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Consumers, Tinkerers, Rebels: The People Who Shaped Europe by Ruth Oldenziel and Mikael Hård (review)

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dressed a storied technological system and contextualized it not only with other production technologies but also with main currents of American and even global history. At the start, Nye suggests that the moving assembly line became “a central icon of capitalist productivity” (pp. ix–x). By the time he concludes, he has proven it to be an icon perfect for constructing a rich narrative, indeed several narratives—of promises realized and hopes dashed, of what Schumpeter called “creative destruction,” of workers “struggling to hold on to the form of life that they had created through the assembly line” (p. 267).

BOB POST

Bob Post once worked on an assembly line at the Carrier Corporation factory in California, making air-conditioning units. When he was with *T&C* fifty years later, the editorial office at The Henry Ford adjoined the call center charged with booking tours of River Rouge. The constant buzz reminded everyone in that office that, whatever else the assembly line might be, to the public it has always been a form of performance art.

Consumers, Tinkerers, Rebels: The People Who Shaped Europe.

By Ruth Oldenziel and Mikael Hård. New York: Palgrave Macmillan, 2013.
Pp. xxi+416. \$95.

We owe Michel de Certeau the insight that modernity invented everyday life and then conceived of it as a mystery. Therefore, this book probes the contours of Europeans’ everyday life in the last century and a half not by looking at the mainstream narratives of technological change, but by delving into its interstices. If the hallmark of industrial modernity is the construction of increasingly expansive technological systems by state and corporate powers, within these systems’ folds emerge countless opportunities for acts of anti-discipline (the tinkering and rebelling summoned in the book’s subtitle) by social actors who can only euphemistically be called “consumers.” The book’s protagonists are social actors who made citizenship claims by engaging with technology as users. These user-citizens, the authors argue, are the unsung heroes of both technological change and its political and cultural dimension, the production of increasingly interconnected European ways of life.

The first installment of a six-volume series titled *Making Europe* and devoted to exploring technology as a transnational phenomenon, this book pursues its admirably ambitious agenda by narrating illustrative (and smartly illustrated) stories. Following a loosely chronological order, each of the eight chapters focuses on a transnational technological system, broadly defined, and looks at it from the perspective of its intended and/or unintended users. The three chapters in part I, which covers the half century before World War I, deal with fashion and clothing, dwellings and home furnishing, and travel and transportation. In each of these cases, the strate-

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gies that emanated from centers of power (the Parisian *maisons*, the hygiene experts, and the transportation industry with its political allies) confronted the subtly subversive tactics of heterogeneous users (women armed with fashion plates, paper patterns, and sewing machines; dwellers bent on interpreting comfort on their own terms; and travelers of vastly unequal classes eager to protect or challenge social and geographical boundaries). One of the book's main accomplishments is that these tensions become materialized in satisfyingly concrete ways, as the reader is invited to follow, among many other things, hands skillfully copying Parisian designs, dwellers debating the pleasures and challenges of home furnaces, and migrants measuring the gap between the disinfecting border stations through which they must pass and the seamless journeys of the cosmopolitan elites on the Orient Express.

The three chapters in part II, which deals with the mid-century decades, examine similar tensions around bicycling and the rise of the automobile, home cooking and the industrialization of food processing and retailing, and "vernacular" and "expert" visions of European kitchens. The main goal here is to show that even at the height of state-centered modernism and American influence, users' mobilization mattered. As long as the middle class rode on two wheels, governments and corporations could not ignore bicycling clubs, which greatly contributed to shaping the infrastructures on which automobility ended up relying. By the same token, ordinary Europeans resisted the lures of both the American supermarket and high-tech kitchen, inflecting these hallmarks of modernity in distinctive ways.

The final part has its inception in the 1960s, when European users on both sides of the iron curtain mobilized with renewed vigor to negotiate the technological systems that regulated their lives. A highly original chapter deals with the genealogy of recycling practices and links the environmental movement of the 1970s to older cultures of thrift, some of which emerged from society and others which were promoted by autarkic and nationalist governments. The last chapter takes on play and examines a wide array of practices, ranging from Western Europeans' passion for making dresses for their Barbie dolls to the history of blue jeans in Communist Europe, and from the early development of personal computing in places, such as Greece and Yugoslavia, that U.S. corporations regarded as too marginal to invest in, to the recent "pirates" movements battling increasingly exclusive definitions of intellectual property.

This is a book of truly imaginative scholarship and remarkable erudition that accomplishes nothing less than showing through a panoply of examples and stories how discipline and subversion define each other, and how the shifting boundaries between the two meet in the things, skills, and gestures that make up the lives of Europeans and, by extension, all modern subjects. In so doing, the authors have set a new standard for how histori-

ans of technology should conceive of consumption. To paraphrase de Certeau one last time, any act of consumption is always already a form of production as well.

DARIO GAGGIO

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Girls Coming to Tech!: A History of American Engineering Education for Women.

By Amy Sue Bix. Cambridge, MA: MIT Press, 2014. Pp. 360. \$34.

This thoroughly researched volume provides the first systematic history of women in engineering education. Departing from biographical accounts of individual women engineers, Amy Bix has researched campus and alumni papers, local newspapers, letters, and administrative records. The result is a densely narrated book with deep insights into the gendered culture of engineering education. Expanding our understanding of the masculine character of technology, as compared to science or medicine, Bix teaches us as much about engineering and its established practices, meanings, and beliefs as about the women who joined the field.

To begin, Bix establishes the first chronology of women in engineering education. Before World War II brought larger numbers of women onto the campuses of technology institutes for technological training programs, only a few women had “invaded” engineering programs. But during the three decades following WWII, growing numbers of women entered them. Now, coeducational schools such as Purdue, Cornell, and Iowa State admitted more women into their engineering programs, some all-male schools such as RPI became coeducational, and others, like Columbia, opened their engineering programs to women.

The core of Bix’s book provides three geographically and institutionally varied case studies of this transition. At Georgia Tech, women sued for their admission to those engineering programs to which they lacked access at in-state public institutions. In response, Georgia Tech allowed a small number of women into select programs, and in 1965 opened all programs to women. At Caltech, undergraduate students and eventually faculty and administrators advocated for the institute to become coeducational, a step that, students claimed, would improve the campus climate in the midst of the countercultural revolution. Finally, MIT had admitted women since the 1870s. But only after WWII did the numbers increase, and women students successfully organized to improve their situation on campus.

Eye-opening commonalities between these cases abound. To begin with, young women encountered an often sexist culture on campus. Many complained about stares that made them insecure as their male peers openly discussed coeducation in student newspapers and published pro-