

Technology & Gender

INFO I-590 • Spring 2017

In this seminar we will explore the literature on the history of gender and technology, with a particular focus on information technology. From the “computer girls” of the early 20th century to the hyper-masculine culture of contemporary computing, ideas about gender have reflected and transformed our understanding of sexuality and gender. Our goal in this seminar is to survey the best of the emerging literature on gender and computing, with an eye towards the practical application of gender theory into your future research projects.

Professor Nathan Ensmenger
nensmeng@indiana.edu

Revision Date: February 28, 2017

Course Schedule:

In addition to doing the required readings and preparing for discussions, you will be responsible for writing a short (1-2 pg) reading response paper each week.

The supplementary readings and extended bibliography are meant to make you aware of the larger literature, and to provide a guide for those of you who need further preparation for your qualifying exams or dissertation research.

A note on books: all of the articles listed below will be made available electronically. The books you are responsible for borrowing, purchasing, or otherwise acquiring. I did not order them via the bookstore, as in most cases you can find better bargains elsewhere.

I January 11

Introduction and in-class primary source exercise.
Turkle, "Hackers: Loving the Machine for Itself"

II January 18

Scott, "Gender: A Useful Category of Historical Analysis"; Cowan, "The 'Industrial Revolution' in the home: household technology and social change in the 20th century"; Oldenziel, "Boys and their toys: The Fisher Body Craftsman's Guild, 1930-1968, and the making of a male technical domain"

Supplemental Readings

For further development of her argument on the (lack of) industrialization in female domestic work, see Cowan, *More Work for Mother: The Ironies of Household Technologies from the Open Hearth to the Microwave*. Lerman, Mohun, and Oldenziel, "Versatile tools: Gender analysis and the history of technology" provides an introduction to their influential special issue of *Technology & Culture* on women and technology in which the Oldenziel article above first appeared.

III January 25

Bray, "Gender and Technology"; Kleif and Faulkner, "'I'm No Athlete [but] I Can Make This Thing Dance!' Men's Pleasures in Technology"; Fischer, "Gender and the Residential Telephone, 1890-1940: Technologies of Sociability"

Supplemental Readings

Wajcman, "Reflections on Gender and Technology: In What State is the Art?"; Bray, *Technology and Gender*; Edwards, "The Army and the Microworld: Computers and the Politics of Gender Identity"; Pirsig, *Zen and the art of motorcycle maintenance: an inquiry into values*; Ullman, *Close to the machine: technophilia and its discontents : a memoir*; Florman, *The Existential Pleasures of Engineering*

IV February 1

Oldenziel, *Making Technology Masculine: Men, Women and Modern Machines in America, 1870-1945*

Supplemental Readings

Maines, *The technology of orgasm : "hysteria," the vibrator, and women's sexual satisfaction*; Rossiter, *Women scientists in America : struggles and strategies to 1940*; Tichi, *Shifting Gears: Technology, Literature, Culture in Modernist America*; Hacker, *Pleasure, Power and Technology: Some tales of Gender, Engineering, and the Cooperative Workplace*

V February 8

Strom, *Beyond the typewriter : gender, class, and the origins of modern American office work, 1900-1930*

Supplemental Readings

Davies, *Woman's place is at the typewriter : office work and office workers, 1870-1930* focuses on the typewriter as a gendered technology. Milkman, *Gender at work: the dynamics of job segregation by sex during World*

War II argues that women do not replace men during war; new and gendered positions are created for them. Benson, *Counter Cultures: Saleswomen, Managers, and Customers in American Department Stores, 1890-1940* describes women's work in retail. Tone, *Devices and desires : a history of contraceptives in America* is a history of birth control, and includes a section on female entrepreneurs in this technology.

VI February 15

Hicks, *Programmed Inequality: How Britain Discarded Women Technologists and Lost Its Edge in Computing*

Supplemental Readings

Both Ensmenger, *The Computer Boys Take Over* and Abbate, *Recoding Gender: Women's Changing Participation in Computing* cover the analogous story of the development of computer programming in the United States during this period. Agar, *The Government Machine: A Revolutionary History of the Computer*, while not explicitly about gender, provides the context for the turn towards "machinic" thinking in the British Civil Service.

VII February 22

Nakamura, "Indigenous Circuits: Navajo Women and the Racialization of Early Electronic Manufacture"; Ensmenger, "Making Programming Masculine"; Haraway, "Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century"; Bernstein et al., "Silicon Valley: Paradise or Paradox"

Supplemental Readings

For other accounts of the roles that women played in the early computer industry, see Shetterly, *Hidden Figures: The Untold Story of the African American Women Who Helped Win the Space Race*, Grier, *When computers were human*, and Goyal, "Women's contributions to early computing at the National Bureau of Standards."

VIII March 1

Hackers: Heroes of the Computer Revolution, (selected excerpts); Eglash, "Race, Sex, and Nerds: From Black Geeks to Asian American Hipsters"; Lagesen, "A cyberfeminist utopia? Perceptions of gender and computer science among Malaysian women computer science students and faculty"; Ensmenger, "'Beards, Sandals, and Other Signs of Rugged Individualism': Masculine Culture within the Computing Professions"

Supplemental Readings

Kidder, *The Soul of a New Machine* was awarded the Pulitzer Prize for its gripping tale of computer engineers as Wild West heroes. Kocurek, *Coin-Operated Americans: Rebooting Boyhood at the Video Game Arcade* provides the larger context for understanding masculinity and video games. Losse, *The Boy Kings* updates these narratives for the Facebook era. If you have trouble understanding Haraway, read Gibson, *Neuromancer*, which covers some of the same territory in the form of cyberpunk science fiction. In fact, read the Gibson anyway. It is beautiful, insightful, and powerfully influential in its own right.

IX March 8

Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*

X March 22

Pascoe, *Dude, You're a Fag*

XI March 29

Cohn, "War, Wimps and Women: Talking Gender and Thinking War"; Nafus, "'Patches don't have gender': What is not open in open source software"; Reagle, "'Free as in sexist?': Free culture and the gender gap"

XII April 5

Cassell and Jenkins, *From Barbie to Mortal Kombat*

Supplemental Readings

Burrill, *Die Tryin': Videogames, Masculinity, Culture*

XIII April 12

Kafai, *Beyond Barbie and Mortal Kombat*

Supplemental Readings

Shaw, *Gaming at the Edge: Sexuality and Gender at the Margins of Gamer Culture*

XIV April 19

Gaboury, "On Uncomputable Numbers: The Origins of a Queer Computing"; Nooney, "A Pedestal, A Table, A Love Letter: Archaeologies of Gender in Videogame History"; Wu et al., "Beyond Virtual Carnival and Masquerade: In-Game Marriage on the Chinese Internet"

Supplemental Readings

Ruberg and Shaw, *Queer Game Studies*

XV April 26

TBD.

XVI Additional Resources

References

- Abbate, Janet. *Recoding Gender: Women's Changing Participation in Computing*. MIT Press, 2012.
- Agar, Jon. *The Government Machine: A Revolutionary History of the Computer*. MIT Press, 2003.
- Alberts, Gerard, and Bas van Vlijmen. *Computerpioniers: het begin van het computertijdperk in Nederland*. Amsterdam University Press, 2017.
- Benson, Susan Porter. *Counter Cultures: Saleswomen, Managers, and Customers in American Department Stores, 1890-1940*. Urbana : University of Illinois Press, 1987.
- Bernstein, Alan, Bob DeGrasse, Rachael Grossman, Chris Paine, and Lenny Siegel. "Silicon Valley: Paradise or Paradox." In *Mexican Women in the United States*. 1980.
- Bivens, R. "The gender binary will not be deprogrammed: Ten years of coding gender on Facebook." *New Media and Society*, 2015.
- Blas, Z. "What is Queer Technology?" *SACHIKO HIROSUE JIM RUXTON LORENA SALOMÉ ...*, 2006.
- Boyer, Kate, and Kim England. "Gender, work and technology in the information workplace: from typewriters to ATMs." *Social & Cultural Geography*, 2008.
- Bray, Francesca. "Gender and Technology." *Annual Review of Anthropology*, 2007.
- . *Technology and Gender*. Univ of California Press, 1997.
- Burrill, Derek A. *Die Tryin': Videogames, Masculinity, Culture*. Peter Lang, 2008.
- Cassell, Justine, and Henry Jenkins. *From Barbie to Mortal Kombat*. MIT Press, 2000.
- Cherny, Lynn, and Elizabeth Reba Weise. *Wired women : gender and new realities in cyberspace*. Seal Press Distributed to the trade by Publishers Group West Seattle, Wash Emeryville, CA, 1996.
- Cheryan, Sapna, Victoria C Plaut, Caitlin Handron, and Lauren Hudson. "The Stereotypical Computer Scientist: Gendered Media Representations as a Barrier to Inclusion for Women." *Sex Roles*, 2013.
- Cohn, Carol. "War, Wimps and Women: Talking Gender and Thinking War." In *Gendering War Talk*. 1993.
- Cowan, R S. "The "Industrial Revolution" in the home: household technology and social change in the 20th century." *Technology and Culture*, 1976.
- Cowan, Ruth Schwartz. *More Work for Mother: The Ironies of Household Technologies from the Open Hearth to the Microwave*. Basic Books New York, 1983.
- Daniels, Jessie. "Rethinking Cyberfeminism(s): Race, Gender, and Embodiment." *Women's Studies Quarterly*, 2009.
- Davies, Margery W. *Woman's place is at the typewriter : office work and office workers, 1870-1930*. Temple University Press, 1982.
- Dublin, Thomas. *Women at work*. Columbia Univ Pr, 1981.
- Easlea, Brian. *Fathering the Unthinkable: Masculinity, Scientists and the Nuclear Arms Race*. Pantheon Books, 1987.
- Edwards, Paul N. "The Army and the Microworld: Computers and the Politics of Gender Identity." *Signs*, 1990.
- Eglash, Ron. "Race, Sex, and Nerds: From Black Geeks to Asian American Hipsters." *Social Text*, 2002.
- Ensmenger, Nathan. "'Beards, Sandals, and Other Signs of Rugged Individualism': Masculine Culture within the Computing Professions." *Osiris*, 2015.

- Ensmenger, Nathan. "Making Programming Masculine." In *Gender Codes: Why Women are Leaving Computing*. 2010.
- Ensmenger, Nathan L. *The Computer Boys Take Over*. MIT Press, 2010.
- Estrin, T. "Women's studies and computer science: their intersection." *Annals of the History of Computing, IEEE*, 1996.
- Faulkner, W. "Nuts and Bolts and People': Gender-Troubled Engineering Identities." *Social Studies of Science*, 2007.
- Faulkner, Wendy. "Dualisms, Hierarchies and Gender in Engineering." *Social Studies of Science*, 2000.
- Fischer, Claude S. "Gender and the Residential Telephone, 1890-1940: Technologies of Sociability." *Sociological Forum*, 1988.
- Florman, Samuel C. *The Existential Pleasures of Engineering*. Macmillan, 1996.
- Gaboury, Jacob. "Darling sweetheart: Queer objects in early computer art." *Metaverse Creativity*, 2013.
- . "On Uncomputable Numbers: The Origins of a Queer Computing." *Journal of the New Media Caucus*, 2015.
- Gibson, William. *Neuromancer*. Ace Books, 1995.
- Goyal, A. "Women's contributions to early computing at the National Bureau of Standards." *Annals of the History of Computing, IEEE*, 1996.
- Gray, Kishonna L. *Race, Gender, and Deviance in Xbox Live*. Routledge, 2014.
- Green, Eileen. *Virtual Gender: Technology, Consumption, and Identity*. Psychology Press, 2001.
- Grier, David Alan. *When computers were human*. Princeton, NJ Princeton University Press, 2005.
- Grossman, Rachael, and United Nations Institute for Training and Research (UNITAR). *Women's Place in the Integrated Circuit*. Technical report. 1980.
- Hacker, Sally. *"Doing it the hard way": investigations of gender and technology*. Allen & Unwin Australia, 1990.
- . *Pleasure, Power and Technology: Some tales of Gender, Engineering, and the Cooperative Workplace*. Boston: Unwin Hyman, 1989.
- . "The Culture of Engineering: Woman, Workplace and Machine." *Women's Studies International Quarterly*, 1981.
- Hackers: Heroes of the Computer Revolution*.
- Haraway, Donna. "Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century." In *Simians, cyborgs, and women: the reinvention of nature*. 1991.
- Hayles, N. Katherine. *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*. University of Chicago Press, 2008.
- Hicks, Marie. "De-Brogramming the History of Computing [Think Piece]." *Ieee Annals of the History of Computing*, 2013.
- . *Programmed Inequality: How Britain Discarded Women Technologists and Lost Its Edge in Computing*. MIT Press, 2016.
- Jarrett, Kylie. "The Relevance of "Women's Work"" *Television & New Media*, 2014.

- Johnson, Nicola F, Leonie Rowan, and Julianne Lynch. "Constructions of gender in computer magazine advertisements: Confronting the literature." *SIMILE: Studies In Media & Information Literacy Education*, 2006.
- Kafai, Yasmin B. *Beyond Barbie and Mortal Kombat*. MIT Press, 2008.
- Kidder, Tracy. *The Soul of a New Machine*. Little, Brown Boston, 1981.
- Kleif, Tine, and Wendy Faulkner. "'I'm No Athlete [but] I Can Make This Thing Dance!' Men's Pleasures in Technology." *Science, Technology & Human Values*, 2003.
- Kocurek, Carly A. *Coin-Operated Americans: Rebooting Boyhood at the Video Game Arcade*. 2015.
- Kvande, Elin, and Bente Rasmussen. "Men in male-dominated organizations and their encounter with women intruders." *Scandinavian Journal of Management*, 1994.
- Lagesen, V A. "A cyberfeminist utopia? Perceptions of gender and computer science among Malaysian women computer science students and faculty." *Science, Technology & Human Values*, 2008.
- . "Reassembling Gender." *Social Studies of Science*, 2012.
- . "The Strength of Numbers: Strategies to Include Women into Computer Science." *Social Studies of Science*, 2007.
- Lerman, N.E., A.P. Mohun, and R. Oldenziel. "Versatile tools: Gender analysis and the history of technology." *Technology and Culture*, 1997.
- Lie, M. *He, she and IT revisited*. New perspectives on gender in the information society, 2003.
- Light, Jennifer. "When Computers Were Women." *Technology and Culture*, 1999.
- Losse, Katherine. *The Boy Kings*. Simon / Schuster, 2012.
- Lowe, Graham. *Women in the Administrative Revolution: The Feminization of Clerical Labor*. University of Toronto Press, 1987.
- Maines, Rachel P. *The technology of orgasm : "hysteria," the vibrator, and women's sexual satisfaction*. Baltimore, Md Johns Hopkins University Press, 1999.
- Margolis, J, A Fisher, and F Miller. "The anatomy of interest: Women in undergraduate computer science." *Women's Studies Quarterly*, 2000.
- Margolis, Jane, and Allan Fisher. *Unlocking the clubhouse: women in computing*. MIT Press, 2002.
- "Mary Edwards: Computing for a Living in 18th-Century England," 2003.
- Matrix, Sidney Eve. "Cyberfeminism and Technoculture Studies: An Annotated Bibliography." *Women's Studies Quarterly*, 2001.
- Matthews, Glenna. *Silicon Valley, Women, and the California Dream*. Stanford University Press, 2003.
- McIlwee, Judith, and J. Gregg Robinson. *Women in engineering: Gender, power, and workplace culture*. Albany: State University of New York Press, 1992.
- Mellström, Ulf. "The Intersection of Gender, Race and Cultural Boundaries, or Why is Computer Science in Malaysia Dominated by Women?" *Social Studies of Science*, 2009.
- Milkman, Ruth. *Gender at work: the dynamics of job segregation by sex during World War II*. University of Illinois Press, 1987.
- Misa, Thomas, ed. *Gender Codes: Why Women are Leaving Computing*. Wiley, 2010.
- Nafus, D, J Leach, and B Krieger. *Gender: Integrated report of findings*. FLOSSPOLs, 2006.

- Nafus, Dawn. "'Patches don't have gender': What is not open in open source software." *New Media and Society*, 2012.
- Nakamura, Lisa. "Indigenous Circuits: Navajo Women and the Racialization of Early Electronic Manufacture." *American Quarterly*, 2014.
- Namioka, Aki, Julie A Adams, Juanita Ewing, Nadyne Mielke, Eliot Moss, and Lucy Suchman. "From sorceress to scientist: women in computing." In *OOPSLA Companion '08: Companion to the 23rd ACM SIGPLAN conference on Object-oriented programming systems languages and applications*. 2008.
- Neale, Margaret A, Karen A Jehn, and Gregory B Northcraft. "Why Differences Make a Difference: A Field Study of Diversity, Conflict, and Performance in Workgroups." *Administrative Science Quarterly*, 1999.
- Nelson, Alondra, Thuy Linh N Tu, and Alicia Headlam Hines. *Technicolor: Race, Technology, and Everyday Life*. NYU Press, 2001.
- Nelson, K, and N Veltri. "Women In Information Technology Careers: A Person-Process-Context-Time Framework," 2011.
- Nooney, Laine. "A Pedestal, A Table, A Love Letter: Archaeologies of Gender in Videogame History." *Game Studies*, 2013.
- Oldenziel, R. "Boys and their toys: The Fisher Body Craftsman's Guild, 1930-1968, and the making of a male technical domain." *Technology and Culture*, 1997.
- Oldenziel, Ruth. *Making Technology Masculine: Men, Women and Modern Machines in America, 1870-1945*. Amsterdam: Amsterdam University Press, 1999.
- Ong, Aihwa. *Spirits of Resistance and Capitalist Discipline*. SUNY Press, 1987.
- O'Riordan, Kate, and David J Phillips. *Queer Online: Media Technology & Sexuality*. Peter Lang, 2007.
- Pascoe, C J. *Dude, You're a Fag*. Univ of California Press, 2011.
- Pirsig, Robert. *Zen and the art of motorcycle maintenance: an inquiry into values*. New York: Morrow, 1974.
- Plant, Sadie. *Zeros + Ones: Digital Women + the New Technoculture*. 1998.
- Poindexter, Paula Maurie, Sharon Meraz, and Amy Schmitz Weiss. *Women, men, and news: divided and disconnected in the news media landscape*. Routledge, 2008.
- Probert, B, E Green, J Owen, and D Pain. "Gendered By Design? Information Technology and Office Systems," 1995.
- Pursell, Caroll. "'I am a Lady or an Engineer?' The Origins of the Women's Engineering Society in Britain, 1918-1940." *Technology and Culture*, 1993.
- Rakow, Lana. *Gender on the line: women, the telephone, and community life*. University of Illinois Press, 1992.
- Rasmussen, B. *The production of male power in computer science*. Women, 1991.
- Rasmussen, Bente, and Tove Hapnes. "Excluding Women from the Technologies of the Future? A Case Study of the Culture of Computer Science." *Futures*, 1991.
- Reagle, Joseph. "'Free as in sexist?': Free culture and the gender gap." *First Monday*, 2012.
- Reuben, E, P Sapienza, and L Zingales. "How stereotypes impair women's careers in science." *Proceedings of the National Academy of Sciences*, 2014.
- Rossiter, Margaret W. *Women scientists in America : before affirmative action, 1940-1972*. Johns Hopkins University Press, 1995.

- . *Women scientists in America : struggles and strategies to 1940*. Johns Hopkins University Press, 1982.
- Rotella, Elyce J. *From home to office : U.S. women at work, 1870-1930*. UMI Research Press, 1981.
- Rothschild, Joan, Cynthia Cockburn, Susan Ormrod, and Ruza Furst-Dilic. "Gender and Technology in the Making." *Technology and Culture*, 1995.
- Ruberg, Bonnie, and Adrienne Shaw. *Queer Game Studies*. 2017.
- Salter, Anastasia, and Bridget Blodgett. "Hypermasculinity & Dickwolves: The Contentious Role of Women in the New Gaming Public." *Journal of Broadcasting & Electronic Media*, 2012.
- Scharff, Virginia. *Taking the Wheel: Women and the Coming of the Motor Age*. The Free Press New York, 1991.
- Schlombs, Corinna. "A Gendered Job Carousel: Employment Effects of Computer Automation." In *Gender Codes: Why Women are Leaving Computing*. 2010.
- Scott, J.W. "The uses and abuses of gender." *Tijdschrift voor Genderstudies*, 2013.
- Scott, Joan W. "Gender: A Useful Category of Historical Analysis." *The American Historical Review*, 1986.
- Shaw, Adrienne. *Gaming at the Edge: Sexuality and Gender at the Margins of Gamer Culture*. 2015.
- Shetterly, Margot Lee. *Hidden Figures: The Untold Story of the African American Women Who Helped Win the Space Race*. HarperCollins UK, 2016.
- Sproull, Lee, Sara Kiesler, and David Zubrow. *Encountering an alien culture*. Technical report. Carnegie Mellon, 1983.
- Stepulevage, L. "Computer-based office work: stories of gender, design, and use." *Annals of the History of Computing, IEEE*, 2003.
- Stewart, Melanie. *Cracking the Gender Code: Who Rules the Wired World?* New York: Second Story Press, 2000.
- Stone, Rosanne-Allucquere. *The War of Desire and Technology at the Close of the Mechanical Age*. MIT Press Cambridge, MA, 1996.
- Stout, Jane G, and Heather M Wright. "Lesbian, Gay, Bisexual, Transgender, and Queer Students' Sense of Belonging in Computing: An Intersectional Approach." *Computing in Science & Engineering*, 2016.
- Strom, Sharon Hartman. *Beyond the typewriter : gender, class, and the origins of modern American office work, 1900-1930*. University of Illinois Press, 1992.
- Suchman, Lucy. "Review: Wajcman Confronts Cyberfeminism." *Social Studies of Science*, 2006.
- "Technofeminism (paperback) WAJCMAN Judy," 2004.
- Terranova, Tiziana. *Network culture: politics for the information age*. Pluto Pr, 2004.
- Tichi, Cecelia. *Shifting Gears: Technology, Literature, Culture in Modernist America*. University of NC Press Chapel Hill, 1987.
- Tone, Andrea. *Devices and desires : a history of contraceptives in America*. Hill / Wang, 2001.
- Turkle, Sherry. "Hackers: Loving the Machine for Itself." In *The Second Self: Computers and the Human Spirit*. 1984.
- . *The Second Self: Computers and the Human Spirit*. Simon / Schuster, 1984.
- Ullman, Ellen. *Close to the machine: technophilia and its discontents : a memoir*. City Lights Books, 1997.
- Varma, R. "Why I chose computer science? Women in India." *AMCIS 2009 Proceedings*, 2009.
- Varma, Roli. "Women in Computing: The Role of Geek Culture." *Science as Culture*, 2007.

- Vitores, Anna, and Adriana Gil-Juárez. "The trouble with 'women in computing': a critical examination of the deployment of research on the gender gap in computer science." *Journal of Gender Studies*, 2016.
- Wajcman, Judy. "FROM WOMEN AND TECHNOLOGY TO GENDERED TECHNOSCIENCE." *Information, Community and Society*, 2007.
- . "Reflections on Gender and Technology: In What State is the Art?" *Social Studies of Science*, 2000.
- Wallach Scott, J. "Gender: Still a Useful Category of Analysis?" *Diogenes*, 2010.
- Wilson, Fiona. "Can Compute, Won't Compute: Women's Participation in the Culture of Computing." *New Technology, Work and Employment*, 2003.
- "Women, Work and Computerization," 1997.
- Wu, W, S Fore, X Wang, and P S Y Ho. "Beyond Virtual Carnival and Masquerade: In-Game Marriage on the Chinese Internet." *Games and Culture*, 2007.
- Zoonen, Liesbet van. "Gendering the Internet: Claims, Controversies, and Cultures." *European Journal of Communications*, 2002.