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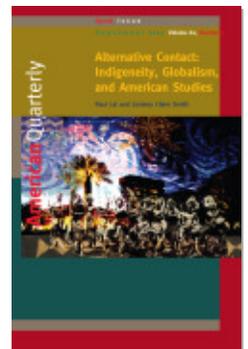
## **Technology, Culture, and the Body in Modern America**

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# Technology, Culture, and the Body in Modern America

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***The Body Electric: How Strange Machines Built the Modern American.* By Carolyn Thomas de la Peña. New York: New York University Press, 2003. 329 pages. \$35.00 (cloth).**

***Swinging the Machine: Modernity, Technology, and African American Culture between the World Wars.* By Joel Dinerstein. Amherst: University of Massachusetts Press. 415 pages. \$80.00 (cloth). \$24.95 (paper).**

THE RELATIONSHIP BETWEEN TECHNOLOGY AND CULTURE IS ONE OF THE MOST venerable areas of inquiry in the historiography of American studies.<sup>1</sup> Yet it's fair to say that recent work in the history of technology has been slow to adopt the questions framing other fields in the humanities and social sciences, especially those stemming from conceptualizations of difference as an analytic category. A major, important exception here is the influential work by a generation of feminist historians, currently led by Ruth Oldenziel and Arwen Mohen, which interrogates the relationship between gender and technology.<sup>2</sup> Although the historiography of race and digital culture technologies is growing exponentially each year, the number of historically based, American studies-inflected studies of race and technology can, sadly, be counted on one hand.<sup>3</sup> Fortunately, two recent books extend the American studies interest in the history of technology and culture in important ways. Carolyn de la Peña's excellent *The Body Electric: How Strange Machines Built the Modern American* extends the technology and culture tradition to the

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fields of public health and popular science in the late nineteenth and early twentieth centuries. Joel Dinerstein's brilliant *Swinging the Machine* is the first American studies project that puts race in the middle of the technology and culture intersection. Both books, inspired by and working within an older American studies tradition, help link the long-standing interest in technology and culture with a newer American studies focus on subjectivity, difference, and the body.

*The Body Electric* and *Swinging the Machine*, covering overlapping time periods yet different cultural expressions, are both concerned with how the body accommodates, resists, and incorporates new technologies. The books explore the flip side of technology and aesthetics, in that both look at how everyday Americans used technology to fashion modern subjectivities that made room for individual adaptation. They represent an important response to the call made in the late 1980s and early 1990s concerning the human-machine nexus, when Mark Seltzer's *Bodies and Machines*, Cecelia Tichi's *Shifting Gears*, and Martha Banta's *Taylored Lives* all sought to understand how machine age technologies framed American subjectivity and cultural production.<sup>4</sup> In the dialectic between bodies and machines, however, both of these fine books, while acknowledging the structuring impact of mechanization and mass production, emphasize the body's playful, utopian accommodations, as well as incorporations, of modern technology.

Carolyn de la Peña's superbly researched project examines how Americans in the period between 1870 and 1935 sought to supplement their physical energy through engagement with a variety of popular health technologies, including muscle-building machines; electrical invigorators, such as belts and collars; and radioactive elixirs. As she persuasively argues, historians' understanding of the modern body in this period has been generally understood as a narrative of decline. The classic argument, drawn from George Beard's *American Nervousness* (1881), is that modern technologies (including electricity) enervate rather than invigorate the body; Beard's cure for neurasthenia in white, middle-class women was, as Charlotte Perkins Gilman made famous, the rest cure. But as de la Peña argues, our understandings of the period are overdetermined by these few chapters in *American Nervousness*; not all Americans interpreted the relationship between modernity and the body in such dystopic terms. Both health experts and enthusiasts viewed the new technologies of the 1870–1930 period optimistically and in fact sought to harness the power of these new technologies on

behalf of the body's internal energies. De la Peña helps explain how the utopian thrill with which Americans greeted the Corliss engine at the 1876 Philadelphia Centennial was sustained—despite anxiety over neurasthenia—through popular, optimistic engagements in health technology. As she points out, less than ten years after he wrote *American Nervousness*, even George Beard had changed his mind about electricity and began using it directly as a cure for neurasthenia.

The first section of *The Body Electric* concerns health machines designed to unblock the body's internal energy resources. During the mid- and late nineteenth century, the body was seen as a closed system, and as Anson Rabinbach has argued in *The Human Motor*, physiologists and industrialists increasingly understood the body through mechanistic metaphors, as a machine or motor.<sup>5</sup> De la Peña argues that the development in weight-lifting machines in this period answered, in part, the implicit promise that bodies could become as powerful as machines. Muscles emerged as cultural status symbols among the salaried classes largely as a result of concern about loss of vitality, and machines were the means through which these new muscles were made. De la Peña introduces the figures who invented these now-ubiquitous machines, or their predecessors, including James Chiosso and his Polymachinon as well as David Butler and his Health Lift. Dudley Allen Sargent of Harvard University was the first athletic trainer to design pulley-based weight systems for use in amateur athletics, which eventually replaced the older European gymnastic tradition. Sargent introduced anthropometric measurements to Harvard athletics as a means of assessing physiological characteristics and development, a system that spread throughout the Ivy League in the 1890s. While Sargent introduced exercise machines to athletics, Gustav Zander invented and marketed his own set of machines to hotels, spas, and private clubs. These systems all worked with the goal of building muscle and unblocking the body's dormant energy sources; they wed the vitality of an (idealized) working-class body with the mechanical precision of a managerial brain. Historians of sport may have encountered some references to these figures, but de la Peña's dense research and lively narrative draw illuminating connections among the histories of sport, technology, gender, and public health.

While exercise machines worked with "force" to unblock the body's limited energies, the discovery of electricity created the possibility of supplementing the body's finite resources with infinite external power.

De la Peña reviews both popular and scientific electrotherapies in order to historicize electrotherapy's popularity. By the 1870s regular electric treatments had been standardized within medicine as a cure for everything from poor eyesight to sexual dysfunction, and the period between 1880 and 1920 is known as the golden age of electrotherapy. Physicians used galvanic currents to create localized muscle contractions and stimulate enervated or troublesome body parts. Alongside the licensed physicians, self-identified "doctors" marketed health electricity systems for home use. By the 1870s these do-it-yourself treatments were often marketed through the wearing of an electrical appliance, such as a belt or collar. These treatment programs constructed the body as a run-down machine or a dry sponge that needed the jolt of an external energy source. Through machines, electricity promised to restore human vitality.

Among the strengths of this book are de la Peña's thorough research and her ability to uncover the popular beliefs and practices concerning the body, technology, and health that underlie the peculiar technologies that she describes. Surely one of her juiciest discoveries is the series of electric appliances designed to rejuvenate the locus of manhood itself, the penis. This fascinating chapter analyzes artifacts such as the "Pulvermacher Belt and Suspensory Apparatus," a belt with an optional lightweight metal woven pouch that surrounded the penis and testicles with galvanic current. The Thermalaid was a narrow metal rod attached to electric power sources and inserted into the anus, where the vibrating electric current provided that special stimulation to another organ central to the male anatomy, the prostate. The devices, as de la Peña forcefully demonstrates, did more than insert technology into the body, linking modern manhood and electrical power. The technologies provided a solution to the late-nineteenth-century concern at the heart of the "seminal economy": the belief among physicians, clergy, and middle-class men that masturbation would cause diminished sexual vitality, impotence, and eventually insanity. Since most middle-class men during this period didn't marry until they were thirty, and since medical and religious warnings concerning the "sins of Onan" were ubiquitous, masculine anxiety was considerable. In advertising's classic ploy, manufacturers of electric devices such as the Pulvermacher raised the specter of impotence and insanity in order to banish it through the purchase of a commercial product. If men had depleted their vitality through self-abuse, then electricity would restore it, with no one being the wiser.

Radium, whose discovery was announced in 1902 by Marie and Pierre Curie, is the operative component in the third and final health technology explored in *The Body Electric*. The new element was heavily covered in the medical, scientific, and popular press. In the United States, radium offered the general public the utopian promise of transforming the body into a supercharged system capable of providing its own limitless energy. Americans were fascinated by radium's invisible ability to alter cells, killing the damaged and rejuvenating the remainder. In the first thirty years of the twentieth century, America was gripped by "radiomania," as radium's promise was marketed to consumers through popular fiction, public demonstrations, new products, and life-enhancing elixirs. The most popular radium cure in American history was "Dr." William A. J. Bailey's brand of what was widely known as "liquid sunshine," Radithor. Between 1925 and 1930 Bailey sold four hundred thousand bottles of this radium-infused energy water worldwide. Bailey's radium elixir offered to fulfill the dream promised by exercise machines and electrical devices: to convert radium's magical energy into usable physical force. Unfortunately this new technology had its dystopic side. Radithor converts, including the high-profile industrialist Eben M. Byers, became terminally ill with bone fractures, skin abscesses, anemia, and weight loss. As de la Peña argues, Byers's death "represents a consequence unfathomed by early advocates: that technology could actually destroy the bodies it promised to build" (209). Radium represents both of the two meanings that Americans actively negotiated in relationship to new technologies during the 1870–1930 period. On the one hand, electricity, machinery, and radium promised tremendous productive power, offering to eliminate fatigue, cure illness, and prolong youth; on the other hand, these technologies were laced with destructive potential.

*The Body Electric* makes a key contribution to a number of fields. Within the history of medicine and popular health, de la Peña integrates a discussion of professionalizing medical expertise, looking at both popular healers, whom doctors increasingly marginalized as quacks and charlatans, and also the patients themselves, whom she shows were active in pursuit of their own health, with or without the blessings of "legitimate" medical experts. With this move, she adds to the small but growing historiography of American popular science and medicine during this period. De la Peña builds on the rich American studies tradition of examining the intersections between technology and cul-

ture, and her book joins Rachel Maine's *Technology of Orgasm* in exploring the corporeal uses of new technologies by everyday Americans.<sup>6</sup>

Also working within the American studies technology and culture tradition, Joel Dinerstein's magisterial *Swinging the Machine* redefines both American modernism and the machine age. The book examines how interwar Americans created swing music and dance as a "specifically African American inquiry into the nature of human life in a technological society" (7). Dinerstein takes the elements of modernist machine age aesthetics—such as flow, repetition, speed, power, and efficiency—and examines the corporeal negotiations with these technological imperatives during the interwar period. His project represents an important and persuasive complement to an earlier historiography of American modernist aesthetics in design and the visual arts, such as Terry Smith's *Making the Modern* and Jeffrey Meikle's *Twentieth Century Limited*.<sup>7</sup> But whereas these earlier projects looked at the material and visual culture of machine age modernism, and were largely unconcerned with questions of racial difference, Dinerstein's focus on African American expressive culture brings race to the center of inquiry concerning the histories of technology and modernity.

Dinerstein's argument, as well as his historiographic intervention, hinges on a shift in emphasis from repetition to rhythm. Historians and critics of industrialization, mass production, and labor-management relations have emphasized the rigidity and alienation wrought by the second industrial revolution, as mechanization threatened to permeate every aspect of modern life. Mass production's standardization of temporal units, interchangeable parts, routing and accounting systems, and even corporeal motions depended upon a logic of precise repetition. Dinerstein's question is, in a period defined by the conflation of human and machine, "how can a human being reclaim his or her human motor from workplace demands, and how can a person integrate the newly revved-up, machine-driven human motor into the entire human organism?" (11). His complex answer rests, in part, on rhythm. Americans wanted, he argued, to see the machine mastered, and it was rhythm, as an aesthetic force, that enabled them simultaneously to incorporate and counter the period's logic of repetition. Through an aesthetics of rhythmic bodily movement, derived in part from West African diasporic cultural forms, musicians and dancers were able to create big-band swing, tap dance, and the lindy hop as "public models

of humanized machine aesthetics" (12). African American vernacular cultural expressions became "survival technologies" that enabled all Americans, including whites, to reclaim the human in the machine age.

This is a big book, in all senses of the term, and divided nearly evenly between sound and movement. Four chapters historicize the relationship between technology and jazz during the Depression era. In the early years of the Depression, Dinerstein argues, the technocratic utopianism of the early years of the century had given way to a more suspicious assessment of mechanization's effect on everyday life. Shadowing intellectuals' observations of the speeding-up of daily life, what Dinerstein calls the period's "tempo-of-life" discourse, was an anxiety that machines were driving a mechanized tempo of life that would result in disequilibrium, a life out of balance. Dinerstein addresses the mechanization of daily life through an innovative examination of urban aural culture. Clearly influenced by recent work in the history of sound, including Emily Thompson's important *Soundscape of Modernity*, Dinerstein shows how everyday mechanical sounds, from the roar of machines at work to the rattle of passing locomotives, shaped the dense layers of noise that were the period's industrial soundscape.<sup>8</sup> Early jazz was an aesthetic response to this aural environment. As jazz musician Paul Whiteman argued in 1926, "the rhythm of machinery became the rhythm of American civilization, a clanging, banging, terrific rhythm, full of energy." The popularity of swing in the 1930s, Dinerstein argues, was the "result of a cultural need for a functional art form to respond to the new tempo of life" (56).

In two tightly argued chapters, Dinerstein demonstrates the linkages among jazz, African American culture, modernity, and trains. African American musicians in the 1920s and 1930s, such as the twelve-piece Alphonse Trent Band, developed rhythmic musical responses to the technological soundscape, epitomized by the train. The word *train*, for example, also referred to a basic drum pattern that stylized the rhythm of a steam locomotive pulling out of the station. Almost all of the swing bands of the era, including those of Fletcher Henderson and Count Basie, included train-derived swing riffs as a standard opening, creating what Dinerstein describes as "the locomotive ball of sound" (71). Here Dinerstein follows the work of blues and jazz scholar Albert Murray in disrupting music scholars' older, inaccurate dichotomy that placed primitive, preindustrial African Americans on one side and mechanical, commercial Euro-Americans on the other. Instead, Dinerstein argues,

what makes American popular music modern is the incorporation of sonic elements from the industrial soundscape, particularly the train, into the rhythms, sounds, and symbols of popular musical forms. African American swing musicians, many of whose roots were in the equally train-inflected blues tradition, stylized mechanical elements of an industrial culture into a living, popular aesthetic form.

In a chapter on the popular swing bands of the 1930s, Dinerstein revisits the streamlined trains of the 1930s, such as the Burlington Zephyr, as a vehicle for understanding how the machine-worn body of the second industrial revolution could also be streamlined for the machine age. Swing's rhythmic groove helped revitalize the enervated body, and Dinerstein shows how jazz itself was streamlined as it moved from small-unit jazz to big-band swing. Solo instrumentals gave way to precise massed sections of trombones, saxophones, and trumpets, which built rhythmic tension in precisely calibrated call-and-response patterns. The rhythmic "groove" was smoothed out as string basses, guitars, and cymbals replaced tubas, banjos, and the thudding bass drum. Critical to an aesthetics of streamlining and modernity, the tempo of big-band swing accelerated, as two beats gave way to four and swing tunes clocked in at two hundred beats per minute, the fastest dance music in American history. All of these elements were a part of African American jazz before Benny Goodman's success in what Dinerstein calls the "corporate whitefacing of swing."

One of the book's major contributions is to disrupt scholars' implicit definition of modernism as solely a white, Euro-American cultural movement. As Dinerstein argues, although African American arts and letters are no longer dismissed as primitive or naive, scholars have not, with the exception of some discussions of literary modernism, analyzed African American cultural production in light of modernism as an aesthetic movement. Yet jazz had all the elements of what Dinerstein calls "African American popular modernism," including the cosmopolitan integration of diverse musical influences into a new, hybrid form as well as improvisation, or the breaking down of set forms to create new interpretations. Dinerstein describes the process through which African American musicians, storytellers, and dancers integrated the "voice" of machinery into cultural forms as "techno-dialogic" (126). The incorporation of the industrial soundscape into the blues and jazz was, in part, a legacy of West African musical practices, where the representation and stylization of everyday sound was a sociocultural imperative. Both

European modernists and African American bandleaders referenced the mechanical soundscape in their work; a key difference between African American and European modernism, however, is that jazz musicians sought to communicate with a *popular* audience.

The popularity of African American–influenced modernist forms extended to the corporeal expression of machine age rhythms: dance. In three chapters covering precision dance, tap, and the lindy hop, Dinerstein offers another site for the techno-dialogic, or the engagement of technology in cultural expression. If the tap dancers and the lindy hoppers are the playful heroes of Americans’ dance with technology, then Florenz Ziegfeld and Busby Berkeley, represent, in contrast, the “apotheosis of mechanized choreography” (202). Dinerstein’s chapter on the “pleasure machine” of precision dance constitutes his most elaborated gender analysis. Whereas his other chapters on dance discuss the innovations made by the dancers themselves, here he focuses on the producers and choreographers of the elaborate female spectacles that blended vaudeville, burlesque, and variety into a mechanized girlie show. Unlike the chorus girls of the Folies Bergère, where each dancer was meant to be individually attractive, Ziegfeld chorus girls were chosen and trained to look and sound as similar to one another as possible. As Paul Derval, the long-term director of the Folies Bergère, commented, “[The] *chorus girl Americana* as a species [is] mass-produced, like a Chevrolet or a tin of ham” (190). The Ziegfeld girls acted in skits about machines and automation; as a “mass ornament” (to borrow Siegfried Kracauer’s term), they functioned as eroticized pleasure machines for an implied male audience. Drawing from Martin Rubin’s *Showstoppers: Busby Berkeley and the Tradition of Spectacle*, Dinerstein extends his discussion of mechanized choreography to Berkeley’s camera dances.<sup>9</sup> Individual dancers and innovations are subsumed into a living architecture of pattern, form, repetition, and movement: a machine age, modernist aesthetics wherein each dancer represents an interchangeable, standardized part. Although Dinerstein’s argument is compelling, he writes about the precision dancers as if they were, in fact, identical. Ziegfeld’s imperative to present the “American girl” as a standardized white type, however, occasioned widespread ethnic impersonation, as new immigrants passed as “American girls” in order to make it on Broadway. In his efforts to cast precision dance as the mechanistic “other,” Dinerstein glosses over the complexities of racial formation in the consolidation of early-twentieth-century definitions of whiteness as well as idealized American beauty.

If precision dance represents the chilling efficiency of standardized motion, then tap signifies freedom, the “cultural hunger” for an individual synthesis of the body and the machine. The most popular machine age art form, tap “took the speeded-up machine-driven tempo of life and the metallic crunch of cities and factories and spun it all into a dazzling pyrotechnical display of speed, precision, rhythmic noise, continuity, grace and power” (222). As in other sections of the book, Dinerstein escorts his reader through delightful, incisive close readings that harness the analysis of formal elements to his overall argument. Here, Fred Astaire’s “Slap That Bass” in *Shall We Dance* (1937) emerges as a key text not only to the chapter but also to the book as a whole. Dinerstein stresses the importance of African American vernacular dance to Astaire’s style, especially the step and sound made by dropping the heels, as well as his use of a broken rhythm. But as with big-band swing, African American contributions to tap were marginalized through “aesthetic racism” as the form became mainstream in the 1930s. In “Slap That Bass,” Astaire plays a Philadelphia dancer who finds himself in an ocean liner’s engine room. Below deck, African American workers and the ship’s engines engage in a call and response pattern, as the men chant, sing, and work in syncopated rhythm to the ship’s machinery. Astaire watches this Hollywood minstrel scene intently, and then “joins in,” a move that puts him at the center and renders the black performers marginal, as their swing rhythm and work songs give way to Gershwin’s orchestral arrangements. The main dance sequence is a dialogue between Astaire and the ship’s machinery. As he did with the black workers, Astaire listens to the rhythm of the machine’s pistons with intensity, cautiously echoing the machine with his own soft-shoe tap. In a series of duets with different machines, Astaire demonstrates that he has more virtuosity than the machine, as well as more expressive energy: in a rematch of the battle between man and machine first staged between the black folk hero John Henry and the steam hammer, Astaire beats the machine at its own game. The routine encapsulates the techno-dialogic: first, machine rhythms come into society; then African Americans stylize this aural environment in voice and percussion, primarily through work songs; and finally, the stylized rhythms become “survival technologies” for both African Americans and whites, often (though not always) through a process of aesthetic whitefacing. Dinerstein elaborates on the centrality of African American vernacular dance to machine age popular culture in a

companion chapter on the lindy hop's machine aesthetics and its reception among Euro-Americans. A concluding chapter on the 1939 World's Fair reinterprets the fair's modernism in relationship to the integral role that African American-derived cultural forms, especially swing and tap, played in making the fair a financial and popular success.

I have nothing but enthusiasm for these outstanding books. In one elegantly written, well-researched, and delicately argued project, Dinerstein has produced a magnificent interdisciplinary cultural history that is a must-read for both graduate students and advanced undergrads in a variety of related fields, including U.S. cultural history, African American history and culture, history of technology, and the history of both popular music and dance. De la Peña's book offers an important addition to the historiography of popular culture, technology, public health, and science in the 1870–1930 period, providing a model for interdisciplinary archival research. With its brilliant analyses of radioactive elixirs and personal devices, this book would electrify both graduate and undergraduate students in the history of technology, public health, science, and popular culture.

### NOTES

1. For representative texts from American studies' "myth-symbol" era, see Leo Marx, *The Machine in the Garden: Technology and the Pastoral Ideal in America* (New York: Oxford University Press, 1964); Alan Trachtenberg, *Brooklyn Bridge: Fact and Symbol* (New York: Oxford University Press, 1965); John Kasson, *Civilizing the Machine: Technology and Republican Values in America, 1776–1900* (New York: Grossman Publishers, 1976).

2. See, for example, Ruth Schwartz Cowan, *More Work for Mother: The Ironies of Household Technology from the Open Hearth to the Microwave* (New York: Basic Books, 1983); Ruth Oldenziel, *Making Technology Masculine: Men, Women, and Modern Machines in America, 1870–1945* (Amsterdam: Amsterdam University Press, 1999); Arwen Mohun, *Steam Laundries: Gender, Technology, and Work in the United States and Great Britain, 1880–1940* (Baltimore: Johns Hopkins University Press, 1999). More recent work has been gathered in Roger Horowitz and Arwen Mohun, eds., *His and Hers: Gender, Consumption, and Technology* (Charlottesville: University Press of Virginia, 1998); Nina E. Lerman, Ruth Oldenziel, and Arwen Mohun, eds., *Gender and Technology: A Reader* (Baltimore: Johns Hopkins University Press, 2003); see also Shelley Nickles, "More Is Better: Mass Consumption, Gender, and Class Identity in Postwar America," *American Quarterly* 54 (December 2002): 581–622.

3. An exception here is Venus Green's important *Race on the Line: Gender, Labor, and Technology in the Bell System, 1880–1980* (Durham: Duke University Press,

2001). For race and new media technologies, see Rachel C. Lee and Sau-ling Cynthia Wong, eds., *Asian America.Net: Ethnicity, Nationalism, and Cyberspace* (New York: Routledge, 2003); Alondra Nelson and Thuy Linh N. Tu, with Alicia Headlam Hines, eds., *Technicolor: Race, Technology, and Everyday Life* (New York: New York University Press, 2001); and Beth E. Kolko, Lisa Nakamura, and Gilbert B. Rodman, eds., *Race in Cyberspace* (New York: Routledge, 2000).

4. Mark Seltzer, *Bodies and Machines* (New York: Routledge, 1992); Cecelia Tichi, *Shifting Gears: Technology, Literature, Culture in Modernist America* (Chapel Hill: University of North Carolina Press, 1987); Marta Banta, *Taylored Lives: Narrative Productions in the Age of Taylor, Veblen, and Ford* (Chicago: University of Chicago Press, 1993).

5. Anson Rabinbach, *The Human Motor: Energy, Fatigue, and the Origins of Modernity* (Berkeley: University of California Press, 1992).

6. Rachel P. Maines, *The Technology of Orgasm: "Hysteria," the Vibrator, and Women's Sexual Satisfaction* (Baltimore: Johns Hopkins University Press, 1998).

7. Terry Smith, *Making the Modern: Industry, Art, and Design in America* (Chicago: University of Chicago Press, 1993); Jeffrey Meikle, *Twentieth Century Limited: Industrial Design in America, 1925–1939* (Philadelphia: Temple University Press, 1979).

8. Emily Thompson, *The Soundscape of Modernity: Architectural Acoustics and the Culture of Listening in America, 1900–1933* (Cambridge: MIT Press, 2002).

9. Martin Rubin, *Showstoppers: Busby Berkeley and the Tradition of Spectacle* (New York: Columbia University Press, 1993).