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 humanties 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 Tonniës, 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 developers 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 compare 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 expressions 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 ultimately by the purchase decisions of individual customers and the actual use to which those individuals put the technology. By this process, the technology is transformed into something different. In the case of the telephone, we will see how AT&T leaders, pressed in part by consumers, eventually tried to redefine their product from a totally practical service into a "comfort," a luxury, of the modern lifestyle.[39]

Most social constructivism has concentrated on the producers, marketers, or experts of a technological system. I intend to go further, to emphasize the mass users of technology, to go to what Ruth Schwartz Cowan has labeled the "consumption junction"—the point at which the final consumers choose, employ, and experience a technology. What we ultimately need, as Cowan argues and illustrates with the history of stoves, is a focus on the consumer if we are really to understand the social implications of technology.[40]

A User Heuristic: From the Consumer's Viewpoint

Once we have understood the genesis of a technology, its development and promotion, we can begin looking at consequences. Here we should ask: Who adopted the device? With what intention? How did they use it? What role did it play in their lives? How did using it alter their lives? This angle, an extension of social constructivism, emphasizes human agency and intentionality among end users. People are neither "impacted" by an external force, nor are they the unconscious pawns of a cultural *Geist*. Instead of being manipulated, they manipulate. We assume that users have purposes they mean the technology to serve, and—this is a point of method—that users can understand and tell us about those ends and means.*

This rational, individualistic model is, by itself, inadequate. Social and cultural conditions largely determine people's ends, be those ends the desire to be entertained, or to see family, or to appear *au courant*. Moreover, social and cultural conditions limit people's choices. People choose within obvious constraints, such as the income they have and the costs they face. They also choose within the constraints of their information, their skills, formal and informal rules, and the like. So, for example, teenagers who do not understand pregnancy cannot

* This discussion is akin to von Hippel's on "users as innovators." In the arena of producer goods he documents how often users develop innovations for a technology, modifications that are later commercialized by the original manufacturers (von Hippel, *Sources of Innovation*).

reasonably choose a birth control device, older people unfamiliar with electronics will shy away from computers, and men exposed to cultural images that depict cooking as feminine may be unable to master oven controls. People also choose within the constraints imposed by the distribution system of the technology. If telephone services are not provided in their community, people cannot use them. Alternatively, distributors can force people to use a new technology by eliminating other options, as, for example, when banks make it hard to use human tellers and thus constrain customers to use automatic tellers.* The sensibility of users can thus operate only within narrow social and cultural limits.

From this perspective the consequences of a technology are, initially and most simply, the ends that users seek. People, however, have multiple, often contradictory, purposes, so that use of a technology may have nonobvious consequences. In particular, some technologies can alter the trade-offs among people's goals and yield paradoxical results or even no evident effects at all. For example, the nature of the urban housing market means that many Americans must trade proximity to their jobs for spacious homes farther away. Some urban scholars suggest that most Americans have used automobiles not to shorten their work trips but to move farther away from their jobs and thereby purchase larger but cheaper housing. Thus the automobile may have led, not to shorter commutes, but to more spacious housing. Similarly, some historians suggest that the mechanization of housework saved American homemakers considerable time, but most women used the time savings not to gain respite but to attain even greater cleanliness, and thus they ended up devoting the same amount of time to housework as they had before. As a final example, most Americans may have decided that the time they saved using modern transportation to keep in touch with their kin should be spent, not for more frequent contact with those relatives, but for the same frequency of contact at greater distances. More generally, people can put technologies to various ends—which may include keeping some activities just as they were. In these ways, some major technologies may have few direct and overt consequences.

So far, I have addressed intended consequences, but new technologies may also have second- and third-order consequences that are unintended. Individuals directly experience the unintended consequences of their own choices. For example, spending money on a new device means limiting other expenditures. Touring by automobile exposes travelers to new cultural influences.

More interesting and less controllable, individuals indirectly experience the unintended collective consequences of *others'* use. Over the years, shopping by automobile probably encouraged the dispersal of stores and so perhaps increased everyone's need to have an automobile. As more people use telephones to get services, service providers reorganize to deal with calls and perhaps thereby pressure nonsubscribers to get telephones. These examples illustrate one kind of collective by-product of adopting a new technology: An optional device becomes necessary. Other collective consequences include what economists call "externalities," such as the increased demand for oil because of the automobile or the decline in slide-rule skills because of the calculator. These reverberations can be paradoxical. For example, congestion on streetcars may have encouraged Americans to switch to automobiles for commuting, which eventually led to yet another form of traffic congestion.[41]

These externalities illustrate that a technology can be both a *tool* for an individual user and, aggregated, become a *structure* that constrains the individual. Individuals may not choose to watch television, but they must still contend with television in popular culture, children's fantasy lives, politics, public schedules (at least one presidential inauguration has been worked around the Superbowl), and so on. At either level of analysis, individual or structural, the center of the process is the purposeful user employing, rejecting, or modifying technologies to his or her ends, but doing so within circumstances that may in some instances be so constraining as to leave little choice at all.

This "heuristic," or instructive tool for thinking about technology, may be closer to the instrumental model I described earlier than to the symptomatic model, but it emphasizes the users rather than the imperative properties of the technology,* stresses social ends and social contexts, and denies the determinism of the billiard-ball metaphor.

One implication of this perspective is that empirical, historical research is of critical importance. If we can neither deduce a technology's social role from its manifest properties nor easily extrapolate it from a cultural *Geist*, if it matters more what individual users choose

*This point was suggested by Ilan Solomon.

*It is therefore possible for people to "misuse" a technology, at least from the point of view of its providers, as we shall see in the case of the telephone.

a mass product, an everyday device for handling chores and having conversations. The role of the telephone unfolded over time. To what effect?

Such assessments can best be done by establishing some benchmarks for comparison. I chose to compare the social history of the telephone to that of the automobile. Although as an object and a system the automobile differs greatly from the telephone—gas and electric services are more like the telephone in form—from the user's point of view they are comparable. The automobile provides some of the same space-transcending functions of the telephone, albeit more slowly. Where possible, therefore, I contrast the diffusion and social uses of the telephone to those of the automobile.

THE TELEPHONE'S SOCIAL ROLE: SOME SPECULATIONS

Despite the paucity of research, there have been some speculations about the social implications of the telephone. Ithiel de Sola Pool, one of the few researchers in this field, compiled a long list of forecasts made before 1940 about the telephone's role. Commentators predicted a range of consequences, from the disappearance of regional dialects to the elimination of written records for historians.[47]

Two topics illustrate the range of the weightier claims. One: Some have argued that use of the telephone altered the physical layout of American cities. Because telephone conversations erase the "friction of space"—the time and cost of crossing distances—they also reduce the importance of central location. Businesses and people can therefore more easily move to the urban periphery.[48] Two: Some serious commentators, as well as many industry representatives, have described the telephone as a force for democracy, because it permits citizens to communicate, to collaborate, and even to conspire uncontrolled by a central authority.[49] As intriguing as these and many other speculations are, we have very little, if any, solid evidence on their plausibility, much less their factuality.

This study looks more closely at a few other sets of speculations. One is the broad concern over whether the telephone has expanded or diminished personal relations. The industry itself said that telephone calls enriched social ties, offering "gaiety, solace, and security," even making of America "a nation of neighbors." Less interested parties, as well, described the telephone as a device that worked on behalf of social attachments.[50] The most common claims were that the telephone allowed rural people to overcome isolation, perhaps even saving many farm wives from insanity (see Chapter 4). Others, however, charge that the telephone provides but an echo of true human communication. "It brought people into close contact but obliged them to 'live at wider distances' and created a palpable emptiness across which voices seemed uniquely disembodied and remote," writes Stephen Kern. It is, in such views, an impersonal instrument whose use spreads impersonality.[51]

A second and widespread conviction is that telephone use weakens local ties in favor of extralocal contacts and national interests. Some make this claim approvingly, stating that the telephone is "an antidote to provincialism." Increased communication promises to advance contact among cultures, to help bring "the brotherhood of man." But for others the telephone is yet another of modernity's blows against local *Gemeinschaft*, the close community. We get larger "electronic neighborhoods . . . but shallower kinds of community." Ron Westrum has argued that devices such as the telephone "allow the destruction of community because they encourage far-flung operations and far-flung relationships." At an even deeper level the telephone contributes to placelessness, and without rootedness both community and identity are at risk.[52]

Few have argued against the delocalization claim, but Malcolm Willey and Stuart Rice did so in the most comprehensive study of the new communications' effects, a monograph published in 1933 for President Hoover's Commission on Social Trends. They argued that people use the telephone, like other point-to-point media, to augment local ties much more than extralocal ones and that calling strengthens localities against homogenizing cultural forces, such as movies and radio. "The telephone replaced the back fence and so was local in its influence," as another author put it.[53]

A third general concern has been for the subjective implications of telephone use. Many have ruminated on subtle psychological effects, for example, the possible creation of an alert, tense, "speedy" frame of mind. People are on edge, conscious that a call may occur at any instant, always impatient because the telephone has trained them to expect immediate results. Yet others describe the telephone as providing a calming sense of security.[54] Similarly, commentators have worried about privacy and "privatism." Carolyn Marvin wrote: "The telephone was the first electric medium to enter the home and unsettle customary ways of dividing the private person and family from the

to do with a device and how these choices aggregate, then we must look closely at the histories of specific technologies. (Oliver Wendell Holmes once wrote that on some points "a page of history is worth a volume of logic.") Of course, we always seek to simplify, to group together specific instances, or find a few underlying dimensions (for Kern, the key category is space-transcending implements; for Meyerowitz, electronics). And so we should. But until we have reason—or better, evidence—to the contrary, we should assume that each technology may be used differently and play a different social role, and that different people may use the same technology to different effect.

This, too, is a serious problem in the field: the shortage of reliable evidence, compared to the plenty of impression, anecdote, and abstracted inference. Borgmann again illustrates. He purposely eschews any empirical literature and concentrates instead on philosophical discourse (in part because he distrusts social science as a technological, alienating "device"). Instead of research, he says, we should rely on our "common intuitions." This is a mistake, since few intuitions are so common as to be indisputable and even common intuitions are often false (for example, the world is flat, "blood tells," and so on). Borgmann's essay, like most supposedly theoretical discourses, rests on many empirical assumptions, some plausible, some dubious, most unexamined.[42] But even less polemical writers rely often on impression in place of hard evidence. For example, many a scholar has repeated the claim that the railroad companies developed standard time zones to rationalize their work. Recent research shows, however, that scientists were the ones who pushed the standardization; the railroads were not terribly interested.[43]

We need to study how specific devices were introduced and adopted, what people used them for, how that use changed as the technology evolved, how those uses altered other actions, how patterns of use changed the context for other actors, and so on. (Again, social constructivists have explored some of these concerns in concrete case studies.) To address questions about twentieth-century modernity, such studies ought to examine the key technologies of the transition, such as the automobile, assembly line, radio, and refrigerator. Historians have documented the development of many of those technologies, but have rarely described their social roles (the research on housework being an exception). Once we understand how the technologies emerged, we need to ask a few key questions: First, why and how did

individuals use the technology? Second, how did using it alter other, less immediate aspects of their lives? Third, how did the collective use of a technology and the collective responses to it alter social structure and culture?

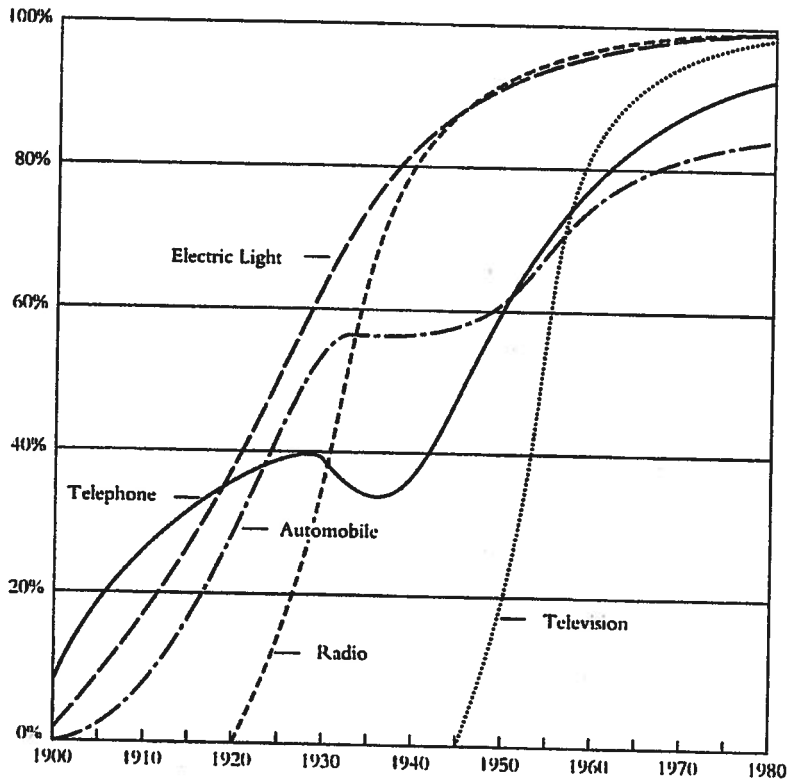
In this book I try to follow this "use heuristic" as far as the evidence will allow. Although the next two chapters take the common social constructivist path, examining how producers of the telephone developed and marketed their service, later chapters turn more toward Cowan's "consumption junction." They focus on users as individuals and as communities. Since the users were, as years passed, increasingly a mass population, the way of studying them becomes more sociological and statistical rather than historical and biographical. (More on method in a later section.) But the intent is always to discern how the average user reacted to and employed the technology.

WHY THE TELEPHONE?

Concerns about modernity, technology, and community motivated this study. I wanted to understand an aspect of the coming of modern society by examining the technological changes that were integral to it. According to the argument I have just laid out, this requires diligent empirical study of how people adopted and used a specific technology. Many technologies could and ought to be studied. Producers used some new technologies to alter goods production and delivery—new machines, materials, communication systems, control processes, and the like—with profound consequences for work and the economy.[44] I chose to focus, however, on a technology that people used daily in private life, a technology that may have affected social relations, community, and culture.

That still leaves a wide range of technologies. Figure 1 shows how a few key consumer products spread in the twentieth century. There are many other possibilities as well. Recent women's history scholars, for example, have studied technologies used for food preparation and cleaning. I further narrowed my choice to point-to-point, space-transcending technologies, such as the railroad, automobile, telephone, and streetcar.

The ability to travel and speak across space changed fundamentally between 1850 and 1950: from horsepower for the few to railroads, streetcars, bicycles, and automobiles for the masses; from military semaphore to business telegraphs and then telephones for the masses.



Note: Smoothed lines.

FIGURE 1. U.S. HOUSEHOLDS WITH SELECTED CONSUMER GOODS, 1900–1980. This figure shows how several domestic technologies spread among Americans in the twentieth century. Slowed in part by the Depression, the telephone and automobile did not diffuse as rapidly as the three electronic devices. (Source: U.S. Bureau of the Census, *Historical Statistics* and *Statistical Abstract 1990.*)

These new technologies undergirded other material changes, such as increasing production and the rise of national markets. To the classical sociologists—most explicitly, to Emile Durkheim[45]—the multiplication and extension of interpersonal contacts were crucial to the development of modern society. More interaction generated economic and social specialization, brought cultures together and accentuated their discords, and shifted the bases of social solidarity from bloodline and place to occupation and taste. If we understand this change

in social interaction, classical theory suggests, we understand much of modern society. Finally, to understand changes in private life and personal relations, it is appropriate to examine the means by which people conducted those relations.

Of the several space-transcending technologies, I selected the telephone, for two major reasons. First, the telephone captures most cleanly the magnification of social contact, without the complications of freight hauling or commuting involved in, say, the automobile or railroad. In 1875 Americans who wanted to send a message had to travel or use an intermediary who traveled; the messages were brief and one-way; the range and volume of communication were severely limited. (Use of the telegraph was highly restricted to business and rare emergencies.) In 1925 most Americans could speak to one another across town or across country quickly, back and forth, and fully. The possibilities of personal communication expanded vastly. How did people adopt and adapt to such a drastically new condition of social life?

The second reason is that among the space-transcending technologies of this era the telephone has been studied least. (Since I began this research in the early 1980s, some serious work has appeared. See the bibliographic essay in Appendix A.) In truth, none of these technologies has been studied *sociologically* in any depth. Compared to the shelves of research on, for example, television and its consequences, even the automobile is a mystery. Moreover, except for a few business historians, scholars have all but ignored the telephone. Why? Perhaps the moment of the telephone's notoriety preceded the era of social research. Or perhaps few social problems seem tied to the telephone. Or as one literary analyst has suggested, perhaps the telephone belongs to the class of "anonymous objects . . . so imbedded in daily routine as to have become undifferentiated from the rest of our immediate landscape."[46]

I want, then, to understand the introduction of the telephone, the uses to which people put it, and its evolving social role in daily life. To understand these developments, one must do more than reason forward from the properties of the telephone; one must study the historical process itself. One must do more than catalog the commentaries of contemporary observers; one must look at the conduct of daily life itself. One must do more than study telephone use today; one must examine change over time. The telephone began as a novelty, became business's substitute for the telegraph, and then evolved into

more public setting of the community." One common complaint in the nineteenth century was that the telephone permitted intrusion into the domestic circle by solicitors, purveyors of inferior music, eavesdropping operators, and even wire-transmitted germs. Among some communication theorists the telephone's intrinsic social psychological character wears away privacy: Messages come unbidden; background sounds reveal intimacies of the home to the caller; speakers cannot prepare for or reflect upon the discussion as they can in letters; callers' voices are disembodied from context; and so on.[55]

Others, however, blame telephone use, as well as television watching, suburban backyards, and the like, for creating "a general withdrawal into self-pursuit and privatism." One concern in the earliest days was that the telephone allowed people to conceal from community scrutiny inappropriate activities, such as illicit romances or liquor purchases. With the telephone and other devices people need public spaces less often and thus disengage from public life, burrowing into familial cocoons.[56]

These speculations revolve around what might be called the first-order consequences of telephone use: what its use means for the users. There are also second-order consequences: what widespread use of the telephone means for others and for the community. For example, at some point people with telephones began to assume that others would be instantly reachable. As Willey and Rice put it in 1933, "to be without a telephone or a telephone listing is to suffer a curious isolation in the telephonic age."[57]

There is little confirmation of the validity of these speculations, either in reports by contemporary observers or, much less, in systematic comparative evidence. The claims depend on an analysis of the inherent "logic" of the telephone, on impressions (not always unbiased), on anecdotes and second-hand tales. The dominance of opinion over evidence in this area is illustrated by a trivial example that came to intrigue me. Repeatedly, writers claimed that the telephone made construction of skyscrapers possible. The first instance of this claim seems to have been in 1902, and the latest I found was in 1989. Its greatest publicist was AT&T's chief engineer in the early 1900s, John J. Carty. A telephone was useful in managing construction high above the ground, he argued, but was even more important in solving the messenger problem:

> Take... any of the giant office buildings. How many messages do you suppose go in and out of those buildings every day[?] Suppose there was [*sic*] no telephone and every message had to be carried by a personal messenger. How much room do you think the necessary elevators would leave for offices? Such structures would be an economic impossibility.

This contention lacks both evidence and plausibility. The historical timing is off, and other means of sending messages—pneumatic tubes, for example—were available. Yet this claim has been repeated for over 80 years without serious examination.[58] If we know so little about such a simple, material issue, consider how little we really know about the role of the telephone in personal relations, families, and community life.

Claims about the automobile's role are numerous, and some of them—especially those dealing with the changing physical layout of North American cities—have been well researched. But many claims about the automobile's role in the social lives of its users are as contradictory and as undocumented as those about the telephone.

Many blame or credit the automobile for the decline of local attachments in favor of placeless ties, whether for better—"the unshackling of the age-old bonds of locality," according to Robert Heilbroner—or for worse. A few, conversely, claim that the automobile instead abetted a retreat from urban cosmopolitanism into suburban provincialism.[59] Many commentators, particularly in the 1920s, lamented that the automobile undermined the family by permitting its members to pursue their pleasures at movies, roadhouses, campsites, and lovers' lanes. More recently, others say that the automobile encouraged extreme familism, an encapsulated privatism.[60] For some observers the automobile has been a tool for women's liberation (and another antidote to farmwife insanity), but for others it helped shackle women to their domestic chores.[61] Unfortunately, for many of these speculations, and especially for the seamier ones, there is but one major source of historical evidence, itself sometimes debatable, a chapter in the Lynds' *Middletown*.[62]

This quick review of speculations about the telephone and automobile suggests at least two points: that these technologies may have affected basic features of American life and that we have few facts about these phenomena.

We will look closely at the telephone in the development of modern American life, making brief comparisons to the automobile. We will dwell most on personal relations, local community, and subjective reactions. We do *not* ask what the "impacts" or "effects" of the telephone were. That is the wrong language, a mechanical language that implies

that human actions are impelled by external forces when they are really the outcomes of actors making purposeful choices under constraints. Instead, we ask who adopted the telephone, when, where, how, and why; for what ends; and to what uses. By these uses—and by the second-order constraints generated by common use of telephones—we can understand what role the telephone played in modernization.

We may discover negative answers to these questions. We may find that the role of the telephone or automobile in these spheres was negligible, that relations, local ties, families would have been little different without the devices. Historian Daniel Boorstin asserts that "the telephone was only a convenience, permitting Americans to do more casually and with less effort what they had already been doing before."[63] That would be a fascinating conclusion because it would imply that people can assimilate drastic alterations in material conditions—here, the capacity to talk instantly with almost anyone—and continue the same social patterns they had before. It would show a powerful tendency toward homeostasis. Indeed, most of the evidence we will review suggests that Americans assimilated the telephone easily, even becoming nonchalant about it by the 1920s. It also suggests that Americans used this device to pursue their ends, not "more casually," but more aggressively and fully.

The next section discusses the methods used to pursue these questions. In the section after that, the reader will find an outline of the book. Chapter 2 begins the study with a summary history of the telephone and automobile in North America.

A NOTE ON METHOD

This study spans history and sociology, two disciplines that have grown closer in the past generation. Many historians have realized that they do far more than simply narrate, that their stories convey causal explanations, even if only implicitly. Many sociologists have abandoned the naive model of a physical science, realizing instead that their discipline, like the other life sciences, describes and explains historical events. Thus the work of historians and sociologists has converged in the study of certain issues—for example, mobilization in great revolutions, the adaptation of immigrant groups—in ways that sometimes make it difficult to divine the authors' pedigrees.

Yet a gap remains. Sociologists and historians differ in intent, historians usually seeking to provide a fully realized account for an event and sociologists usually seeking to extract general principles. Rhetorical styles vary. Sociologists usually persuade by weaving subtle and complex correlations into a simple, plausible, theoretical fabric. Historians more often rely on narrative structure, story lines featuring flesh-and-blood actors rather than bodiless attributes. "Historians want readers to remark that things became *really different* and for a coherent set of reasons—and to remember this in something like a story form" writes the social historian John Model. "Historians simplify reality for literary reasons, and then aim to overcome that simplification with concreteness (hence, quotations; hence, examples) and evocation."[64] Preferred causal explanations often differ, with historians more commonly stressing human agency, sociologists more likely attributing action to structural circumstances. Standards of evidence diverge. A first-hand account that historians might consider concrete and contextualized sociologists might dismiss as "anecdotal," that is, idiosyncratic and biased. A statistical pattern of covariation that sociologists might hail as revealing historians might dismiss as an abstracted conflation of diverse cases, without context, and lacking in any persuasive cause-and-effect narrative.

I am interested in a historical "moment" for its intrinsic significance and for its ability to reveal, in a general way, how people deal with changing material conditions. My sociological heritage, however, will be obvious. The reader will find more attention to the accurate generalization than to the telling anecdote, more effort to organize an argument than to establish a chronology, more persuasion by weight of data than by the logic of narrative. Nevertheless, I use a combination of typical historians' and sociologists' methods and hope that the outcome will inform both schools.

My general strategy was to combine several levels and modes of investigation to understand how Americans adopted and used the telephone—and the automobile—in the years up to World War II. These were the years during which the two technologies became staples of middle-class American life. In this period we could observe people coming to know, adopt, use, and adapt to the innovations.

The research includes a study of how the telephone industry marketed its product. How did the vendors, whose livelihoods were at stake, comprehend the public demand for the technology? They were not, as we shall see, always accurate in their perceptions. Nevertheless, their knowledge of the market, the advertising they designed, and the consumer responses they surveyed all provide indirect evidence of

popular reaction. The next step, still closer to the user orientation, is an analysis of the patterns of diffusion: Who adopted the telephone, where, and when? By examining adoption patterns, we may, admittedly with some error, infer motivations and uses. Yet another strategy is to trace the integration of the technology into daily life: Where does the telephone appear in regular activities? How do people use it? What can we infer then about its social role?

These general approaches are translated into several concrete studies. The major ones are

1. A history of how the telephone industry marketed its product to North American households, with special attention to rural and working-class customers. This study draws largely on industry and government archives: publications, reports, internal correspondence, and the like.

2. Statistical analyses of state-level data on telephone and automobile adoption, assessing the factors that apparently encouraged or discouraged diffusion.

3. The largest and most complex segment, a triad of community studies, reported first in Chapter 5, on three towns in the San Francisco Bay Area—Antioch, Palo Alto, and San Rafael. The research included a few different components: (a) a social history of each town from 1890 to 1940, focusing on community social life; (b) an account of how the two technologies entered each town; (c) statistical analyses of telephone and automobile diffusion; and (d) statistical analyses of social change.

4. A statistical analysis of who adopted the telephone when. We drew samples of households from each of our three towns for five years, selected from the period of 1900 to 1936, and by linking telephone directory entries to census or city directory lists were able to find out what sorts of households were most or least likely to adopt the telephone in which year. We also used a national survey conducted during World War I and a census of Iowa farmers in 1924.

5. Oral histories with 35 elderly people living in the three towns (described more fully in Chapter 8). It would be valuable to have first-hand accounts written by typical Americans about their encounters with telephones in the early twentieth century. But, besides the problem long noted by social historians that few ordinary people leave memoirs and diaries, getting or using a telephone was not, as we shall see, a remarkable event. Even our elderly interviewees had to be encouraged to think about it.

Because there are few first-hand accounts of everyday life generations ago, and because the claims of interested parties must be viewed with caution, we rely in many places on sociological data. These data, such as censuses and surveys, speak only indirectly about individual action, hide personalities, and require interpretation, yet they are more representative and systematic than the—yes—anecdotal evidence one must otherwise rely upon.

These are the major components of the research, augmented by other bits here and there. The research includes both conventional archival research and conventional econometric analyses. The specific methodologies are described in the appropriate chapters, in appendixes, or in related articles.*

A GUIDE TO THE BOOK

America Calling generally moves from the telephone industry to the user to the social role of the telephone, from the national to the local to the personal level.

Chapter 2 presents a brief, nontechnical history of the telephone in North America. Chapter 3 explores the various ways that the telephone industry, especially AT&T, marketed its service to households, exploring the manner in which the industry understood or misunderstood subscribers' use of the telephone. Chapter 4 tracks the diffusion of the telephone across the United States, assessing the factors that encouraged or retarded its spread. It also contrasts the telephone's

*A major concern for some historians may be the collaborative nature of the local histories. (I personally gathered almost all the material from industry archives.) The tradition in history is that the lone researcher fingers each scrap of parchment to judge its authenticity and to place it in context. The time and effort required plainly narrow the scope of any single historian's research. Although an important standard, this value must be traded off against other research values, such as the desirability of *comparing* cases, without which it is difficult to draw any general conclusions. (On the value of multiple, comparative studies, see, for example, Dykstra and Silag, "Doing Local History.") In this study I compromised by focusing on three communities and by assigning each of my research assistants to do the primary research on a single town. Such collaborative research seems atypical in history, but when it is supervised by a single scholar and parallel guidelines are followed, as in our research, this approach can be fruitful. Where the community stories coincide, we draw confidence in making generalizations; where they diverge, we are stimulated to seek out the sources of difference.

diffusion in rural as opposed to urban areas and in the working as opposed to the middle class. Chapter 5 further examines diffusion, but at the level of the local community and the household. It recounts the response to the telephone in Antioch, Palo Alto, and San Rafael and then uses census data to determine which households in those towns adopted the telephone in which years. In most of these studies we use the automobile as a comparative benchmark.

Chapter 6 employs a variety of evidence, from etiquette manuals to counts of advertisements, to chart how the telephone became an accepted part of everyday life. Chapter 7 looks at social change in our three towns, focusing on localism: Did residents become less involved in and less attached to their towns as the half-century passed? Chapter 8 looks more closely at individuals, asking how they reacted to the telephone and how they used it in their personal lives. In that context the chapter also analyzes the differences between men and women in regard to the telephone. Chapter 9 outlines telephone history from 1940 and summarizes the findings and implications of this study.

CHAPTER TWO

The Telephone in America

Alexander Graham Bell's fabled first words over the telephone, "Mr. Watson, come here, I want you," may not have been as dramatic as those dit-dotted by Samuel Morse during the first major exhibition of the telegraph, "What hath God wrought," but telephony's early years contained great drama nevertheless. Tinkerers and scientists raced to improve the primitive device; entrepreneurs struggled to rescue a failing company that would grow into a great industrial empire; its leaders battled attackers to secure their monopoly; gritty linemen risked their lives in blizzards to keep the wires humming; and telephone operators bravely stayed at their switchboards during fires and floods to make calls that barely averted tragedy. Such drama is the stuff of most telephone histories. Even skeptics must acknowledge the accomplishments of North America's telephone pioneers. They built an outstanding industry and public service.

Our purpose here, however, is to understand how the telephone system developed in America from 1876 to 1940. Consistent with the theoretical charge of the previous chapter, we take the perspective of residential consumers rather than engineers concerned with the machinery, corporate executives concerned with financial issues, or the