Avner Greif is a professor of economics, best known to medieval historians for his work on the Maghribi traders, Jewish merchants who immigrated from Iraq to North Africa in the tenth century and then traded extensively in the Mediterranean world. In *Institutions and the Path to the Modern Economy*, he has produced a significant contribution to interdisciplinary scholarship. It brings together techniques from the social sciences to address economic development in the late Middle Ages in Europe and the Muslim world through comparative contexts, historical analysis, and theory. His rationale can be summed up: “We use theory to delineate various possibilities and the conditions conducive to the existence and functioning of a particular institution; we use evidence to direct the analysis toward particular issues and possibilities rather than others” (p. 451). Greif’s definition of an institution is complex: “An institution can therefore be defined as comprising cognitive, coordinative, informational, and normative social elements that jointly generate a regularity of (social) behavior by enabling, guiding, and motivating it” (p. 151).

The author clearly wants to make this work accessible to many different audiences. Thus, guideposts are everywhere. Detailed appendices also speak to this concern. Greif advises readers with interests in the analysis of institutions to concentrate on certain chapters and two appendices, B, “Is Homo Sociologicus Strategic” and C, “The Role of Theory: Reputation-Based Private-Order Institutions.” Whereas readers interested in the historical moment should address themselves to other chapters, with chapter 12 common to both lists. To assist novices in game theory he has presented a primer in Appendix A. He is mindful of the reality that models do not always fit the facts and is anxious to avoid tautology “by adjusting the model to fit the data” (p. 352).

The historical contexts within which Greif tests his analysis are rich and varied: among them, Maghribi traders, Genoa, the Hansa, the Champagne fairs, European (especially Italian) communes, medieval England, and nineteenth-century California. He emphasizes the Maghribi experience and that of the Genoese, for both of which remarkable sources remain: the Genizah documents of Cairo for the Maghribi and chronicles, notarial registers, and diplomatic documents for Genoa.

The commune and the merchant guild are examples of corporate institutions that evolved in late medieval Europe to provide a basis for modern economic institutions. Genoa outdid Pisa in commercial expansion; its several rival clans were forced to cooperate to face external threats and to use arbiters (the podestea) to control internal violence. Modeling first, Greif then comments: “History confirms the relationships between an external threat, joint mobility, and commercial expansion that are predicted by the conjecture regarding the centrality and implications of mutual deterrence in the consular system” (p. 234). In regard to the Hansa: “In its constant efforts to preserve trade rights and supremacy, the Hansa crushed the other traders’ groups (Greif 1992). Thus a merchant guild that had facilitated trade in the late medieval period was transformed into a monopolistic organization that hindered trade expansion during the premodern period” (p. 122).

Greif makes distinctions between European institutions and those of the Muslim world, of which the Maghribi were a part. Collective punishment as a response to
cheating proved to be the Maghribi response to the needs of self-regulation. Greif contrasts the bilateral reputation mechanism of the Genoese with the collective punishment of the Maghribis. According to their cognitive system, “a Maghribi merchant is expected to hire only an honest Maghribi agent and to reciprocate in sharing information” (p. 131). The Genoese reputation-based institutions allowed them to hire non-family members as agents able to commit ex ante to being honest ex post in keeping with their individualistic cultural beliefs and a predilection to conceal information.

Throughout his study Greif is interested in change and the parameters of change. He is arguing for the introduction of a “historical-process perspective” into “social-science oriented historical research” (p. 156). Desirous of putting aside a deterministic theory of history, Greif asserts, “The historical-process perspective suggests an alternative: history unfolds based on the nondeterministic impact of past institutions on outcomes in general and institutional dynamics in particular” (p. 156).

The book suffers from a lack of nuance, as in the treatment of slavery, which did not disappear from medieval Europe as Greif states. Occasional anachronisms such as the use of the term Holy Roman Empire in an eleventh-century context creep into the text. The assignment of Venetian origin for double-entry bookkeeping would entail more than a passing commentary as proof. In the otherwise interesting development on the perhaps unique European community responsibility system, the policing mechanism of the Champagne fairs—impounding or distrainants and “holding every member of a community liable for each member’s default in intercommunity exchange”—could have been effectively linked to a treatment of the law of marque (p. 328). The massive bibliography has some notable omissions (e.g., fama). Occasional typos (e.g., pp. 23, 332) and awkwardness of style do not detract from the contributions of the author. Using history and theory, Greif is able to shine new light on European economic developments and to suggest some explanations for European success based on “self-governed, non-kin-based corporations” rather than the role of the state (p. 390). These ideas and his approach should generate considerable future discussion.

KATHRYN REYERSON, University of Minnesota

EUROPE


Rachel Fuchs’s Gender and Poverty in Nineteenth-Century Europe seeks to integrate a wide variety of scholarship in women’s, gender, and social-cultural history to cast new light on problems of poverty across Europe (including some coverage of Eastern Europe and Russia).

The book consists of six chapters that range over such topics as “population and poverty,” studies of the poor in both rural and urban settings, and institutions for the relief of the poor. Although the chapters are united by the book’s common theoretical framework, they can also be read separately with profit as well.

Fuchs establishes her point of view in the Introduction, in which she lays out both her concern for the coverage of gender differences in the study of poverty and her conviction that “the poor survived by fashioning a culture of expediencies” (p. 5). She also cites the “practice theory” of Pierre Bourdieu, which emphasizes the importance of improvisation in poor people’s interactions with their institutional environments.
Fuchs taps these and other recent bodies of theory to argue that gender is a social category based on issues of power as well as sex, and to express her concern to emphasize the “agency” of the poor who were forced to operate within a general “climate of calamities.” The book provides better coverage of topics in the lives of working women than the lives of working men, though Fuchs’s goal in all chapters is to show the integration of the two at the level of family, neighborhood community, and work. The book is also more complete for trends in Western than Eastern Europe and Russia.

It is useful to contrast Fuchs’s work with an earlier volume on a similar topic in the same Cambridge series—Robert Jütte’s *Poverty and Deviance in Early Modern Europe*. Both works provide a history of the daily lives of the poor and an analysis of the poor as they interacted with the state, the workplace, the law, the church. But whereas Jütte focused more on these specific loci of interaction, Fuchs’s work is more concerned with discussing major trends in European history, such as processes of industrialization and responses to it. This greater concern for the “master narratives” of the European past occasionally causes the poor as a group to disappear from the text as it pursues the more general context. Moreover, the voice and engagement of the author is much more present here than in Jütte’s earlier volume.

It is notoriously difficult for those studying the subject to set clear boundaries around it. Who, exactly, is to be included in the category of the “poor”? Fuchs’s volume is no exception, and for its wide range may be considered more or less a study of the history of the European working classes, the majority of whom—at one point or other in their lives—lacked the resources to support themselves and their households in adequate fashion.

Fuchs weaves together the different chapters by reference to the theme of a culture of expediencies, showing how the poor tried to adapt to macrosocial changes that impinged on their lives—for example, through out-migration from rural areas. The book does not present a strong or overarching argument about the improvement or decline in relative living standards over the course of the century. Indeed, to substantiate any such strong interpretation would have been impossible given the long time period covered and geographical extensiveness of Fuchs’s study. Rather, the author has chosen to emphasize the abilities of the poor to adapt to changing circumstances.

Particularly successful are Fuchs’s chapter on “Work in the Cities,” and the final chapter on “Charity and Welfare.” The former investigates such important themes in gender history as the “male breadwinner model,” conflicts between the working and maternal lives of urban women, and reforms of the industrial workplace both from “above” and through the agitation of the poor themselves. The Charity and Welfare chapter allows Fuchs to trace specific trends more clearly than elsewhere in the volume. Here, she offers an excellent overview and periodization of the development of religious and state-sponsored programs for the poor, drawing a sustained comparative analysis of programs in Britain, Germany, and France. The chapter successfully synthesizes much recent scholarship on the themes of gender and welfare—a body of work to which the author herself has been a leading contributor.

As Fuchs announces from the beginning of the book, she wrote this work for non-specialists. While it will be used with profit in courses on the social history of nineteenth-century Europe, women’s, and gender history, it should also be of interest to historians eager to update their knowledge of classic themes in the comparative history of the poor over the long nineteenth century. The volume is richly illustrated with photographs, drawings, and paintings depicting the poor, and is made even more useful by its lists of further reading organized by chapter.

KATHERINE A. LYNCH, Carnegie Mellon University
The ancient teacher of rhetoric, Quintilian, called them *status*: the agreed-upon questions upon which controversies in a community are grounded, the epistemologically shared beliefs that lie beneath yet provide our very ability to contest the questions on which we disagree (*Institutio Oratoria*, Cambridge, MA: Harvard University Press, Loeb Classical Library, 1949: II.iv.30, III.vi.1-5). Yet because they are places of agreement, the common ground of particular *status* tend to remain invisible to us, and they tend to remain unexamined regardless of whether they provide a foundation of concrete or a foundation of quicksand. With *Warfare State: Britain, 1920–1970*, David Edgerton in fact exposes a great patch of historiographic quicksand upon which we have all been standing, and in so doing shows how we (historians) need to re-examine some of our basic shared beliefs about the modern British state. We must put the military back in the stories we tell, and we must give it a role far more complex than the clichéd character of barrier to economic progress and geopolitical prominence.

The British state of the middle five decades of the twentieth century was indeed shaped by “civilian” concerns of welfare, but the painstaking details of the eight chapters of *Warfare State* show it to have been a state even more shaped by the “military” concerns of warfare. Edgerton combines exhaustive analysis of armament industries and government ministries and careful examination of external and internal relationships within Britain’s civil service and scientific elites with a detailed evaluation of the evolution of our historical storytelling since the Great War. In so doing, he not only shows a British state which was far more complex an organism than any “welfare state” label can suggest, he also exposes the dangers that accompany academic conceptualization of the past.

In the pages of *Warfare State*, Edgerton revises several important stories, but Edgerton’s real targets are beliefs we have built upon a foundation of technocratic declinism and what he calls “anti-history.” Edgerton wants us to see how our very expertise can blind us to important parts of the past, how our professional lack of interest in certain questions can shape our willingness to confront the details of particular historical evidence. We may be able to quickly point out the technological determinism and Whiggishness of popular historical writing—“non-professionals” make easy targets—yet in our casual dismissing of popular story-tellers we have also failed to pay attention to real historical details being highlighted by their story-telling.

In a key sub-theme of the book, for example, Edgerton thus both picks apart C. P. Snow’s “two cultures” idea (pp. 196–210) and connects its weaknesses to later technocratic misinterpretations of the Ministry of Technology created following Harold Wilson’s “white heat” speech at the Labour Party’s annual conference in 1963 (chapter 6). The bigger problem with the “two cultures” idea was not that Snow and the others got the history wrong. (In fact, they did: Edgerton’s evidence makes clear that the Ministry of Technology was “an ending rather than the beginning of an overweening enthusiasm for national technology” (p. 264)). The bigger problem has been our anti-historical following of Snow’s lead, our failure to dig into, as Edgerton has dug into, the messy historical evidence about British civilian and military culture.

*Warfare State* will, I fear, be coolly received by many in its intended audience. Part of the reason is Edgerton’s writing style, particularly in the first half of the book. Edgerton is Hans Rausig Professor at the Centre for the History of Science, Technology and Medicine at the Imperial College London, and he clearly knows his subject forward, backward, sideways, and inside out. Unfortunately, however, that very exper-
tise sometimes takes too much control over his prose. Non-specialists will at times be overwhelmed by the detail provided about the bureaucrats, officers, and scientists of the warfare state, particularly in chapters 2–4. Comprehension is aided by five appendices (pp. 339–52) listing the dramatis personae (a listing which, by the way, future researchers on the warfare state will find invaluable), but the reality is that the decades of anti-history Edgerton decries mean most of the people named in Warfare State will be strangers to the average historian. And there will be a lot of these strangers to keep straight: the appendices list well over 250.

Be clear: the content provided in chapters 2–4 matters. A lot. Careful attention to the detail Edgerton provides will be rewarded, particularly for a reader who started with his outstanding final chapter on “Rethinking the relations of science, technology, industry and war.” Combine this final essay—which by itself justifies the price of the book—with the details from earlier chapters on interwar supply ministries, on nationalization and the armaments industry, and on the postwar expert state, however, and one sees the real power of Edgerton’s argument.

But the opening chapters will not be quick reading. As a result, I fear they may provide an easy “anti-history”-type excuse for missing Edgerton’s larger epistemological point. Warfare State, asks us for nothing less than a change in our underlying habits of mind, and bad habits of mind are notoriously difficult to change. With a physical habit such as smoking or drinking, it is relatively easy to see the negative consequences the habit promises for our lungs or liver; but habits of mind are harder. And when our habits are shared with all around us, when everyone else is smoking the rhetoric of decline and academic expertise, seeing the problem becomes more difficult still.

David Edgerton has thus done yeoman work here in pointing out the shared habits of mind underlying the stories historians have been telling about the relationships among science, technology, industry, and the military. What he has uncovered—stories great and small untold for decades because of the blinders of our own intellectual expertise—is sobering and troublesome. Let us hope, however, that we will be willing to see what he has revealed.

WADE E. SHILTS, Luther College


Second novels are often thought to show whether a writer has “lost his touch” and does not have more than one book in her or him. Second edited volumes can suffer a similar fate. Stephen Broadberry and Mark Harrison have previously edited a volume on the economics of World War II (subtitled “Six Great Powers in International Comparison.” Cambridge University Press, 1998). Like the first one, however, the present collection of essays is a remarkable scholarly achievement. Far more than a mere collection of scholarly papers on the economics of World War I, it offers instead a panoramic overview of how the first “total war” was waged in economic terms. For the better-known combatants, we learn much in terms of valuable historical detail, important revisions to existing data, and the compilation of comparable statistics. At least as importantly, for powers such as the Ottoman Empire and Austria-Hungary, which have often been neglected, we now have magisterial overviews of the existing stock of knowledge.

In parallel with their earlier work, the editors use this volume to advance their hypothesis that—in essence—only economic might mattered. Once the German attempt
at Blitzkrieg in the West failed in 1914, it was only a matter of time until the larger, richer economies swept all before them. Military history buffs may struggle with the relegation of battlefield events to the fringes of World War I, but Broadberry and Harrison make a powerful case. The wider the gap between living standards in the peacetime economy and subsistence, the greater the proportion of output that government could channel into the production of guns, shells, tanks, and poison gas. Poorer combatants had to contend with another crippling problem—the unwillingness of agricultural producers to surrender their surpluses. As the supply of industrial goods dwindled, farmers had few incentives to produce much, consume little, and hand over the difference. Ill-designed policies, including low price ceilings, often produced perverse incentives. The worst of all possible worlds was low-productivity agriculture combined with an effective bureaucracy enforcing bad policies. Russia, Germany, and Austria-Hungary suffered from this combination, whereas Italy and Turkey apparently did much better because enforcement of (poor) schemes was limited. In Italy in particular, as Francesco Galassi and Mark Harrison argue, food leaked out of the official supply chain everywhere, ensuring that peasants had incentives to keep producing.

Albrecht Ritschl offers new estimates of the proportion of GDP commanded by the German government. His figures offer an important corrective to the standard view (confusingly repeated in the editors’ introduction) that nobody squeezed their economy harder than the Germans. The new figures imply a ratio of state expenditure to GDP some 8–10 percentage points lower than previously thought; also, it took much longer to reach the peak. Full mobilization under the “Hindenburg Program” of 1916 was only on par with existing French levels.

Max-Stephan Schulze gives a colorful and informative description of the Austro-Hungarian Empire’s economic decline and fall during the war. Few readers will forget the graphic details, such as the Viennese magistrates who, faced with empty granaries in 1918, seized Rumanian barges on the Danube loaded with grain for Germany. The two halves of the empire coordinated their policies poorly. The import-dependent Austrian part soon faced severe shortages, accompanied by food riots, whereas wheat-producing Hungary remained better off. The transport network quickly fell into such a state of disrepair that, by 1917, mined coal failed to reach the factories, leaving them idle. It is nothing short of stunning that Austrian production of field guns and artillery shells was nonetheless broadly comparable with peak U.S. performance (higher for one, somewhat lower for the other).

Sevket Pamuk’s chapter does not have the luxury of being able to fall back on national income statistics for the period. For the Ottoman Empire, the outbreak of war in 1914 followed hot on the heels of defeat in the Balkan war of 1912/13. The empire’s financial system was weak, its main coal mine within reach of Russian naval guns, and the transport network underdeveloped. That the Ottoman Empire stayed in the war, fighting in the Arabian Peninsula and in Europe while mounting a highly effective defense at Gallipoli, is nothing short of amazing. Pamuk speculates that ineffective enforcement of policies designed to squeeze the peasant population may have actually improved economic performance, and that German advisors and economic assistance may also have played a role.

Herman de Jong’s chapter on the Dutch economy in World War I offers a useful benchmark for the economic performance of the belligerents. Except for a modest increase in army size and shipping losses, the neutral Netherlands had a “good war.” Germany happily bought its agricultural produce and supplied coal in exchange. Demand for everything from hogs and potatoes to shipping services and banking was high. Despite this privileged position, Dutch GDP per worker actually declined by 17–23 percent. The lack of intermediate inputs and the increasing squeeze of the Allied
blockade took their toll. The Dutch case puts productivity changes elsewhere into perspective: Germany saw a decline of 29 percent and France 26 percent. Given that, for example, 75 percent of French males aged 20–55 had been called up by the end of the war, these declines do not look too severe compared to the experience of a neutral power. U.K. productivity, on the other hand, surged by 11 percent, and Italy saw its output rise by one-third (based, however, on dubious figures as explained by Broadberry in a separate appendix).

How well does the central hypothesis that World War I was essentially a “numbers game” hold up? Germany and Austria-Hungary knocked Russia, part of an economically superior alliance, out of the war in 1917. The United States’s industrial might had barely begun to tell on the Western front by the time the Central Powers sued for peace. As Hugh Rockoff describes in his essay, much of the material used by Pershing’s forces was of British and French origin, and the vast increase in American armament output had not yet reached the trenches when Ludendorff and Hindenburg decided to cut their losses.

A more fundamental reservation is in order. Some 30 years ago, Nick Crafts, in an essay on the British Industrial Revolution, made an eloquent plea for giving a greater role to chance in economic history. It is not hard to imagine that a bit of good luck could have turned the 1918 Ludendorff offensive on the Western front into a major rout, producing an earlier Dunkirk. Far from offering a compelling case for the editors’ hypothesis, the varied performances of poorer belligerents such as Italy and the Ottoman Empire suggests that there could at times be a remarkable disconnect between economic power and military performance, even during the first of the twentieth-century’s two “total wars.” Despite these complications, by assembling such a fine summary of the available evidence and detailed data summaries, the editors and contributors have done much to stimulate further debate and future research about the economics of World War I. This volume belongs on the shelf of every economist, historian, and economic historian with an interest in the twentieth century.

HANS-JOACHIM VOTH, ICREA and Universitat Pompeu Fabra

ASIA


The considerable fortune accumulated by the famed salt merchants of China has often been attributed to their privileged access to government licenses that limited salt sales through quotas. In this volume, Madeleine Zelin, Professor of History and East Asian Languages and Cultures at Columbia University, uses source documents—municipal archival documents of case records of legal suits, business accounts and contracts, local gazetteers, memoirs and transcribed oral histories—and other primary and secondary materials to evaluate the economic history of the salt industry. Among the many substantive findings that emerge in her study is that the industry was built on much more than the government’s regulations on salt.

The “Merchants” of the title refer to the entrepreneurs of Zigong, in the western hinterland province of Sichuan, who dealt in the business of producing and trading salt. Salt production was a multi-step process that began with raising the salty brine. This

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required pumping and well drilling, a costly venture that could potentially take five or ten years. Afterwards, furnaces were needed to evaporate the salt. Because the tasks involved in processing were invariably larger than anyone could undertake alone, production ultimately relied not only on advances in new technologies but, just as importantly, on organizational structures that allowed groups (such as corporate groups and lineages) to finance the drilling, to create profit-sharing arrangements, and to allow a rental market in productive assets. The first chapters of the book describe the technology used in salt production. Using the example of two salt yards, chapter 2 discusses the structure of investment contracts in well drilling. Chapter 3 shows how partnerships (e.g., contracts for renting a well or for renting a furnace and leasing brine and gas), were used to organize fragmented resources and to aggregate smaller amounts of capital. Zelin provides important new evidence of an active industrial sector where property rights and contracts were recognized and enforced by the existing legal framework, though commercial laws governing limiting liability and the effects of bankruptcy did not exist until the turn of the twentieth century.

For acquiring the necessary capital, banking and credit services were not critical to the early development of the salt industry. Instead, assets were often brought together through kin and the establishment of lineage trusts, with little financing from outside sources. Chapter 4 focuses on the role of the lineage in structuring the management of the firm, taking as examples several families that accrued large fortunes as salt developers.

In addition to capital, processing the salt required a sizable labor force and the possibility of shipping the goods to potential buyers. Large vertically integrated firms could ensure not only their own supplies of brine and gas, but establish contacts in merchant networks for the sale of their goods. Chapter 5 considers working conditions in the salt industry, which was the largest employer outside of agriculture in Sichuan. Chapter 6 considers the question of the impact of government regulation on producers.

The remaining chapters, 7–10, turn to the changes in the twentieth century, when the prosperous salt empires of the previous century faced decline, mainly as a result of political instability and the lower profitability of processing brine. In addition, over the late nineteenth century and twentieth century, the state increasingly sought to tax salt in transit. Chapter 7 surveys the impact of technological changes. Chapter 8 details the family histories of the salt magnates in the later period. Chapter 9 brings the implications of politics to bear on the business of merchants. Chapter 10 addresses the question of the long-term implications of the industry on Zigong’s economic development.

The text assumes some familiarity with the institutional background of early modern China, and most chapters are packed with carefully teased out analysis from original sources. However, Zelin also provides brilliant summaries in the introductory and concluding sections of each chapter, targeted to a wide audience in business history. The book’s glossary compiles an excellent list of more than 750 names and terms used in the text, both in pinyin and in Chinese. If this sounds specialized, it is—but the writing is so clear and engaging that even the general reader will want to know more about the uses of bamboo piping in pumping or the intrafamilial spats of the merchant clans.

A recurrent theme of the book is that the business arrangements seen in the Chinese salt industry belie not only previous perceptions about the predatory influence of the “feudal” state on entrepreneurial incentives in China, but also the purported uniqueness of Western business practice. On both fronts, this book breaks important new ground and will have a major influence on the future research agenda. The Merchants of Zigong, however, is fundamentally not a comparative study, and such comparisons as it makes are based mostly on secondary sources from the business history of the United States. Nevertheless, it is at these points that some of the more provocative observations emerge. For example, Zelin observes, “On a much more limited playing
field, the *chengshouren* then played much of the same role of informed ‘honest broker’ performed by investment bankers like J. P. Morgan” (p. 48). In another analogy, Zelin finds that the advantages of vertical integration in the Chinese salt industry “match in importance the organizational breakthrough made by the great American oil and steel companies . . .” (p. 96). The implication of the analogies is that, despite differences in institutional environments, similarities in business practice between China and the United States arose out of underlying similarities in “opportunities and constraints” (p. 292). For those who see more differences than similarities between oil and salt, the correspondences may seem to be too broad brush. How far should the similarities be taken, and what is the significance of the differences? It may take another book to answer these questions, but the undertaking would be well worth it.

*The Merchants of Zigong* is a microeconomic case study that greatly expands our knowledge of business practices in the nineteenth and twentieth centuries while shedding light on the institutions in which the Chinese firms operated. It is a work that shows just how good historical scholarship on China can be; researchers will refer to it time and time again.

**CAROL H. SHUIE, University of Colorado, Boulder**

**UNITED STATES**


The new, five-volume *Millennial Edition of Historical Statistics of the United States* has arrived. It is a great success that will easily fill the shoes and shelf-space of the well-worn, two-volume *Bicentennial Edition*. Unlike its predecessor, the *Millennial Edition* was neither sponsored nor published by the United States Census Bureau. Although the Census Bureau declined to participate in the new project, it did give a stamp of approval to the endeavor and allowed the new edition to build freely on the earlier editions. Ultimately, the *Millennial Edition* is every bit as authoritative as the earlier editions in terms of its underlying scholarship, and it is even more ambitious in its coverage. The lack of government involvement, however, shifted costs to the academic community on both the production and consumption sides. At $990, this is not a collection that every scholar can afford to have on her shelf for frequent consultation, but I imagine that internet access to the data series through library subscriptions will ease that constraint.

If one believes that a central purpose of both economics and history is to make sense of economic change, then one must also believe that the discovery and documentation of the factual record of economic change are endeavors of first-order importance. By extension, knowledge of the fact-production process (that is, the assumptions and choices that underpin the numbers that ultimately appear in a data series) is a valuable source of credibility for someone who purports to explain “stylized facts.” In this context, the *Millennial Edition* is a major contribution because it presents a fresh distillation of the quantitative record of the development of the United States, accompanied by expert essays on the origins, reliability, and comparative properties of the data series.

The five volumes are organized by broad themes: Population, Work and Welfare, Economic Structure and Performance, Economic Sectors, and Governance and Inter-
national Relations. Each volume is divided into several chapters. The bulk of each chapter is devoted to reporting data series over as long a period as possible. Each chapter also features an introductory essay that highlights major themes and trends and identifies key data sources, historical events, and methods of compilation.

As mentioned previously, the data series and essays can also be accessed online, saving users countless hours of key punching data from the print volumes, but my remarks are based solely on the print volumes. I should add the disclaimer that I contributed some data on home ownership to the project. This was a relatively minor contribution, and it does not compromise my objective evaluation of the larger work, which encompasses more than 37,000 data series.

Volume 1: Population

The expansiveness of the Millennial Edition is immediately apparent to those familiar with the Bicentennial Edition. Volume 1 of the Millennial Edition contains nearly 800 pages of information on population, vital statistics, migration (internal and international), family and household composition, and American Indians. By my count, the comparable sections of the Bicentennial Edition, where comparable sections exist, contain only about 120 pages.

Although most series in the Millennial Edition report national aggregates, the population counts of chapter Aa are also reported by city, metropolitan area, urbanized area, and state. The chapter, edited by Michael Haines, also includes new estimates of the Hispanic population from 1850 to 1990 (contributed by Brian Gratton, Myron Guttmann, and Elizabeth Wildsmith). This is the first appearance of a source-related theme that comes up several times in Volume 1—the Hispanic estimates are derived in large part from the micro-level census data available through the Integrated Public Use Microdata Series project (IPUMS). The micro-level data allow users to calculate essentially consistent series for populations or places that the original published census volumes do not tabulate separately. Throughout the volume, information from the “old” published census volumes and the “new” micro-level samples complement one another nicely.

In chapter Ab, Haines introduces the U.S. vital statistics data (fertility, mortality, marriage and divorce, life expectancy, and the like), identifies some of the major trends in U.S. demographic history, and points out areas of recent scholarly advance, statistical blind spots, and continuing debates. One could not have a better guide for the tour of American vital statistics, and nonspecialists certainly do need a guide. The chapter’s introductory essay and the detailed table notes impart an appreciation for the range, complexity, and pitfalls of vital statistics measurement.

Joseph Ferrie edited the short but valuable chapter on internal migration. The census added a state-of-birth question in 1850, thereby providing the first statistical anchor for the characterization of internal mobility. In the 1940s, the census and the Current Population Survey began inquiring about recent geographic mobility, but in general economic historians who hope to study internal migration patterns face severe data constraints. Ferrie highlights the potential for linking individuals from one census date to the next to study geographic mobility, and in the introductory essay he includes some comparisons between his own 1850 to 1860 linked sample and late twentieth-century samples. Although not exploited in the Millennial Edition, the fully transcribed individual data (i.e., not a sample) from the 1880 Census are another promising source for forming such links, and I imagine that economic history will see a resurgence of internal mobility studies as a result.

Many of the Millennial Edition’s chapters include chronologies that highlight important events and policies. These chronologies are one of my favorite features of the
new edition. An especially helpful timeline appears in chapter Ad (edited by Robert Barde, Susan Carter, and Richard Sutch) and pertains to the history of international migration to the United States. The chapter’s data tables report annual immigration counts (flows) by country of origin or birth, by age, by sex, and by occupation. They also report decennial counts from census enumerations of the foreign born (stocks), including their ability to speak English, their tendency to locate in cities, their fertility and homeownership rates, and their occupations. Americans’ Nobel Prizes are broken down by the recipient’s place of birth, a feature that academics will find especially interesting but that policymakers should probably note as well. Since 1980, 7 of 30 American recipients of the prize in physics were born elsewhere; in chemistry, 11 of 28 American recipients were born elsewhere. Additional information on admissions under various immigration programs, on naturalization by country of origin, and on deportation round out the statistical characterization of American immigration history.

The IPUMS data take center stage in Steven Ruggles’s chapter on family and household composition. Ruggles is the prime architect of the IPUMS project, and he puts the resource to good use here. After pointing out important changes in family structure, which are dramatic in the late twentieth century, Ruggles provides a succinct introduction to the large interdisciplinary literature that addresses the issue. The subsequent chapter, edited by Carter and Matthew Sobek, rearranges selected labor force, marital status, and education data so that they are reported by birth cohort rather than by time of observation. This cohort-based perspective is common in labor economics and demographic studies, and I am glad to see it make an appearance in the Millennial Edition. It is a compelling way to depict the experiences of subsequent cohorts as they moved through their lifecycle.

C. Matthew Snipp edited the final chapter of volume 1 which assembles a variety of data series pertaining to American Indians. This chapter deserves special attention, perhaps especially from nonspecialists who would like to incorporate information on Native Americans into their teaching of American history. The chapter contains the most coherent and compact collection of quantitative information that I have seen on the topic. It supplements the data series with maps that distinguish tribal territories (circa 1600 and 1995) and a timeline of the history of epidemic disease among Indians, based on work by Henry Dobyns (Their Number Became Thinned, Knoxville: University of Tennessee Press, 1983). Historical Statistics is obviously not an historical atlas—its series emphasize national rather than local perspectives—but in general I would have welcomed more maps to complement the quantitative history that unfolds in the tables.

Volume 2: Work and Welfare

The second volume contains chapters on labor market variables, unions and work-related injuries, slavery, education, health, inequality and poverty, social insurance, and nonprofit entities. The first chapter starts with a 60 page tag-team essay by Carter and five associate editors (Lee Craig, Robert Margo, Joshua Rosenbloom, Matthew Sobek, and William Sundstrom). It would be a good place for a graduate student interested in labor history (or labor economics more generally) to start her reading. The chapter provides a quantitative overview of the major historical trends and discusses the range of data obstacles and opportunities. Among many other interesting tables, Thomas Weiss provides labor force counts covering 1800 to 1900; Sobek provides IPUMS-based detailed figures for labor force participation and employment by occupation and industry; and Margo organizes and reports the historical wage data, including his own skill and region-differentiated series for the antebellum period.
Chapter Bb is a comparatively short chapter on slavery. The essay by Stanley Engerman, Richard Sutch, and Gavin Wright includes a helpful chronology of emancipation (1761 to 1888). In addition to the expected information on the size of the slave population and slave prices, the chapter includes a table of information on slave insurrections starting in 1663, based on work by Marion D. De B. Kilson (“Towards Freedom” *Phylon* 24 [1964]). This is a more extensive collection of statistics than was printed in the previous edition of *Historical Statistics*, but given the size of the historical literature on the topic, readers might be surprised that there is not more information in the chapter. It turns out that some additional information on slavery is reported elsewhere in the *Millennial Edition*. For example, Richard Steckel reports on slave heights in Chapter Bd (on health statistics) and John McCusker’s chapter on the colonial era includes some information on slave populations and prices.

Claudia Goldin edited the chapter on education (chapter Bc). Her introductory essay features a concise description of the three transformations of America’s education system (the diffusion of publicly funded elementary schools, the high school movement, and mass higher education) and a chronology of major events in the history of American education policy. One of those events was the creation of the U.S. Bureau of Education in 1867 which (thankfully) started compiling national statistics on students, teachers, and schools. Goldin’s essay is followed by 100 pages of carefully documented statistical tables on enrollments, teachers, school characteristics (e.g., length of school term and public-private distinction), graduation rates, test scores (starting in 1971), years of completed schooling, earnings reported by level of educational attainment, and school revenue and expenditure information. Like the chapter on labor market statistics, this chapter would be a natural starting point for anyone undertaking research on American education.

The subsequent chapter, edited by Richard Steckel, features two main kinds of information: series that describe the U.S. healthcare system (hospitals, practitioners, insurance, and expenditures) and series that describe Americans’ health status (disease prevalence, disability, height, and body mass index). The chapter also provides information on health behaviors such as cigarette and food consumption. Of course, a good deal of health-related information is also contained in Chapter Ab (vital statistics) of volume 1, as discussed previously. From a historical perspective, the height information is especially useful because it dates well into the 1700s (for men), because so much health-related information is embedded in a population’s average height, and because the mid-nineteenth-century decline in Americans’ height is one of the more surprising and fascinating facts of American economic development. The chapter’s concise and well-documented collection of historical statistics on the healthcare system is also a valuable resource.

Chapter Be combines information on economic inequality (edited by Peter Lindert) and poverty (edited by Linda Barrington and Gordon Fisher). The introductory essay on poverty statistics includes a summary of the history of poverty measurement in the United States, complete with tables that list and describe studies of American poverty from 1870 to 1962. Income inequality is difficult to measure at the national level before 1940, when the census first inquired about income, but the tables do include some of the recent, highly publicized work by Thomas Piketty and Emmanuel Saez that extends to 1913 (“Income Inequality in the United States, 1913–1998.” *Quarterly Journal of Economics* 118, no. 1 [2003]: 1–39). The chapter also includes estimates of wealth inequality across households from 1774 to 1998. The earlier chapter on labor includes estimates of wages by occupation and industry that often form the basis of economic histories of wage inequality trends.

The history of American social insurance and public assistance is described in chapter Bf, edited by Price Fishback with assistance from Joan Underhill Hannon, Melissa
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Thomasson, and Stephen Ziliak. The chapter’s essay includes an informative history of American policy with respect to the poor, the old, the sick, and the unemployed. As is often the case in these volumes, one can learn a great deal from the copious notes associated with each table. Examples taken at (near) random are Fishback and Thomasson’s description of the Black Lung Benefits program (p. 2-788) and Ziliak’s description of efforts to replicate Stanley Lebergott’s pauper support data (p. 2-724).

Peter Dobkin Hall edited the volume’s final chapter (Bg) on “Nonprofit, Voluntary, and Religious Entities.” It is a fascinating collection of information on a segment of American life that usually remains in the shadows of quantitative economic histories. The range of information here makes it a difficult chapter to summarize. Topics include annual membership figures for fraternal organizations (e.g., the Elks and the Modern Woodmen of America), the numbers of Boy Scouts and Girl Scouts, annual church congregation measures by denomination, philanthropic and charitable giving, and some information on private, nonprofit educational institutions. I believe these series are new to Historical Statistics (that is, no comparable series appear in earlier additions), and they are a welcome extension of the statistical record of American society.

Volume 3: Economic Structure and Performance

Even by Millennial Edition standards, the third volume covers a lot of ground. The first several chapters report national accounts statistics and series of price indices, consumer expenditures, and savings and capital accumulation. The topics in the second half of the volume are more varied and include geography and the environment (chapter Cf), science, technology and productivity (chapter Cg), business organization (chapter Ch), and financial markets (chapter Cj).

Richard Sutch edited the chapters on national income statistics (Ca) and business cycles (Cb). Chapter Ca’s essay highlights the history of national income and product accounting, including the major contributions of economic historians (such as Simon Kuznets) to the development of both the concepts and the substance of national accounting. The chapter features several alternative annual series (one of which is designated the “Millennial Edition series”) for real GDP dating back to 1790, as well as an index of industrial production that was recently compiled by Joseph Davis. Chapter Cb is a natural continuation of Ca and focuses on fluctuations in economic activity. The chapter features dates for business cycle troughs and peaks (again dating to 1790) and several series that report quarterly or monthly levels of output, employment, unemployment, wages, stock market indicators, interest rates, and money supply for the twentieth century.

Christopher Hanes edited the chapter on prices (Cc), along with associate editors Lindert and Margo. The essay strongly cautions users about the pitfalls of historical price data, a useful admonition for those tempted to cut-and-paste historical series into macroeconomic analyses without thinking hard about the statistics’ origin, accuracy, and suitability for the task at hand. Most of the price series are from long-familiar sources, but the chapter does feature some relatively new series from Hanes (consistent wholesale price series), Margo (rents in New York City), and William Nordhaus (price of light).

Chapter Cd, edited by Lee Craig, begins with tables from the Bureau of Economic Analysis (1929–1999) and from Stanely Lebergott (1900–1929) that contain annual information on expenditures for food, clothing, housing, furnishings, medical care, transportation, and more. These tables have a strong national-income-accounts flavor (and basis). The second main kind of information in the chapter is based on surveys of family consumption expenditures. The information is often tabulated by income, race,
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Sutch guides readers through the inter-related concepts and measures of saving, capital, and wealth in Chapter Ce. His essay also includes a succinct history of nineteenth- and twentieth-century saving trends and the economic history literature that studies the trends. Many of the historical saving series (dating to 1897) build on work by Goldsmith (*A Study of Savings in the United States*, Princeton, NJ: Princeton University Press 1955), complemented by later series from the Bureau of Economic Analysis. Estimates of household net worth start in 1946 and were originally compiled by the Board of Governors of the Federal Reserve System. Historical national wealth estimates, starting in 1850, again rely heavily on work by Goldsmith.

The subsequent two chapters were edited by Gavin Wright. Chapter Cf summarizes information on “Geography and the Environment” and chapter Cg focuses on “Science, Technology and Productivity.” The incorporation of some recent (mostly post 1960) information on pollution levels is an excellent addition to the *Millennial Edition*. My favorite part of chapter Cf is a collection of climate statistics (temperature and precipitation), organized by Myron P. Guttman and Timothy G. F. Kittel. Alas, a table on tornadoes, floods, and tropical cyclones that appeared in the *Bicentennial Edition* appears to have been left by the wayside in the new edition (or at least I failed to locate it). This is, of course, a minor omission in the grand scheme of things, but in the wake of Hurricane Katrina there may be an increased interest in the history of natural disasters and their aftermath.

Enormous increases in computing power and usage are perhaps the most salient technological changes since the *Bicentennial Edition*’s publication in 1975. Although patent statistics (starting in 1790) and research and development expenditures (starting in mid-twentieth century) make up the bulk of chapter Cg’s data series, there are two tables on computer purchases and processor speed that shed some light on trends in computing. I imagine that these tables will be significantly expanded if and when the next edition is produced to include, say, the proportion of households that own a personal computer, regional and income-based differences in computer ownership and usage, and measures of the intensive or extensive use of the internet by businesses and consumers. That said, a search of the *Millennial Edition*’s index reveals that some information on household expenditures on computers and on the number of existing web sites appears elsewhere in the volumes. This serves as a simple reminder that while it is tempting to bypass the index when searching for a series (because the data are already arranged by topic), some statistical series may fit well in more than one chapter.

Naomi Lamoreaux provides an insightful discussion of the evolution of American business enterprises in Chapter Ch. Her essay includes a review of the twentieth-century intellectual history of the theory of the firm, a review of the relevant legal history, and, of course, a description of the rise of big business (plus a helpful timeline). A key point in her discussion is that it is exceedingly difficult to count “firms” in a way that corresponds closely to the theoretical concepts that economists articulate. For measurement, one must resort to legal definitions and classifications. The volume of information on firms expands greatly in the twentieth century as a consequence of the establishment of the federal income tax, and this expansion is clearly reflected in the chapter’s data tables. There are, however, tables with counts of incorporations dating to the 1700s for some states.

With the assistance of several associate editors, Michael Bordo edited volume 3’s largest chapter, including 236 pages of tables on American monetary and financial history. The scope of the information is reflected in the sub-essays that comprise the
chapter’s introduction: monetary aggregates (by Richard Anderson), monetary statistics before the era of national banking (by Hugh Rockoff), monetary policy (by Bordo and David Wheelock), financial institutions and their regulation (by Howard Bodenhorn and Eugene White), securities markets (by Peter Rousseau), and debt, the flow of funds, interest rates, and yields (by John James and Richard Sylla). As with many of the chapters, the data here reflect an enormous amount of careful scholarship that went into assembling and interpreting the quantitative history of American finance. Unlike the other chapters in the volume, the introductory remarks here do not use graphs to depict and summarize the course of the major historical series. I have noted above that timelines are sometimes used to great effect in the *Millennial Edition* to organize the long histories of particular aspects of American development. One might have been a very helpful accompaniment to this chapter’s introduction to American money and finance.

*Volume 4: Economic Sectors*

The fourth volume is laid out in a sequence familiar to anyone who has worked with Standard Industrial Classification codes: agriculture, natural resource industries, construction, manufacturing, distribution (retail and wholesale trade), transportation, communications, and services and utilities. (Public administration, another standard classification, is covered in volume 5, and health, education, and finance are covered in volume 3.)

For the first chapter (Da, “Agriculture”) Alan Olmstead and a team of five associate editors (Julian Alston, Bruce Gardner, Philip Pardey, Paul Rhode, and Daniel Sumner) provide a sparkling introduction to the history of American agriculture. The essay includes five separate chronologies that highlight major technological and legislative events, and a narrative that emphasizes agriculture’s economic dynamism. Research, innovation, technological diffusion, rapid productivity advance, and (sometimes perverse) government policies have long played key roles in the sector. The first set of data tables focuses on farms and farm structure since 1850; the second set focuses on acreage, production, and prices of crops and livestock; the third set focuses on outputs, inputs, and productivity; the fourth set details farm income and expenses; the fifth set details farm-related policies and related expenditures.

Chapter Db, edited by Gavin Wright, covers “natural resource industries” including mining, energy, fisheries, and forestry. Wright’s research has illuminated the ways in which natural resources, and especially mineral resources, have interacted with technological capabilities in shaping American economic ascendance. His introductory essay features these same themes and also highlights data constraints and key institutions such as the legal environment, the U.S. Geological Survey, and the education of mining engineers. I will add one caveat here. Although it makes sense to have energy included in Chapter Db, I became confused when doing some recent research because statistics on electricity are split between volumes 3 and 4. Some of the consumer-related information is volume 3, but other key series on residential use (such as the proportion of households with electrical service and the average residential price) are located in this chapter of volume 4. This was the one and only time the index did not help me locate a series I figured must exist somewhere in the collection.

Construction, housing, and mortgage statistics appear in Chapter Dc, introduced and organized by Kenneth Snowden. In addition to the information provided in the introduction, Snowden provides copious documentation for each table. The first parts of the chapter emphasize construction activity (new buildings, input costs, workers employed). In the rest of the chapter, as Snowden puts it, “… the focus is sharpened to
residential housing and series that document how we have built, occupied, owned, and financed this most enduring symbol of the American Dream” (p. 4-395). I especially appreciated Snowden’s guide to the evolving American mortgage market.

Jeremy Atack and Fred Bateman edited the subsequent chapter on manufacturing. The rise and fall of American manufacturing (as a share of employment or GDP) are a central theme in the story of American economic development. Atack and Bateman succinctly describe the fundamental changes in manufacturing activity in their introduction—from artisan shops to factories, from water power to steam and electrical power, and the emergence of “mass production for the Amass market” (p. 4-575). In the tables that follow, the drama of American manufacturing unfolds in numerical form—establishments, outputs, inputs, corporate form, and profits—often disaggregated to the industry level.

Chapter De focuses on “Distribution” and presents statistics on wholesale and retail trade, plus some information on advertising. Daniel Raff provides a brief, engaging guide to the history of selling stuff in the United States, from general stores to Wal-Mart. Louis Cain effectively uses maps, graphs, and a timeline to introduce the chapter on transportation (Df). The introduction highlights the ongoing interaction of private and public interests (and funds) in planning and building the American transportation network. This is a lengthy chapter with nearly 200 pages of data series that begin with a table describing farmers’ trips to market in rural Massachusetts in the late 1700s and end with oil and gas pipeline mileage up to the late 1900s. In between, the story of the nation’s economic integration plays out a fundamental level, as the modes of transporting people and goods across great space improve and facilitate ever increasing volumes of movement, at higher speed, at lower costs, and with more safety and reliability.

Volume 5: Governance and International Relations

The final volume starts with four chapters on government-related activities: government employment and finances (chapter Ea), elections and politics (chapter Eb), crime and law enforcement (chapter Ec), and national defense (chapter Ed). It continues with chapters on international trade (chapter Ee), and finally, the statistical records for outlying areas (chapter Ef), the colonial era (chapter Eg), and for the short-lived Confederate States of America. Volume 5 concludes with appendices on weights and measures (appendix 1), states and census regions (appendix 2), and the origins and history of Historical Statistics (appendix 3).

John Wallis edited the chapter on “Government Finance and Employment.” His delineation of eras in which different layers of government predominated (state governments to 1842, local governments to the 1930s, and the federal government ever since) provides a helpful organizational framework for thinking about American fiscal history. Wallis also highlights the difficulties of measuring the extent of overall government activity prior to the twentieth century, and consequently many of the data series (in particular, those requiring information for nonfederal activities) start in 1902. The federal series on debt, expenditure, and revenue, however, run back to 1789.

Historical Statistics focuses primarily on economic and demographic data, but John McIver’s chapter on “Elections and Politics” adds perspective on American political history. The introductory essay views American democracy as an evolving phenomenon and provides a chronology of major political events in U.S. history. The data series include voter turnout, presidential elections, and the volume of congressional legislative activity. This, of course, scratches the surface of the quantitative record of American politics. One might imagine that a major, and perhaps overwhelming, area for potential expansion of Historical Statistics would be in the direction of political ac-
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Keith Poole and Howard Rosenthal’s massive dataset documenting the history of Congressional voting comes to mind.

Douglas Eckberg, with Sutch as associate editor, discusses and organizes national data series on crime, law enforcement, and justice in chapter Ec. The essay provides a helpful guide to the history and shortcomings of a variety of data sources on crime, and it is best summed up by Eckberg as follows: “Criminal statistics remain difficult and unreliable, but not completely so” (p. 5-218). In addition to the standard crime series one would expect from the Federal Bureau of Investigation, the chapter includes information on lynchings, on self-reported victimization rates, on suicides and homicides, and on incarceration and executions. It is a thoroughly depressing but important collection of information.

Scott Sigmund Gartner, with associate editor Hugh Rockoff, edited the chapter on “National Defense, Wars, Armed Forces, and Veterans.” The essay and data have two major components: first, information on the military, its resources (human and otherwise), and its engagements; and second, information on veterans. There are some extraordinary series here, including a table documenting hostile engagements with American Indians between 1866 and 1891, and a longer table of major battles dating to the Revolutionary War. Unfortunately, whereas the lists are helpful in terms of dating and sequencing events, they provide little or no information on the outcome or historical significance of the engagements. That said, I realize it may be impossible to sum up any event’s significance in a phrase or two (e.g., how does one accurately convey the significance of “July 4, 1863, Vicksburg” or “July 3, 1863, Gettysburg”?).

Michael Edelstein, Douglas Irwin, and Lawrence Officer organized the chapter (Ec) on American international economic relations, including detailed information on the balance of payments, international trade in goods and services, and exchange rates. I would have welcomed a concise chronology of major events in U.S. economic policy with respect to the international economy, though many of the major turning points are identified in the chapter’s informative introductory essay.

Chapter Ef, edited by Sumner La Croix, pulls together data on “outlying areas” of the United States—12 areas that are controlled by the U.S. but that are not part of the contiguous 48 states and are not states (although Alaska and Hawaii are included here). La Croix had the difficult task of assembling and evaluating data from a wide variety of fragmentary sources. He has succeeded admirably in producing series for population, education, output, trade, prices, and territorial government receipts and expenditures.

John McCusker’s introductory essay to chapter Eg, “The Colonial Economy,” captures the spirit of the Millennial Edition—“This chapter tells a story in numbers”—and provides an engaging characterization of economic progress in the colonial era. It could easily serve as a reading assignment for standard courses on American economic history. Its copious footnotes and lengthy list of references firmly anchor the essay’s historical narrative. As in the previous chapter, the data range broadly: population, output, prices, money, taxes, and trade.

The final main chapter of the Millennial Edition, edited by Roger Ransom, reports on the brief existence of the Confederate States of America (1861–1865). The chapter’s “chronology of events” is a helpful summary of the Civil War. The data series include information on population and output before and after the war as well as information on money, commodity prices and bond prices during the war itself.

Conclusions and Applause

The Millennial Edition is a major collective and cooperative achievement for the economists, historians, statisticians, and archivists who have contributed directly to the
new volumes or to the preceding editions of _Historical Statistics_. The scope of the enterprise—across scholars, organizations, and generations—is conveyed in the preface, acknowledgments, and lists of contributors and consultants at the beginning of the first volume and in Carmel Ullman Chiswick’s appendix to the fifth volume. Thus, the _Millennial Edition_ begins and ends by acknowledging its historical roots, a fitting and virtuous circle for volumes that are the product of so much scholarship and that will be the cornerstone for so much more. Every library should invest in these volumes.

It is rare to see a project that is both massive and ambitious come off so well. A standing ovation is due and, of course, the big round of applause goes to the principal architects and editors: Richard Sutch and Susan Carter (general editors). The next round is for the editors in chief: Susan Carter, Scott Sigmund Gartner, Michael Haines, Alan Olmstead, Richard Sutch, and Gavin Wright; for managing editors Robert Barde, Matthew Sobek, and Monty Hindman; and for consulting editors Anthony Angelotta and Frank Smith. They deserve congratulations on a job well done and our gratitude for having done it.

WILLIAM J. COLLINS, Vanderbilt University


Jason Scott Smith provides a detailed history of the New Deal’s efforts to build public works, and he explains those efforts in the context of public works programs before and after the New Deal. Smith motivates his book largely as a contribution to the debate among historians as to whether the New Deal was a major reform or a rear-guard effort to block calls for radical policy changes. That debate, he argues, can move ahead by focusing attention on public works, because doing so allows scholars to analyze concrete measures of policies, most importantly budgets. Smith concludes that, despite its failure to solve the unemployment problem, the New Deal should be viewed as a major reform because it established public works programs that contributed greatly to long-run economic growth. As he explains, “In sum, this book argues that New Deal public works programs were not simply employment measures that failed due to insufficient state capacities. Instead, they were an extraordinarily successful method of state-sponsored economic development” (p. 19). The book will generate interest among economists, political scientists, and historians seeking to understand the history and evolution of public works programs.

After an introductory chapter, the book proceeds chronologically. Chapter 2 focuses on the political economy of the early New Deal, particularly the Public Works Administration’s (PWA) efforts to build infrastructure and increase employment. Chapters 3 and 4 document the PWA’s success in building infrastructure. Chapters 5 and 6 turn to the later New Deal’s (post-PWA) construction projects, principally those of the Works Progress Administration (WPA). Chapters 7 and 8 examine post-depression era public works and how federal programs evolved in response to World War II and the end of the Great Depression. Chapter 9 concludes.

The book has much to praise. Smith provides an interesting account of many dramatic changes in policy, explaining how politicians and bureaucrats responded to external events (the depression, the onset of war, the end of war) and to their experiences with the administrative difficulties and corruption that inevitably occur when establishing such large government programs. Furthermore, I found the book very pleasant to read, thanks to careful writing and citations.
The book’s weak point is its claim to have demonstrated that public works spurred economic development. Supporting such a claim would require a systematic recognition of opportunity costs: Resources such as labor, land, machinery, and raw materials, have alternative valuable uses. Whereas directing resources toward public works may promote economic development in some cases, it will hinder it in others—when the opportunity costs are high. By merely documenting the large scale of New Deal public works and describing the types of benefits the projects provided, Smith does not provide sufficient support for his conclusion that New Deal public works “were an extraordinarily successful method of state-sponsored development.”

To be clear, I do not doubt the desirability of building public works that have large net benefits but would go unbuilt in the absence of government policy (the book usefully quotes Adam Smith on this point). Yet the merit of any given project depends on costs, as well as benefits. For example, one can argue in support of federal highway programs on the grounds that state funding will be inefficiently too low (if state-level decisions count only benefits to within-state constituents), but that does not mean that increased federal funding will, at the margin, generate benefits sufficient to cover the increased costs. In practice, interstate highways are valuable (as the book explains), but the federal appropriations process is notorious for politicians’ efforts to obtain pork-barrel projects; thus, increased budgets may direct resources to relatively low-value uses.

Smith does devote substantial attention to the New Deal’s failures. For example, he points out that many New Deal projects paid too little attention to environmental concerns. But the book would be stronger if it explained the more general nature of the problem. From the perspective of almost any environmentalist (and of cost-benefit analysis), public works projects often waste natural resources. One reason is that, when politicians seek to create “jobs” (counting wages as benefits, ignoring the opportunity cost of labor), and when dollars of revenue generated from natural resources have more political weight than do the opportunity costs (such as the value of wilderness forgone), we get too many roads through forests and too many dams on rivers. A similar point applies to the issue of how well the New Deal served African Americans. Smith argues that the New Deal should have devoted more resources toward helping African Americans (and I agree). But evaluating the New Deal’s success in lifting African Americans from poverty requires a balanced view of what went wrong—although more money spent on some types of public works would have helped African Americans, more spent on other types probably would have harmed them. For example, the New Deal could have devoted more money to building schools, which might have generated substantial net gains for African Americans. Yet spending more on the urban renewal “mega-projects” set in motion by the New Deal (and promoted by federal funding for several more decades) could have done additional harm—some of these projects demolished entire African American neighborhoods. For such projects, less federal funding would have been better for African Americans.

Overall, Smith presents an interesting and detailed account of New Deal public works, and he provides new insight into the manner in which those programs evolved from the predepression era and how they shaped policy during and after World War II. The book’s historical analysis will be valuable to scholars interested in the history and political economy of public works programs, but the book would be stronger if it systematically considered opportunity costs before concluding that New Deal public works successfully promoted economic development.

ROBERT K. FLECK, Montana State University

In 1978 Vernon W. Ruttan and his co-author Uri Ben-Zion published an econometric model exploring the relationship between aggregate demand changes and the rate of technical change. Their conclusion: “We show that the value of input-saving technical change is greater in periods of greater demand than in periods of stable or falling demand” (Hans P. Binswanger, Vernon W. Ruttan, and others. Induced Innovation. Baltimore: The Johns Hopkins University Press, 1978: 262). That conclusion would seem to forecast the answer to the question posed in the title of this volume. Unless one is prepared to contend that war is the only source of aggregate demand expansion, the answer must be a negative. However, the question, while not quite a “throw away line” because the last chapter of the book does address it, is not the focus of the book. The subtitle more accurately describes the content as does Ruttan’s statement that the book is an attempt “to assess the significance of military [and defense-related] procurement on the development of commercial technology” (p. 170).

Ruttan observes that “we do not yet have, and perhaps cannot have, a body of rigorous econometric evidence against which to evaluate the economic impact of defense and defense-related R&D and procurement” (p. 170). Thus the methodology that he opts for is a “careful narrative analysis of individual cases” (p. 170). The cases chosen are those in which known military demands played a role. Technologies with minimal or no involvement with military procurement are cases aside. One might list electricity, the internal combustion engine, the radio, and, more recently, biotechnology and medical imaging. The cases are six general-purpose technologies: interchangeable parts and mass production, military and commercial aircraft, nuclear energy and electric power, computers and semi-conductors, the Internet, and the space industries. After an introductory chapter that reviews theories on the rate and direction of technical change—induced technical change, evolutionary theory, path dependence, and radical technology shifts derived from “presumptive anomalies” in an existing technology—the discussion turns to the case studies. Each of the technologies is surveyed in detail, largely from secondary sources, but with explicit time lines of the development of the technology and its sources in military R&D procurement. The twentieth-century technologies are detailed by source agencies in funding as well as by steps in a given technology’s development. Curiously, the surveys are largely “dimensionless” in economic terms. Occasional, general references to the magnitudes of military expenditures relative to civilian are given, e.g., “The military and space programs continued to account for at least two thirds of R&D directed to increasing aircraft performance until at least the early 1980s” (p. 62). However no such estimates are offered consistently for the twentieth-century cases discussed nor are military procurement expenditures given at any point for any of the technologies. The bypassing of data for both R&D and for military procurement is surprising given that Ruttan’s earlier work, Technology, Growth, and Development (New York: Oxford University Press, 2001), does include data for 1960 to 1999 on federal research and development expenditures broken down in part by function—defense, space, atomic science—as well as the federal R&D expenditures on civilian technologies (ibid., p. 548). Data such as these, when set against private-sector R&D expenditures, might well have provided a relative, quantitative assessment of the significance of military-based R&D for the technologies reviewed. The size of the military market relevant for the technologies discussed also remains an open question. Military procurement expenditures do not appear in Ruttan’s earlier work nor do they here, though such figures are (presumably)
accessibility and might be allocated, at least broadly, to the technologies at issue. The absence of any quantitative measures necessarily leaves Ruttan with judgment conclusions such as: “In the case of the general-purpose technologies that emerged as important sources of growth in U.S. economy during the last half of the twentieth century, it was primarily military and defense-related demand that drove these emerging technologies rapidly down their learning curves” (p. 166).

Why might the federal government in its military R&D and expenditure role be a more effective technology developer than the private sector? Ruttan’s survey of the six cases suggests two answers. The first is that the federal government is a capital supplier par excellence, offering resources far beyond what the private sector might assemble. Witness the initial capital expenditures for both nuclear and space technology development. Secondly, the government supplies “patient capital” with a ten or 20 year time horizon that can allow technologies to mature. Witness earth-observing, navigational, and communications satellites—though Ruttan extends the point considerably: “Each of the general-purpose technologies that I have reviewed have required several decades of public support, primarily in the form of military R&D and defense or defense-related procurement to reach the threshold of commercial viability” (p. 177).

The “narrative analysis” of the book succeeds largely as narrative—as an institutional history of technology development in selected fields where military R&D and expenditures played a role. As analysis, there is less to point to, for, without the basic data on military R&D and procurement expenditures by technology forms, little analysis can result. Speculative judgments are possible however, and Ruttan concludes with one, addressed to a variant of the book’s title, that warrants quotation: “Will it take a major war or threat of war to induce the mobilization of the scientific, technical, and financial resources necessary to develop major new general-purpose technologies? My answer to this question, based on historical experience, is that it may” (p. 185).

H. A. GEMERY, Colby College


In his new book, Paul D. Moreno wants to revise our understanding of the relationship between black workers and unions in U.S. history by refuting the “divide and conquer” view of this relationship. In the “divide and conquer” story, employers have actively sown conflict between white workers and black workers in order to undermine the bargaining position of labor. Moreno, the Grewcock Professor of History at Hillsdale College, wants to replace this view with one closer to a neoclassical “economics of discrimination” framework, combined with a “public choice” model in which groups with common economic interests seek to use the state to further their goals.

The main contribution of this book is that it tracks the contentious relationship between black workers and labor unions over such a broad sweep of time, integrating histories that have previously been told in piecemeal fashion (up to the Great Depression, or from the depression to the Civil Rights era, or for particular industries only). This virtue, though, is related to the primary weakness of the book. In his effort to cover so much terrain, Moreno fails to provide much analysis of how particular events conform or fail to conform to the theoretical point he wants to make.

In addition to introductory and concluding chapters and an appendix entitled “‘Divide and Conquer’: The Folklore of Socialism,” the book contains seven chapters ex-
amining the antebellum era of “free labor;” the period “From Reconstruction to Jim Crow;” the Progressive Era; the years from 1920 to 1935; the New Deal era and World War II; the Civil Rights era; and the period from 1965 to the present.

The early chapters draw in part on Robert Higgs’s work (especially Competition and Coercion: Blacks in the American Economy 1865–1914. New York: Cambridge University Press, 1977) in arguing that black advance in the post–Civil War era was aided by competitive markets and generally hindered by collective action to limit that competition. As the organized labor movement took shape through this period, unions tried to raise wages by excluding black workers from training and employment when they could. In doing so, they inevitably created a pool of potential replacement workers and strike breakers who counteracted union efforts in many instances. Moreno emphasizes the importance of this strikebreaking activity and views it as an example of the kind of competition that erodes discrimination within a Beckerian framework, rather than as evidence of a conscious plan by employers to divide workers.

But unions and black workers were not always opposed to each other in this era. Moreno describes how the United Mine Workers in Alabama were racially inclusive, to the point that mine owners tried to turn the public against their 1907 strike by suggesting that the union favored “social equality” between the races. On the other hand, mining unions in Illinois remained racially exclusive. In West Virginia, black mine workers were more fully integrated into the union and supported it “zealously,” and strikes there “were more likely to be broken by poor whites” (p. 106). After bringing this variation in union practices to our attention, though, Moreno briskly moves on before analyzing in detail what it means for the broader points he wants to make.

As the federal government and several state governments took a more active role in regulating labor relations in the 1920s and 1930s, black workers and white unions often found themselves taking opposing positions on these policies, according to Moreno. In particular, black leaders and legislators opposed bills limiting the use of court injunctions to end strikes. During debate on the Wagner Act, the NAACP sought an amendment requiring unions to be nondiscriminatory, but the AFL opposed this, and no such requirement was included in the final bill.

Ultimately, though, the growing foothold that black workers gained in Northern industry would require unions to begin to alter their position regarding black labor. The emergence of the CIO and their strategy of forming industrial, rather than craft, unions would further this growing unity. Despite his general emphasis on conflict between black workers and labor unions, Moreno does note that “there was substantial merit in the claim that the CIO had done more to improve American race relations than any other organization” (p. 193). Again, though, Moreno points out that there was considerable variation in race-related practices across CIO unions and locals: “A New York local of the United Electrical, Radio, and Machine Workers established a vigorous fair employment committee, while fifty workers in a St. Louis United Electrical local left their jobs when their employer upgraded black workers” (p. 206). And again we are left to wonder whether this kind of variation should be taken as evidence in support of the “economics of discrimination” story that Moreno wants to tell.

Moreover, Moreno appears to agree that some employers did begin to engage in a “divide and conquer” strategy, or something like it, during this period when the black-labor union alliance was strengthening. He says that the 1954 Brown decision “and the AFL and CIO support for it gave employers the opportunity to exploit racial tensions as never before” (p. 228), and that “[i]n the mid-1950s, Southern employers began to use the issue of racial equality to divide black and white workers to prevent unionization” (p. 229). It would seem, then, that where conditions allowed it, employers were will-
ing to play on racial animosity to reduce worker unity, even if this racial animosity was not created solely by their efforts.

Though the position of black workers in unions had become entrenched by the 1960s, Moreno argues that the advent of effective civil rights and antidiscrimination legislation would create new impediments to cooperation between black workers and organized labor. A central point of conflict was the treatment of seniority rights, which black leaders felt perpetuated the effects of past discrimination. Federal contract compliance policies, especially in construction work, would also be a source of tension. Ultimately, the impact of these kinds of conflicts would be overwhelmed by the rapid decline in the importance of organized labor in general through the late twentieth century.

Moreno does a creditable job of pulling together a great deal of material covering nearly two centuries of black-union relations. His attention to the conflicting efforts of black workers and labor leaders to shape labor market policy is a particularly valuable contribution. His effort to connect this history to very large questions about the nature of market economies is laudable. He takes a clear position on these large questions, and this point of view gives his writing vigor, though it occasionally leads to distracting rhetoric (e.g., his description of Martin Luther King Jr., as “essentially a socialist” [p. 224], and his claim that “under the Wagner Act, employers were forbidden to tell the truth about union racial policies while unions were free to lie about the employer’s position” [p. 228]). He also makes some controversial claims in a rather offhand manner. For instance, he claims that the Reagan administration continued to forcefully implement affirmative action policies (pp. 282–83), though this would appear to conflict with the position of Jonathan Leonard (“The Impact of Affirmative Action Regulation and Equal Employment Law on Black Employment.” *Journal of Economic Perspectives* 4 [Fall 1990]: 47–63), among others. Despite these flaws, this book will be useful for individuals interested in an overview of black-union relations in the long-term and for those interested in an interpretation that focuses on workers, rather than employers, as shapers of racial employment patterns.

**THOMAS N. MALONEY, University of Utah**


There are a growing number of books available on the history of computing and the manufacture of computers. Much of this history is a well-trodden path—the early pioneers, the first machines and so on. Or so it might seem. Arthur Norberg has taken some of the most well-known episodes and, by looking at them in an interconnected way, and by asking the questions that technology, business, and economic historians should be interested in, has come up with an elegantly written and convincingly argued book that gives a refreshing new perspective on the emergence of the computer into the 1950s.

The book deals with the development of two key businesses, the Eckert-Mauchly Computer Company (EMCC) and Engineering Research Associates (ERA), as they struggle to become established manufacturers of computers or key components. It then examines their eventual absorption into Remington Rand. Remington Rand and the Univac computer is widely remembered as a business failure, eclipsed by IBM in the
The technical developments during this period have been covered in previous accounts, though the decision-making processes involved, less so. Norberg’s book is invaluable on both counts. The transition from mechanical to electromechanical, the competing forms of storage media, the development of early programming, and so on are all exhaustively detailed, but more importantly the ambitions and constraints facing the early engineers and entrepreneurs are charted in parallel, to give us one of the most well-rounded histories in the field.

EMCC and ERA represent two similar yet different entry routes into the computer manufacturing world. ERA was formed after World War II in order to keep together a team of engineers that had been working on applied research for the military, particularly the U.S. Navy. Norberg provides concise and useful biographies of all the key personnel involved in the establishment of this and other enterprises under scrutiny. He also traces networks and tracks the technologies as they develop. In the case of ERA the emphasis in the early years is on the Navy’s sponsorship and the development of magnetic drum storage devices. EMCC represents Eckert and Mauchly’s attempt to build on the ENIAC developments through their own private company. As with ERA, however, despite efforts to get funding and contracts from a wider commercial arena, it is government contracts that keep the fledgling firm going, funding by the National Bureau of Standards being vital in the early stages. This is unsurprising given the volatile and uncertain world of early computer technology, its temperamental nature, bewildering complexity, and rapid evolutionary cycle—new systems were often superseded before they were completed. The story of both ERA and EMCC is one of over-optimistic designs, cost overruns, constant contract renegotiation, and delayed deliveries. Norberg provides comprehensive accounts of a number of contract histories and their endemic difficulties. Only state purchasers could perhaps survive in such a world. Of the early contracts secured by EMCC, those with the Prudential Life Insurance make it stand out as the pioneering commercial company.

Eventually, both companies needed to become part of a larger-scale operation in order to survive. Norberg explains that a different mix, indeed a different culture of management and technical expertise evolved at ERA and EMCC. Norberg’s essential message is that when the two companies were eventually folded into Remington Rand, it is the failure of the latter to effectively reconcile these different cultures which was to handicap the company in its contest with IBM. In charting the progress of ERA and EMCC, and the effect of their incorporation into Remington Rand, Norberg confronts a series of crucial issues and debates. Engineers and entrepreneurship—can boffins be effective managers and achieve commercial success? Funding and investment—where do advanced technology firms get funding in a pre-venture capital world? Government funding and control—how does this affect the direction of technology and the competitiveness of firms, and what competences do government staff possess in assessing technologies or supplier companies? What interests do they have in securing the future of fledgling, strategically important companies? Are such companies viewed as strategically important from an economic or military point of view? Norberg’s book is replete with information, most of it garnered from archive sources, that addresses and informs these questions. It is a very fine piece of scholarship that will be invaluable to a wide range of historians seeking to understand the evolution of both technology and U.S. business.

RICHARD COOPEY, University of Wales, Aberystwyth

This edited volume provides a fine start toward a definitive treatment of corruption and reform in U.S. economic history. The volume promises lessons to reduce corruption and promote economic development (p. 4). Although the well-executed chapters deserve reading, they highlight the ambiguity and apparent difficulty of studying corruption.

Predictably in a volume on corruption, definitional issues loom. The authors offer several meanings of corruption: “the misuse of public power for private purposes (Menes, p. 65),” “[t]heft from the public (Cutler and Miller, p. 154),” “sale of public assets for private gain (Bodenhorn, p. 231),” “the illicit sale of political influence (Troesken, p. 263, original italics),” and illegal subversion of public policy (Fishback, p. 286). In general, the book defines corruption as illegal interactions with public officials in order to advance private economic interests. This includes bribery, kickbacks, embezzlement, skimming from public contracts, and payments to manipulate laws and regulations.

In a thought-provoking essay, impressive for the scope of scholarship, John Joseph Wallis distinguishes systematic from venal corruption. Systematic corruption occurs when public officials constrain the economy in order to preserve political power. This is the debilitating form that can cripple a society’s health. Except for certain cases in the early nineteenth century (such as bank chartering, as covered by Howard Bodenhorn’s chapter), the United States avoided this type of corruption. Written state constitutions and the transition to general, rather than special, state incorporation laws played important roles in this achievement. In contrast, venal corruption entails using political means to advance private economic ends. This is the common, but less damaging, form of corruption, leading to suboptimal resource allocation but not structural impairment.

While intriguing, the distinction seems unstable. Is the quest for power not often motivated by a desire to promote economic position? Can venal efforts to advance merely private interests lead to restrictions that become systematic? Here is the dubious difference: “Systematic corruption occurs when politics corrupts economics. . . . Venal corruption occurs when economics corrupts politics (p. 25).” Wallis’s treatment in developing the argument merits attention, but the concepts require further refinement.

Having defined corruption, the next step is measurement. The authors are particularly inventive here—but in ways that yield conflicting conclusions about the pattern of corruption over time. In the introductory chapter the editors, Edward L. Glaeser and Claudia Goldin, use adjusted word counts of “corruption” and “fraud” from newspaper articles between 1815 and 1975, finding that corruption was most prevalent during the nineteenth century and then declined from the mid-1870s. They note that today some consider the United States among the least corrupt economies (p. 1). Yet, Rebecca Menes, using biographical information for mayors of large cities, finds that corruption peaked between 1880 and 1930. Moreover, Stanley L. Engerman and Kenneth L. Sokoloff suggest that corruption, or something like it, has never been as significant as it is today.

On two levels the volume’s focus on corruption seems frustrated. First, in several chapters corruption plays little or no role. For example, Matthew Gentzkow, with Glaeser and Goldin, document the rise of a neutral press but do not test whether it controlled corruption. Engerman and Sokoloff’s review of Erie Canal construction
touches on political manipulation and partisan behavior but not corruption *per se*. Naomi R. Lamoreaux and Jean-Laurent Rosenthal offer an elegant analysis of the rise of the corporate form of business organization relative to partnership that says nothing about corruption. The interesting analysis of the food and drug protection acts by Marc T. Law and Gary D. Libecap provide valuable insights into who gained and who lost, but there is no real discussion of corruption in the sense of violations of law-enshrined norms.

Second, some chapters find or assert that corruption was not important for their topic. After applying her measure of corruption in urban areas, Menes (p. 67) finds little effect of corruption on economic growth; indeed, corruption does not even seem to have impaired the quality of government (p. 69). David Cutler and Grant Miller (p. 154) assert, but do not show, that corruption fails to explain the replacement of private by public municipal water systems. Similarly, Price V. Fishback finds that mining and manufacturing employers subverted employment safety legislation but that there was little evidence of “bribery or other illegal corruption (p. 314).” For a volume on corruption, it seems ironic that there was so little of it or that it did not matter.

Some chapters explicitly deal with corruption. Bodenhorn’s piece documents the rise of corruption in New York bank corporation charters, followed by the decline in corruption via free banking. Werner Troesken’s discussion of the evolution of utility regulation places corruption and reform at the center of the explanation for continuous regulatory regime change. The final chapter by Wallis, Fishback, and Shawn Kantor argues that pre-1933 local corruption in distributing social welfare payments did not afflict New Deal programs because it was in President Roosevelt’s political interest to control corruption.

This volume contains a number of intriguing ideas. Mention has been made of Wallis’s distinction between systematic and venal corruption. There is also what might be called the regulatory dialectic, developed in Troesken’s application of Mancur Olson’s notion of regulatory cycles: Every regulatory regime is corruptible; what matters is having the flexibility in the political/economic environment to replace corrupt regimes with something different—something, we must recognize, that will eventually itself become corrupted. There is also the Wallis, Fishback, and Kantor notion that corruption can be constrained if it is in the political interest of officials to do so. How to design incentive mechanisms to accomplish that would be worth study.

Embrace competition. This is the volume’s main lesson from the American experience with corruption and reform. Separation of powers and balanced government injected competition in public power and constrained corruption in New York bank chartering (Bodenhorn) and in the distribution of relief during the New Deal (Wallis, Fishback, and Kantor), and were critical to preventing systematic corruption (Wallis). Competition also proved important for moving newspapers from explicitly biased voices toward a more neutral, objective standard—potentially constraining corruption (Gentzkow, Glaeser, and Goldin). And competitive elections compelled even urban political machines to provide quality government services (Menes, pp. 85–86).

This is a valuable volume by many of the leading scholars in U.S. economic history. It is a fascinating attempt to deal with an important issue in economic development by looking to the lessons of history. A part of the fascination lies in the apparent difficulty of clearly describing corruption’s historical role and extracting useable lessons. Worth reading, but not a roadmap to reform.

**Christopher Grandy, University of Hawaii**

This carefully researched and well-written book offers the best full-length scholarly treatment available on the rise of Silicon Valley, a topic that has been, for the most part, the province of boosters and popularizers. Christophe Lécuyer, who has a doctorate in history from Stanford University and is now a senior scholar at the Chemical Heritage Foundation and an economic analyst for the president of the University of California, has mined a wealth of archival materials and conducted numerous interviews to present a detailed yet engaging history of the San Francisco Peninsula’s development from an industrial backwater with just a few radio enterprises in the early 1930s to a main center of electronic component firms by the 1960s. By this time, Silicon Valley had become central to the U.S. political economy, producing and developing the components used in the military’s advanced weapons systems as well as in many industrial goods.

By starting with the 1930s and by focusing on the history of key electronics firms, Lécuyer challenges the work of historian Stuart W. Leslie (The Cold War and American Science: The Military-Industrial-Academic Complex at MIT and Stanford [New York: Columbia University Press, 1992]) and others that emphasizes the role of cold-war military funding and of Frederick Terman, Dean of Engineering and then Provost of Stanford University, in fostering the growth of Silicon Valley. Lécuyer does not discount this view entirely, agreeing that electronics firms benefited from proximity to Stanford, and also that the military, as both patron and customer, was important to Silicon Valley’s success. But Lécuyer aligns himself with the theories of economist Alfred Marshall and emphasizes the development of “unique manufacturing, product engineering, and management competencies” (p. 5) as the keys to Silicon Valley’s emergence and growth as an industrial region. He thus locates the seeds of Silicon Valley’s success in the innovative practices of business corporations rather than in geographical factors such as proximity to a university or in political-economic developments such as cold war military spending.

Lécuyer, who shows an understanding of business and economic history as well as a gift for explaining complex technologies in terms comprehensible to the layperson, illustrates his argument through a close study of a handful of companies—Eitel-McCullough, a manufacturer of power-grid tubes; Litton Industries and Varian Associates, designers and producers of microwave vacuum tubes; and Fairchild Semiconductor and its spinoffs Intel and Signetics. He strives to place each company’s development in the context of the political economy, showing, for example, how a company’s relationship to the Defense Department shaped both the engineering and marketing challenges it confronted and the choices the company made to overcome them. For example, to get a foothold in the manufacturing of magnetrons, a kind of microwave tube used in advanced radar systems and much in demand by the military during the Korean War, Litton Industries approached the Navy for advice and then, at the Navy’s suggestion, set itself the task of manufacturing a magnetron like one being made by Sylvania and Raytheon but at lower cost and higher quality. To achieve this, the company adopted innovative manufacturing methods, developing a new, very clean process for producing magnetrons and instituting tight discipline over the workforce, requiring workers to inspect their own work and making them responsible for its quality in order to ensure a precision product.

Lécuyer asserts that Silicon Valley companies developed not just in relation to Defense Department needs and constraints, but also in relation to each other, the culture and practices of early electronics component firms being adopted by companies that
came later. For example, Litton’s emphasis on designing a high-quality product and developing new manufacturing techniques was adopted by subsequent microwave tube entrepreneurs, and became characteristic of Silicon Valley firms, according to Lécuyer.

This argument—that culture and practices important to success were developed and transmitted from one company to the next—would be more convincing had Lécuyer delineated the mechanisms and networks through which ideas and practices were disseminated, not just among the handful of companies examined in Making Silicon Valley, but also among the hundreds of ventures that came to make up Silicon Valley. One wonders, for instance, what part was played by the Defense Department, particularly by its scientific and industrial liaisons, in creating and fostering communication among Silicon Valley engineers. Also worthy of consideration is the role of Stanford University, both through its Industrial Affiliates and other programs, which brought Stanford engineering faculty together with participating Silicon Valley companies to exchange research ideas, and through its science and engineering faculty, who trained many of the employees of Silicon Valley companies, and, in several instances, founded electronics companies themselves. One also wonders whether an examination of additional companies, including those that did not succeed as well as those founded by Stanford professors wishing to bring to the market technologies developed under military sponsorship, would affect his theory as to what made Silicon Valley into a dynamic high-tech region.

Whether or not Lécuyer, in emphasizing the innovations made by electronics entrepreneurs and engineers, has uncovered the key to the rise and success of Silicon Valley, he has produced an intelligent and valuable study that deserves a place on the bookshelves of economic and business historians as well as historians of science and technology.

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GENERAL AND MISCELLANEOUS


For better or worse, historians have found it useful to organize the past into a series of epochs, often punctuated by wars; the “long nineteenth century” (1789–1914) and the interwar years, for example, have been the focus of substantial bodies of research. The 1990s, which began with the end of the Cold War, and, one might argue, ended with the terrorist attacks of 11 September 2001, may prove to be another epoch that attracts the interest of historians. Especially from the vantage point of the United States, those were heady years of robust economic growth, optimistic projections of the emergence of a “new economy,” enormous increases in stock prices, and an acceleration of worldwide economic integration, to name just a few of the remarkable developments of the decade.

Although dramatic, and often regarded by contemporary observers as revolutionary or unprecedented, many of the developments of the 1990s bear some resemblance to those of earlier periods. Globalization, after all, was quite extensive at the beginning of the twentieth century, and episodes of rapid technological progress and productivity growth were experienced in the 1920s and 1930s in the United States. The historical
significance of the 1990s, and to what extent this decade ushered in a truly new era, is open to question. The essays in this volume address this question as only economic historians can: by analyzing the developments of the 1990s in their historical context, and exploring the parallels between the 1990s and earlier eras.

Edited by Paul W. Rhode and Gianni Toniolo, the chapters in this volume were written by many excellent economic historians, including several leading experts on the topics taken up in the book. Focusing on the United States, the chapters analyze many of the most prominent developments of the 1990s, such as productivity growth and technological change, asset bubbles and macroeconomic conditions, globalization and economic integration, and social and political change. All are of quite general interest.

Several of the chapters find interesting parallels between the experiences of the U.S. economy in the 1920s and the 1990s. Robert J. Gordon’s chapter, for example, documents some remarkable similarities in macroeconomic conditions between the two decades. Growth in GDP, employment, and productivity were nearly identical in the 1920s and 1990s, and low inflation was enjoyed in both decades as well. There was also a boom in the stock market in both the ’20s and the ’90s, of course, and Eugene N. White’s chapter discusses the difficulties entailed in assessing whether or not these episodes were “bubbles.” He examines the response of the Federal Reserve to both episodes, in light of the uncertainty surrounding the extent to which the booms were driven by improved fundamentals. The Fed has been blamed for fueling both booms, but White’s discussion highlights the difficulty in ascertaining the appropriate monetary policy response to asset price inflation.

Several chapters examine productivity growth and technical change in the United States in the 1990s, and again, comparisons between the ’20s and the ’90s are found to be instructive. Alexander J. Field’s chapter focuses on multifactor productivity growth, and shows that it was lower, and more concentrated in particular sectors, in the 1990s compared to the 1920s and 1930s. The sectors within which the productivity gains of the 1990s were concentrated are the focus of Peter L. Rousseau’s chapter, which compares the gains related to the adoption of information technologies in the 1990s to those resulting from electrification in the earlier part of the century. Gavin Wright’s chapter describes the history of productivity growth and wage changes over the twentieth century, and presents a provocative argument about the causal effects of rising wages on productivity. In general, these chapters present an interesting spectrum of opinion on the sources of productivity growth in the 1990s.

The process of globalization in the 1990s is discussed in chapters by Barry Eichengreen, Nicholas Crafts, and Riccardo Faini. Eichengreen’s chapter presents a detailed discussion of the extent of world trade and financial flows in the 1990s, in an effort to determine how distinctive the 1990s really were. Although by most measures, globalization was more extensive in the 1990s than in earlier decades, Eichengreen argues persuasively that the growth in international transactions of that period was a continuation of processes under way for some time. Crafts’s chapter documents the growth experiences of the different regions of the world in the 1990s, and compares them to their long-run histories. Although he documents the striking progress made by China and India during the decade, Crafts’s main conclusion is that globalization has failed to facilitate progress in catch-up or convergence within the developing world. Faini’s chapter evaluates the growth experience of Europe in the 1990s, the decade in which it made significant progress towards greater integration. Contrary to popular wisdom, Faini concludes that there is little evidence of a relative economic decline in Europe.

Finally, there are chapters on social and political developments written by Peter Temin, Peter H. Lindert, and Michael A. Bernstein. Temin’s chapter views the 1990s
as a postwar decade, and compares the experiences of that decade to those of earlier postwar episodes. In his chapter, Lindert documents that the welfare state is not in retreat among OECD countries, and moreover argues that there is likely to be “convergence in the shares spent on social transfers and public education in the rest of the world,” meaning that new welfare states will likely emerge in the developing world. Finally, Bernstein’s chapter surveys the moves toward deregulation and lower taxes in the United States in the 1990s, and assesses their consequences.

The range of questions relevant to the topic of this book is quite broad, and one might quibble with some of the decisions of the editors regarding the focus of the volume. There is probably too little discussion of the growth of China and India, Japan’s long economic slump, and the financial crises of East Asia and Latin America, all important developments that shaped the world economy 1990s. It is perhaps unfair to expect a volume such as this to be comprehensive, however, and in any case the emphasis on the United States provides greater analytical depth.

It is, of course, too early to understand the impact of the 1990s definitively. But the essays in this volume offer interesting and in some cases surprising insights into the historical significance of the decade. And because they present a historical analysis of recent economic events, the essays in this volume might prove useful as additions to the syllabus of undergraduate courses on subjects such as macroeconomics or international economics.

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