

Toward an Historical Sociology of Business Culture

Thomas J. Misa

Illinois Institute of Technology

Andrew Carnegie had the good fortune to possess contacts among the rich and famous on both sides of the Atlantic, wealth enough to buy the good favor of reporters, and media savvy. But he also had the ill fortune in the 1890s to need all these resources, for in that decade both his public image and his business philosophy were under challenge. At the beginning of the decade bad news kept coming from his Homestead mill, first a public scandal concerning defective armor plate for the nation's battleships and then a worldwide outcry in the aftermath of the Homestead strike. At the end of the decade there was the momentous matter that two of the strongest personalities in American business – Henry Clay Frick, the king of Connellsville coke, and J. Pierpont Morgan, the nation's premier investment banker – were each gunning for him. Bad blood had existed between Carnegie and Morgan ever since the Corsair compact of 1885 [32, pp. 133-38]. Just as his conflict with Carnegie over a tangle of railroad and steel issues reached a critical point at the turn of the century, Morgan stated that unless something dramatic was done, "Carnegie is going to demoralize railroads just as he has demoralized steel" [6, p. 467]. In 1901, to forestall the impending calamity, Morgan purchased the wide-ranging Carnegie properties – including iron ore holdings, coal and limestone lands, a fleet of 112 lake steamers, over 1,000 miles of railroad, blast furnaces, and steel plants – and formed them along with his Federal Steel properties into the gigantic United States Steel Corporation. In the years that followed the steel merger, Morgan and Carnegie spoke just once before Morgan's death in 1913; in effect the financier told the former steel man that he had not driven a hard enough bargain. Frick, even after his forcible ouster from the Carnegie company in 1900, won a place on the board of Morgan's U.S. Steel for helping the combine gain possession of the Rockefeller iron ore mines. He and Carnegie remained hostile and silent, save for one vituperative exchange of letters, until their deaths in 1919.

I tell this familiar tale not to rehearse the "robber baron" thesis of business history's past, but to illustrate a point that those contemplating its future might ponder. Scholars studying the thinking and behavior of business people frequently encounter historical conflicts between two or more major protagonists, even while each party behaves rationally or at least consistently with his or her underlying philosophy or model of business. Under the sway of the

BUSINESS AND ECONOMIC HISTORY, Volume twenty-five, no. 1, Fall 1996.
Copyright ©1996 by the Business History Conference. ISSN 0849-6825.

structural-functionalist approach pioneered by Alfred Chandler, business historians have shown a tendency to deal more fully and sympathetically with the protagonists that “won” and to deal less fully or even unsympathetically with those that “lost.” The result has been a scholarship dominated by studies of the dominant individuals and the dominant firms.

Business historians are presently confronting a search for new perspectives and new foundations. Studies by Scranton, Ingham, Blackford and others studying non-leading-sector industries, or smaller businesses, have helpfully widened the scope of business history. The themes of the field have been enlarged as well. Sicilia and Lipartito have advocated taking a contextual approach to the study of business organizations and society [25, 38]. Most recently, they have each advocated the historical study of business culture [26, 39]. This paper explores insights from the sociology of knowledge that might extend this broadening and contextualizing of the field, leading toward an integrative effort that might be termed an historical sociology of business culture. I believe such an effort should embrace richly textured studies not only of smaller firms, or non-leading-sector industries, but of the largest firms and leading-sector industries as well. Revamping business history from the “bottom up,” but paying little attention to center firms, however overdue this compensatory history might be, will not serve business historians well. After all, there is ample opportunity for fresh insight into U.S. Steel, Ford, and General Motors. In the paper’s conclusion, I suggest an approach to bridging the thematic gap between newer approaches to business history focusing on culture, society, and context, and traditional approaches focusing on managerial hierarchies and economies of scale, speed, and scope. Finally, it is important to note that business historians may have much to *teach* would-be sociologists of knowledge, for in focusing variously on heroic individuals or on broadly posited social “interests” they have too often ignored economic and institutional dynamics that have been at the core of business history.

Forms of Culture

Before turning to the sociology of knowledge, it may be helpful to reflect on the shape or form of “culture.” Culture can be conceptualized in a blindingly diverse number of ways, of course. To simplify matters a bit, let us consider three very general approaches: the anthropologist’s notion of culture as a unified “whole”; the historian’s familiar notion of culture as “context”; and a sociologist’s approach to culture as a set of tensions.

Historians and consultants writing about “corporate culture” have typically adopted the first approach, the anthropologist’s notion of culture as a unified “whole,” although they have rarely been explicit about this choice. Business historians have usually conceptualized a particular business’s or organization’s culture as a unitary whole, whose components are articulated by top management and passed down to the rank-and-file through a series of formal and informal mechanisms [7, 13, 16, 45]. (By contrast, labor historians have used

“corporate culture” to explore cultural or class or gender conflicts [11, 12, 33].) Culture, for these historians as well as for most cultural anthropologists, possesses an internal logic and series of functional relationships. Such logic and functionality is revealed by a classic exercise in cultural anthropology, i.e., to take a set of apparently inexplicable beliefs or actions, and to show how these beliefs are comprehensible and how they form a meaningful whole.

The explication by Mary Douglas of “The Abominations of Leviticus” is a paradigmatic case in this tradition [10, pp. 54-72]. Far from the hopeless tangle of contradictory statements that they might appear to be at first glance, the dietary rules set out in Leviticus are injunctions on how to live a holy life, one of wholeness and completeness, by avoiding behaviors that threaten the perfection of the individual or that expose one to “hybrids” or other “confusions.” These abominations include the mixing of cattle breeds, the planting of more than one kind of seed in a single field, the mixing of two cloths in one garment, and above all the consuming of animals deemed to be unclean. Unclean animals are those that do not fit into the classification of animals found in the book of Genesis. Locusts, for instance, are deemed unclean because they crawl on the earth, whereas Genesis sets forth that creatures living on earth may only hop, jump, or walk.

At some remove from locusts, but implicitly sharing Douglas’s model of culture as a unitary and meaningful whole, are the many analysts of “corporate culture.” In a recent formulation of the theme, Kunda presents an ethnographic study of a high-technology Route 128 electronics firm and argues that the firm’s corporate culture was unitary and pervasive. His finding resulted from the firm’s systematic efforts at fostering and sustaining its corporate culture. These efforts included designing company meetings to build consensus behind management initiatives, encouraging employees to participate in loyalty-building social and recreational events, and even employing an in-house anthropologist who served effectively as an interpreter and conveyor of the corporate culture. Kunda conceptualizes corporate culture as a form of “normative control,” defined as “the desire to bind employees’ hearts and minds to the corporate interest” [23, p. 218]. While masterfully showing the functional relation of many different social and cultural elements to an overall conception of the firm’s corporate culture, Kunda’s ethnography does not take the reader “inside” the firm to evaluate possible rifts in the supposedly all-embracing culture. Consequently, he simply fails to consider whether the engineer-employees have any loyalty, attachment, or orientation to anything but the corporate culture. The choice of cultural model, then, largely determined the range of findings.

On the anthropologist’s view of culture as an integrated whole showing unitary patterns, an “anthropology of business culture” might focus on the existence and functioning of a general culture (in a firm or beyond), on the institutionalized patterns of behavior, on giving prominence to continuity and mechanisms of articulation. The result might be “a coherent understanding of

how different [business] systems reflect the cultures which sustain them.”¹ An historical anthropologist examining the culture of Carnegie, Morgan, and Frick at the turn of the century might focus not so much on their several points of disagreement but on their many areas of shared, common assumption. In an era of Populist and Progressive suspicions of big business, these men were each committed to the capitalistic business system. In an era of opportunistic financial manipulations on Wall Street, each man was committed for the long term to the building up of a vast empire. Even Morgan and Carnegie saw eye-to-eye on the gold standard. After all, Morgan not only spent much of the mid-1890s placing massive issues of gold bonds for the U.S. Treasury, but also granted Carnegie’s request in 1901 to be paid for his properties in first-mortgage 5 percent gold bonds.

In business history a contextual approach – the second form of conceptualizing culture – is comparatively novel, but as David Sicilia has reminded us, contextualism has been the dominant approach in the history of technology for more than a decade [38]. In his wide-ranging review of the field, Staudenmaier writes that contextual history of technology requires conceiving of “the internal design of specific technologies as dynamically interacting with a complex of economic, political, and cultural factors” [40, p. 11]:

Genuine contextualism is rooted in the proposition that technical designs cannot be meaningfully interpreted in abstraction from their human context. The human fabric is not simply an envelope around a culturally neutral artifact. The values and world views, the intelligence and stupidity, and biases and vested interests of those who design, accept and maintain a technology are embedded in the technology itself [40, pp. 165-66].

A central insight of this approach, Staudenmaier argues, is that “the specific designs chosen by individuals and institutions necessarily embody specific values.” It is not too much to say that this insight has become the dominant theme in the field [40, pp. 121-61, 181-201; 41]. Indeed, I have suggested that the contextual approach, in underscoring the congruence of specific technical details with the surrounding culture’s values, has had the inadvertent result of de-emphasizing technology’s role in social change [30, pp. 317-19; 31, pp. 116-18].

A flood of detailed studies in *Technology and Culture* and elsewhere has adopted this contextual approach to show how social and cultural forces have shaped technological change. Several examples give the flavor of this work. Carolyn Cooper examines the career of inventor Thomas Blanchard against the backdrop of patent management – including the steps subsequent to invention of revising, licensing, and litigating of patents – as well as contracting for the Federal government. Paul Israel recounts the careers of telegraph inventors from Samuel Morse through Thomas Edison, against the backdrop of the telegraphers’ technical community, urban environment, and changing corporate context. Steven Lubar shows how specific technical characteristics of American pin-

¹To adapt a phrase describing “the anthropology of science” from Arnold Thackray [43, p. 310].

making machines reflected American cultural values. Mark Rose examines the evolution of heating and lighting technologies against the backdrop of urban growth and spatial rearrangement. And in a wide-ranging literature review, Rose has discerned four distinct ways in which public policies have interacted with technological innovation [8, 19, 27, 34, 35].

While the anthropological approach would focus on culture as a whole, and while a contextual approach would investigate the interaction of the technology (or business practice) with its context, a sociological approach would highlight not unity or interaction but tension. In emphasizing tension, a sociological approach would stress that there is not a single culture, or unitary social order, but that “the social order” is divided or segmented. Relationships are not inevitably consensual, but have elements of complementarity or even conflict. Instead of a unitary culture, there are dominant ideologies that serve dominant social groups or classes. Knowledge, then, is not some collection of neutral facts about a nonpartisan reality. Knowledge in this perspective is a tool or weapon used by certain segments of society to achieve their goals.

The Sociology of Knowledge

The sociology of knowledge in the form that I have found most helpful is rooted in the sociology of scientific knowledge. While there are of course obvious differences between the science system and the business system, there are also several suggestive parallels. The two domains are similar at least in sharing a formal commitment to rationality and objectivity. Consider the analogy: truth/reality is to science as profit/allocative efficiency is to business. In the past for both the history of science and business history, these rational principles were assumed to be sufficient analytical tools to understand the domain at hand. Perhaps even today, in the company of philosophers of science and neo-classical economists, these rational principles hold sway.

The modern sociology of scientific knowledge took form as a critique of the received wisdom which presumed the impartial, objective, rational character of scientific knowledge. From the 1950s on philosophers and historians of science, consolidating their respective disciplines, had found common ground in the conception that (as Alexander Koyré put it) “the science of our epoch, like that of the Greeks, is essentially *theoria*, a search for the truth ... an inherent and autonomous...development” [quoted in 42, p. 119]. Finding common ground in a hearty and spirited dissent from this idealist, internalist conception of science were a group of sociologists and social historians of science emerging in the 1970s. Drawing on varied antecedents in the writings of Karl Mannheim, the early work of Robert Merton, and Thomas Kuhn’s *Structure of Scientific Revolutions* [22], they sought through sociological argument and empirical studies to destroy the “myth” that scientific knowledge was an autonomous development, divorced from institutions and the press of politics. Social historians of science sought to demonstrate that scientific ideas and research

programs were “evolving responses to intellectual, institutional, financial, political and career pressures and opportunities” [43, p. 311].

Advocates of the “strong programme” in the sociology of scientific knowledge, notably Barry Barnes and David Bloor, took the argument one step further. “All knowledge, whether it be in the empirical sciences or even mathematics, should be treated through and through as material for investigation,” wrote Bloor in 1976. “There are no limitations which lie in the absolute or transcendent character of scientific knowledge itself, or in the special nature of rationality, validity, truth or objectivity” [quoted in 24, p. 244]. Methodologically, this meant insisting upon symmetrical explanations for knowledge deemed either “true” or “false” (the symmetry thesis) and, consequently, erasing the traditional distinction between the social and cognitive realms. For Michael Mulkey the presumed impossibility of ever knowing what actually happened to historical actors meant taking scientists’ discourse to be the only reliable unit of analysis. In sketching out an “instrumental model” of sociological explanation, Steve Shapin argued that “Knowledge is not regarded in this literature as contemplatively produced by isolated individuals; it is produced and judged to further particular collectively sustained goals” [37, p. 197]. Reality, as a privileged form of explanation, was banished. Scientific knowledge was no different than religious beliefs, social theories, and other cultural productions; it was, in short, socially constructed.²

Social historians of science turned these suggestions into a small torrent of empirical work. “An empirical sociology of knowledge has to do more than demonstrate the underdetermination of scientific accounts and judgments,” as Shapin phrased the matter [37, p. 164]. “It has to go on to show why particular accounts were produced and why particular evaluations were rendered; and it has to do this by displaying the historically contingent connections between knowledge and the concerns of various social groups in the intellectual and social settings.” Amid a staggering variety of empirical case studies, three themes stand out. Studying scientific controversies was quickly grasped as a productive way to show the contingent and constructed nature of scientific knowledge. During controversies not only is the outcome of properly certified, “correct” knowledge simply not known; participants in the controversy often are explicit about identifying the interests at play, sometimes attacking their opponents in print and explicitly attributing “interests” to them [32, pp. 30-36].

Second, in debunking the notion of culture as a neutral backdrop and showing instead the goal-directed nature of knowledge, some historians and sociologists used detailed, contextual case studies to point out the “isomorphic structure,” or “elective affinities,” between the worldview (said to be) embodied in a certain cultural construct and the social interests of groups endorsing that construct. Consider how rival strains of social theory and rival strains of

²For “the many empirical successes of practical sociological approaches to scientific knowledge” see the early, influential review by Steve Shapin [37, p. 158] which includes a 149-item bibliography.

evolutionary theory sorted themselves out around the turn of the century. Orthodox Darwinism, with its stress on gradual evolution through the accumulation of small, incremental changes, was favored by liberal political groups, which held that social change was the product of small innovations by ordinary people. By contrast, the rival evolutionary theory of Mendelism appeared to permit abrupt, discontinuous changes, which was more agreeable to conservative groups holding that social change could be effected only by outstanding figures in extraordinary circumstances [22, p. 303].

A third strategy, which often underlay the above two, was to affirm one version or another of relativism – the proposition holding that criteria of judgment are not fixed, and vary with individuals and environment. While most historians are comfortable with methodological relativism (the proposition that during an investigation the analyst should set aside what one “knows” to be true about the phenomena at hand and focus instead on what the historical actors knew or thought they knew about it), advocates of the sociology of scientific knowledge appeared to advocate an epistemological relativism which despaired of ever knowing reliable facts, let alone the truth, about the subject at hand. In certain footnotes and in singular public spectacles, some incautious sociologists even appeared to slide over the brink into a wide-ranging ontological relativism.

Given the above discussion of “contextualism” and “constructivism,” it is clear why neatly disentangling the two approaches is so difficult and why so many have confused or conflated them [17, pp. 211-14; 38, p. 67]. Simply put, there is much common ground. Indeed, the overriding reason why the sociology of knowledge, in the words of David Hounshell, “spread like a firestorm in the history of technology” [17, p. 213] beginning in the late 1980s is that the methodological injunctions made by its advocates, and especially by advocates of the social construction of technology [2, 3, 4], were congenial to the Society for the History of Technology’s (SHOT’s) dominant contextualism. Business historians evaluating this field are of course free to take up for their own purposes whatever new ideas they find congenial. Nevertheless, at least three distinctions can be made between “contextualism” and “constructivism.” First, contextualism in SHOT was a well established tradition a decade before social constructivism became something of a sensation. Since 1975 all of SHOT’s Dexter-Prize winning books have been contextualist studies [40, p. 183]; while the conference that resulted in *The Social Construction of Technological Systems* volume, the first substantial interaction between historians of technology and constructivist sociologists, was held in 1984 [2]. Moreover, despite the contextualist insight that “specific designs chosen by individuals and institutions necessarily embody specific values,” and despite the extension that “the dynamics of interaction between world view and technical design need not be limited to an individual technology” [40, pp. 166, 200], it is a rare historical study of technology that demonstrates the constructivist ambition of showing “elective affinity” between a dominant technological design and a dominant set of social values.³

³Otto Mayr has compared the preference in early-modern Continental Europe for clock mechanisms and authoritarian political theory, on the one hand, with the preference in early-modern England for feedback mechanisms and liberal political theory [29]. Mayr’s book, however, shows no trace of social constructivism.

Finally, contextualists and constructivists have largely diverged on the question of relativism. While contextualists have even used constructivist language to combat the bogey of technological determinism, they have rarely sought to affirm the constructivist stance of relativism by challenging the commonsense reality of the specific artifact or system under study.⁴ On the other hand, constructivists have pressed the relativist perspective that “technical artifacts do not exist without the social interactions within and among social groups” and, by extension, that “for different social groups, the artifact presents itself as essentially different artifacts” [3, p. 76]. That is, if a single artifact (using the commonsense meaning of that term) is given distinct meanings by two (or more) distinct social groups, the contention is that it is meaningful to talk about there being two (or more) distinct artifacts.⁵

And Whence the Market?

Advocates of cultural approaches to business history, and not just of the sociological approaches discussed here, may be tempted to oppose the “old” approach stressing market-driven, organization-mediated rationality with the “new” approach stressing instead the culture-mediated, non-rational wellsprings of business and consumer behaviors [26, pp. 5-7, 33-37]. But there is good reason to seek common ground from the start and to avoid dichotomies that may prove false. The contrived conflict in science studies, for instance, between so-called internalist and externalist camps, led to a decade-long split just presently showing signs of synthesis.⁶

In conceptualizing cultural and market forces, business historians might elaborate the concept of “user-producer interactions” from evolutionary economics. Indeed, there is much to admire in these economists’ systematic description of the process and patterning of change [9; 32, pp. 262-65; 44]. From several angles, the important role of users in innovation processes is receiving long-overdue attention [5, 15, 19, 20, 21]. My conception of user-producer interactions encompasses how users and producers are internally organized, how and why they develop modes for communicating with each other, how and whether strategic decisions about innovation are made, as well as straightforward economic considerations, including price signals and demand structures. Indeed, I have argued that a wide range of cultural, institutional, and market forces can be handled with this concept [28; 32, pp. xix, 276-82]. Cartel-like behavior, whether intermittent or persistent, takes on a new analytical significance,

⁴Cooper’s study of Blanchard’s machinery and patent management strategies is a good example of a contextualist approach using constructivist language but not relativist epistemology [8, pp. 3-4, 51, 251 n4].

⁵Wiebe Bijker explicitly rejects the realist (anti-relativist) proposition that “there is an independent and invariable reality of which only the interpretations may vary” [2, p. 186 n1].

⁶See the varied proposals for synthesizing ‘internal’ cognitive factors with ‘external’ social factors in [1, 14, 18, 24, 36].

precisely because consensual, cooperative, and even collusive behavior by producers, or by users, does not need to be reduced to an aberrant form of efficient market functioning [32, p. 288 n.12]. Business-government relations, even beyond the government's direct activity in procuring goods and services, can also be incorporated seamlessly into this conception. Federal, state, and local governments all exert indirect influence on user-producer interactions through antitrust, standards-setting, building codes, municipal zoning laws, and other public policies. All of these influences help shape, even as they interact with, the evolving user-producer interactions.

References

1. Wilbur Applebaum, "Epistemological and Political Implications of the Scientific Revolution," in Stephen A. McKnight, ed., *Science, Pseudo-Science, and Utopianism in Early Modern Thought* (Columbia, Missouri, 1992), 167-202.
2. Wiebe E. Bijker, "The Social Construction of Bakelite: Toward a Theory of Invention," in Wiebe E. Bijker, Thomas P. Hughes, and Trevor Pinch, eds., *The Social Construction of Technological Systems* (Cambridge, 1987), 159-87.
3. Wiebe E. Bijker, "The Social Construction of Fluorescent Lighting, Or How an Artifact was Invented in Its Diffusion Stage," in Wiebe E. Bijker and John Law, eds., *Shaping Technology/Building Society* (Cambridge, 1992), 75-102.
4. Wiebe E. Bijker, *Of Bicycles, Bakelites, and Bulbs: Toward a Theory of Sociotechnical Change* (Cambridge, 1995).
5. Stuart S. Blume, *Insight and Industry: On the Dynamics of Technological Change in Medicine* (Cambridge, 1992).
6. Vincent P. Carosso, *The Morgans: Private International Bankers, 1854-1913* (Cambridge, 1987).
7. Albert Churella, "Corporate Culture and Marketing in the American Railway Locomotive Industry: American Locomotive and Electro-Motive Respond to Dieselization," *Business History Review*, 69 (1995), 191-229.
8. Carolyn C. Cooper, *Shaping Invention: Thomas Blanchard's Machinery and Patent Management in Nineteenth-Century America* (New York, 1991).
9. Giovanni Dosi, Christopher Freeman, Richard Nelson, Gerald Silverberg, and Luc Soete, eds., *Technical Change and Economic Theory* (London, 1988).
10. Mary Douglas, *Purity and Danger: An Analysis of Concepts of Pollution and Taboo* (New York, 1966).
11. Jeff Ferrell, "'The Song the Capitalist Never Sings': The Brotherhood of Timber Workers and the Culture of Conflict," *Labor History*, 32 (Summer 1991), 422-31.
12. Lisa M. Fine, "Our Big Factory Family: Masculinity and Paternalism at the Reo Motor Car Company of Lansing, Michigan," *Labor History*, 34 (Spring/Summer 1993), 274-91.
13. John Griffiths, "'Give My Regards to Uncle Billy': The Rites and Rituals of Company Life at Lever Brothers, c.1900-c.1990," *Business History*, 37 (Oct. 1995), 25-45.
14. Ian Hacking, "'Style' for Historians and Philosophers," *Studies in History and Philosophy of Science*, 23 (1992), 1-20.
15. Eric von Hippel, *The Sources of Innovation* (New York, 1988).
16. Sheldon Hochheiser, *Rohm and Haas: History of a Chemical Company* (Philadelphia, 1986).
17. David A. Hounshell, "Hughesian History of Technology and Chandlerian Business History: Parallels, Departures, and Critics," *History and Technology*, 12 (1995), 205-24.
18. David L. Hull, *Science as a Process: An Evolutionary Account of the Social and Conceptual Development of Science* (Chicago, 1988).
19. Paul Israel, *From Machine Shop to Industrial Laboratory: Telegraphy and the Changing Context of American Invention, 1830-1920* (Baltimore, 1992).
20. Janet T. Knodler, "Early Examples of User-Based Industrial Research," *Business and Economic History*, 22, (Fall 1993), 285-94.

21. _____, "Market Structure, Industrial Research, and Consumers of Innovation: Forging Backward Linkages to Research in the Turn-of-the-Century U.S. Steel Industry," *Business History Review*, 67 (Spring 1993), 98-139.
22. Henrika Kuklick, "The Sociology of Knowledge: Retrospect and Prospect," *Annual Review of Sociology*, 9 (1983), 287-310.
23. Gideon Kunda, *Engineering Culture: Control and Commitment in a High-Tech Corporation* (Philadelphia, 1992).
24. Loet Leydesdorff, "The Knowledge Content of Science and the Sociology of Scientific Knowledge," *Journal for General Philosophy of Science*, 23 (1992), 241-63.
25. Kenneth Lipartito, "Innovation, the Firm, and Society," *Business and Economic History*, 22 (Fall 1993), 92-104.
26. _____, "Culture and the Practice of Business History," *Business and Economic History*, 24 (1995), 1-41.
27. Steven Lubar, "Culture and Technological Design in the 19th-Century Pin Industry: John Howe and the Howe Manufacturing Company," *Technology and Culture*, 28 (1987), 253-82.
28. Bengt-Ake Lundvall, "Innovation as an Interactive Process: From User-Producer Interaction to the National System of Innovation," in Giovanni Dosi, et al. eds., *Technical Change and Economic Theory* (London, 1988), 349-69.
29. Otto Mayr, *Authority, Liberty, & Automatic Machinery in Early Modern Europe* (Baltimore, 1986).
30. Thomas J. Misa, "How Machines Make History, and How Historians (and Others) Help Them to Do So," *Science, Technology & Human Values*, 13 (1988), 308-31.
31. _____, "Retrieving Sociotechnical Change from Technological Determinism," in Merritt Roe Smith and Leo Marx, eds., *Does Technology Drive History?* (Cambridge, 1994), 115-41.
32. _____, *A Nation of Steel: The Making of Modern America, 1865-1925* (Baltimore, 1995).
33. Thomas F. O'Brien, "The Revolutionary Mission: American Enterprise in Cuba," *American Historical Review*, 98 (June 1993), 765-85.
34. Mark H. Rose, "Machine Politics: The Historiography of Technology and Public Policy," *The Public Historian*, 10 (Spring 1988), 27-47.
35. _____, *Cities of Light and Heat: Domesticating Gas and Electricity in Urban America* (University Park, PA 1995).
36. Warren Schmaus, Ullica Segerstrale, and Douglas Jesseph, "Symposium on the 'Hard Program' in the Sociology of Scientific Knowledge: A Manifesto," *Social Epistemology*, 6 (1992), 243-65, 315-20.
37. Steven Shapin, "History of Science and its Sociological Reconstructions," *History of Science*, 20 (1982), 157-211.
38. David B. Sicilia, "Technological Determinism and the Firm," *Business and Economic History*, 22 (Fall 1993), 67-78.
39. _____, "Cochran's Legacy: A Cultural Path Not Taken," *Business and Economic History*, 24 (Fall 1995), 27-39.
40. John M. Staudenmaier, *Technology's Storytellers: Reweaving the Human Fabric* (Cambridge, 1985).
41. _____, "Recent Trends in the History of Technology," *American Historical Review*, 95 (June 1990), 715-25.
42. Arnold Thackray, "Science: Has Its Present Past a Future?" *Minnesota Studies in the Philosophy of Science*, 5 (1970), 112-33.
43. _____, "History of Science in the 1980s," *Journal of Interdisciplinary History*, 12 (1981), 299-314.
44. Steven W. Usselman, "IBM and its Imitators: Organizational Capabilities and the Emergence of the International Computer Industry," *Business and Economic History*, 22 (Winter 1993), 1-35.
45. Wen-hsin Yeh, "Corporate Space, Communal Time: Everyday Life in Shanghai's Bank of China," *American Historical Review*, 100 (1995), 97-122.