

Gender & Technology

A READER

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Introduction: Interrogating Boundaries

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I'd like to be just like my Dad,
He's handsome and he's keen;
He knows just how to drive the car,
And buy the gasoline.¹

— song lyrics, "Mister Rogers' Neighborhood," 1960s

Are cars masculine technologies? What other technologies — rhyming or otherwise — would have made good illustrations of manhood for boys growing up in suburban cold war America? Could Mister Rogers, the helpful and friendly children's TV personality of the years between *The Mickey Mouse Club* and *Sesame Street*, have written his song without reference to technology?

In a different verse, Mister Rogers used knowledge about the material world to encourage female aspirations as well:

I'd like to be just like my Mom,
She's pretty and she's nice;
She knows just how to make the bed,
And cook things out of rice.

Are beds and stoves technologies? Are they feminine technologies? Could Fred Rogers have sung his verse for little girls without reference to material objects and knowledge of how to use them?

In the 1970s, Rogers completely rewrote these lyrics to remove the gender stereotypes. Yet while the material world we inhabit and the gender roles we teach

our children may be less blatantly dichotomized now than a generation ago, but Fred Rogers's rhyming stereotypes have modern parallels in childhood activities from baking cookies with mom to the fishing trip with dad. For both grown-ups and children—in the present and in the past—material things (stoves and ovens, cars, fishing rods, bedspreads) can be read as codes for gender. So, too, gender expectations often inform the uses of these objects.

Although we may think of gender as a way of analyzing the social side of human activity and technology as a component of the physical world around us, in fact gender and technology are closely related. Scholars have written of a “mutual shaping” of the social and the technological: each shapes the other.² In times of technological change, then, we can expect contests over social categories such as gender; in times of social change, we should look for new kinds of interactions with the material world. As these articles show, such change rarely happens smoothly or automatically. Neither technology nor gender ideology is static or stable.

The articles in this book explore technology through the lens of gender and gender through the lens of technology, and they do so in historical perspective. As a result, the authors shed light on the entwined and reciprocal relationships, in different places and times, between these two important categories of analysis. We hope this volume brings insights and provokes new investigations in gender studies, technology studies, and history.

Technology

In colloquial English, “technology” has come to refer most often to computers and their networks, but the historian interested in discussing telephones or steamboats or blacksmithing uses *technology* in a broader and more anthropological sense. Thinking about technology as people's ways of making and doing things allows the term easily to encompass stone age tools and space age instruments, sewing and cooking and driving cars and programming computers.³ In cultural studies, meanwhile, technology is often discussed in linguistically grounded terms as a *discourse* or *text*. This approach takes its cue from Michel Foucault, who understood technology to be a whole set of social techniques that become institutionalized.⁴ The authors in this book discuss technology historically: they examine new and old material things and people's knowledge about them; the hardening of social facts into clothing, furniture, factories, modes of transportation, energy

systems, and so on; the constraints imposed by the physical existence of the built environment once it has been constructed. We argue that the material matters.

All societies have ways of constructing their material worlds, of creating and using artifacts of many kinds. Different cultures—or the same culture in different time periods—accomplish tasks and attach meanings to objects in particular ways. The articles in this book focus on a particular place at a particular time: North America, mostly during the century from 1850–1950, the heyday of industrial capitalism. The authors discuss the technologies and forms of social organization specific to that historical context, including factories and cars, dressmaking and laundry, and bodies and machines. They examine people as well as things, emphasizing the changes and continuities of human technological activities: making, doing, using, designing, producing, consuming, repairing, recycling.

Because these authors understand technology to be situated in time and place, their scholarship explores how the workings, uses, and meanings of technologies are contingent on particular historical contexts. In the past ten years, scholars in gender and cultural studies have marveled at the technological possibilities of biomedical innovations and the Internet to change the sanctity of the body itself. But as some of these essays on the body show, cyborgs have a history, too. Early hair removal technologies, for example, shaped not only gender and racial identities but also modified bodies. The Internet, also, must be situated historically: computers are not the first kind of information technology to allow the masquerades and disembodiment of authors, as the novels of George Sand (b. Amantine Aurore Lucie Dupin, 1804–1876) and George Eliot (b. Mary Ann Evans, 1819–1880)—made possible by nineteenth-century printing, paper, and bookmaking technologies—demonstrate. Throughout the period spanned by U.S. history, technologies have entwined bodies and machines, as studies of early industrial factory mechanization reveal.⁵

Once one considers “technology” in this anthropological and historical way, it becomes clear that its study involves not only material things but also people. Humans' choices, creativity, knowledge, ideologies, assumptions, and values must always be explored along with the objects and machines resulting from their technological activities. After all, technologies do not work without the people who produce, handle, and use them. Furthermore, humans associate their technological activities with the categories by which they divide and define themselves—age, wealth, race, education, work, region, and, of course, gender.

Gender

The word *gender* has come into common usage as one of the many ways by which we sort people into familiar categories. But like many other such schemas, the male/female dichotomy masks complex social and cultural processes. Scholars examining how gender works in society have pointed out that maleness and femaleness do not exist independently but are defined in relation to each other. The boundaries between how people designated male are expected to behave and how people designated female are expected to behave are sometimes redefined, negotiated, or violated. Gender is not only a way to sort people; it is also a way to assign power in particular contexts. The shape of this boundary varies from place to place, from time period to time period, from situation to situation. Elite men once wore wigs and makeup; “painted women,” meanwhile, were read as sexually available, not respectable ladies. Flexibility and open communication, once “feminine” characteristics, can now be labeled “good management practice” in the corporate world. Like technology, defining *gender* demands attention to historical processes—gender too is historically contingent.

Keeping track of masculinities and femininities is more easily managed if one thinks of gender as operating at different levels, in layers of function and meaning. At the most personal level, gender is an *identity*, a part of how one sees oneself and presents oneself to the world. People perform their sense of their own gender, not only by words and gestures, but also in material ways: by wearing baseball caps or skirts, ties or jewelry; by tinkering with cars or baking cookies; by shaving with particular colors of razors.

Meanwhile, the larger society makes use of gender in organizational and material ways, so gendered people navigate, create, and modify gender *structures* and *institutions*: Boy Scouts and Girl Scouts, men’s departments and women’s departments, beauty salons and barbers, men’s and women’s locker rooms, or, often, corporate typing rooms and board rooms. Finally, gender works in *symbolic and representational* ways, in assumptions about what men and women like, in images of manhood and womanhood, in styles and expectations and ideologies based on portrayals of gender difference. The image of Mr. Rogers’s car-driving Daddy is effective not because Mom never chauffeured the kids to piano lessons but because cars were symbolically associated with manhood. Similarly a person toiling over a hot stove represents nurturing womanhood, unless the person wears a tall white

hat—in which case this person has been symbolically represented as a professional male of refined taste, a chef.

Interrogating Boundaries: Technology and Gender

Discovering the role of material objects in these layers of gender construction, like considering the role of gender in constructions of technologies, makes clear the importance of treating these two categories together. At every level we find tight connections, technology shaping gender and gender shaping technology. Gender analysis illuminates our understandings of technology, and attention to technology illuminates our understandings of gender. Technology, too, can be analyzed in layers of identity, structures, institutions, and representations.

We can often see this process more clearly by examining the technologies and gender ideologies of the past. For example, early cars were, not surprisingly, machines run by men—a chauffeur, often, who knew the quirks of the machine or an adventurous hobbyist with money for luxury. As cars became more reliable and more popular, their owners constituted a market for a range of gadgets, including now-common items like side-view mirrors and a roof to keep off the rain. One of the most innovative of these was the electric ignition—imagine starting your car from the driver’s seat instead of having to crank the engine. But electric “self-starting” ignitions were marketed “for the wife,” a specialty item, slow to be adopted as standard equipment: manly men would not mind arm-breaking cranks or trudging around the car on a muddy road to get it started.⁶ The long life of the cranked engine makes little sense without considering the expectations of adventurous manhood.

In this case, expected gender identities shaped accessories sold with cars; in turn, the new freedom of automotive transport, now with roof and ignition made safe for the new category of “female drivers,” allowed women to extend the reach of appropriate and respectable activity. Similarly the “safety bicycle” was marketed as a machine women could use, not only adding reliable brakes for male cyclists but also redefining cycling as a respectable female pastime. These examples take us from identity to structure, a physical enlargement of where a person could go in a day’s travel and also where a woman could go alone. Indeed, physical structures often regulate, reinforce, or impose gender, and gender difference structures the built environment: consider a tree house with a “no girls allowed” sign; a fighter jet off-limits to female pilots; a small electric drill (black case, motor to turn at-

tachment) and an electric mixer (white case, motor to turn attachment); a disposable razor (pastel colors, curved handle, built-in lotion dispenser) and a disposable razor (black and chrome, sharp angles, triple blade). Saloons and bars were traditionally built with a “ladies’ entrance” to the dining room, and early hotels were designed with separate parlors for male and female guests. Other dichotomies and categories often intersect and complicate these structures. For example, we expect separate facilities, in the United States called “ladies’ rooms” and “men’s rooms,” to be built in public buildings, while we have no problem with unmarked “bathrooms” in our private spaces at home; for decades in the southern United States, public restrooms were marked “white” and “colored,” a racial rather than a gender-based material structure.⁷

These connections become embedded in our vocabulary as well. When typewriters first entered American offices, clerking was a male profession. Soon “typewriters” did not refer to the novel writing machines but the women who controlled them. Similarly, in the early telephone operating systems “switches” referred to the women operating them. Before electronic calculating machines the (female) mathematicians whose work enabled missiles to launch accurately were called “computers” — the new digital technologies were named after the workers.⁸

Finally, representations of gender and technology regularly rely on each other, from the “shop ‘til you drop” of female-coded consumerism to the (male) doctor in the white lab coat whose advice in the TV ad is cloaked in the symbols of scientific expertise. Advertising is perhaps the easiest place to find such representations throughout the twentieth century, in images or text. But many other sources — advice manuals, literature, sermons, school reports, Mr. Rogers’s song lyrics — use technologies to represent gender categories and gender to categorize technologies.

The connections, indeed, are so ubiquitous they often seem natural and have therefore been hidden from analysis. Treating both categories as constructed, rather than natural or immutable facts, and treating them together, highlights the importance of human agency in understanding historical change and continuity. For example, individual technologies such as the pill, the computer, or the Internet have often been considered causes of women’s liberation, but technologies by themselves have no such power. Human beings made these technologies and human beings chose to use them, often based on human desire for (or resistance to) social change.

The stories are often complex, as human stories tend to be. Funding for contraceptive research came out of progressive social ideals including eugenics: “birth

control” and “planned parenthood” were labels based on goals of population control and limiting lower-class family size. The research grew out of the assumption that new technological solutions were more promising than teaching men reliable condom use. That the pill became an emblem of changing social mores for unmarried middle-class women was not inherent in the technology but chosen by the women who used it. Conversely, technologies enable social change as well; without reliable contraception, sexual activity is more likely to result in pregnancy. With reliable contraception, sexual activity conducted privately can more successfully be separated, if the participants so choose, from its more public results. But even these “revolutionary” technologies embed continuities: the computer keyboard is based on the typewriter keyboard, which was designed to keep mechanical keys from sticking; packaging for the pill was designed with a week of placebo pills so women could still menstruate “normally” but would not forget to take their pills daily.⁹ Social beliefs and practices and technological developments reciprocally shape each other, often with unexpected outcomes, as humans debate and negotiate the alternatives and the constraints.

When we recognize the role of human choice in shaping these categories and their relationships, we must recognize also that both gender and technology are about power: social, cultural, economic, political. Differences are not simply descriptive but shape opportunity and access in industrial capitalism as it has developed in North America. The association of maleness and technological prowess in a society that values technological change camouflages the privileges accorded men; they are labeled privileges of technological knowledge rather than of masculinity. The gendered production/consumption dichotomy, so common in industrial society, labels male-coded activities “production” and camouflages the work and the technological content of activities labeled “consumption” or “reproduction.” Consumption and reproductive activities are generally unpaid or underpaid, invisible knowledge and invisible contribution in a capitalist economy.¹⁰

Gender analysis, scholars have long since pointed out, invites the interrogation not only of the boundaries between maleness and femaleness but also between other categories as well: between public and private, between various racial labels and identities, between animate and inanimate. As you read this book, we invite you to interrogate the boundaries of industrial capitalism: technological/social; production/consumption; skilled/unskilled; expert/user. Outside of this book people usually assume a boundary between the categories “gender” and “technology” just as they assume one between “male” and “female.” We seek to examine the

gender/technology boundary, to explore its construction, to explain the shapes it has taken in the past and understand its legacy for the present and future.

NOTES

1. This song appeared first on Program #3, produced in 1968 and repeated in several other episodes. Private communications, Elizabeth Mahoney and Laurel Povazan-Scholnick, Mister Rogers' Neighborhood Archives, University of Pittsburgh, January 2002, and Hedda Sharapan, associate director of public relations, Family Communications, Inc., May 2003. The song lyrics were completely revised in 1975; later the song was dropped from the Mister Rogers repertoire. Other revisions in 1975 included attention to whether machines did things on their own: after 1975, machines never initiate interactions with humans. Telephone interview, Hedda Sharapan, November 2002. Lyrics reproduced by permission of Family Communications, Inc.

2. For a full discussion of the literature we rely on in this introduction, see the historiography essay at the end of this volume.

3. Melvin Kranzberg, "At the Start," *Technology & Culture* 1 (1959):1-10; Brooke Hindle, "The Exhilaration of Early American Technology: An Essay" in Hindle, ed., *Technology in Early America: Needs and Opportunities for Study* (Chapel Hill, 1966), reprinted in Judith McGaw, ed., *Early American Technology: Making and Doing Things from the Colonial Era to 1850* (Chapel Hill, 1994). For more recent discussions, see McGaw's introduction to that volume; McGaw, "No Passive Victims, No Separate Spheres: A Feminist Perspective on Technology's History," in Stephen Cutcliffe and Robert Post, eds., *In Context: History and the History of Technology* (Bethlehem, Pa., 1989), pp. 172-191; Merritt Roe Smith and Leo Marx, eds., *Does Technology Drive History* (Cambridge, Mass., 1994); and Donald MacKenzie and Judy Wajcman, eds., *The Social Shaping of Technology* (Birmingham and Philadelphia, 1999).

4. A good example, well known in women's and gender studies circles, is Theresa De Lauretis's book *Technologies of Gender: Essays on Theory, Film and Fiction* (Bloomington, Ind., 1987).

5. A cyborg is a "cybernetic organism," a combination of organic and inorganic parts. On cyborgs in gender studies, see Donna Haraway, *Simians, Cyborgs and Women: The Reinvention of Nature* (London, 1988), which includes her now-classic essay, "A Manifesto for Cyborgs: Science, Technology, and Socialist Feminism in the 1980s," originally published in *Socialist Review* 15 (1985): 65-107. On hair removal, see Rebecca Herzig, "Situated Technology: Meanings," in this reader. Biographical details on Sand and Eliot are from *American Heritage Dictionary of the English Language* (Boston, 1992). For further discussion of the gendered origins of computer technologies, see Paul Edwards, "Industrial Genders: Soft/Hard," and Jennifer Light, "Programming," both in this volume.

6. This discussion is drawn from Virginia Scharff, *Taking the Wheel: Women and the Coming of the Motor Age* (Albuquerque, 1991). In fact, gas-powered combustion engines

were generally associated with masculinity, and electric cars—in their brief heyday—with femininity.

7. For the example of drills and beaters, we thank Deborah Douglas of the MIT Museum. On hotels, see Molly W. Berger, "A House Divided: The Culture of the American Luxury Hotel, 1825-1860," in *His and Hers: Gender, Consumption, and Technology*, eds. Roger Horowitz and Arwen Mohun (Charlottesville, Va., 1998). On bathrooms, see McGaw, "Why Feminine Technologies Matter," in this book and Patricia Cooper and Ruth Oldenziel, "Cherished Classifications: Bathrooms and the Construction of Gender/Race on the Pennsylvania Railroad during World War II," *Feminist Studies* 25, no. 1 (Spring 1999): 7-42. On bicycles, see Wiebe Bijker and Trevor Pinch, "Social Construction of Artifacts," in Wiebe Bijker, Thomas Hughes, and Trevor Pinch, eds., *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology* (Cambridge, Mass., 1987), pp. 17-50; and Ellen Gruber Garvey, "Reframing the Bicycle," *American Quarterly* 47, no. 1 (March 1995): 66-101.

8. See Margery Davies, *Woman's Place Is at the Typewriter: Office Work and Office Workers, 1870-1930* (Philadelphia, 1982); Sharon Hartman Strom, *Beyond the Typewriter: Gender, Class, and the Origins of Modern American Office Work, 1900-1930* (Urbana, Ill., 1992); Kenneth Lipartito, "When Women Were Switches: Technology, Work, and Gender in the Telephone Industry, 1890-1920," *American Historical Review* 99 (1994): 1074-1111; and Jennifer Light in this book.

9. See notes 29-32 to "The Shoulders We Stand On" in this reader.

10. For further discussion, see "The Shoulders We Stand On."

Entwined Categories: Gender Constructs Technology

What is technology?

How has technology been gendered?

What is technology? What is not technology? Is the material world shaped by ideas about gender, and are people's perceptions of the material world shaped by ideas about gender? How? Defining technology broadly—as we have done in the introduction to this volume—as a process of “making and doing things,” rather than as a particular set of recent and sophisticated artifacts, allows us to analyze and compare both ordinary and arcane elements of the material world and the ways people interact with it. Because people construct and use technologies, their values shape their choices—but people also deploy the technologies available to them as they construct meaning in their lives.

The articles in Part I allow us to explore the meanings and boundaries of technology in our broad definition and to think about why the word *technology* is often used more narrowly in colloquial English. What parts of the material world have been labeled “technological” and why? In what ways have ideas about gender shaped technological choices? Are technologies sometimes “masculine” and sometimes “feminine”? How do these stories, in turn, shed light on how gender was understood by the actors involved?