the telephone, but some objected that it encouraged too much familiarity and incivility and that it undermined neighborhood solidarity.⁶

These comments, whether by industry representatives or viewers-with-alarm, reflected genuine and widespread concerns, at least by elites, about the social implications of modern inventions. The concerns are, in turn, rooted in a larger meditation in Western societies about modernity.

MODERN TIMES

Modernity is an omnibus concept and, like the omnibus of the nineteenth century, carries a variety of riders—an eclectic assortment of ideas about economic, social, and cultural changes over the past several generations.* Most sociologists and historians writing about

*Large bodies of literature in sociology, history, and the humanities address the concepts of modern, modernization, and modernity. They identify many sociocultural

modernization focus on industrial and commercial development: the rise of the factory, market, or corporation, and the increase in affluence. Others stress changes in social organization, such as the evolution of the nation-state and the small household. Still others emphasize alterations in culture and psyche, for example, the growth of individualism, sentimentality, or self-absorption. Modernization theorists also differ about when in the past three centuries the critical transformations happened. Most, however, implicitly agree that modernity comes as a coordinated set of changes. Whichever change is depicted as the conductor of this omnibus, the rest inevitably come along for the ride, for modernization is a global process.⁷

Contemporary writers follow the path trod by the founders of social science, theorists such as Emile Durkheim, Max Weber, Karl Marx, Ferdinand Tönnies, and Georg Simmel. Living from the mid-nineteenth century through the early years of the twentieth and surrounded by severe disjunctures in material culture, they believed that a new society was being born. The theorists largely concentrated on changes in economic organization, but much of their attention also turned to social life—to personal relations, family, and community. Modernity in these spheres followed in part from changes in how people made a living, but modernization also directly transformed private life. The growth of cities, wider communication, more material goods, mass media, and the specialization of land use and institutions—these kinds of changes, the early social theorists argued, altered personal ties, community life, and culture. More specifically, modernization fostered individualism and interpersonal alienation, abraded the bonds of social groups, and bred skepticism in place of faith. Some theorists described these developments as the liberation of individuals from the shackles of oppressive communities, others as

attributes as *the* trait that distinguishes the modern from the premodern (never mind the postmodern): rationality, individualism, secularism, organization (*Gemeinschaft*, usually defined as “society,” as opposed to *Gesellschaft*, “community”). The conceptual statements usually beg an empirical question by assuming that this property is more common now than it was “then” (whenever and wherever “then” was). Since I am concerned precisely about the empirical assumptions, my usage is simple. By modernity I mean the style of social life and culture typical of twentieth-century America, as contrasted to earlier eras, especially the nineteenth century. Some, especially those who locate the great transition a few centuries ago, will find that a misuse of the term. Presumably, whatever the criterion is, it nevertheless ought to have become more evident over the past four generations.

the isolation of individuals from loving communities. Two sides of the same coin. Much, perhaps most, of modern sociology and increasingly of the field of social history involves variations on this motif.⁸

Modernization theory, by now implicit in the language used to discuss contemporary society, is open to several criticisms. Critics debate whether such transformations really happened. The assumption that economic, social, and psychological changes would occur together is debatable. Charles Tilly, for example, has challenged the theoretical assumption that “‘social change’ is a coherent general phenomenon, explicable *en bloc*.” Darrett Rutman has poked fun at the tendency of his colleagues in the field of history to locate the “lost community” ever backward in time: “Some have said we lost it when we disembarked John Winthrop from the *Arbella*”—all of which “has made us appear to be classic absent-minded professors regularly losing our valuables.”⁹

Still, the concerns addressed by modernization theorists, and in simpler forms by nonacademics like the 1926 Knights of Columbus, are profound. The material culture of twentieth-century society differs strikingly from that of earlier eras. How has that difference altered the personal lives of ordinary people? In this book I am concerned with the manner in which turn-of-the-century technologies made a difference to North Americans’ ways of life, in particular to community and personal relations. I use the telephone as a specific instance of that material change, bringing in the automobile for comparison.

The results of this inquiry suggest, in broad strokes, that while a material change as fundamental as the telephone alters the conditions of daily life, it does not determine the basic character of that life. Instead, people turn new devices to various purposes, even ones that the producers could hardly have foreseen or desired. As much as people adapt their lives to the changed circumstances created by a new technology, they also adapt that technology to their lives. The telephone did not radically alter American ways of life; rather, Americans used it to more vigorously pursue their characteristic ways of life.

The next section of this chapter pursues theoretical issues in the study of technology. Some readers may wish to turn to a later section of this chapter—“Why the Telephone?”—where explicit discussion of the telephone begins (p. 21).

DOES TECHNOLOGY DRIVE SOCIAL CHANGE?

Technological change in the personal sphere is a central dynamic of all theories of modernity.¹⁰ Today's instruments of daily life—food preservatives, artificial fabrics, cars, and so on—are at least necessary, if not sufficient, conditions for what we consider modern society. Interest in whether and how such technologies alter social life generated a field of study, “technology and society.”

Once a sociology of technology focused on these matters. It flourished until the early 1950s under the leadership of the University of Chicago's William F. Ogburn, but “passed into oblivion in slightly more than two decades.” Currently, scholarship on technology rests largely in the hands of historians and economists, although a band of more sociologically oriented scholars are active. Historians have superbly documented the technological developments that mark Western modernization. Yet they usually write on the social sources of technological change (for example, how national cultures shaped the development of trolley systems) rather than on the technological sources of social change. Economists tend to focus on immediate and straightforward applications of technical advances. Neither group, and few scholars generally, have looked closely at how the use of major technologies affects personal and social life.¹¹ There are important exceptions. Most noteworthy are several historians who have studied housework technologies. They have striven to understand how vacuum cleaners, stoves, and the like altered the lifestyles and well-being of American women.¹² In general, however, scholars have neglected the social role of technology and left “theorizing”—that is, accounting for the influence of technology on social life—to the older Ogburn approaches or to common sense.

Others, quite different, have eagerly addressed the social implications of technology. These, loosely termed “culture critics,” contend that technology has created a modern *mentalité*. They have posed some challenging ideas. Where Ogburn and others saw the nuts and bolts of a technology, they see its symbolism and sensibility.

But both perspectives on technology are problematic. Our way of thinking about the *causal* link between technology and social action impedes our understanding of technology's role. Even the language we employ can be a problem, as in the common use of the word *impact* to describe the consequences of technological change.

Defining Technology

The dictionary defines technology as applied science. Some have construed it more broadly, as “practical arts,” the knowledge for making artifacts, or even the entire set of ways that people organize themselves to attain their wants. Put that broadly, the concept comes to subsume almost all human culture, including magic. As the label stretches—as it becomes, for example, a synonym for rationality—“technology” becomes less a subject of study and more a rhetorical term.¹³

Let us restrict the idea to the more tangible, physical aspects of technology, to devices and their systems of use. And since this study concerns the everyday domestic sphere, technology here is similar to the idea of material culture. For some people, items of material culture, such as refrigerators, bicycles, telephones, phonograph records, and air conditioners, may seem too mundane for serious study. Yet Siegfried Giedion offers another viewpoint in the opening pages of *Mechanization Takes Command*:

We shall deal here with humble things, things not usually granted earnest consideration, or at least not valued for their historical import. But no more in history than in painting is it the impressiveness of the subject that matters. The sun is mirrored even in a coffee spoon.

In their aggregate, the humble objects of which we shall speak have shaken our mode of living to its very roots. Modest things of daily life, they accumulate into forces acting upon whoever moves within the orbit of our civilization.¹⁴

The prosaic objects of our culture form the instruments *with* which and the conditions *within* which we enact some of the most profound conduct of our lives: dealing with family, friends, and ourselves.

For most culture critics these objects are the focus of concern. The key question usually is: What has the automobile, or the television, or the skyscraper, or whatever *thing*, done to us? Of course, a material object itself, lying bare on the ground, is of no interest. As historian Thomas Hughes has emphasized, there is a “system” around a functioning technology—a commercial broadcasting system around the television; appliance, electrical, and food-packaging systems around the refrigerator. References to the material object, as in “the diffusion of the automobile,” are shorthand for the larger system.¹⁵ The point is not merely a matter of lexicon. Separable parts of a technological system may have separable consequences. Television, for example, can be analyzed by its specific content—such as the sexual titillation,

violence, and commercials it broadcasts—or by its technical features—such as the flickering of images, dissociation of place, and passivity of watching.

Intellectual approaches to technology and society can be divided into two broad classes: those that treat a technology as an external, exogenous, or autonomous “force” that “impacts” social life and alters history, and those that treat a technology as the embodiment or symptom of a deeper cultural “logic,” representing or transmitting the cultural ethos that determines history.¹⁶ Each approach is problematic.

Impact Analysis

The older, Ogburn analysis is a “billiard-ball” model, in which a technological development rolls in from outside and “impacts” elements of society, which in turn “impact” one another. Effects cascade, each weaker than the last, until the force dissipates. So, for example, the automobile reduced the demand for horses, which reduced the demand for feed grain, which increased the land available for planting edible grains, which reduced the price of food, and so on. A classic illustration is Lyn White’s argument that the invention of the stirrup led, by a series of intermediate steps, to feudalism.¹⁷

Economic rationality is an implicit assumption in the billiard-ball metaphor. A technology is considered imperative to the extent that it is rational to adopt it. Adopting it in turn alters related calculations, leading to further changes in action. The model allows for unintended consequences, particularly during Ogburn’s famous “cultural lag” (a period of dislocation when changes in social practice have not yet accommodated the new material culture), but change largely follows the logic of comparative advantage among devices. More contemporary versions of this impact model appear in the literature on technology assessment.¹⁸ Such thinking about technology is deterministic: Rationality requires that devices be used in the most efficient fashion.

Critics have challenged the assumption that technological change comes from outside society as part of an autonomous scientific development and that application of a device follows straightforwardly from its instrumental logic. Instead, these critics contend that particular social groups develop technologies for particular purposes—such as entrepreneurs for profits and the military for warfare. The devel-

opers or other groups, operating under distinctive social and cultural constraints, then influence whether and how consumers use the new tools.¹⁹ Some scholars have argued, for example, that the automobile, tire, and oil industries, through various financial stratagems, killed the electric streetcar in the United States to promote automobile and bus transportation.²⁰ In this view technological change is better understood as a force called up and manipulated by actors in society. Historian George Daniels puts the challenge broadly:

No single invention—and no group of them taken together in isolation from nontechnological elements—ever changed the direction in which a society was going. . . . [Moreover,] the direction in which the society is going determines the nature of its technological innovations. . . .

Habits seem to grow out of other habits far more directly than they do out of gadgets.²¹

Against the metaphor of ricocheting billiard balls, we have perhaps the metaphor of a great river of history drawing into it technological flotsam and jetsam, which may in turn occasionally jam up and alter the water's flow, but only slightly.

Others reject technological determinism less completely, granting that material items have consequences, but claiming that those consequences are socially conditioned. Societies experience technological developments differently according to their structure and culture. For example, John P. McKay has shown how the trolley system developed more slowly but more securely in Europe than in the United States. Others have argued that France's autocratic centralism retarded the diffusion of the telephone.²² More generally, historians of technology often explain that a technological development may have unfolded otherwise were it not for social, political, or cultural circumstances. For instance, some historians of housework contend that American households might have developed communal cooking and laundering facilities with their neighbors, but instead most individual American families own small industrial plants of ovens and washers, expensive machines that are idle 90 percent of the time. This is not economically efficient, critics contend; rather, it is the outcome of American institutions and culture. (More on this "social constructivism" perspective later.) The blunt conclusion from the last generation of scholarship is that the whig analysis of technology cannot hold. The ideas that technologies develop from the logical unfolding of scientific rationality, that they find places in society according to principles of economic

optimization, that their use must be comparatively advantageous to all, and that the only deviation from this rationality is the brief period of social disruption labeled “cultural lag”—this model has long been rejected as conceptually and empirically insufficient.

But another form of determinism has arisen: the “impact-imprint” model. According to this school of thought, new technologies alter history, not by their economic logic, but by the cultural and psychological transfer of their essential qualities to their users. A technology “imprints” itself on personal and collective psyches.

Stephen Kern’s *The Culture of Time and Space, 1880–1918*, which illustrates this approach, is a well-received and thoughtful analysis of space-transcending technologies developed before World War I: the telegraph, telephone, bicycle, and automobile. Together, Kern contends, these new technologies “eradicated” space and shrank time, thus creating “the vast extended present of simultaneity.” Without barriers of space and time, we moderns can reach and be reached from all places instantly, an experience leading to heightened alertness and tension.

The crux of Kern’s argument is that the essences of the technologies—the speed of the bicycle and automobile, the instancy of the telegraph and telephone—transfer to their users. For example, Kern cites a 1910 book on the telephone (subsidized, it turns out, by AT&T) claiming that with its use “has come a new habit of mind. The slow and sluggish mood has been sloughed off. . . [and] life has become more tense, alert, vivid.” Similarly, he quotes a French author on how driving an automobile builds skills of attention and fast reaction. The technologies passed on their instancy and speed to the users and, through them and through artists, to the wider culture.²³

But how can a technology pass on its properties? Ultimately, the argument rests on metaphor become reality. At points, Kern lays out a plausible causal explanation. For example, he contends that unexpected telephone calls at home promote anxiety and feelings of helplessness.²⁴ He does not, however, pursue this kind of speculation consistently. Had he done so, he might have found that it did not always lead in the same direction. The telephone might also promote calm because its calls reassure us that our appointments are set and our loved ones are safe. Kern might also have more consistently compared the psychological consequences of these technologies with those of their precursors. While he compares the suddenness and demand of the telephone call to the leisureliness of the letter, he does not com-

pare it to the surprise and awkwardness of an unexpected visitor at the door. The power of Kern's general argument rests ultimately on the impact-imprint metaphor: The jarring ring of the telephone manifests itself in a jarred and nervous psyche.

Kern's analysis also raises issues of evidence. Most of his material comes from literary and artistic works, suggestive and significant to be sure, but not to be taken at face value.* Even more, he and his sources typically reason from the properties of the technologies to the uses of them and then to the consequences. For example, the essence of the automobile is speed; it is used in a speedy way; thus its users' lives are speedier. Instead of reasoning from the properties of the tools, however, one might look at what people do with the tools. In the case of the automobile, one could reason that the replacement of the horse and train by the automobile would have sped up users' experiences. This may sometimes be so, but not always or perhaps even mostly. Touring by car rather than train probably led, according to a historian of touring, to a more leisurely pace. People could pull over and enjoy the countryside, "smell the roses." Similarly, farmers who replaced their horses with motor vehicles could travel faster to market, but many apparently used the saved time to sleep in longer on market day.²⁵ Kern's *Space and Time* exemplifies a mode of thinking about technology that, while more sophisticated than the earlier simple technological determinism, is still deterministic.

Joshua Meyerowitz's *No Sense of Place* presents a similar logic. In this award-winning volume Meyerowitz combines McLuhanesque insights with some sociology to create an argument both similar to and different from Kern's. Electronic media "lead to a nearly total dissociation of physical place and social 'place.' When we communicate through telephone, radio, television, or computer, where we are physically no longer determines where and who we are socially."²⁶ All places become like all others; cultural distinctions among places are erased, privacy is reduced, and areas of life previously sheltered from public view—the "backstage"—are revealed. Like Kern, Meyerowitz reasons from the properties of the technologies to their consequences: Electronic media are "place-less," so people lose their sense of place.

The problems of this approach are similar to Kern's. Meyerowitz, for example, argues that, unlike letter writers, telephone callers can

*By which I mean: Artists do not simply mirror their society. Instead of merely describing reality, they often "play" with reality by, for example, depicting escapes from it, ironic twists on it, fears about it, or romanticizations of it.

pierce other people's facades by hearing sounds in the background of the other party. Thus the telephone breaks down privacy. But why not instead compare the telephone call to the personal visit or to the front-stoop conversation? If telephone calls have replaced more face-to-face talks than letters, then the telephone has increased privacy. On empirical issues Meyerowitz relies on "common sense" or news stories for evidence and produces very few historical accounts. To take a minor illustration, Meyerowitz argues that "electronic messages . . . steal into places like thieves in the night. . . . Indeed, were we not so accustomed to television and radio and telephone messages invading our homes, they might be the recurring subjects of nightmares and horror films." Perhaps. But while accounts of early telephony (pronounced teh-LEH-feh-nee) suggest a wide range of reactions, including wonder and distaste, they do not indicate that early users had nightmares about invading messages.

The two forms of technological determinism reviewed here differ. The older one was "hard," simple, and mechanistic; the newer is "soft," complex, and psychocultural. But both are deterministic. A technology enters a society from outside and "impacts" social life. Both describe a form of cultural lag, during which sets of adaptive problems arise because we, by nature or by historical experience, are unable to use a new technology to meet our needs and instead are used by it. Ironically, because the newer form of determinism is more cultural and thus more holistic (and thus also in some ways like the "symptomatic" approach discussed in the following section), it typically describes a convergence of similar effects—for example, in Meyerowitz's electronic media and placelessness. Different specific technologies change us in the same ways. This logic can be even more deterministic than that of Ogburn, since his analysis contains the possibility that specific cause-and-effect trajectories may diverge. In either case, such impact analyses ought to be abandoned. The first is too rationalized, mechanical, and lacking in social context. The latter is too reliant on imagery rather than evidence. It suffers from what historian David Hackett Fischer labels "the fallacy of identity."²⁷ Indeed, we should abandon the word *impact*. The metaphor misleads.

Symptomatic Approaches

"Symptomatic" analysts, to use literary critic Raymond Williams's term, describe technologies not as intrusions into a culture but as ex-

pressions of it. Langdon Winner uses the term “technological politics” for a theory that “insists that the *entire structure* of the technological order be the subject of critical inquiry. It is only minimally interested in the questions of ‘use’ and ‘misuse,’ finding in such notions an attempt to obfuscate technology’s systematic (rather than incidental) effects on the world at large.” Typically, the underlying *Geist*, or spirit, is an increasing rationalization of life, carrying with it mechanization, inauthenticity, and similar sweeping changes. Specific material goods are in essence manifestations of this fundamental *Geist*.²⁸

Much of Lewis Mumford’s later writings are in this vein, for example:

During the last two centuries, a power-centered technics has taken command of one activity after another. By now a large part of the population of this planet feels uneasy, indeed deprived and neglected unless it is securely tied to the megamachine: to an assembly line, a conveyor belt, a motor car, a radio or a television station, a computer, or a space capsule. . . . Every autonomous activity, one located mainly in the human organism or in the social group, has either been bulldozed out of existence or reshaped . . . to conform to the requirements of the machine.²⁹

More popular writings, such as those of Ellul on *technique* and Schumacher in *Small Is Beautiful*, also describe a deep force that spawns a homogeneous set of technologies.

A specific technology matters little. It may be the actual instrument of a deeper process or just a sign of it, a synecdoche for all technology. Leo Marx has shown how nineteenth-century American Romantics used the railroad as an emblem for social change. More recently, writers have held that other technologies, such as the engine, assembly line, and automobile, epitomize deeper conditions such as cultural modernity.³⁰

The symptomatic approach raises its own problems. The causal logic is usually opaque: How does a *Geist* shape psyche and culture? Do people learn, say, rationalization, by using specific devices? Or, is using a device the expression of rationalization learned in other ways, say, through mass media? The approach carries a major assumption about technology that seems both logically and empirically unwarranted: that modern technologies form a coherent, consistent whole—a contention that follows almost necessarily from the idea of an underlying process. Jennifer Stack has pointed out that “by assuming, and therefore searching for, only correspondences [of technologies with the *Geist*] writers deny the possibility that a technology might

embody elements that truly contradict the essence of the totality or simply express something other than the essence.”³¹ This holism appears in several forms.

One form is the implicit claim that these technologies operate in parallel with homogeneous effects. Mumford makes that claim in his list of devices that people cling to, and others make it in arguments that modern technologies generally lead to routinization or that they necessarily alienate users from nature. But do all these modern tools operate in parallel? Perhaps not. Take, as another example, philosopher Albert Borgmann’s inquiry on *Technology and the Character of Contemporary Life*. He defines modern technology as “the typical way in which one in the modern era takes up with reality,” a truly global definition. Borgmann then distinguishes modern (1700 to now) *devices* from largely premodern *focal things*. Things are objects whose operations we understand and that can “center and illuminate our lives”—like fireplaces, violins, and national parks. They are good. Devices are objects whose internal workings are mysteries and that merely deliver some end to us—like central heating, stereos, and motor homes. They are bad. (The evaluations are explicit in Borgmann’s book.)³² One immediate problem, among others, is that Borgmann equates so many diverse objects—toasters to telemetry—and asserts that they all deeply affect relations and psyches in the same way.*

There is little theoretical and less empirical reason to lump these diverse objects into a single category *a priori* and to assume parallelism. Such an action forecloses rather than broadens scholarly inquiry. (It assumes a “myth of cultural integration.”³³) The various uses of different technologies may clash with one another. Perhaps, for example, movies helped bring people into public spaces more, but television reversed that. Or take the idea of routinization. Some have suggested that the railroads enforced a rigidity about time through their fixed schedules. If so, the automobile must have contradicted this trend by allowing people to come and go as they pleased. Or take housework. Ruth Cowan has persuasively argued that some household appliances brought functions into the home and others extruded functions

*Other problems include the difficulty any other observer would have in distinguishing a focal thing from a device, the evident subjectivity of the distinction. As in many other cultural critiques, we have a catalog of class prejudices. Violins, Borgmann claims, are focal, because he presumably can play and enjoy them; the operations of stereos are alienating mysteries. Of course, for others, the reverse is true. Similarly, computers are mere devices to Borgmann, although to many they are engrossing and fulfilling, constituting a focus of community.

from it. Or, finally, take the set of technologies Malcolm Willey and Stuart Rice call “agencies of communication,” some of which they claim increased cultural standardization (radio, movies) and some of which they claim reduced it (telephone, automobile).³⁴ If even within such narrow sets of technologies there could be such varieties of possible consequences, how can we assume homogeneous consequences across the hodgepodge of modern tools?*

Another corollary is the assumption that the several effects of any device operate in parallel and are the same for all people. A technology could, instead, have contradictory consequences or different ones for different groups. For example, farmers’ use of the automobile may have simultaneously solidified rural communities by increasing local interaction and weakened them by allowing farm families to tour distant locales. And use of the automobile may have increased the social mobility of blacks in the South more than that of whites. The workplace computer may both degrade the skills of middle managers and upgrade those of secretaries.³⁵

Another dubious corollary is that technology has cumulative effects: The more of the cause, the more of the consequence; for example, the more powerful computers are, the more “placelessness” there is, to use Meyerowitz’s term. Sometimes this may be so, but often it probably is not. When televisions were scarce, for instance, family members and even neighbors came together to watch, but as televisions became common, it seems that people increasingly watched them alone. Similarly, early washing machines may have encouraged collective housework, drawing homemakers to laundromats, but the later, cheaper machines probably encouraged privatization of housework by allowing homemakers to do the wash at home.³⁶

Since those writing in the symptomatic mode assume that history has a grand direction, they often tend to extrapolate developments almost *ad infinitum*. Video games provide a cautionary tale. In the early 1980s many commentators projected the PacMan-ization of American youth. Yet the video craze collapsed almost as fast as it grew (and then it rebounded with Nintendo games, but perhaps only for a while).

*Sigmund Freud made a similar point in *Civilizations and Its Discontents*: “Is there, then, no positive gain in pleasure, no unequivocal increase in my feeling of happiness, if I can, as often as I please, hear the voice of a child of mine who is living hundreds of miles away. . . ? [But] if there had been no railway to conquer distances, my child never would have left his native town and I should need no telephone to hear his voice. . . .” (translated by James Strachey, Norton edition, 1962, p. 35).

Claims about the computerization of the American home appear to be similarly mistaken.³⁷

The symptomatic approach widens our view of technology from simply mechanical and instrumental attributes to the cultural and symbolic contexts within which devices are developed and employed. It reinforces the need to incorporate social context into our explanations. In some ways, however, this approach is more problematic than simple technological determinism. Because its proponents locate the source of change in a global *Geist* and therefore disdain serious attention to any particular technology, this approach cannot explain how people come to use a technology and thereby change their lives. Its holism may conceal and confuse matters more than the piecemeal nature of technological determinism.

Social Constructivism

Several historians and sociologists, particularly European scholars, have in recent years formalized an approach that stresses the indeterminacy of technological change. Mechanical properties do not predestine the development and employment of an innovation. Instead, struggles and negotiations among interested parties shape that history. Inventors, investors, competitors, organized customers, agencies of government, the media, and others conflict over how an innovation will develop. The outcome is a particular definition and a structure for the new technology, perhaps even a “reinvention” of the device. The story could always have been otherwise if the struggles had proceeded differently. That is why the same devices may have different histories and uses in different nations. I have already mentioned the example of streetcar systems. Similarly, radio frequencies became privately owned franchises broadcasting commercially sponsored entertainment in the United States because of social conditions and political arguments specific to this country. (Critics of a more deterministic bent might rejoin, however, that such national differences in radio operations pale in comparison to their similarities.)³⁸

This perspective brings us closer to incorporating end users into the analysis. Carolyn Marvin, for example, describes debates among electrical experts of the late nineteenth century about the social implications of lights and telephones and what ought to be done to manage those implications. Users are represented in “negotiations” that reshape innovations and channel their use by interest groups and ul-