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This paper examines the cultural climate faced by women in the American computer industry from the 1960s to the early 1980s, a period in which the percentage of the industry workforce that was female almost tripled. Drawing on a comprehensive study of articles and advertisements in the trade journal Datamation, sources from IBM, Control Data, and the Burroughs Corporation, and the records of the user group SHARE, Inc, the study argues that the cultural climate of the industry shifted radically in the early 1970s, from hostility in the 1960s to a more open one in the late 1970s and early 1980s.

In 1994, the American Sociological Review published an article entitled “Male Flight From Computer Work,” which discussed the potential “ghettoization,” a decline in status and wages, of the computer industry workforce. The reason for this concern lay in the gender makeup of the workforce: computer work was “a rapidly feminizing occupation,” with an influx of women who would necessarily lead, according to some sociological hypotheses, to the ghettoization of computer work or even its “resegregation” as an essentially female-only occupation. Authors Rosemary Wright and Jerry Jacobs concluded that these outcomes were not coming to pass and that the computer industry workforce was in fact “integrating,” as “an occupation with gradually increasing numbers of women, in which men are not fleeing in response to women’s entry.”

Although Wright and Jacobs’ matter-of-fact discussion of a “feminizing” computer workforce seems odd in light of the underrepresentation of women in contemporary computing, their argument reflected a historical reality. Between the early 1970s and the mid-1980s, the percentage of the computer industry workforce that was female almost tripled, from around 15% in 1971 to 38% in 1985. Given the growth of the industry as a whole in this period, this represents a huge absolute growth of the number of women in computing. After 1985, however, this percentage plateaued, and by the early 1990s, it was falling precipitously. Wright and Jacobs’ Bureau of Labor Statistics (BLS) data end in 1991, so just as they were discussing the “feminization” of computing, a historical reality for almost three decades, computing was in fact becoming increasingly male-dominated.

As this trend toward male dominance continued in the 1990s, scholars were quick to turn to the study of this new phenomenon, led by works like Jane Margolis and Allan Fisher’s Unlocking the Clubhouse: Women in Computing. This body of work (valuably synthesized in J. McGrath Cohoon and William Aspray’s Women and Information Technology: Research on Underrepresentation) identified a number of structural obstacles to female participation in the culture and especially education of computing but was largely composed without attention to the historical context of the period 1971–1985.
Historians of computing have likewise turned toward the study of women in computing since the 1990s. This historiography, led by works like W. Barkley Fritz’s “The Women of ENIAC” and Jennifer Light’s “When Computers Were Women,” traces the involvement of women in computing to the earliest days of electronic computing and to the human computing projects which preceded them. Although more general studies like Thomas Misa’s Gender Codes and Janet Abbate’s Recoding Gender have contributed to our understanding of the subsequent decades of electronic computing, further work remains to be done. This is especially true for the period in the 1950s and 1960s, before the BLS began gathering employment statistics in 1971.

The role of women in computing during the pre-1971 period has been illuminated by two major areas of scholarship. One area is essentially biographical, focusing on the noteworthy contributions of female computing pioneers like Jean Bartik, Beatrice Worsley, and Grace Hopper (honored as the Data Processing Management Association’s first “man of the year” in 1969). Although such studies are valuable, they leave open to question the experiences of more ordinary female computer workers in a period in which the electronic computing workforce was rapidly expanding.

Such an insight has been provided by the second area, studies of the professionalization of computer programming, led by the work of Nathan Ensmenger. Ensmenger argues that computer programming was “made masculine” as a necessary part of efforts to establish it as a high-status endeavor within the white-collar workplace. Programming, initially known as “coding,” was originally seen as a low-status clerical task and was therefore gendered female, Ensmenger argues. In this he draws on a larger body of labor history by scholars like Margery Davies and Sharon Hartman Strom, who describe the “feminization” of clerical office work in the United States in the early 20th century as a necessary component of that work’s construction as routinized, low-status, and low-paying. During the 1950s and 1960s, Ensmenger argues, computer professionals sought to raise the status of their work, through measures like professional societies and certification, the establishment of computer science as an academic discipline, and the identification of programming as a masculine activity. “As computer programmers constructed a professional identity for themselves during the crucial decades of the 1950s and 1960s … they also constructed a gender identity,” Ensmenger asserts. “Yesterday’s ‘computer boys’ are today’s ‘IT guys’.”

Ensmenger’s essential point that the identification of computers with masculinity is a historical construct is important, complementing similar historical analyses of masculinity in computing by Paul Edwards and Thomas Haigh, and in science and technology at large by Carroll Pursell, Margaret Rosier, and Ruth Oldenziel. This work is a valuable reminder of Joan W. Scott’s observation that “gender” should not be taken to be merely a synonym for “women” in historical scholarship.

One of the crucial parts of Ensmenger’s argument that programming was “made masculine” during the 1960s is an analysis of portrayals of programmers within the computing industry, as the idealized programmer came to be typified with stereotypically male characteristics, and female programmers conversely were portrayed in a negative light. This paper is intended to extend that analysis, by examining portrayals of women in computing within the computer industry in the 1960s and beyond into the 1970s and early 1980s. To do this, it draws on three major threads of evidence.

The first thread is an analysis of the portrayal of women in the trade journal Datamation, drawn from a comprehensive study of almost thirty years of the journal’s run, from 1958 to 1985. This follows Ensmenger’s analysis of sources from the journal from the 1960s but extends his work in time. This analysis also follows the work of Marie Hicks on women in British computing, Carolyn Marvin on late 19th century electrical engineering journals, and Amy Sue Bix on women in mid-20th century engineering education. This paper follows these authors in using the advertisements, articles, and even jokes of a professional journal to analyze how that journal portrayed women in the field (which Bix calls the “cultural climate” faced by female engineering students). Although my analysis supports Ensmenger’s contention that Datamation portrayed women in the industry negatively in the 1960s, it finds that a much more inclusive “climate” was in place by the mid-1970s.

The second thread of evidence is a comparative analysis of portrayals of women by three major computer firms (IBM, Control Data, and the Burroughs Corporation), based
on archival research conducted at the Charles Babbage Institute. These companies behaved in divergent ways in the late 1960s and early 1970s, but by the mid-1970s, all three companies emphasized the gender diversity of their workforces. This development (which likely reflects the influence of equal opportunity legislation and the women’s movement) further serves to highlight the differences between portrayals of women in the 1960s and those of the 1970s and 1980s.

Finally, this paper reports an analysis of attendance of the SHARE, Inc. conference, a prominent IBM user group in the late 1950s and 1960s. This is intended to provide a quantitative view (albeit imperfect) of women in computing before reliable gathering of BLS statistics began in 1971. As the work of Hicks, Bix, and Ensmenger emphasizes, the portrayals of women as either outsiders or insiders in technical professions (Bix’s “cultural climate”) is important, with real ramifications for the gendering of particular types of work. Nonetheless, the still poorly understood lived reality of women in computing in this period should also not be forgotten. The preliminary quantitative view provided by these data will hopefully shed some light on this reality, complementing work on this era based on oral histories (such as that of Janet Abbate).

**Portrayals in a Public Forum: Datamation**

Launched in the mid-1950s, Datamation was an influential computer industry trade journal, which a 1983 Control Data-sponsored study estimated was regularly read by 43% of data processing professionals. Besides its opinion-shaping potential within the industry, Datamation is a useful source for tracing publicly expressed attitudes of industry professionals over time, with editorials, advertisements, cartoons, and humor pieces appearing alongside articles of professional interest.

Based on a comprehensive study of Datamation’s run from 1958 to 1985, three distinct periods of portrayals of women can be discerned. In the period before 1969, portrayals of women were negative (when women in the industry were acknowledged at all), with “woman programmers” serving as the butt of jokes and advertisements contrasting optical character recognition (OCR) technology with the femininity of keypunchers. This accords with Ensmenger’s analysis of Datamation and similar sources from the 1960s. However, the following years were different. For five years between 1969 and 1974, Datamation became a contested space, with the hostile portrayals of women of the 1960s existing alongside positive female archetypes. Beginning in 1975, new editorial attention to the issues faced by women in the field replaced the open misogyny of a few years before. While this active interest diminished in the early 1980s, the post-1975 period was quite different from the misogyny of the 1960s. Although this shift could be interpreted as mere “whitewashing,” the fact that archetypal programmers were almost exclusively portrayed as male in the mid-1960s and very potentially female in the late 1970s should not be neglected.

**Before 1969: Derisive Portrayals**

The “woman programmer” was an object of humor in the early 1960s, generally portrayed as physically unattractive and unfeminine. For instance, a female programmer is one of three uninspiring job applicants featured in the 1962 humor piece “How to Hire a Programmer.” She “is the spitting (she chews Copenhagen) image of a lady programmer.” This unfeminine archetype “wears flat shoes, and she is a little cross-eyed. Her figure resembles a full potato sack. Her dress and makeup indicate that she is a solid, plain-thinking person with no frills at all.” When she is offered a position (beating out a slovenly and insubordinate sandal-wearing beatnik and an outright charlatan), she “goes home to ask her mother about it.”

A rare serious treatment of “The Woman Programmer,” by Datamation news editor Valerie Rockmael likewise took pains to defend the femininity of female programmers. “It is … felt that women have a humanizing influence, make working conditions more pleasant, and even add to the decor of an office,” she argued. “The notion that female programmers are dull, drab, lip-stickless creatures is grossly erroneous.”

Advertisements in the 1960s picturing women were generally uncomplimentary as well. Advertisements for OCR technology, which made text directly machine-readable, carried the implicit promise of deskilling (and thus lowering the wages of) clerical labor through the purchase of capital equipment (as one OCR service ad bluntly noted “typists are paid less than keypunch operators”). This deskilling of the almost exclusively female keypuncher workforce (in 1966, 99% of keypunch operators in the burgeoning Minnesota information processing sector were women) was framed in gendered
As a series of ads for Recognition Equipment’s OCR reader in the front pages of 1967-1968 issues declared, the machine “can do anything your keypunch operators do” without a series of the pictured operators’ failings, from wasting the working day with shopping and gossip to crying and sulking when slighted, to “taking maternity leave…suffering from morning sickness, or complaining of being tired all the time.”

Although this message was at the expense of the lowest rung of the computing hierarchy, these ads cannot have been welcoming to women seeking positions in programming or systems analysis. More to the point, the messages of these ads were scarcely accidental: the companies paying for them obviously expected them to appeal to potential customers and, ultimately, to sell their products.

A few exceptions to this general hostility toward women in the early 1960s can be found in Datamation. These exceptions focused on the instrumental value of female labor in addressing the perceived programmer shortage of the period. Rockmael’s “The Woman Programmer,” for instance, implicitly makes this connection, speculating that “current needs” were the cause for what she characterizes as the industry’s comparative openness to women and the “above average salary” they could command.

Other pieces made this argument more explicitly, such as a 1962 editorial on recruiting from high schools as a solution to the programmer shortage, which noted that “many of the young ladies…have been told that programmers are restricted to the male sex” in a discussion of students’ misapprehensions; and a 1964 report on a survey of industry professionals, which predicted increased female participation as a solution to the programmer shortage.

These derisive portrayals of female programmers (and women generally) are reminiscent of Marvin’s description of how “trivial” trade journal content like jokes and anecdotes about the ineptitude of marginalized groups (like racial minorities and women) served to privilege the professional status and knowledge of professionalizing (white male) electricians. This supports Ensmenger’s argument that a similar process of exclusion of women was underway in the computer industry of the 1960s.

**Contested Space: 1969–1974**

Beginning in 1969, however, Datamation became a contested space, with positive portrayals of female computer workers appearing alongside derisive images like those of the 1960s. This was almost certainly a manifestation of the growing voice of the women’s movement in American society at large in the period. If this is the case, it is significant that the movement had such an impact in the pages of a professional journal like Datamation.

Although advertisements in the 1960s almost invariably pictured programmers or other high-status employees as white men, women and racial minorities began to appear in advertisements in the 1969–1974 period. This shift is exemplified by a 1969 Ampex ad for magnetic tape, which featured the prominently pictured “computer programmer Carol Ching,” declaring that when she “ignores our tape, we know we’re doing our job.”

Like the tape it advertises, the ad’s use of an Asian-American woman as an archetypal programmer received no comments.

However, sexist OCR ads persisted in this period, exemplified by a full-color 1970 Entrex ad which declared that “We taught our data entry system to speak a new language: dumb blonde. If a girl can type, she can enter data on our system. If she can read, she can verify it on the display. To her, it’s a typewriter and a nifty little tv screen: (She can be the dumbest blonde you can find).”

Readers of Datamation in this period were confronted with two wildly disparate messages of “Carol Ching” and “dumb blonde” style ads, often in the same issue.

Some of Datamation’s readership was on the side of “Carol Ching.” Although the Letters page of Datamation had been silent on sexism and the place of women in the industry in the 1960s (with one 1963 exception), a steady stream of letters protesting the sexism of “Dumb Blonde” style ads, discussing discrimination in the workplace and advocating more women in programming positions began to appear after 1970. Reflecting the contested nature of this period, however, Datamation generally published these letters under patronizingly “humorous” captions, such as “Lib and Let Lib” (referring to the sometimes-dismissive term “women’s lib”), or “Women Slighted” for a letter protesting an article’s explicit discussion of illegal pay discrimination.

The Letters page of a publication like Datamation is not directly representative of the readership at large. Letter writers themselves underwent self-selection, and letters would in turn pass through editorial selection to be published. With these caveats in mind,
however, Datamation’s readership in this period evidently included a group of people concerned enough with perceived sexism to correspond about it and large enough to furnish letters year after year. In turn, while Datamation’s editorial staff generally published these letters under sarcastic captions, they did publish them nonetheless, suggesting that such letters were seen as worth paying attention to. Taken together, these two factors demonstrate that something had changed in the attitudes of the readership or editorial perceptions of importance, or both, from the silent days of the Letters page in the 1960s, most likely reflecting the upheavals occurring in American society at large.

Positive Portrayals: After 1975
By 1975, the 1969–1974 challengers to the overtly sexist advertisements and “humor” of the 1960s had evidently won. Advertisements showcasing diverse workforces now appeared as the norm, and letters supporting women in the industry steadily continuing to be published but without the patronizing captions of 1969–1974. Datamation also started to publish articles sympathetically examining issues faced by women in the industry. Datamation had settled into a generally consistent portrayal of women that was a marked contrast from that of the previous decade, tending toward neutral or even sympathetic treatments.

Beginning in 1975, Datamation shifted editorial direction, publishing a series of pieces sympathetically examining issues faced by women in the industry. This genre of article began with the 1975 Winifred Asprey and Ann Wheeler Laffan piece “Women Speak Out on DP Careers,” which reported the results of a survey they conducted of women in the industry. Prominent management consultant Robert L. Patrick’s “You’ve Come a Long Way, Baby” analyzed the progress made by women in the industry; and Gonnie Siegel’s “The Best Man for the Job May be a Woman” challenged Patrick’s dismissive attitude toward continuing challenges faced by women. These pieces agreed that an equal place for women in the industry was a good thing and that at least some progress toward that end was being made. Compared to Rockmael’s defensive treatment of “The Woman Programmer” in the 1960s, these articles convey positive editorial interest in women’s issues. Likewise, letters in response to these articles (generally favorable, although some were critical of Patrick’s sanguine tone) were no longer printed under the “humorous” captions of 1969–1974.

Anxieties about women in high-status roles being “unfeminine” were expressed in 1970s pieces like “Women Speak Out on DP Careers.” Although the “unfeminine” archetype of the 1960s was a programmer, by 1975 this perception was attached to women in management positions, with one respondent to Asprey and Laffan’s survey reporting that “by and large, women who do attain management positions are aggressive, super-competent and competitive, and scorned by males as ‘unfeminine’ and ‘know-it-all’ types.” Similar sentiments can be found in later articles, reflecting the triumphalist attitude of the late 1970s (see below). Meanwhile, whereas the “unfeminine” “woman programmer” was the butt of jokes in the early 1960s, similar jokes about “aggressive” or “competitive” female managers cannot be found in the Datamation of the 1970s. This is further evidence for the 1975 shift.

Beginning in 1978, a new triumphalist rhetoric began to infuse articles on women in the field, with retrospectives on the sexism of the 1960s and confident predictions of equality in the future. Dorothy A. Walsh’s 1978 “Up From Programming,” described the author’s experiences in the programming workforce of the early 1960s, explicitly contrasting it with the relative equality of the late 1970s. Anne-Marie Lamb’s 1979 “Profiling Computer People: A First Draft,” which analyzed the state of the industry workforce, was similarly triumphalist, with Lamb noting that a “recent estimate [which] placed the percentage of women programmers and systems analysts at 16.5 ... is probably as good as, if not better than, any other sector.” This triumphalism extended to the future: the 1981 article “The Growing DP Job Market,” for instance, concluded that “discrimination ... will have to be eliminated as a matter of economic necessity,” and that “by 1990, women and racial minorities will be recruited not because of legislation, but because their members are desperately needed in the dp workforce.”

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The 1982 article “The Old Clothes of Advertising,” which examined ads from the previous 25 years of Datamation, prominently included a Recognition Equipment OCR ad promising that the machine would not take maternity leave among the old advertisements which were “good for a chuckle or two.” Entrex’s “dumb blonde” ad, however, was not included, because the company denied permission to reprint it. In only twelve years, standards of acceptability in Datamation had changed dramatically.

In the early 1980s, the active editorial interest in women’s issues seemed to decline, with no articles on the subject appearing between 1981 and 1985 (perhaps reflecting the Reagan-era backlash against the second-wave feminist movement). However, the overt sexism of the 1960s did not return. Images of computer professionals in advertisements and on cover illustrations continued to be gender- (and racially) diverse, and when letters protesting perceived sexism (such as the all-male makeup of a profile of young PC enthusiasts) were printed, it was without sarcastic captions.

This study of Datamation supports Ensmenger’s assertion that women were portrayed negatively in the computer industry of the 1960s. Following the period covered by his study, however, this changed. Between 1969 and 1974, Datamation was a contested space, with conflict between this hostility and criticisms of it. The negative portrayals of the 1960s cannot be found after 1975.

This analysis reflects a comprehensive study of Datamation’s run over this period, lending confidence to the periodization above. It is reasonable, however, to ask whether Datamation is a representative source. Evidence from another trade publication, Computerworld, suggests that it is. A 1967 piece entitled “Are Women a Problem?,” appearing in the second issue of Computerworld, shows the same hostility toward women in the industry that Datamation did in the 1960s, accusing them of “creat[ing] problems for others, [and] find [ing] problems for themselves.” By 1975, Computerworld ran a survey of women in the industry as a front-page story, just as Datamation was showing a similar editorial interest in the position of women in the industry. Likewise, when the Association for Women in Computing (a professional organization for women in the field) was founded in 1979–1980, Computerworld’s editors were quick to ask for a membership list in hopes of conducting a position and salary survey. All three fit with Datamation’s treatment of gender: the hostile attitude toward “problem” women in 1967 with the misogyny common in Datamation at the same time and the editorial interest in issues faced by women in the industry in 1975 and 1980 with the articles Datamation began to run in the mid-1970s.

The overtly sexist portrayals of the 1960s did not directly continue into the contemporary period of low female participation in the industry, having been replaced by 1975. This fits with the larger demographic trends of the industry: the conflict, new editorial interest, and triumphalism of the 1970s were in the middle of the two-decade period of growing female participation in the industry workforce between at least 1971 (when BLS statistics on women in computing begin) to the mid-1980s. However, this problematizes Ensmenger’s assertion that the contemporary construction of programming as a masculine activity took place in the 1960s. It seems clear that the gender identification of programming work was more complicated than the “computer boys” of the 1960s simply becoming “today’s IT guys.”

A cynic could justifiably suggest that Datamation’s sudden change in the early 1970s was a form of “whitewashing,” rather than a reflection of a deeper commitment to the participation of women in the industry. Although it would indeed be naïve to believe Datamation’s editors became committed feminists in the early 1970s, the fact that this whitewashing (if that is what it was) took place at all is significant. It is almost certainly not a coincidence that this change took place as the women’s movement’s voice was growing in strength in American society, implying that the change in Datamation reflected this. If so, this suggests that the “external” force of second-wave feminism cannot be neglected in an analysis of the “internal” imperatives of professionalism.

Bix describes a similar change in corporate engineering recruitment advertisements, with generally sexist ads in the 1960s giving way “almost overnight” in the mid-1970s to ads emphasizing the companies’ commitment to diversity. Bix argues that the efforts of feminist groups like the Society of Women Engineers played a large part in this shift. It appears that something similar happened in the pages of Datamation at the same time.

**Portrayals by Computer Companies: Control Data, Burroughs, IBM**

In the first half of the 20th century, IBM (founded in 1911 as the Computing-Tabulating-Recording Company), and the Burroughs
Corporation (founded in 1886 as the American Arithometer Company) were close competitors in the field of information processing with electromechanical tabulating machines.⁴⁹ Both companies entered the electronic computer market in the early 1950s, joined by established competitors and new companies, such as the Control Data Corporation (CDC), founded in 1957 by ex-employees of Sperry-Rand’s Univac division.⁵⁰ As the computer industry matured in the 1960s, Burroughs (specializing in banking applications) and Control Data (associated with supercomputing) found themselves playing a distinctly secondary role to industry leader IBM.⁵¹

In the 1960s, the three corporations typically deployed male-dominated imagery in depicting their workforces. The few women pictured served as models to advertise hardware or as the target of unflattering treatments like IBM’s “Suzie Meyers Meets PL/I,” advertisement in Datamation, which depicts the eponymous “young girl with no programming experience” as a potential user of the company’s PL/I language. Ensmenger argues, as a visual shorthand for the language’s simplicity.⁵² A Burroughs recruitment brochure exemplifies the mid-1960s: “[The] Burroughs Corporation provides the opportunities you’re seeking for career and financial growth. We are a leader in the industry,” it proclaimed, promising bright futures in research and development, manufacturing and engineering, marketing, and finance, picturing archetypal employees in each category. Virtually all of these Burroughs employees are white men, in crew cuts and suits. The only women pictured are workers in computer manufacturing (under male supervision) and glamour models accessorizing a “complete line view” of Burroughs products.⁵³ The archetypal Burroughs employee was a Burroughs man.

Between 1967 and 1974, however, the three companies underwent a shift comparable to that taking place concurrently in Datamation. In place of the male-dominated imagery of the 1960s, all three companies began to highlight diversity in their workforces, paralleling their adoption of formal equal opportunity employment programs. The three companies did not move in lockstep: Control Data shifted early, Burroughs later, with IBM in between. By the mid-1970s, the imagery of all three was quite different from what it had been a half-decade earlier.

Control Data was the earliest of the three companies to shift from the male-dominated archetype of the 1960s, beginning around 1967–1969. New ads featuring diverse CDC workforces began to appear in Datamation in 1969, providing early examples of the diversity-emphasizing “Carol Ching” type of ad discussed above.⁵⁴ Control Data also sought to recruit women for computer education, especially the company’s Control Data Institutes. While these for-profit trade schools taught lower-status skills like computer maintenance, their curricula also included programming.⁵⁵ Beginning in 1967, press releases advertising them used gender-neutral language (the substitution of the word “individuals” for the earlier “young men,” and the repetition of a quote by the company’s president, William Norris, calling for 100,000 new “men and women” to become programmers).⁵⁶ By 1968 and 1969 the press releases explicitly addressed female recruitment, quoting CDI director Layton Kinney “that about 20 percent of the programming technology courses include women.”⁵⁷ In 1969, Control Data also partnered with liberal arts colleges to offer programming courses, with Kinney pointing out that “many women do not realize the computer industry can offer them good jobs” and that “one objective of our course is to attract and train women for an industry they have largely overlooked.”⁵⁸ Control Data recruitment brochures from the late 1960s also targeted women.⁵⁹ Although some of those efforts can appear misguided to contemporary eyes (such as a 1969 “Happen-In for Women,” intended as a recruiting tool in which a “buffet, music, prizes, and fashion show highlight the event which will include interviews of other career girls in the computer industry”), the fact that they were made at all is significant.⁶⁰

IBM began to shift its imagery a few years later, beginning in 1970. Advertisements in marked contrast to the “Suzie Meyers” ad began to appear, such as one with the tagline “give your computer a head start,” featuring photographs of the heads of a racially and gender diverse group of “IBM systems engineers.”⁶¹ Similarly, IBM’s Think magazine (at the time a kind of public interest publication showcasing articles by noted public intellectuals) displayed a similar interest in gender diversity issues in 1970, publishing two generally favorable articles on the women’s liberation movement (under a cover entitled “Adam’s Rib to Women’s Lib”).⁶² Although the subject matter of Think was ostensibly society at large, it is nonetheless
noteworthy that an IBM-funded and edited publication regarded “women’s lib” as a salient issue in 1970.

These external shifts coincided with internal changes at IBM, which instituted an equal opportunity employment program under executive Barbara Boyle in 1970. In a subsequent *Harvard Business Review* article on equal opportunity programs, Boyle used the IBM program as an example of a successful implementation of her ideas. Citing managerial seriousness about equal opportunity goals, she claimed that IBM met its initial employment targets within 18 months. This program, characterized by formalized personnel management and “quasi-judicial” disciplinary practices, was evidently influential, as sociologist of labor Frank Dobbin’s *Inventing Equal Opportunity* argues that IBM and Lockheed Martin were the “best practices” models for other American corporations seeking to avoid equal opportunity lawsuits in the 1970s.

The Burroughs Corporation lagged behind CDC and IBM, continuing to use male-dominated recruiting imagery well into the 1970s. This changed with its 1974 recruitment brochure, which featured a diverse workforce, with both women and racial minorities appearing on every page. This brochure presents a carefully crafted image of Burroughs, but this image is strikingly different from the white, male-dominated ones of previous years. Women appear as employees in prestigious and technically oriented departments, including programming, in marked contrast to previous images of women exclusively in low-status clerical and assembly jobs. This diverse imagery continued in subsequent recruiting brochures into the 1980s. Given the suddenness of this shift, it seems likely that Burroughs’ recruiting department made the conscious decision (or was instructed) to highlight images of diversity in the company’s corporate image; 1974 was the last year before *Datamation*’s own editorial shift, further suggesting that the changing climate of the early 1970s was industry-wide.

As with *Datamation*, the climate of the 1970s and 1980s in all three companies was quite different from that of the 1960s. Like Burroughs’ turn to imagery of diversity for its post-1974 recruiting brochures, IBM advertisements of the 1970s, exemplified by the multipage bimonthly *DP Dialogue*, displayed diverse imagery, with articles like “Faculty Volunteers from IBM Aid Minority Education,” and “Community Projects Get Boost from IBM Fund,” often prominently featuring female or racial minority employees. Even after *DP Dialogue* turned in the late 1970s to a more direct advertisement of industrial problems solved by IBM’s Data Processing division, photographs typically continued to portray gender and racially diverse IBM teams. This was also true of the imagery in internal IBM publications like *Think* and *Management Update* (although a statistical study has shown that *Think* underrepresented IBM’s female workforce in the 1980s).

Both publications also ran articles on the company’s measures to promote diversity in its workforce. Control Data likewise continued to emphasize workforce diversity in the 1970s and 1980s, led by a 1971 affirmative action policy which called for the “aggressive recruitment, selection and placement ... of women.” In addition to exhortations for “increased ... numerical participation” at all levels of the company, this policy displays explicit attention to external imagery, declaring that “when employees are pictured in product or consumer advertising, employee handbooks, or similar publications ... men and women should be pictured.” When employees are pictured in ... help wanted advertising,” it goes on to say, “women should be shown,” and “help wanted advertising should be expanded to include ... women’s interest media.” This policy was reinforced by measures such as a 1975 executive training course run by Boyle/Kirkman Associates (an equal opportunity consulting company founded by Barbara Boyle after leaving IBM), a steady stream of brochures on CDC’s equal opportunity progress, and biweekly Corporate Social Responsibility and Concerns Committee meetings after 1975. The records of this committee are particularly telling, with annual tracking of employment figures for racial minorities and women and explicit discussion of equal opportunity measures to forestall potential legal liability.

The three companies’ historical memory of themselves is also instructive. Control Data and Burroughs commissioned company histories in the late 1970s and early 1980s, and IBM publications like *Think* mobilized history when discussing diversity issues. Control Data’s internal company history contains a lengthy section on its pursuit of corporate social responsibility, detailing its practice of building inner-city plants to employ minorities and including a section claiming to have enacted an affirmative action plan for
women in 1965.78 “The Burroughs Story” of 1978, in contrast, made no mention of social issues at all, including women’s and minority employment.79 Although the authors of the Control Data history evidently considered it important to portray CDC as a socially conscious company, those of Burroughs’ did not make any similar attempt to construct its past in terms of diversity (despite writing several years after the shift in public image in Burroughs recruiting materials).80 IBM’s historical rhetoric of the 1980s was akin to that of Control Data, pointing to the company’s early participation in Plans for Progress in the 1960s and showcasing employment statistics on its workforce diversity.81 Subsequent IBM historical memory has continued to emphasize a self-identity as a diverse company, with the 1970 equal opportunity program receiving attention in the 1988 compendium Thirty Years of Management Briefings, brochures in the late 1990s boasting about the company’s history of diversity and a prominently featured section about women on the IBM Archive’s Website today.82

It is important to reinforce the point that this emphasis on diversity was corporate rhetoric. There are indications that the workplace reality was less sanguine. In 1975, Asprey and Laffan critically examined IBM in “Women Speak Out on DP Careers” (see above), noting that fewer than 5% of IBM’s managers were women.83 Likewise, internal Control Data surveys in the mid-1970s identified “inadequate and unfair employment and advancement opportunities for women” as a common criticism.84 By 1982, however, this criticism no longer appeared in these surveys.85 Likewise, Savvy magazine rated IBM “one of the best 16 places for women to work” that same year.86 While IBM received 621 equal opportunity audits between 1972 and 1982 (a normal number of such complaints for a corporation of IBM’s size), it apparently failed none of them.87 A 1975 Computerworld survey of female computer professionals exemplifies the confused picture painted by these threads of evidence. Despite its headline’s statement that the “majority of women DPers find no job discrimination,” much of the article was devoted to survey participants’ anecdotes to the contrary, and noted that “the women were nearly unanimous in crediting the feminist movement with the improvement of their situation in recent years.”88 As Janet Abbate has observed, women’s experiences in the computing field cannot easily be reduced to a single formula.

**Behind the Portrayals: SHARE Attendance, 1958–1972**

While BLS data provide a quantitative view of gender breakdown of the computer industry workforce after 1971, such a quantitative view is lacking for the first years studied by this paper, in the late 1950s and 1960s. While an estimate of pre-1971 workforce statistics will likely lack the accuracy of the BLS data, it can nonetheless provide useful evidence. I have constructed a quantitative view of the late 1950s and 1960s by examining records from the user group SHARE, Inc.89 Founded in 1955 by representatives from California aerospace firms, this user group for IBM computers grew rapidly, with hundreds of attendees by the late 1950s and thousands by the mid-1960s.90

SHARE meeting reports throughout this period contained a directory of attendees listed by first and last name and institutional affiliation, offering a relatively large sample of computer professionals. Using selected SHARE reports, given names were tallied as male, female, or, in the case of unisex names (for example, Lynn and Pat), ambiguous. Some names were merely reported with initials: these were counted in the meeting total but have been otherwise excluded from the sample. This total, and the number of female names are in Table 1, with percentages of the total number of unambiguously gendered names (the meeting total minus the number of attendees identified by initials and unisex names).

These data should not be relied on too heavily. Nonetheless, any sense beyond the anecdotal of the gender makeup of computing

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Females (%)</th>
<th>Meeting Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1958</td>
<td>20 (9.43)</td>
<td>282</td>
</tr>
<tr>
<td>1960</td>
<td>44 (13.41)</td>
<td>639</td>
</tr>
<tr>
<td>1961</td>
<td>101 (15.37)</td>
<td>862</td>
</tr>
<tr>
<td>1963</td>
<td>91 (11.86)</td>
<td>983</td>
</tr>
<tr>
<td>1964</td>
<td>104 (11.05)</td>
<td>1041</td>
</tr>
<tr>
<td>1966</td>
<td>56 (8.48)</td>
<td>1296</td>
</tr>
<tr>
<td>1967</td>
<td>94 (7.51)</td>
<td>1444</td>
</tr>
<tr>
<td>1970</td>
<td>163 (8.57)</td>
<td>1950</td>
</tr>
<tr>
<td>1972</td>
<td>135 (8.35)</td>
<td>1669</td>
</tr>
</tbody>
</table>
in the 1950s and 1960s is valuable, and these data provide such a sense. Roughly one in ten SHARE attendees throughout the 1958–1972 period were women, with percentages varying between about 7% to 15%. While lower status clerical workers like keypunchers were generally women in this period (in 1966, 99% of keypunch operators in the burgeoning Minnesota information processing sector were women), these SHARE attendees were very likely in higher status roles (including programming). These numbers thus imply that while nonclerical female computer workers were a minority in this period, they were far from a negligible one, supporting contemporary statements in Datamation about the relative openness of programming careers to women. They also accord with a 1960 Management and Business Automation survey of corporate computing departments, which reported that about 15% of programmers at the time were female. However, it is noteworthy that this proportion remained relatively stable throughout this period, implying that a “masculinization” of nonclerical computer work like that observed in the post-1985 period did not occur in the 1960s. Ensmenger argues that programming was originally dominated by women, pointing to the low status “coding” work of the “women of ENIAC,” and was only later “made masculine” as a high-status white-collar job. These SHARE data imply that such a transition of programming to a majority-male occupation occurred early in the history of computing, before the late 1950s.

Conclusions
In the late 1950s and through much of the 1960s, the trade journal Datamation and the computer companies IBM, Control Data, and Burroughs typically portrayed an industry workforce of white men. When women did appear, it was generally in low-status jobs, as models, wives, and office “decor,” or as the target of derisive humor. However, between 1969 and 1974, the companies adopted images of diverse workforces, actively recruiting women, and began equal opportunity employment policies, and Datamation witnessed a contest between the older, male-dominated imagery and a newer, friendlier portrayal of women. From 1975 into the 1980s, all three companies portrayed diversity in their workforces, while Datamation took an active editorial interest in women in the industry.

Although this rhetoric should not be confused with the lived reality of women in the industry (and should thus be tempered by oral history-based work like that by Abbate), these findings serve to extend and temper Nathan Ensmenger’s gender analysis in The Computer Boys Take Over. They support Ensmenger’s observation that portrayals of women in the 1960s were generally hostile. However the evident shift in the early 1970s modifies his argument that the exclusion of women from idealized constructions of programmers in the 1960s resulted in the low rate of participation of women in computing today. In light of how different the industry portrayals of the 1970s and early 1980s were from those of the 1960s, the drop in female participation in high-status jobs like programming and systems analysis, which began in the mid-1980s, seems unlikely to be an effect of “masculinization” of these jobs two decades earlier. The percentage of the computing workforce that was female (and of computer science degrees awarded to women) grew for almost twenty years between 1971 (when BLS statistics on the computing workforce begin) and the mid-1980s, nearly tripling during exactly the period when the industry portrayals of women changed so radically from those of the 1960s.

The motivation for this shift in the early 1970s deserves further study. One potential motivation for the companies’ active attempts to recruit women could have been the perception of a labor shortage of programmers, seen as a “crisis” in the industry from the 1960s on. However, although recruiting female programmers was occasionally mentioned as a solution to this labor shortage by some Datamation contributors in the early 1960s, this idea cannot be found in either Datamation or sources from the three companies in the 1970s and 1980s. A second potential motivation was legal: Frank Dobbin argues that, in the early 1970s, American corporations turned to formalized equal opportunity and antidiscriminatory practices to avoid lawsuits. Internal Control Data documents do explicitly acknowledge equal opportunity programs as a method for avoiding legal liability. However, such corporate legal concerns cannot explain the shift in the letters and articles of a trade journal like Datamation, nor can they explain the evident interest of Control Data in recruiting women years before (as management consultant Robert Patrick put it in Datamation) “management started to take [antidiscrimination laws] seriously.”
Corporate cultures were also a potentially important factor. Control Data’s culture, for instance, was heavily invested in a self-image of “social responsibility” derived from the political views of its president, William Norris, which manifested in projects like the construction of plants in impoverished inner city and rural areas and an Employee Advisory Resource program.

This unique corporate culture might well have been a factor in CDC’s early and sustained interest in recruiting women. However, the general industry trend of a shift in the early 1970s cannot be explained solely by the idiosyncrasies of any one individual or company.

This leaves the rise of the feminist movement of the early 1970s, which the women surveyed by Computerworld in 1975 drew attention to, as the most plausible driver of this change. Amy Bix has argued that a similar shift in engineering advertisements at the same time was largely due to the efforts of feminist groups like the Society of Women Engineers. The influence of feminist activism on the American computer industry of the 1960s and 1970s deserves further study akin to that by Bix. A comparative perspective may also be helpful: while Marja Vehtiläinen, Vivian Anette Lagesen, and Marie Hicks have studied the gender dynamics of computing outside of the United States, further work outside of the American context remains to be done.

It should be noted that the core of Ensmenger’s argument in The Computer Boys Take Over is focused on the late 1950s and 1960s and that his sources date from that period. It is not surprising, then, that his argument is sound for those decades but in need of correction for the 1970s and 1980s. His recent Osiris article “Beards, Sandals, and Other Signs of Rugged Individualism,” which describes the construction of masculine programming identity in university computer centers in the 1970s, should be noted. Ensmenger argues that the contemporary stereotypical image of the male “computer nerd” or “hacker” arose in these spaces and continued into the era of personal computing, entering popular culture in the early 1980s (for instance, in films like Revenge of the Nerds and War Games). The close coincidence between these popular images of programmers as exclusively male and the plateauing rate of female participation in the mid-1980s bears note, suggesting that programming may have been “made masculine” by these popular sources. The research studied by Cohoon and Aspray suggests that the gendering of computer activities as “masculine” in the 1980s and 1990s largely occurred early in life, before potential female programmers even had a chance to choose to enter the computing workforce. As historians continue to study the puzzling decline of female participation in the industry that began in the 1980s, these popular images of male programmers may well be a fruitful area for further analysis.

References and Notes


2. A similar analysis from the same period can be found in K.M. Donato, “Programming for Change? The Growing Demand for Women Systems Analysts,” Job Queues, Gender Queues: Explaining Women’s Inroads into Male Occupations, B.F. Reskin and P.A. Roos, eds., Temple University Press, 1990. I am grateful to an anonymous reviewer for pointing out this source.


4. Wright and Jacobs, “Male Flight From Computer Work,” pp. 529. The percentage of the computing workforce that was female, and the percentage of computer science bachelor’s degrees earned by women both declined precipitously in the 20 years following 1985, by almost 10 and 17 percentage points respectively. See also T.J. Hayes, “Computer Science: The Incredible Shrinking Woman,” Gender Codes: Why Women Are Leaving Computing, pp. 33, 43.


46. L. Taylor, “President’s Letter, November 20, 1980.” CBI 49 (Association for Women in Computing), Box 1, Folder 1.


53. Untitled recruitment brochure, CBI 90:20, Burroughs Corporation, Corporate and Recruiting Brochures, Box 1, Folder 4.


55. W. Norris, Speech given to Industrial Relations Association of Chicago, May 26, 1969, pp. 3, in CBI 80:23 (Control Data Corporation, Executive History Project Records), Box 6, Folder 17; and press releases mentioning programming training, e.g., June 6, 1968, CBI 80:13 (Control Data Corporation, Press Releases), Box 2, Folder 7; July 30, 1968, CBI 80:13, Box 2, Folder 8. These programming training programs continued into at least the early 1970s: see Datamation November 1972, pp. 211.

56. Press releases for April 13, 1965, CBI 80:13 (Control Data Corporation, Press Releases), Box 1, Folder 15; November 21, 1967, CBI 80:13 (Control Data Corporation, Press Releases), Box 2, Folder 5.

57. Press release for May 8, 1968, CBI 80:13 (Control Data Corporation, Press Releases), Box 2, Folder 7; Computerworld estimated that “40 percent of Control Data’s programming technology students are girls” in 1967: see Computerworld, vol. 1, no. 2, 1967, pp. 3.

58. Press release for August 4, 1969, CBI 80:13 (Control Data Corporation, Press Releases), Box 3, Folder 5.

59. See also Figure 6.1 in Ensmenger, “Making Programming Masculine,” Gender Codes: Why Women are Leaving Computing, and Figure 10.2 in J. Abbate, “The Pleasure Paradox: Bridging the Gap Between Popular Images of Computing and Women’s Historical Experiences,” Gender Codes: Why Women Are Leaving Computing, pp. 117, 216.


62. Think, July/August 1970. Think would subsequently transition into an internal company publication in 1971.


66. “Consider Burroughs … Where People Make the Difference,” CBI 90:20 (Burroughs Corporation, Corporate and Recruiting Brochures), Box 1, Folder 5.

67. Recruiting materials for Burroughs’ UK division lagged behind these American brochures, only shifting to diverse imagery later in the 1970s. This observation conforms with Marie Hicks’ finding that British computer industry advertisements continued to portray women in low-status roles well into the 1970s. See also Hicks, “Only the Clothes Changed: Women Operators in British Computing and Advertising, 1950–1970,” pp. 5–17.

68. Datamation, June 1973, pp. 130; Datamation, October 1973, pp. 46.

69. See, e.g., Datamation, December 1973, pp. 80; Datamation, March 1975, pp. 66–D.


72. “Memo on EEO/AA,” CBI 80:6 (Control Data Corporation, Corporate Administration), Box 5, Folder 2, Appendix G.

73. “Memo on EEO/AA,” pp. 35.


75. “Memo on EEO/AA,” CBI 80:6 (Control Data Corporation, Corporate Administration), Box 5, Folder 2; CBI 80:23 (Control Data Corporation, Executive History Records), Box 6, Folder 18; CBI 80:23 (Control Data Corporation, Executive History Records), Box 6, Folders 19–24.

76. Minutes for August 2, 1979, CBI 80:23 (Control Data Corporation, Executive History Records), Box 6, Folder 23; Minutes for January 22, 1975, CBI 80:23 (Control Data Corporation, Executive History Records), Box 6, Folder 19.

77. The parallel between the three companies’ interest in history and the historically oriented triumphalism in Datamation’s contemporaneous treatments of gender is noteworthy.

78. R.G. Lareau, “Legal Function,” in John Sciamanda Executive History, Document B, pp. 10, CBI 80:23 (Control Data Corporation, Executive History Records), Box 5, Folder 3. See also miscellaneous company histories, CBI 80:24 (Control Data Corporation, Historical Archives and Company History), Box 2. I have found no CDC documents from the 1960s corroborating
this retrospective claim of a 1965 affirmative-action plan. This claim should thus be taken with a grain of salt (the EEOC was only organized in 1965).


80. Further evidence for this socially conscious CDC self-image can be found in M. Jansen, et. al., *HR Pioneers: A History of Human Resource Innovations at Control Data Corporation*, North Star Press of St. Cloud, 2013. This history of Control Data's human resource policies, written in collaboration with former CDC executives, has a strong emphasis on the company's commitment to social responsibility.


85. “1982 Employee Attitude Survey,” CBI 80:20 (Control Data Corporation, Corporate Identity), Box 2, Folder 2.


88. “Majority of Women DPers Find No Job Discrimination,” *Computerworld*, vol. 9, no. 30 1975, pp. 1, 4. As subsequent letters to the editor pointed out, the small sample size (30) of this survey casts doubt on its statistical value. Nonetheless, it is noteworthy that Computerworld conducted and printed it as a front-page headline in 1975, just as *Datamation* was likewise beginning to show active editorial interest in women's issues.

89. I am grateful to Jeffrey Yost for suggesting this line of inquiry.


91. SHARE 11 Report, CBI 21 (SHARE, Inc. Records), Box 3, Folder 17.

92. SHARE 14 Report, CBI 21 (SHARE, Inc. Records), Box 3.

93. SHARE 17 Report, CBI 21 (SHARE, Inc. Records), Box 3.

94. SHARE 20 Report, CBI 21 (SHARE, Inc. Records), Box 3.

95. SHARE 23 Report, CBI 21 (SHARE, Inc. Records), Box 4.

96. SHARE 26 Report, CBI 21 (SHARE, Inc. Records), Box 4.

97. SHARE 29 Report, CBI 21 (SHARE, Inc. Records), Box 4.

98. SHARE 34 Report, Volume 1, CBI 21 (SHARE, Inc. Records), Box 5.

99. SHARE 38 Report, Volume 1, CBI 21 (SHARE, Inc. Records), Box 6.


105. Thomas Haigh has suggested that business computing, which arose from male-dominated corporate tabulating-machine departments, may have in turn been male-dominated from the start, and that the precedent of scientific computing with ENIAC is of limited value in understanding it. Haigh, “The Chromium-Plated Tabulator,” pp. 96.

106. “It is … felt that women have a humanizing influence, make working conditions more
pleasant, and even add to the decor of an office.”
V. Rockmael, “The Woman Programmer,”
Datamation, January 1963, pp. 41.


111. e.g., V. Rockmael, “The Woman Programmer,”
Datamation, January 1963, pp. 41; “A Long View of a Myopic Problem,”
Datamation, May 1962, pp. 22; Datamation, February 1964, pp. 69.

112. Dobbin, Inventing Equal Opportunity, pp. 15–16, 101–106; Minutes for January 22, 1975, CBI 80:23 (Control Data Corporation, Executive History Records), Box 6, Folder 19 (see above).

113. R. Patrick, “You’ve Come a Long Way, Baby,”


118. Ensmenger, “Beards, Sandals, and Other Signs of Rugged Individualism,” pp. 38–65. The distinction between the academic spaces described by N. Ensmenger here and the corporate computing context discussed in this article is also noteworthy: see “Beards, Sandals, and Other Signs of Rugged Individualism,” pp. 59 for a discussion of the difference between the two.


120. Cohoon and Aspray, eds., Women and Information Technology: Research on Underrepresentation.

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