

Scientia Canadensis

Canadian Journal of the History of Science, Technology and Medicine
Revue canadienne d'histoire des sciences, des techniques et de la médecine

Scientia
Canadensis

Marie Hicks. *Programmed Inequality: How Britain Discarded Women Technologists and Lost Its Edge in Computing*. 352 pp. Cambridge, MA: MIT Press, 2017. \$40.00 (hardcover). ISBN 9780262035545

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Volume 41, Number 1, 2019

URI: <https://id.erudit.org/iderudit/1065969ar>

DOI: <https://doi.org/10.7202/1065969ar>

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Publisher(s)

CSTHA/AHSTC

ISSN

1918-7750 (digital)

[Explore this journal](#)

Cite this review

Boeva, Y. (2019). Review of [Marie Hicks. *Programmed Inequality: How Britain Discarded Women Technologists and Lost Its Edge in Computing*. 352 pp. Cambridge, MA: MIT Press, 2017. \$40.00 (hardcover). ISBN 9780262035545]. *Scientia Canadensis*, 41(1), 95–97. <https://doi.org/10.7202/1065969ar>

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The relationship between gender, computing, and labor is a relatively recent research topic in the history of technology. Prior accounts focused on installing a much-needed counter-story to the dominant masculine image of computing. Marie Hicks' *Programmed Inequality* extends these perspectives in two ways. First, it strategically avoids to chronicle single individual accounts and instead draws attention to women as a class to reflect this large group of labor. Second, the book shows how the history of women's participation in Britain's computing industry informs today's broader conditions of IT labor in the Anglo-American world. Through the case of Britain's computing industry and its particular governmental context, Hicks presents a detailed account of how heteronormative societal norms not only affected Britain's abundant class of skilled computer workers — women — but also its early leading position in the international computer market.

These two changes, as Hicks describes, are intertwined. They frame the book's argument that computerization is a project of power reinforcement by certain groups of people at the expense of others, in the book's context—of women and class in British society. Understanding women and women's computing labor as a class reveals the importance of gender in the construction of computer technology and societal organization by technology as Hicks notes.

The book's narrative draws on a multitude of sources from government records and archival material on Britain's nationalized computing companies to census data and oral interviews with female computer workers. Yet, as Hicks notes, although women are prominent in the book, the women themselves were not prominent programmers or scientists compared to examples from other computer histories. Reflecting Britain's computer development, the book's story also "shifts from women's work to men's work, and from labor to management, as the gender of the field changes" (16). *Programmed Inequality* begins with the origins of computer work during World War II, moving forward to the post-war translation of computing for the British civil service and in the country's attempts to modernize society through this technological revolution in the mid-1960s, and ends in the late 1970s when Britain's computer development was outplayed.

The first chapter introduces how women's computing work, often designated as rote and deskilled, contributed critically to early computerization and the outcome of the war. Hicks' analysis of the recently accessible archival data on Bletchley Park and the Colossus computers illustrates how women's invisibility, owed partially to the secrecy around Bletchley, signaled later gendered labor hierarchies. The war's context of the WRNS (Women's Royal Navy Service) work restricted internal and external exchange about this type of work and its level of complexity. Such secrecy ensured that a 'sub-clerical' categorization remained attached to

women's work in the post-war period. As the War ended, many women working in war-related computing positions found their ways into Civil Service computer work. As Hicks points out in the *second chapter*, however, this process created "a feminized machine underclass" (59) through a series of institutional reforms — definitions of labor practices as "machine grades" and job classifications that ensured. These labor reforms established computing as a low-paid, feminized work without career perspectives. Women at this time were assumed to leave jobs once they reached a certain age to get married and have children. These women who first operated these electromechanical machines and later electronic ones were the preferred hiring target not because of their skills, but because of the perception created through clerical job descriptions that their work was mindless. As Hicks shows, the opposite was the case.

The result of these reforms would set the stage for a technocratic era based on the "coming computer "revolution"" (98) to follow; but also as it turned out to counteract this vision. In *Chapter 3*, "luck and labor shortage" determined the computing labor developments of the 1960s. At this time the computer would become a standard tool and the instrument of the government's commitment to establish a new social order through Prime Minister Harold Wilson's launched "White Heat" technological revolution. Institutional transformations and massive funding of the national computing industry aimed not just at producing technology. These implementations raised the profile of computing work to make it

more attractive to men as management changed their understanding of the embedded in this technology. Paradoxically, as Hicks demonstrates by comparing oral histories with government records, the computer companies' advertisement of computing work as female and skill-less countered these kinds of endeavors. As this period of luck and labor shortage brought many women into higher-ranked positions, the government and Civil Service began seeing this as a threat to men's career opportunities. Ongoing labor reforms, as *Chapter 4* demonstrates, would allow relatively young, unmarried women to earn more than their male colleagues. This advantage had to find an end by creating new structures, which would bring management and computing jobs closer together. Female computer operators often had to make room for male executive officers they had trained. As long as technical work remained "liminal" to the white collar clerical work, however, the male officers with newly acquired technical skills would often end up leaving for the private sector and non-computing jobs.

Shifting computer labor from female to male and from lower clerical work to higher-ranked one was not a side effect of ongoing reforms as the *fifth chapter* demonstrates. It was part of the stirred effort of the state's computerization according to Hicks. The active alignment with centralization and the focus on mainframe computers through consolidation of Britain's computing companies, however, slowed down the country's "computer progress;" ultimately, leading to the failure of British computer technocracy

in the late seventies. In the *concluding chapter*, Hicks argues that Britain lost the leading position in computing with its unceasing attempts to redefine computer workers' class and hesitation to respond to international computer technology developments adequately.

Programmed Inequality presents a rarely framed connection between female computer work, its defining hierarchies of gender and class, and ideas of centralized control ascribed to technology. As computer labor became more professionalized and confined to a male domain not only in Britain but everywhere, the book gives voice to a largely ignored class of workers and their knowledge which

shaped post-industrial nations relying on computing. Hicks' account reminds us of all the other areas of computer work disregarded in the boundless focus on 'computer geniuses,' scientists, and programmers. As the book shows, their work and public service would be impossible without the many thousands of female computer workers behind that. *Programmed Inequality* will interest historians and social scientists of computer technology and labor alike, as well as a general audience concerned with the cultural histories of hidden figures.

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