next two projected volumes. Addressing these problems would make the book considerably easier to read.

Despite its weaknesses, however, this book will be an important starting point for much-needed study of how businesses use computers. Cortada has been an important proponent of focusing not just on the supply side of computers, but on the demand side. Technology influences business and society through its use. Thus, studies of innovation only look at half of the picture; studies of use provide the other half.

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Though the American research university always has been utilitarian, recent intensifications of university-industry relations have made many wonder if the university has sold itself to commercial sponsors at the cost of its quality and independence. Though “technology transfer”—the movement of academic research into the private sector for development and sale—is only one of a range of university-industry relationships, it has great historical importance, stemming from the landmark Bayh-Dole Act of 1980, which allowed universities to own and license the inventions created by their employees with public funds. Technology transfer has great symbolic importance as well, as it reflects a pervasive market model of innovation, one in which economic competitiveness requires maximized technological innovation; which in turn requires more commodity-oriented research; which in turn, it is said, requires direct financial incentives for the institutions and people involved in the work. The Bayh-Dole Act provided these incentives by allowing universities to convert inventions into intellectual property for sale to the private sector while giving the inventors a share of the revenues. Twenty-five years of increases in university patenting and licensing revenues have been interpreted as proof that this theory was correct and that the current patenting system is a solid success.

This book is one of the few that empirically investigates this assumption, asking whether the Bayh-Dole intellectual property system is causally responsible for this increase in patenting. The authors
remind us that American research universities patented inventions long before the advent of Bayh-Dole. Patent revenue was always uneven, relying mostly on a small number of blockbusters, and Bayh-Dole has not changed this pattern. Universities, particularly private ones, steadily increased their patenting activity after 1945 and before the advent of Bayh-Dole. Much of this increase occurred in the 1970s, when the commercial value of biomedical patents induced a new set of less-established research universities to initiate patenting programs. The increase that correlates most directly with Bayh-Dole is the growth of intellectual property management programs at universities.

To gauge the impact of these programs on research and development, Mowery et al. analyze five contemporary case studies in the fields of biomedicine and information technology. They show that a wide range of variables affect these endeavors, requiring that we supplement our customary fixation on intellectual property with such factors as the extent of preexisting informal know-how in the related industry sector, the status of rival products, ratios of industry and university participation in the technology’s prior development, the technical difficulty of the development process, the researchers’ professional networks, among other factors. As it happens, patenting clearly enabled commercialization in only one of the five cases. The others used other channels, and in at least one case transfer took place as much in spite of patenting as because of it. The authors draw only tentative conclusions from their small sample, but they do suggest that technology transfer programs need to be flexible and case-specific, favor relationships as much as revenues, and focus on broad research goals rather than on the protection of property rights, which would mean favoring non-exclusive licenses whenever possible.

The book also considers several looming policy issues. The authors find no evidence that the Bayh-Dole system has changed the shape of research or damaged open publication, though they remark that by the time the evidence is clear the damage will have been done. They are very concerned about the patenting of scientific materials, for studies are showing that this practice is raising the cost and delaying the progress of some fields of research. The authors suggest that the commercialization of science may eventually jeopardize its nonprofit status and its research exemption from royalty payments. We might infer that such trends may eventually impair the university’s capacity to conduct unprofitable research for the public good. The authors also point out the global dangers of countries in Europe, Asia, and Africa rushing to imitate an American technology transfer process whose best results are limited to specific sectors that are already supported by forms of social and intellectual capital and by institutional conditions that other countries will not easily replicate.
One hopes that this valuable book will prompt greater precision in current debates over science and technology policy. Policymakers may wish to acknowledge, for example, that patents are important for attracting capital to faculty start-ups without claiming that they promote the general good, and continue to refine policy accordingly. In any case, policymakers and researchers should reckon with the book’s major findings: Bayh-Dole’s insertion of academic research into a system of intellectual property rights was only one of many causes of increased patenting activity; failure to see this has meant Bayh-Dole’s benefits have been exaggerated and prematurely generalized across disciplinary lines. Efforts to find better mixtures of private and public control, or to move beyond these current categories, or to combine economic efficiency with deeper definitions of the public good, will be helped by this book’s combination of historical intelligence, empirical grounding, and careful synthesis.

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By the 1970s, the American economy was in the midst of a wrenching transformation that eviscerated once-venerable manufacturing industries on a scale not seen since the Great Depression. The extent of the wreckage was unprecedented, as Pittsburgh, Buffalo, Detroit, Baltimore, and scores of other communities across the country experienced plant shutdowns and massive employee layoffs. No longer able to compete effectively in an increasingly global economy dominated by more nimble foreign firms, American producers of steel, automobiles, and other capital-intensive goods closed aging factories and shifted their resources to new locales outside the Rust Belt. In 1982 Barry Bluestone and Bennett Harrison published The Deindustrialization of America: Plant Closings, Community Abandonment, and the Dismantling of Basic Industry (New York, 1982). In that politically charged study, the authors addressed the urgent political and economic crises that faced displaced industrial workers, their communities, and the businesses that supported them. Now, more than twenty years later, Jefferson Cowie and Joseph Heathcott have assembled