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BOOK REVIEW

A review essay: examining the fraught racial, gendered and class-based origins of the early internet and its antecedent

Black software: the internet and racial justice, from the Afronet to black lives matter, by Charlton D. McIlwain, Oxford University Press: New York, 2019. Hardcover, 312 pp., $24.95.

Programmed inequality: how Britain discarded women technologists and lost its edge in computing, by MarHicks, MIT Press: Cambridge, MA, 2017. Paperback, 372 pp., $20.

A people's history of computing in the United States, by Joy LisiRankin, Harvard University Press: Cambridge, MA, 2018. Hardcover, 336 pp., $29.05.

The story of computing, at least as told by software and hardware companies, but also by well-meaning enthusiasts—is riven with "great men" narratives. These include the mythic centering of the United States, but especially California's Silicon Valley, situated in a simplistic East vs. West Cold War backdrop and the triumphant move from mainframes and IBM to Steve Jobs and the Apple II, all of which led to the launch of the civilian internet. There's a feeling of inevitability about the whole thing.

And yet, of course, there is much more to that story.

Historians such as Margaret O'Mara and Ben Peters are among those who have successfully interrogated the reified myths of the early internet, as have other scholars such as Thomas Streeter.

But three other historians of technology have similarly brought to bear the needed, and critical, lenses of race, gender and labor/class to these stories, adding necessary complexity.

Race, and paths not taken (but maybe with some new beginnings)

In Charlton McIlwain's *Black Software*, he unpacks the systematic racism and lack of opportunities presented to young black people, including college students, when it came to technology training during the height of the Cold War. This eventually led to a less-diverse, less-representative early internet—with some notable exceptions.

McIllwain, a vice provost at NYU, and a professor of media, culture and communication at its Steinhardt School, is well positioned to interrogate how this happened. He primarily takes an oral-history approach, with some archival research.

Racism shot through the United States' science-and-technology competition with the Soviet Union.

The privileged barriers-to-entry at elite institutions such as MIT hindered the inclusion of African Americans into innovative careers, leaving more aggressive recruitment of people of color to corporations like IBM, as well as uniquely positioned government agencies, such as NASA. But they were exceptions.

MIT, for example, made the decision in spring 1964 "that a single digit number" of black students would be allowed into the university. "They, like officials at most elite science and engineering institutions at the time, made the de facto decision to exclude," McIllwain writes, in ways that "would have devasting consequences" (21). While it would later reverse this decision, MIT's uncertain, and late, start with the challenges of integration was not unusual.

Innovation would have to happen outside of more traditional spaces and programs in the 1970s and 1980s, and McIlwain documents an exiled generation of entrepreneurs, whom he calls "the Vanguard." These included figures such as William Murrell, the president of MetroServe Computer Corporation, in Massachusetts, and Kamal Al-Mansour, the founder of Afrolink Software. The latter company focused on providing African art, history, language and other digital resources to businesses and universities, as well as consumers.

McIlwain notes that a parallel world of black-owned and operated bulletin board networks, including privately-run sites on Usenet and Bitnet, emerged by the 1990s. The former, under the broad umbrella of "Afronet," was partially organized by Ken Onwere, while a student at San Diego State University.

"Afronet was a gate," McIlwain says, "keeping the race trolls at bay. For others, it was a door inviting black people to become part of a real community" (97). Other important leaders included Timothy L. Jenkins, publisher of *American Visions Magazine*, David Ellington and Malcolm CasSelle of NetNoir, and Anita Brown, founder of Black Geeks Online.

As a safe place, and a space for community, these sites and organizers drew thousands of participants to the internet and to computing in ways that made more real their promises to erase or ease racial differences. But those efforts sputtered out by the 2000s, leading to a long gap between them and the rise of the Black Lives Matter movement on a newly reinvigorated Black Twitter.

McIlwain explores the connections between local governments and police departments, alongside these big trends, and the cooperation between what he calls the "Committeemen"—powerful corporate and federal leaders—and technologies of surveillance and control, some pioneered by the Simulmatics Corporation (itself the subject of a forthcoming book, *If Then*, by Jill Lepore). His sobering perspective is timely.

But he does conclude on a hopeful note, with a brief summary of the BLM movement on Twitter and its potential for a fresh re-inclusion of black people into the social meaning and purpose of the internet. Perhaps now, at least, people of color are able to more flly engage, McIlwain writes, in internet spaces that reflect their own identities, struggles and desires.

Class and stories of the periphery

Like McIlwain, Joy Lisi Rankin, research lead at NYU's AI Now Institute, has taken the numerous comforting, if watered down, narratives about the rise of computing in the U.S. and delightfully muddied and deepened them, adding vibrant stories about the role of public and private colleges and universities outside of DARPA, IBM, and other organizations. In her *People's History*, she adds Minnesota's Educational Computing Consortium, Dartmouth's BASIC (Beginners' All-purpose Symbolic Instruction Code) and the University of Illinois's PLATO (Programmed Logic for Automatic Teaching Operations) to the mix, and shows how a handful of educators, students and hobbyists created an alternative, inclusive and early onramp to the internet.

Socioeconomic status, including access to the kinds of resources places such as Dartmouth could bring to bear, as well as gender (with an initial period of flux giving way to a more macho tech culture, in many cases), had an outsized and lingering impact on the early networks that would become our present-day internet. Rankin is a masterful storyteller of the paths-not-taken, and uses archival sources adroitly, along with interviews.

She notes that BASIC, and Dartmouth's distributed computing network in the New England region of the U.S. did open doors to students for programming and exposed them early on, often in fun and creative ways, to computing. This included pathways such as an early kind of football game, as well a sort of messaging system for long-distance, if still-otherwise traditional, courtships.

Driven by the pragmatic idealism of Dartmouth professors Tom Kurtz and John Kemeny, the *interactive* nature of this network fostered a generation of budding computer users. As Rankin writes, "Kemeny wanted students and faculty to use the computer as much as possible—for their homework, for their research, and for their recreation—and he was convinced that computing would become a personal resource only if the programming language was approachable and memorable" (70).

By connecting these younger users to the tangible, messy network that supported what a "computer" meant at that point in time, Kemeny was able to introduce advanced concepts such as time sharing, install a kind of communal ethic into his "computing citizens" and fostered an environment of "social computing" (68, 78-79). Rankin then connects these efforts by faculty and teachers (including high-school educators such as Mary Hutchins at Hanover High School in Massachusetts) in Dartmouth's Secondary School Project with the promise of a national computer network.

Envisioned by the likes of Paul Baran and John McCarthy in the context of the Cold War, the latter idea was to make computing a national utility along the lines of telephone and electricity networks. With roots in MIT's Whirlwind and other large-scale computing projects, these efforts eventually led to an uneven, but promising network of pre-internet networks, some 30 in total, and led by state research universities, including in Illinois, North Caroline, Hawaii, Minnesota and Iowa—including many places far away from Silicon Valley and the Bay Area. While the latter two remained important as centers for innovation and inspiration, it was the work *outside* of these spaces that allowed for non-researchers and military personnel to access computers, and, eventually, the internet as we know it.

Rankin observes that the real shift away from places like the Twin Cities as centers for computer innovation to the West Coast was the move to more "personal" computing, and to thinking of users as consumers and not so much as communal, computing citizens. In this way, computing mirrors the ways news and journalism similarly moved from a kind of governance tool and platform for civic life in the late eighteenth century to a more industrialized, mass-produced and distributed product by the twentieth.

"The people computing became the people consuming," Rankin notes, "Rather than gaining computing through schools—or through an envisioned public computer utility—Americans had to buy a product, a personal computer" (241). This shift from a focus on a community of users and networks of networks was a major one, and helps contextualize all that came after.

Remembering these predecessor voices helps us "create a much richer portrait of our digital nation" (241). "There was an amazing world of personal computing, social computing, and networked computing—all before 1975—and there is so much more to learn about how those worlds became the American digital culture that we recognize today." With that digital culture as an indelible part of American culture, she urges us to "overwrite the Silicon Valley mythology" and to "recover the many people's histories of computing" (242).

Gender-as-class and the example of Britain

An ocean away, another early computing culture was struggling to empower voices on the margins.

Mar Hicks, an associate professor of history at the Illinois Institute of Technology, describes how Britain consistently failed to realize the value of, and retain and promote the skills of, women technology workers.

During the Second World War, the British government relied heavily on female code-breakers, programmers, engineers and scientists in its desperate attempt to break German military codes. At Bletchley Park, but also at other sites, women tech workers were critical—in the truest sense—in the victory over the Axis.

But for a generation their efforts were lost to history—on purpose—due to Cold War secrecy. A conservative business and broader social culture expected women to follow heteronormative life paths that involved leaving careers for marriages by their late 20 s and early 30 s. This led to stagnation and artificial limitations for wages and career prospects. Consigned repeatedly to a special "machine operator class," women nonetheless formed the backbone of computing expertise for generations.

"The process of turning swords to plowshares in the realm of automated work involved a return to a specific kind of normality: one in which computing was still mainly electro-mechnical and in which meritocratic ideals ignored gender and class discrimination in the workforce," Hicks notes (61). From the late 1940s through the early 1950s, and then later, during what Hicks identifies as the "high" technology era of the 1960s and 1970s, the push to keep female workers as cheaply paid as possible gradually led to an effort—ultimately futile—to recreate British imperial power through mainframe computing.

And yet "they appear in the archival record as a group rather than individuals," functioning as a gendered class of workers (61). Hicks convincingly deploys significant, and innovative, archival work and a deep dive into the era's computing trade literature to make the case that gendered labor, tied to early automation, as well as marginalized social roles, meant that efforts for "equal pay" and respect were stymied again and again. "Even as the reach and importance of machine work in the office continued to grow, the labor force associated with it had become poorly paid and perceived as low skill and unprofessional" (96).

Gradually, by the 1960s, the Civil Service in the United Kingdom had blocked all but a few pathways for women for upward mobility, and began emphasizing the need to recruit middle-manager men as programmers, to only limited success. British computing coalesced around mainframe technology too soon and too stubbornly by the 1970s (skipping the mini-computer step represented in the U.S. by the Digital Equipment Corporation's PDP-8, as well as the dominant IBM approach of providing robust tech support for otherwise practical, but not flashy, machines like the System 360).

This led, to the consolidation of *all* major British computing under one roof, namely, ICL (International Computers, Ltd.), with disastrous results.

Britain was not alone in its disregard for women tech workers—the United States, as Hicks point out, has a long way to go with thinking beyond quotas and pipelines as way to bring more women into computing—but it was singularly committed to its state-sanctioned ostracizing of an entire gender (and more specifically, again, its heteronormative expression), through a combination of intentional decisions and their unintended consequences.

Eventually, if reluctantly, the British government and the still-male dominated computer industry (somewhat) opened up more opportunities for women, though not until nearly a generation of potential talent was wasted.

"Career-based identities historically privilege a male subject, rarely taking into account the often circuitous and discontinuous nature of women's nonprofessional categories in constructing their identities," Hicks notes (233). In fact, computerization and unreflective technology adoption can act as a regressive or even repressive force, preserving, rather than transcending, differences based on gender and race.

"Deployed as a centralizing technology designed to concentrate power, computing," Hicks observes, "was necessarily antithetical to equal opportunity" (236). Thinking critically about "devalued computing labor" in the past helps to highlight ongoing, if, for now, unseen, practices that do the same today, Hicks believes (238). Far from being embarrassing or just of its time, discrimination based on gender and race can, and still does, bend the forces and fates of nations.

Thinking about race, gender and class in computing and internet history

The perspectives McIlwain, Hicks and Rankin bring to media history and to the history of technology matter more than ever, as the internet ages out of its long adolescence. It is now, in its more open form, nearly 30 years old, and its roots go back another 20-plus years. As such, however, it still inherits and embodies the values and priorities of earlier eras, and the powers-that-are, not, perhaps, as they should be.

As McIlwain, Hicks and Rankin all point out, it remains critical to consider the development of any technology—but especially those that have promised and still continue to promise to bring about radical change—with a careful, even skeptical eye. Beyond storied "visionaries," we have to remember that even in our supposedly more enlightened age, there are numerous subalterns who are forgotten, subsumed, and ignored. Many histories remain to be written.

It is tempting to revert to grand, progressive narratives that leave out the dead ends, awkward failures, injustices and unjust impacts of power over others less able to tell their own stories, but all three authors call for more sophisticated, specialized histories of previously marginalized communities.

In this, despite their disparate subjects, they are united—let us, as historians of the new, think about the people who cannot yet tell their own stories—and then tell them well.

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