

The Restructuring in Telecommunications

The Fall of the Bell System. A Study in Prices and Politics. PETER TEMIN with Louis Galambos. Cambridge University Press, New York, 1987. xviii, 378 pp., illus. \$27.95.

The last day of existence for the Bell System was 31 December 1983. The following morning it was replaced by seven newly created independent regional telephone companies and a drastically reorganized and stripped down AT&T. Yet as Temin notes, "On New Year's Day, 1984, dial tones greeted those who picked up their phones and calls to distant locations were routinely completed" (p. 332). This, he continues, was a final tribute to a corporate culture that had provided the United States with the world's most efficient and comprehensive telephone network but had been unable to make the political and internal organizational changes required to preserve itself in the face of rapid and fundamental changes in the telecommunications market and in the national ideology concerning the respective roles of competition and government regulation.

As described by Temin, this corporate culture had evolved in response to the vision of AT&T's "legendary" president, Theodore N. Vail, who in the early years of the century had accepted—even welcomed—public regulation in turn for government acquiescence to Bell's monopolization of a nationwide telephone network. The network's primary objective, as defined by Vail, was "universal service," or "a telephone in every home connected to every other telephone in the country" (p. 16). Stemming from this goal of universal service was a dedication to steadily increasing quality through engineering excellence and technological virtuosity.

To implement his vision, Vail designed an organizational structure that survived virtually intact from its inception in 1909 into the 1960s. This structure was highly decentralized, with a great deal of autonomy given to operating-company presidents, and with similar freedom granted the researchers and engineers at Bell Labs and Western Electric to develop and exploit communications technology. There was little direct control from AT&T headquarters, with coordination stemming primarily from a pervasive allegiance to Vail's goals—an allegiance that was imbued in a core of managers by a system of frequent transfer within the subsidiaries and to and from AT&T headquar-

ters and by promotion based on absorption of the culture as much as on skill and ability.

For over half a century, the Bell System worked "spectacularly well" (p. 19) in Temin's assessment. But "universal service" coupled with continuing technological improvement came to be viewed as a corporate responsibility to define customers' needs (as contrasted with ascertaining what customers wanted) and then design products or systems to meet the perceived needs most efficiently. Such an attitude, firmly anchored in the corporate culture, had gone from a basic strength to a fundamental weakness of the Bell System by the 1970s, with the emergence of a vast new set of customer demands for information transmission and processing services and equipment. The obsolescence of Bell's approach to its customers was typified by its struggles to maintain monopoly positions in provision of "end-to-end" service, including control of terminal equipment, which by that time included television transmission devices, PBX switchboards, modems, and more complex machinery integrating data transmission and processing, as well as the familiar telephone instrument. These unsuccessful efforts ultimately resulted in little but antitrust troubles and increased criticism from both government and private sources.

The Bell System was further afflicted by the breakdown of a long-standing regulatory arrangement. In essence, charges made by the operating companies for connection services provided to the Long Lines Division had diverged further and further from realistically estimated interconnection costs, leading to subsidization of local telephone service from the revenues provided by long-distance calls. This cross-subsidization was of mutual convenience, promoting both Vail's universal service goal and the parochial interests of congressmen and state regulatory commissions in holding down the costs of basic telephone service. But the growing gap between the costs of providing long-distance services and the charges made by AT&T for such calls was bound sooner or later to attract potential competitors. Bell's struggles to beat back challengers such as Motorola in the late 1950s and MCI in the following decade through tariff reductions led to conflict with the Federal Communications Commission, roused congressional fears of higher local rates, stirred up popular antimonopoly sentiments and sympathy for

the smaller entrants that were under attack, and ended in a capitulation under which entrants' interconnection charges were set at a fraction of those assessed against AT&T's Long Lines Division. And in 1974, the U.S. Department of Justice filed an antitrust suit, alleging that AT&T had used the Bell System's corporate structure to monopolize the telecommunications market by restricting communications services through the Long Lines Division and by encouraging the operating companies to acquire their equipment from Western Electric.

Bell's problems, Temin emphasizes, stemmed from a changing national ideology as well as changes in the technical characteristics of telecommunications. Specifically, under the Ford, Carter, and Reagan administrations alike, there was a growing skepticism about the need for and efficacy of public regulation of a number of industries, including communications, and a concomitant search for viable competitive alternatives. This deregulation movement struck at the heart of one of the fundamental aspects of the Bell corporate culture—Vail's acceptance of government regulation in exchange for tacit permission to monopolize the market.

The new ideology hit the Bell System with full force under the Reagan Administration, in the person of William Baxter, assistant attorney general in charge of the Antitrust Division, described by Temin as one whose strongly held views combined "two parts of neoclassical economics with one part of law" and who was "committed to implementing that ideology as only a true believer can be" (p. 217). Baxter's suspicion of regulated horizontal monopoly was grounded in his agreement with the deregulation concept. But he combined this with a wholehearted acceptance of the Chicago school of economics and its precept that vertical integration was rarely if ever harmful and was instead almost always established in pursuit of efficiency. Thus, he rejected out of hand his predecessors' proposals for spinning off all or parts of Bell Labs and Western Electric from the rest of the system. Instead, he began crafting and discussing with Bell's attorneys a proposed horizontal divestiture settlement in which the operating companies, remaining under regulation, would be separated from a restructured and unregulated AT&T that would retain the R&D and manufacturing capabilities of Bell Labs and Western Electric. Of great importance to Baxter, there should be a "bright line" between the regulated activities of the operating telephone companies and those of the new, unregulated AT&T.

Baxter, a third-line official in the Justice Department, had not only the strength of

his convictions but also the force of character to pursue the case in the face of outspoken opposition from the secretaries of defense and commerce and doubts expressed by the President. His hand was strengthened by the fears of AT&T's counsel that the trial judge would find the company guilty and order a drastic vertical dissolution if the parties did not reach a settlement first, and by the threat of legislation pending in Congress designed with cavalier inconsistency both to end AT&T's monopoly and to protect the cross-subsidization of local service. (Temin is unduly kind in his discussion of the irresponsible and opportunistic behavior of leading members of Congress in this affair.)

On 8 January 1982, a settlement along the lines advocated by Baxter was agreed to and filed. With some modifications, it was accepted by the court the following May. And thus the restructuring of December 1983 was set in motion.

Temin's study was sponsored by AT&T, and his underlying sympathy for the company is clear throughout. Nevertheless, his analysis of the events and of the behavior of the various participants, especially the Bell culture's inability to cope with a changing environment, is thorough, unsparing, and objective. Among the most admirable features of the book is the clarity and precision with which Temin explains complex and changing aspects of technology, pricing, and politics that shaped this environment. "Businessmen contemptuous of government," he concludes, "would do well to contemplate AT&T's institutional rigidity and the role it played in the fall of the Bell System" (p. 351).

Temin ends his study with a relatively brief and inconclusive assessment of the likely effects of the dissolution. He notes that stockholders, who received shares in each of the seven successor operating companies as well as in the new AT&T in exchange for their shares in the old company, have benefited from the restructuring. Thus, the financial market must have judged the break-up favorably. Yet Temin is dubious, observing that "divestiture may well have sacrificed long-run gains in the quest for short-run goals" (p. 362). He identifies a number of potential long-run problems, of which three seem most significant.

For one, as a result of the trial judge's concern for the financial viability of the operating companies, Baxter's bright line between regulated and free-market activities has been blurred. The right to issue the Yellow Pages was reassigned from AT&T to the operating companies. The operating companies are allowed to sell customer-premises equipment. And the judge left the

operating companies free to petition his court for permission to engage in yet other competitive activities. Second, Bell Labs has been weakened both by the smaller resources of the new AT&T and by being removed from direct vertical integration with the operating companies, thus eliminating economies of scale and scope that made the Labs one of the nation's greatest research institutions. And third, Baxter's hope that the new AT&T, freed from regulatory restraints and able to pursue new lines of business, would offer domestic competition to IBM was "based on a total lack of understanding of the internal operations of the two firms" (p. 361). Rather, Temin expects IBM to remain a full-line computer manufacturer with only a minor interest in telecommunications, while AT&T will run a national telecommunications system and concern itself primarily with computers involved in performing network switching functions.

As an objective historical analysis of a major economic event, describing what happened and why, this book is admirably thorough and lucid. But Temin has chosen not to formulate any specific standards of economic performance by which he can evaluate the actual performance of the old Bell System, the likely future performance of its successor firms, and the objectives sought by Bell managers, regulators, and politicians as societally good or bad, thus refraining from the sort of analysis that most economists consider a major comparative advantage of their discipline with respect to other social sciences. Perhaps, as an economic historian, he has given too little weight to this principle of comparative advantage and too much to another venerable precept of economics, division of labor.

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Pharmaceuticals

Medical Science and Medical Industry. The Formation of the American Pharmaceutical Industry. JONATHAN LIEBENAU. Johns Hopkins University Press, Baltimore, MD, 1987. x, 207 pp. \$35. Henry E. Sigerist Series in the History of Medicine.

Few readers of *Arrowsmith* will forget Sinclair Lewis's sardonic portrait of the Dawson T. Hunziker Company, the drug manufacturer that celebrated its antitoxins in full-page advertisements while peddling cancer cures and complexion creams on the sly. The fictional Hunziker Company would not have been out of place in the medical

marketplace of turn-of-the-century America. Even the best pharmaceutical houses sold ancient nostrums and house elixirs side by side with the products of the new science of Koch and Pasteur; few saw more than advertising value in a scientific laboratory. By the 1920s, however, when Lewis was writing, major American makers of pharmaceuticals had left Hunziker behind. Manufacturers, of course, had not lost the capacity for hypocrisy, but they had culled product lines, improved quality control, and embarked on systematic and sustained efforts to develop new drugs; they had, that is, thoroughly incorporated science and scientific standards into their operations.

It is this transformation of the American pharmaceutical industry that forms the subject of *Medical Science and Medical Industry*. According to its author, Jonathan Liebenau, these changes were neither the result of a revolution in the values of management nor the automatic response to the progress of medical science, but rather arose from competitive pressures in a changing market. Two events emerge as critical in his analysis. The first is the appearance of new biological drugs, especially diphtheria antitoxin, in the 1890s. Among the first fruits of modern bacteriology, diphtheria antitoxin could not be made without the supervision of scientists who possessed up-to-date laboratory experience. In the 1890s such expertise was not to be found in pharmaceutical firms. Rather, it was in such public agencies as the New York Board of Health that bacteriologists, fresh from German universities, organized the first commercial production of antitoxins in the United States. Stimulated by the specter of a government monopoly on a lucrative market, drug makers warmed to the task of making serums, often buying the requisite talent from their public sector competitors. Once in operation, the pharmaceutical industry mobilized its advertising and political resources to restrict or eliminate commercial production by government agencies. Later, anxious to build public confidence in their products and to stamp out competition from small producers, the major makers of biological drugs lobbied on behalf of federal legislation to impose standards on the industry. The resulting Biological Controls Act of 1902, by imposing licensing controls on the sale of vaccines and serums, both led to consolidation in the industry and gave legal definition to scientific practice. Thus, while fighting government competition with one arm, the industry embraced government regulation with the other.

The introduction of biological drugs led to sporadic research on other antitoxins, efforts to educate physicians in their use, and