

Reviews of Recent Publications

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E. R. Petrick, *Making Computers Accessible: Disability Rights and Digital Technology*. Baltimore, MD, USA: Johns Hopkins Univ. Press, 2015, p. 208.

Review by Bill Kirkpatrick

There is a powerful troubling pattern that media historians have observed with the introduction of almost every new communications technology. First, persons with disabilities are held up as special beneficiaries of the technology, even as the paradigmatic users of it: “Moving pictures will be of great benefit to the deaf!” “Radio will be an enormous boon to the blind and the shut-ins!” and so on. Second, as the technology is shaped and developed, those same ostensibly paradigmatic users largely get sidelined, ignored, and forgotten: niche cases can be safely neglected in the chase for mass markets. Third, people with disabilities find ways to use the technology anyway, discovering workarounds or tinkering with assistive adaptations, until finally—after legislation, social pressure, or dumb luck results in tweaks that expand access—the rest of the world may realize: “Hey, those assistive features are good for us ‘normal’ users too!”

With a few twists and turns appropriate to the complexities of the technology, this is the story that Elizabeth R. Petrick explores in *Making*

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Computers Accessible. Although the potential of computers to enable greater social, cultural, and informational access to persons with disabilities was recognized early—and was even championed with great fervor by techno-visionaries like Ray Kurzweil over 40 years ago—it took several decades of technological experimentation, community-building, legal struggle, and political activism to achieve something like a foothold for universal design in computer hardware and software. Petrick tells the story of the user groups and coalitions, the activists and inventors, and the legal shifts in disability rights at the national level that were necessary to make computer technology accessible to a wider range of users. She writes, “All three aspects of the technology—political, legal, and social—came together in the form of technological accommodations to enact civil rights. For these rights to be realized, access had to be built into the technology” (4).

Her first chapter offers a quick overview of the history of disability rights in the U.S., which was making substantial gains in the 1970s just as the personal computer was being developed. However, as she notes, social and political victories for persons with disabilities were necessary but not sufficient in bringing about accessible computing. Therefore, the next several chapters detail the rest of the story: the early screen-readers and input devices, the efforts of groups like the Disabled Children’s Computer Group and the National Special Education Alliance, and

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the role of major corporations like IBM and Apple in supporting accessibility initiatives or—just as crucially—at times forging ahead with technological changes regardless of the potential negative impact on people with disabilities.

Petrick knowledgeably presents all of this history with admirable breadth, but the book comes most alive when she details the unseen and unglamorous work of painstakingly building networks of user groups by people with disabilities and their allies, who shared resources and ideas through newsletters and at monthly meetings at the local public library. Activists like Jackie Brand worked for years—sometimes with the help of tech companies, sometimes in the face of their indifference—to build infrastructures in which disabled users could connect with each other and also provide information back to tech designers. In these chapters, the history of computing becomes a local and deeply human story, one that refreshingly counters the great-man narratives of Gates and Jobs with the less celebrated efforts of, say, a mom in the Midwest trying to help her daughter with muscular dystrophy use computers to communicate, get an education, and play.

At its core, then, this book is a solid institutional history of a long march toward accessibility in which nonprofit organizations worked with multinational corporations—to varying degrees of cooperation and success, and against the backdrop of important political gains for persons with disabilities—to integrate access and interoperability into computer design. In this telling, IBM shines as a company with a long history of respecting difference and fostering concern with differently embodied users, including among its own employees. Apple and Microsoft come off less well: despite some significant contributions (such as the interconnection of local resource centers several years before most Americans knew what online networking was), Apple's commitment to access and diversity could run hot and cold; Microsoft, meanwhile, was essentially a no-show on disability issues before 1994. Petrick strains to be polite to both companies, but their indifference to accessibility issues—and their frequent inability to foresee the broad benefits of accessible technology—is glaring.

I wish Petrick had more directly confronted the questions raised by the uneven performance of tech companies and drawn stronger connections among computer accessibility, market forces, and the political and regulatory landscapes. Specifically, what can we learn from this history is about the role of the market in driving or hindering accessibility, and how should we understand the intersection of disability with the often libertarian ethos of Silicon Valley and the deregulatory economic and social-policy projects of the era? Similarly, Petrick gestures at the ways that attitudes toward disability-shaped technological development, but the book stops short of offering a rich understanding of the ways that computers changed what disability, embodiment, and normalcy mean—or the implications of nonnormative bodies for our dreams of computerized social progress. There is a broad and growing literature on questions of access within disability and media studies that Petrick does not sufficiently engage with, and I would have appreciated an approach that drew more effectively and consistently on political economy, critical disability studies, and the literature on rights discourse to give this history a sharper edge. Finally, it must be noted that her conclusion is overly sunny about the extent to which accessibility has “arrived” as an intrinsic value and design feature in modern computing.

To her fair, however, Petrick understands the complexity of these issues; she may apply her critical lens a bit too intermittently in the rest of the book, but her conclusion explicitly raises exactly the kinds of theoretical questions and critical perspectives that never quite drive the historical analysis in the previous chapters. It is in the conclusion that she most directly confronts the problems with perceiving computer accessibility as an act of corporate charity or, as the techno-utopians and transhumanists would have it, as the triumph of technological innovation over physical and cognitive nonnormativity. Instead, she argues, we should see accessibility as both a human right and as a set of widespread individual and public goods that emerge when we prioritize social and political inclusivity over (on one hand) short-term market forces and (on the other hand) attitudes and policies of normalization that treat persons with disabilities as

perpetually “other.” Had tech innovators thought differently about disability, able-bodiedness, and the “normal user,” she suggests, perhaps they would have arrived more quickly at the technological, political, and—yes—economic values of universal design. For what it is worth, then, my suggestion is to start with the conclusion, then read the rest of the book with those key questions and insights more explicitly in mind.

The above criticisms aside, this is an important and useful work that deservedly won a Computer History Museum Prize as an outstanding book in computer history. Readers of the IEEE ANNALS OF THE HISTORY OF COMPUTING will likely learn a great deal about the politics of computer design, the role of social activism in shaping technology, and the importance of thinking beyond the “normal” in both technology and historiography.

J. Coopersmith, *Faxed: The Rise and Fall of the Fax Machine*. Baltimore, MD, USA: Johns Hopkins Univ. Press, 2016, p. 320.

Review by Jacob Ward

Claude Fischer’s *America Calling*, now 25 years old, exemplified a history of telecommunications oriented around the network attachment, rather than the network itself.¹ The numerous devices that we attach to our communications networks are the technological material mediators for long-distance communication, and yet their history is, 25 years later, mostly dominated by the telephone and the personal computer.

Jonathan Coopersmith’s *Faxed: The Rise and Fall of the Fax Machine* is, thus, a welcome addition to the history of network attachments, and addresses one of the most distinctive office technologies of the late-twentieth century: the fax machine. Coopersmith starts by exploring the longer nineteenth century history of faxing, telling what is by now a familiar tale from histories of telegraphy and the telephone, of fax’s individual inventors and patent disputes, but also showing how the relative simplicity of the competing telegraph stifled fax during this period.

Coopersmith then moves onto the initial and specialized markets which developed for fax after World War I and in the immediate post-World War II decades. Picture telegraphy proved

an important market, with users in the newspaper industry and meteorology for the transmission of photographs and weather maps. Military faxing took off during World War II, and the U.S. military became the largest market and R&D funder for fax into the 1960s.

Finally, Coopersmith explores the heyday of fax and its unexpected popularity as an analogue technology, during a period when digital utopianists like Nicholas Negroponte were decrying its outmodedness. Coopersmith, alongside the importance of technical standards to fax’s international diffusion, also explores fax’s users, ranging from workplace fax snooping to ‘junkfax’ as an interstitial moment between junk mail and junk email.

Coopersmith also highlights Japan’s importance to fax: Nippon Telephone and Telegraph’s significant role in fax development, the Japanese domestic market’s enthusiasm for fax, and the numerous fax models built by Japanese manufacturers during fax’s heyday. Coopersmith should be commended here for avoiding Western-centrism, although it should also be noted that *Faxed* is, for the most part, a history of the USA and Japan, with some Western European nations popping up now and again, and fax’s use outside of the developed world is not addressed.

Another point of interest is Coopersmith’s exploration of visual culture and replicability. Coopersmith introduces his book by emphasizing the importance of visual culture to fax, and while *Faxed* does not quite live up to the expectations he sets on this front—visual culture does not predominate his story—the examples Coopersmith does give are both important and fascinating, from the role of fax in newspapers and meteorology to the growth of “fax art” in the 1980s. A particularly interesting argument on replicability, which Coopersmith might have taken further, is the ways in which replicability mattered less than trust: aside from specialized cases, such as doctors’ signatures for prescriptions, Coopersmith argues that it often mattered less to have a faxed signed document than it did to simply have information telegraphed or telexed. I was surprised by this finding, given the contemporary emphasis on “scanned and signed” documentation.

My main issue with *Faxed* is the picture of technological change which it paints. Coopersmith deploys the ideas of “technology push” and “market pull,” which implicitly reinforce the idea that technological development happens linearly. This is compounded and contradicted by Coopersmith’s exploration of faxing’s dead-ends and side-roads, such as radiofaxing newspapers for customers to print at home, and so his case studies are at odds with his analytical framework. Coopersmith highlights an alternative framework for addressing technological development—Michael Brian Schiffer’s concept of “cultural imperatives”—but no attempt is made to reconcile these different approaches, even though Schiffer explicitly developed the “cultural imperative” as an alternative to “technology push” and “market pull.”²

A secondary issue I have is Coopersmith’s depiction of fax’s “decline.” As Coopersmith himself notes, the 2010 user base for fax-over-internet, provided by market leader j2 Global Communications, was 13.1 million customers and worth \$255 million, up from 4 million subscribers and \$48 million in 2002. Fax clearly still matters, and so it seems that reports of fax’s

decline, including Coopersmith’s, are somewhat exaggerated.

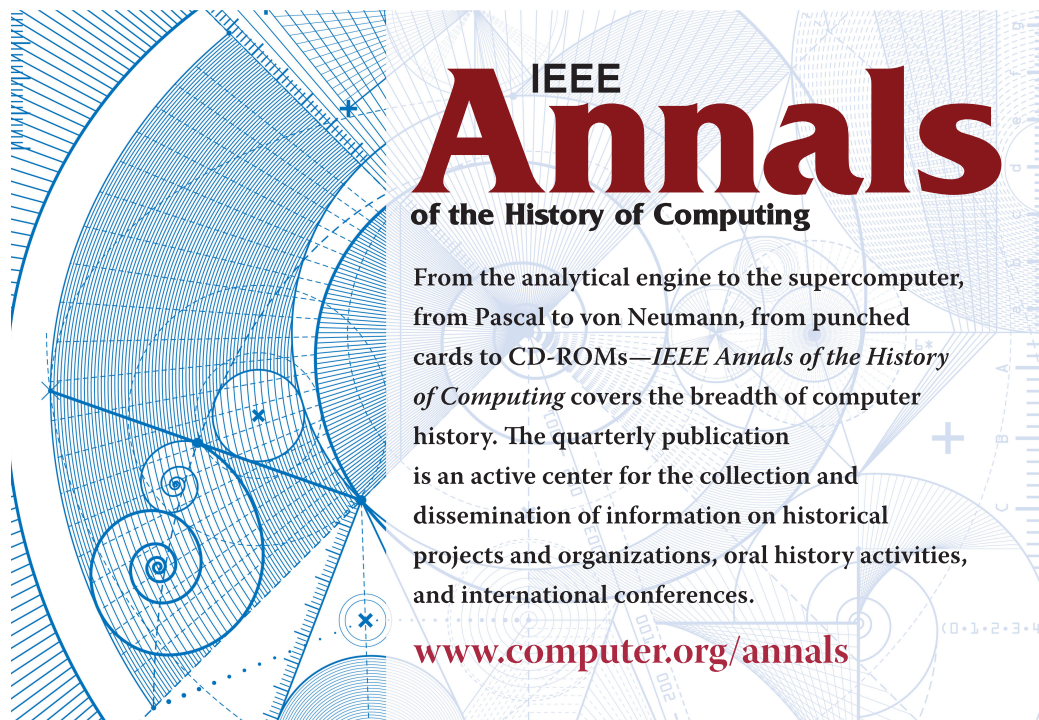
Nevertheless, *Faxed* is a meticulous history of interest to historians of telecommunications and technologies-in-use, and Coopersmith both chronicles the fax machine’s major moments and features engaging stories on art, photography, trust, and Japan. It is a welcome and long-overdue addition to the histories of network attachments and devices.

■ REFERENCES

1. C. S. Fischer, *America Calling: A Social History of the Telephone to 1940*. Berkeley, CA, USA: Univ. California Press, 1994.
2. M. B. Schiffer, “Cultural imperatives and product development: The case of the shirt-pocket radio,” *Technol. Culture*, vol. 34, no. 1, pp. 98–113, 1993.

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The graphic features a complex background of blue geometric patterns, including a large golden spiral, various circles, and grid lines, overlaid on a light blue background. The text is centered and uses a mix of red and black colors.

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