BOOK REVIEWS

When Telephony Was Young

America Calling. A Social History of the Telephone to 1940. CLAUDE S. FISCHER. University of California Press, Berkeley, 1992. xvi, 424 pp., illus. $25.

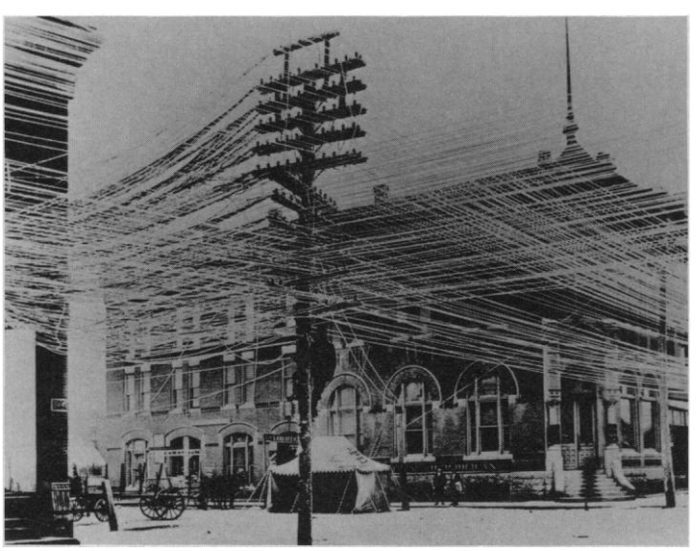
Using the telephone is one of those subjects on which almost everyone feels expert, since almost everyone has had extensive personal experience with it. Some of us even have prejudices on the topic. Personally, I don't much like telephones. They are noisy, intrusive, too often the way bad news, fools, and sales pitches arrive. In the overheated '60s I bought and occasionally wore a button that said "Nationalize AT&T." Today I wish for one saying "Come Back, Ma Bell; All Is Forgiven." Now Berkeley sociologist Claude S. Fischer has given us in *America Calling* the collective opportunity to check our responses to the telephone against those of Americans of the era before World War II.

Fischer is interested in what uses ordinary people made of the new technology of telephony. Who called whom, for what purposes, and what difference did it make in their lives? These topics are difficult ones to document, and Fischer makes imaginative use of a wide variety of theoretical and empirical approaches in attacking them.

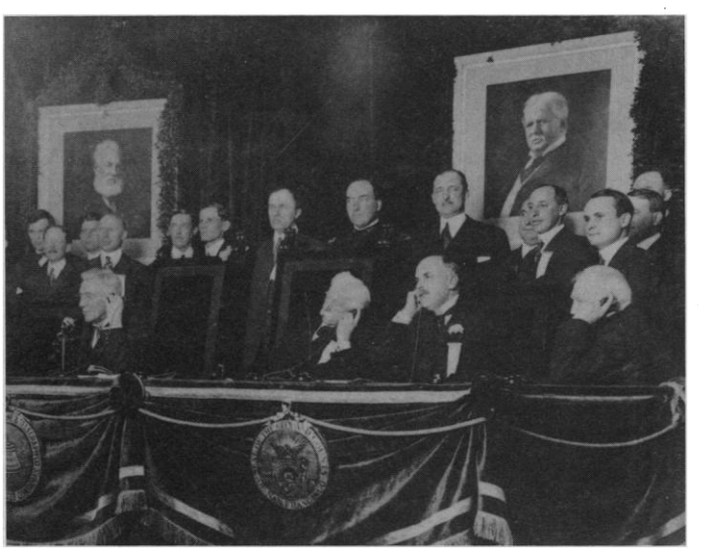
The telephone is one of those inventions that are often said to have revolutionized daily life from the middle of the 19th century on. Others include the telegraph, the railroad, the streetcar, electric lights, indoor plumbing, central heating, household appliances, radios, television, and the mightiest of them all, the automobile. Fischer frequently compares the social history of the telephone to that of other technologies, particularly the automobile, always asking how they spread and how they were used. His goal is no less than an improved understanding of the relationship between technology and modern life.

The book is thus a contribution to what is called technology studies. Those are efforts to comprehend how the evolution of a specifically modern (or now postmodern) society is linked to the creation and use of new technologies. Fischer uses the history of the telephone to question two broad interpretative schemes in that emerging field. One sees technology as "an external, exogenous, or autonomous 'force' that 'impacts' social life and alters history," whereas the other views it as "the embodiment or symptom of a deeper cultural 'logic,' representing or transmitting the cultural ethos that determines history" (p. 8). Fischer's views are much closer to the former than to the latter, but he seeks to occupy the chic middle ground known as social constructivism. That approach "stresses the indeterminacy of technological change" and sees history as something shaped by "struggles and negotiations among interested parties" (p. 16). In particular, Fischer follows the lead of historian of technology Ruth Schwartz Cowan's *More Work for Mother: The Ironies of Household Technology from the Open Hearth to the Microwave* (1983) and focuses on "the point at which the final consumers choose, employ, and experience a technology" so that we can "understand the social implications of technology" (p. 17).

In the case of the telephone, the new device was used in many wonderful and sometimes wacky ways. Telephone companies dreamed up some of them, offering "sports results, train arrival times, wake-up calls, and night watchman call-ins" and publicizing such uses as "lullabies to put babies to sleep," and "long-distance Christian Science healing" (p. 66). Unfortunately, *America Calling* explicitly omits the business use of the telephone, though that was the most common use by far when telephony was young. It is true, as Fischer emphasizes, that the telephone's role in economic development and in the evolution of cities has been much studied and that there are many books on various facets of the history of AT&T and other telephone companies. But we have in fact remarkably little analysis of how the device was actually used by persons on their jobs, just the sort of question this book purports to be interested

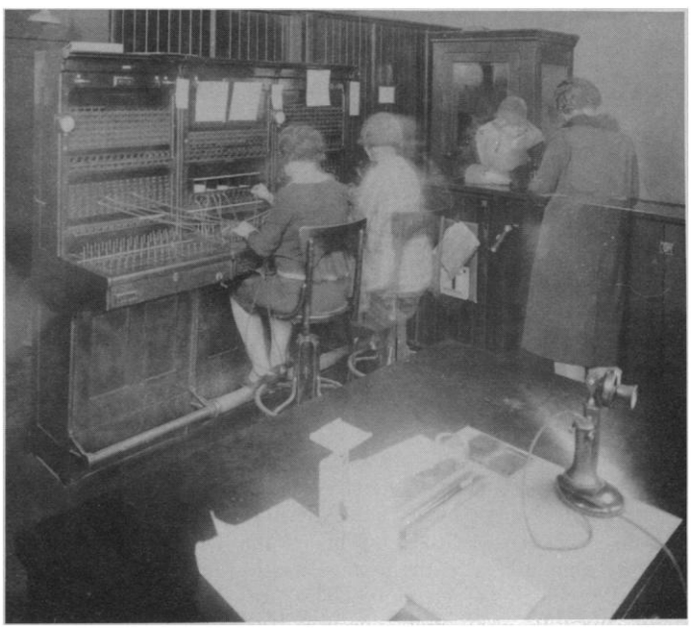


"The expansion of telephone systems and telephone wires around the turn of the century led to many scenes such as this one in an unidentified California town. . . . Town governments often argued with telephone companies over when and how the companies would bury the wires underground." [From *America Calling*; courtesy of Telephone Pioneer Communications Museum]



"This tableau celebrated the completion of the first transcontinental call to San Francisco in 1915. Seated in the center are the city's mayor and Thomas Watson. Watching over the event are the two saints of telephony, Alexander Graham Bell and Theodore N. Vail." [From *America Calling*; courtesy of California Historical Society, North Blake Library, San Francisco]

"Parkinson's lumber yard, 1892, was Palo Alto's first post, telegraph, and telephone office. . . . Alice Kelley, [Parkinson's] assistant postmaster, is in the doorway." [From *America Calling*; courtesy of Palo Alto Historical Association]



"This photograph depicts San Rafael's central office in the 1920s. The woman at the far right is accepting payment at the counter." [From *America Calling*; courtesy of Telephone Pioneer Communications Museum]

in. (One wonders, for example, exactly how employers and white-collar workers struggled over the decades about personal calls made on the job.)

There are some intriguing findings in *America Calling*. Fischer has good data on the gradual diffusion of the new invention, broken down by region, by farm versus nonfarm households, and by sex. Readers may be surprised to learn that the telephone spread more rapidly and more thoroughly in the Midwest and the West than in the Northeast and that lower percentages of big-city households had telephones than did those in cities with populations under 50,000. Among the most compelling and most unexpected circumstances documented in this book is the vast telephonic gulf that separated the working class from the middle class as late as 1940. Even some six decades after the telephone's appearance in American life, working-class telephone subscribers were rare. Whereas other new technologies—the automobile, electric lights, and the radio—did spread into much of the working class by the eve of Pearl Harbor, the telephone did not. One can imagine many possible reasons, some having to do with demand within the working class and some with supply, and Fischer does speculate briefly about this. Granted, authors are free to write about what they like, and granted also that the hardest task for a historian is to explain what did *not* happen. Still, this intriguing aspect of the social history of the telephone goes largely unexplored by Fischer and deserves the attention of historians of the working class.

Perhaps the working class's lack of interest in the telephone is related to Fischer's highly tentative conclusion that the telephone did not in fact seem to make a great difference in daily life. It quickly became a familiar part of the background furniture for most users. There is little compelling evidence that this particular new invention changed daily life much, distorted the social fabric, eroded localism, or made life more "modern." It *may* even have served (weakly) to shore up earlier forms of more local, more parochial, more traditional communities. Perhaps we sometimes overestimate technology's importance to society and to culture.

In sections dealing with the relationships of farmers and of women to the telephone, *America Calling* stresses that we can shape technology, rather than be molded by it. When the telephone was young it was used first by businesses and professionals, and then by middle-class residential callers, mostly women. Wisely treading carefully, Fischer argues that women used it much more than men did and that they did so in pursuit of "sociability." For a long time, telephone companies, run by conservative white businessmen, discouraged "idle" conversation. They resisted chatty socializing and emphasized the telephone's role in business and professional communication, emergency messages, and other serious purposes. Eventually this gave way to reaching out and touching someone, as business finally followed the lead of its customers.

Farmers were a somewhat similar case. Like middle-class women, rural folk were not on the early industry's agenda. For a variety of reasons, some having to do with profit potential and some with cultural prejudice, neither AT&T nor the larger independents were eager to extend their networks into sparsely settled areas. Farmers responded by forming their own numerous, small, often isolated companies, employing less than state-of-the-art equipment that sometimes even included the use of barbed wires to carry signals. This movement was so widespread that, surprisingly, a higher percentage of farm households had telephones than nonfarm ones from 1908 to 1923 (figure 4, p. 93). These instances of farmers seizing the initiative and of residential women customers turning the telephone into an instrument of sociability were both cases in which consumers actively influenced the evolution of a new technology, rather than being passively shaped by the requirements of the technology itself or by the expectations of a powerful industry. Thus Fischer emphasizes that we can be actors, not merely pawns pushed by technology, by culture, or by big business. Thus does he seem to occupy the currently fashionable academic high ground: empowerment, agency, contingency.

But not so fast. Our freedom to choose, though real, operates only within a quite narrow range. "Social and cultural conditions," Fischer declares flatly, "largely determine people's ends" and "limit people's choices" (p. 17). We choose within such

powerful constraints as income, information, and the distribution of a technology. "The sensibility of users," he tells us, "can thus operate only within narrow social and cultural limits" (p. 18). That would seem to be a serious qualification.

Still, *America Calling* does serve to remind us that "technology" is not always and everywhere an indivisible behemoth controlling modern life. Different technologies have different meanings in different circumstances. People can even use them on occasion, as may have been the case with the telephone, for the "maintenance, even enhancement, of past practices" (p. 272). Free will flows, even if only within narrow channels.

American Calling is a potpourri of sociology and social history. It offers little in the way of meaningful comparisons with other societies except Canada, if that counts as other. There are eight appendixes on method and data, as well as separate sections of notes, of bibliography, and of illustrations, making it difficult for the reader to integrate those materials with the text. The text is sometimes breezy, sometimes ponderous, often repetitious. The author freely mixes bits of data, theory, and speculations from many places and time periods. This is not a book notable for its analytical or methodological rigor. Here social science meets journalism, and the dress is casual. The results are often fascinating and sometimes surprising, if not altogether satisfying.

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Collapsed Stellar Objects

High-Energy Radiation from Magnetized Neutron Stars. PETER MÉSZÁROS. University of Chicago Press, Chicago, IL, 1992. xiv, 531 pp., illus. $98; paper, $39.95. Theoretical Astrophysics.

The study of collapsed stellar objects (white dwarfs, neutron stars, and black holes) is a cornerstone of modern high-energy astrophysics. Neutron stars in particular have been objects of intense research since the discovery of radio pulsars in 1967. It is remarkable that most of the theoretical literature on neutron stars also dates from this period. Theoretical physicists had already recognized by 1932 that a star several times more massive than the sun might, after exhausting its nuclear fuel, undergo a supernova explosion and collapse to a degenerate neutron core: essentially a stellar mass, compressed within a sphere whose radius is only about 10 kilometers. However, perhaps because of the exotic nature of these objects, many astrophysicists doubted that neutron stars could actually be formed in nature, and if they did exist it was expected that they might be difficult to detect.

These doubts quickly vanished in the late '60s as it became apparent that neutron stars provided a natural (and essentially the only viable) model of pulsars. Soon afterward, neutron stars were also identified as the sources of pulsed x-ray emission observed from numerous binary-star systems. For most of the past decade they were also considered the most likely sources of the mysterious gamma-ray bursts (sporadic flashes of gamma rays scattered over the sky, which have not yet been identified with known celestial objects). To date over 500 radio pulsars and more than 30 binary x-ray sources have been discovered. In several cases neutron stars have also been detected as optical or gamma-ray sources, including some reported observations at TeV and even PeV energies. Most of these discoveries have generated at least as many theoretical puzzles as they have resolved.

In view of the continuing rapid growth of both the observational and the theoretical literature on neutron stars, it is not surprising that only a few authors have ventured to write textbooks or monographs on the physics of these objects. Peter Mészáros has provided a noteworthy contribution to the available theoretical books that in several ways complements the treatments found in *Black Holes, White Dwarfs, and Neutron Stars* by Shapiro and Teukolsky and *Theory of Neutron Star Magnetospheres* by Michel. In particular (and in spite of some misleading statements on the back cover) Mészáros is primarily concerned with electromagnetic processes in the magnetospheres of neutron stars, as opposed to the physics of their internal structure and evolution. Though his first and last chapters provide some background on these topics, he does not attempt the detailed treatment found in Shapiro and Teukolsky. On the other hand, he presents a more complete discussion of the physical processes underlying magnetospheric phenomena than can be found in either of the works cited above.

Some other comparisons may also be in order. Shapiro and Teukolsky's book was designed as a textbook, with explicit derivations of most fundamental results and problem sets. Mészáros has produced a monograph, with no problem sets and much less effort to be self-contained. His book, like that of Michel, seems most suitable as a professional reference. His treatment differs from Michel's, however, in that he clearly separates the discussion of fundamental physical processes in neutron star magnetospheres from surveys of specific models of pulsars or other sources. Moreover, Mészáros tends to cover the physics at a more advanced level, with few fundamental preliminaries. It is in fact surprising that he suggests his intended audience should include beginning graduate students and even advanced undergraduates. The general level, at least in the first half of the book, seems rather to exclude all but advanced graduate students and researchers in the field.

As a professional reference work, however, the first six chapters are uniquely valuable for their systematic coverage of plasma effects, radiation transfer, and quantum electrodynamics in strong magnetic fields. Mészáros treats most of these topics in considerable depth and provides a compendium of many useful results. Readers with strong backgrounds in classical electrodynamics, plasma physics, and quantum mechanics (including relativistic quantum electrodynamics) should be able to follow his development of the theory, although there are numerous annoying misprints in the equations and even occasional verbal glitches in the text.

The second half of the book is devoted to discussions of astrophysical settings in which neutron stars have apparently been detected. Mészáros devotes complete chapters to accreting x-ray sources in binary systems, isolated pulsars, gamma ray bursters, and the controversial extremely high-energy sources. He states in his introduction that this material is likely to become outdated more rapidly than the first half of the book, and recent observations of gamma-ray burst sources in particular have already proven him correct. Results accumulated since 1991 by the Burst And Transient Source Experiment (BATSE) on the Compton Gamma Ray Observatory (CGRO) have revealed an isotropic but inhomogeneous burst distribution (with a paucity of weaker and presumably more distant sources), which seems to rule out galactic neutron stars as source candidates (except perhaps for a very extended halo population). At present the jury is still out on the true nature of burst sources, but many of the neutron star models discussed by Mészáros are now more doubtful than they appeared to be just a year ago.

Ongoing observations by CGRO, the Roentgen Satellite (ROSAT), and other detectors will almost certainly force similar revisions of the other specific models Mészáros describes. It is also quite possible that many aspects of the current models will survive. In any event, researchers should find that this book will have lasting value as a comprehensive reference on the underly-