

# Power to the People: Toward a Social History of Computing

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When the *Annals of the History of Computing* was first established 25 years ago, it assumed for itself an ambitious agenda: by publishing “scholarly papers and anecdotal notes, rigorously researched material and controversial remembrances,” it would serve as a “living history” of the computer revolution’s unprecedented scientific and technological accomplishments. In practice, its contributions were more often first-hand practitioner accounts rather than scholarly treatises, more often nuts-and-bolts descriptions of specific machines and developments rather than richly contextual histories, this was entirely understandable. The field was new, its full scope and boundaries were as yet undefined, and it had not yet captured the attention of the larger scholarly community.

In recent years, the history of computing as a discipline—and the *Annals* as its most prominent professional journal—has evolved into something more broadly encompassing, intellectually sophisticated, and engaging. Both have attracted a diverse group of professional scholars who bring with them new questions, perspectives, and methodological tools. Mirroring developments in the larger field of the history of technology, the history of computing has increasingly situated seemingly internal developments in electronic computing within their larger social, technological, and political context. The result has been more rigorous, convincing, relevant explanations of how the computer shapes, and is shaped by, modern society.

This being said, there is still much room for improvement. The legacy of an earlier tradition of celebratory accounts of “great men,” pioneering machines, and important “firsts” is still very much with us, particularly in popular and journalistic histories. There remain huge gaps in the literature. And as time moves forward and we expand the boundaries of our discipline to include new periods, actors, and developments, the task before us becomes ever more daunting and enormous.

In several of his recent Think Piece articles, our new editor-in-chief David Grier has suggested ways in which we can manage this task and move forward as a discipline. These were welcome and useful recommendations. Let me add just one of my own.

## Restoring human agency

Any number of theoretical and historiographical toolkits exist that we could productively apply to the history of

computing. This is part of what makes the subject so intrinsically interesting: it is fundamentally intertwined with many of the major historical developments (technical, social, economic, and political) of the late 19th and 20th centuries. In theory, it is a subject of central importance not only to specialists in the history of technology but also a whole host of scholars in various disciplines—including social and cultural historians, economists, business historians and management theorists, labor historians, sociologists of professions, organizational theorists, and computer scientists. Unfortunately, we as a discipline have not always been able to successfully talk across disciplinary and professional boundaries.

One way that we could make our subject more engaging and relevant to others is to focus on people rather than machines. One of the most significant and lasting insights of recent scholarship in the history of technology has been the realization that technological change is as much driven by social processes as by inherent technological imperatives. In other words, there is never a single, ideal type toward which any given technology gradually evolves. Specific technologies are developed to solve specific problems, for specific users, in specific times and places. How certain problems get defined as being most in need of a solution, which users are considered most important to design for, what other technological systems need to be provided or accounted for, and who has the power to set certain technical and economic priorities are fundamentally social considerations that deeply influence the technological development process.

Rather than trying to identify a single pioneer or inventor driving technological development, we should be asking ourselves about other relevant actors and social groups. Who else was involved in the technology’s design and manufacture? Who were the “invisible technicians” who got written out of the official histories but who might have influenced the design process or work practices? (As Jennifer Light and others have suggested, this would also serve as a way to rediscover the contributions of women to the history of computing.<sup>1</sup>) Who was the machine’s intended user, and how were they involved in its development?

I think this last question is most interesting and productive. Assumptions made about who will be using a technology, how, and for what purposes inevitably influence

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ence its eventual design. As my colleague Ruth Schwartz Cowan has famously suggested, there are great benefits to be discovered in the moments and places in which users make choices between competing technologies.<sup>2</sup> These “consumption junctions,” as she calls them, not only reveal social processes in action but are often as significant to the process of invention as the design process.

### ***Individuals versus organizations***

It is tempting for historians, particularly when dealing with the earliest decades of electronic computing, to think of computer users as organizations rather than individuals. This is perhaps most appropriate when dealing with the earliest years of electronic computing, when the relationship between the design of a given computer and the specific needs of a particular government, military, or large corporate client was immediately apparent. Even as the technology of electronic computing becomes more widely available and the influence of specific organizational users more diffuse, these organizations clearly continue to shape the course of technological development.

Thinking in terms of organizations alone, however, is useful but insufficient. Even in an era when only an organization (and a particular kind of organization at that) could muster the financial resources to own or lease a computer, it was ultimately individuals who made the actual decisions to adopt the new technology. Only in retrospect does the electronic computer’s commercial success appear inevitable. In the late 1940s and early 1950s, adopting this expensive, unfamiliar, and often unreliable technology posed challenging problems, both social and technical, for even the most motivated enthusiasts. It is not at all obvious that the costs of this unproven technology were outweighed by its benefits—particularly for corporate users who

already had well-established systems for data processing and for whom return-on-investment was more important than cutting-edge research. Who were the early champions of commercial electronic computing within corporate organizations, and what did they hope to accomplish? We know, for example, that Edmund Berkely played a crucial role in convincing the Prudential Insurance Company to become an early supporter of Eckert and Mauchly, but what about his counterparts at other corporations?

The rise of the commercial computer industry was enabled not only by the invention of new technologies but also by the invention of new categories of computer users. These were not the owners or even the operators of electronic computers, but rather the computer specialists who built their careers around the new technology. They were consultants, analysts, programmers, systems men, and “computer boys” who developed the “software”—broadly defined to include people, programs, and practices—that transformed the latent power of the general-purpose computer into a specific tool for solving real-world problems.

In doing so, they forged a crucial link between the computer and its larger social and economic environment. They helped define what the computer is and what it could be used for. As Atsushi Akera has convincingly demonstrated in his work on the IBM user group Share, these users were active participants in the process of computer development.<sup>3</sup> They also developed new occupational categories, professional societies, and academic disciplines. Their stories reveal the complicated social processes—organizational turf wars, professional jurisdictional disputes, and academic politics—inherent in the process of technological innovation. We know something about a few of the more famous inventors, entrepreneurs, and computer scientists, but we need to understand more about the many thousands of largely anonymous individuals who contributed to the development of this new social and technological environment.<sup>4</sup>

### ***Expanding our community***

Focusing on users lets us explore new types of historical analysis. For example, consider the computer hobbyist and hacker. By the late 1970s, these almost mythological figures had entered the public consciousness as heroes/villains representing the computer revolution’s potential and dangers. The emergence and transformation of this particular group of computer users provides a fascinating glimpse into the computer’s social and cultural history, the development of technical communities and dis-

tinctive subcultures, the relationship between science and craft in engineering practice, and the role of technical elites in modern corporate hierarchies. These are central research agendas in the labor history, business history, and the history of technology to which we as historians of computing are well suited to contribute.

As computing technology becomes more widespread and the computer itself was transformed into a consumer technology, the number and diversity of users expands enormously. Every time the computer gets invented and reinvented—as scientific instrument, business machine, hobbyist's toy, communications device, entertainment center, or Internet node—it enlists or creates a new group of users. I cannot even begin to list or describe them in this brief essay. The point is that including this broad group of users/inventors in our histories will both enrich them and make them more interesting to a wider audience.<sup>5</sup> Doing so will help our field grow and expand with our object of study. The future of the history of computing is not machines, but people.

## References

1. J. Light, "When Computers Were Women," *Technology & Culture*, vol. 40, 1999, pp. 455-483.
2. R.S. Cowan, "The Consumption Junction: A Proposal for Research Strategies in the Sociology of Technology," *The Social Construction of Technological Systems*, W. Bijker, T. Pinch, and T. Hughes, eds., MIT Press, 1987, pp. 261-280.
3. A. Akera, "Voluntarism and the Fruits of Collaboration: The IBM User Group, Share," *Technology & Culture*, vol. 42, 2001, pp. 710-736.
4. Some new literature exists describing these groups. For example, N. Ensmenger, "Letting the 'Computer Boys' Take Over: Technology and the Politics of Organizational Transformation," *Int'l Review of Social History*, vol. 48, 2003, pp. 153-180, and T. Haigh, "Inventing Information Systems: The Systems Men and the Computer, 1950-1968," *Business History Review*, vol. 75, 2001, pp. 15-61.
5. One good example of this approach is T. Bardini and A. Horvath, "The Social Construction of the Personal Computer User: The Rise and Fall of the Reflexive User," *J. Comm.*, vol. 45, 1995, pp. 40-65.

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# MultiMedia 2004

## January-March

### Content Repurposing

With more than 600 device profiles available today for accessing online content, handcrafting content for each device, network, and usage, as well as each of their combinations is unmanageable. Content repurposing tackles this problem by taking content designed for a particular scenario and automatically repurposing it to fit another. Fundamental to this approach is the need to maintain a single copy of the content in its original form and to repurpose the content to fit the desired scenario in real time and in an automated fashion.

## April-June

### Digital Multimedia on Demand

Emerging multimedia systems are expected to support a wide range of applications and integrate a wide array of data (textual, numeric, audio, video, graphics, speech, music, animation, handwriting, and so on). In many multimedia applications—such as video on demand, digital libraries, and home-based shopping—a common feature is the requirement for storing, retrieving, and transporting these data types over a network upon user request. This particular issue will target surveys and papers related to directions and advances made in the scientific and commercial fields for digital multimedia on demand associated with the multimedia user's needs.

# Editorial Calendar

## July-September

### Multisensory Communication and Experience through Multimedia

Successful communication involves a transferral of experience. Transferring multimodal data without concern for whether this information can transcend into a consistent multisensory experience for the receiver doesn't address the full spectrum of communication. This issue focuses on real forms of communication involving all or most of our senses and on the role that multisensory experiences can play in the development of multimedia technologies and content.

## October-December

### Multimedia Visions

Multimedia is unique in its applicability, both pulling from and lending itself to many fields. This issue sheds light on what multimedia is and can be, with the latest research from leading-edge developers and scientists. Whether discussing evolving standards, the impact of multimedia, or posing new avenues of thought, each article proffers a unique vision of a multimedia future.