Introduction

"... you must admit that whatever you and your civilization are, is due to me—as much as if I had not had this dream you would have had no existence whatever."

—Julian Hawthorne, “June, 1933”

*New technologies* is a historically relative term. We are not the first generation to wonder at the rapid and extraordinary shifts in the dimension of the world and the human relationships it contains as a result of new forms of communication, or to be surprised by the changes those shifts occasion in the regular pattern of our lives. If our own experience is unique in detail, its structure is characteristically modern. It starts with the invention of the telegraph, the first of the electrical communications machines, as significant a break with the past as printing before it. In a historical sense, the computer is no more than an instantaneous telegraph with a prodigious memory, and all the communications inventions in between have simply been elaborations on the telegraph’s original work.

In the long transformation that begins with the first application of electricity to communication, the last quarter of the nineteenth century has a special importance for students of modern media history. Five proto-mass media of the twentieth century were invented during this period: the telephone, phonograph, electric light, wireless, and cinema. This period is not the usual starting point for the social history of Anglo-American electric media, which is generally assumed to begin only with the institutional birth of film and broadcasting and the development of large audiences in the twentieth century. The present study modestly attempts to push back those beginnings to the late nineteenth century, when Anglo-American culture was fascinated by the communicative possibilities of the telegraph, the telephone, and the incandescent lamp—choices that may come as a surprise to contemporary sensibilities focused on twentieth-century mass media.
For media historians, the phenomenon of twenty-first-century electronic mass media lies like a great whale across the terrain of our intellectual concern. Asked to explain what sort of phenomenon it is, most of us will unhesitatingly point to the hundreds of millions of radio and television sets that are bought by consumers and promoted by vast industries. This artificial notion is pervasive and not much debated, for it seems simple, obvious, and convenient. But it has rendered invisible important aspects of electric media history, and perhaps mediated communication generally. It does this in part by fixing the social origin of electric media history at the point when media producers began to service and encourage the appliance-buying demand of mass audiences. Everything before this artificial moment is classified as technical prehistory, a neutral boundary at which inventors and technicians with no other agenda of much interest assembled equipment that exerted negligible social impact until the rise of network broadcasting. But a great deal more was going on in the late nineteenth century. New electric media were sources of endless fascination and fear, and provided constant fodder for social experimentation. All debates about electronic media in the twentieth century begin here, in fact. For if it is the case, as it is fashionable to assert, that media give shape to the imaginative boundaries of modern communities, then the introduction of new media is a special historical occasion when patterns anchored in older media that have provided the stable currency of social exchange are reexamined, challenged, and defended.

The present study is not, therefore, an effort merely to extend the traditional time line of electric media. It introduces issues that may be overlooked when the social history of these media is framed exclusively by the instrument-centered perspective that governs its conventional starting point. It argues that the early history of electric media is less the evolution of technical efficiencies in communication than a series of arenas for negotiating issues crucial to the conduct of social life; among them, who is inside and outside, who may speak, who may not, and who has authority and may be believed. Changes in the speed, capacity, and performance of communications devices tell us little about these questions. At best, they provide a cover of functional meanings beneath which social meanings can elaborate themselves undisturbed.

If artifactual approaches foster the belief that social processes connected to media logically and historically begin with the instrument, then new media are presumed to fashion new social groups called audiences from voiceless collectivities and to inspire new uses based on novel technological properties. When audiences become organized around these uses, the history of a new medium begins. The model used here is different. Here, the focus of communication is shifted from the instrument to the drama in which existing groups perpetually negotiate power, authority, representation, and knowledge with whatever resources are available. New media intrude on these negotiations by providing new platforms on which old groups confront one another. Old habits of transacting between groups are projected onto new technologies that alter, or seem to alter, critical social distances. New media may change the perceived effectiveness of one group's surveillance of another, the permissible familiarity of exchange, the frequency and intensity of contact, and the efficacy of customary tests for truth and deception. Old practices are then painfully revised, and group habits are reformed. New practices do not so much flow directly from technologies that inspire them as they are improvised out of old practices that no longer work in new settings. Efforts are launched to restore social equilibrium, and these efforts have significant social risks. In the end, it is less in new media practices, which come later and point toward a resolution of these conflicts (or, more likely, a temporary truce), than in the uncertainty of emerging and contested practices of communication that the struggle of groups to define and locate themselves is most easily observed.

Electrical and other media precipitated new kinds of social encounters long before their incarnation in fixed institutional form. In their institutionally inchoate manifestations, they inspired energetic efforts to keep outsiders out and insiders under the control of the proper people. Chaotic and creative experiments with new media and thought experiments with their imaginary derivatives attempted to reduce and simplify a world of expanding cultural variety to something more familiar and less threatening. That impulse fixed on one-way communication from familiar cultural, social, and geographic perimeters as a preferred strategy to two-way exchange, with its greater presumption of equality and risks of unpredictable confrontation. Classes, families, and professional communities struggled to come to terms with novel acoustic and visual devices that made possible communication in real time without real presence, so that some people were suddenly too close and others much too far away. New kinds of encounters collided with old ways of determining trust and reliability, and with old notions about the world and one's place in it: about the relation of men and
women, rich and poor, black and white, European and non-European, experts and publics.

Discussions of electrical and other new forms of communication in the late nineteenth century begin from specific cultural and class assumptions about what communication ought to be like among particular groups of people. These assumptions informed the beliefs of nineteenth-century observers about what these new media were supposed to do, and legislated the boundaries of intimacy and strangeness for the close and distant worlds they presented to their audiences. How new media were expected to loosen or tighten existing social bonds also reflected what specific groups hoped for and feared from one another. Finally, concerns about how practices organized around new media would arbitrate the claims of antagonistic epistemologies contending in the public arena were rooted in group-specific beliefs about how the world could be known, and how other groups than one’s own imagined it to be. Those who wrestled with these puzzles did not think in terms of the articulated mass media we know, since these inventions were still experimental and their exact shapes vague in the public and expert mind. They thought in terms of devices doing duty in familiar surroundings: the telephone, electric light, phonograph, cinema, wireless, and, always in the background, the telegraph.

This study focuses especially on two inventions on this list that have been regarded as least relevant to twentieth-century media history. The first is the electric light, which is ordinarily not thought of in connection with communication at all. The second, the telephone, has not been considered a medium of mass communication. Nevertheless, the telephone was the first electric medium to enter the home and unsettle customary ways of dividing the private person and family from the more public setting of the community. The electric light was the great late-nineteenth-century medium of the spectacle, dazzling its audiences with novel messages. In much social imagination, it was the premier mass medium of the future. Because the telephone and the electric light were the most technically and socially developed communications devices in the last quarter of the nineteenth century, experts and laymen found them good to think, to paraphrase Lévi-Strauss, about what media systems of the future and the societies that supported them might be like. They were also the most widely experimented with.

It is impossible to separate public discussion of innovations in communication in the late nineteenth century from public fascination with the fruits of electrical possibility generally. This is partly because "electricians" and their associates were the earliest users and closest observers of electric media. Media historians have scarcely noticed this convergence. Focused on the point of mass production, artifactual communications history has failed to recognize that electricians were as deeply involved in the field of cultural production as in the field of technical production. Technological historians also have treated electricians exclusively as technical actors, accepting mostly at face value the boosterism of their professional rhetoric. As citizens with attachments to families, communities, and social amenities as strong as any that connected them to their profession, their role was somewhat different, however. The stamp of society on them was nowhere more visible than in their uneasiness about the impact of new media on family, class, community, and gender relations. The ambivalence that so much characterizes contemporary regard for electronic media did not originate with twentieth-century radio and television, but in threats to social interaction set up by their nineteenth-century prototypes.

The temptation to derive social practice from media artifact has also supported another notion, common to media analysis, that separate media embrace distinct and self-contained codes, or spheres of interpretive activity. Concrete arenas of communication are always more complex than this. In the late nineteenth century, oral-gestural and literate codes were both projected onto electrical devices and events in the struggle to claim and label these new and important objects for social consumption. In general, literate practices were the self-consciously exclusive domain of electrical experts. To be an expert was to have knowledge based on technical texts. We can learn a great deal about how electricians and other social groups constructed the social world by observing their uses of texts, and their evaluation of others’ uses as well. Groups without recourse to special textual expertise approached the electrical unknown directly, learning with their bodies what it was and what their relationship to it should be. Though deeply distrusted by experts as an instrument of naïve empiricism or folk wisdom, the body was a popular probe for making strange phenomena familiar. Even experts found it difficult to resist.

Many of the stories that constitute the evidence for this study describe real events. Others do not, but were treated by contemporaries as if they did. Still others are unselfconsciously extravagant media fantasies. This is as it should be, since fantasies and dreams are important human products that define limits for imagination. Fantasies help us determine what “consciousness” was in a particular age, what thoughts were possible, and what thoughts could not be entertained yet or any-
more. The point frequently has been made that private dreams are systematic in content and impulse. Dreams and fantasies created, exchanged, and reworked in the public forum are systematic as well. They develop their own traditions in the conversation society has with itself about what it is and ought to be. Such dreams are never pure fantasy, perhaps, since their point of departure is a perceived reality. They reflect conditions people know and live in, and real social stakes.

This exercise in communications history is not, in sum, a history of media in the usual Laswellian sense of the set of slices through which societies move messages of particular types. Media are not fixed natural objects; they have no natural edges. They are constructed complexes of habits, beliefs, and procedures embedded in elaborate cultural codes of communication. The history of media is never more or less than the history of their uses, which always lead us away from them to the social practices and conflicts they illuminate. New media, broadly understood to include the use of new communications technology for old or new purposes, new ways of using old technologies, and, in principle, all other possibilities for the exchange of social meaning, are always introduced into a pattern of tension created by the coexistence of old and new, which is far richer than any single medium that becomes a focus of interest because it is novel. New media embody the possibility that accustomed orders are in jeopardy, since communication is a peculiar kind of interaction that actively seeks variety. No matter how firmly custom or instrumentality may appear to organize and contain it, it carries the seeds of its own subversion.

If new communications devices were vehicles for navigating social territory in the late nineteenth century, it is clear that some of the maps constructed for them are fabrications we have sought to dismantle in the twentieth. It is useless to scold nineteenth-century engineers for their failure to be twentieth-century feminists or champions of civil rights, but it may be useful to understand how electrical experts and their publics projected their respective social worlds onto technology in the late nineteenth century, and what justifications and fears motivated them in this. It is also important to notice that communications technologies that prepared the way for twentieth-century media were built to uphold a scheme of social stratification that has attracted sustained contemporary challenge. This, as much as anything else, is a measure of how we have changed.

1

Inventing the Expert

Technological Literacy as Social Currency

The poem is a standardised one, in that it is passed on in a particular context: by selected people and in a special style, people are encouraged to listen to and then recite the myth and a premium or reward is given to those who can do this well.

—Jack Goody, The Domestication of the Savage Mind

"Any opinion mankind has held that has not been through the crucible of science is probably wrong."


Electrical professionals were the ambitious catalysts of an industrial shift from steam to electricity taking place in the United States and Western Europe at the end of the nineteenth century. According to Thomas P. Hughes, Alfred Chandler, and others, that shift was made possible by key inventions in power, transportation, and communication, and by managerial innovations based on them that helped re-scale traditional systems of production and distribution.¹ The retooling of American industry fostered a new class of managers of machines and techniques; prominent among them were electrical professionals. The transformation in which these professionals participated was no class revolution, as David Noble has pointed out.² Their job was to engineer, promote, improve, maintain, and repair the emerging technical infrastructure in the image of an existing distribution of power. Their ranks included scientists, whose attention was directed to increasingly esoteric phenomena requiring ever more specialized intellectual tools and formal training, electrical engineers, and other "elec-