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805-051-1

The Bell-Western Union Patent Agreement of 1879

09/2005-5320

This case was written by Ron Adner, Associate Professor of Strategy and Management at INSEAD and George David Smith, Clinical Professor of Economics at New York University, as a basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation. It is adapted with permission from George David Smith's article, "The Bell-Western Union Patent Agreement of 1879: A Study in Corporate Imagination."

The Bell-Western Union Patent Agreement of 1879[1]

Telegraphy was a technological innovation of the first order. Save for the railroad, the telegraph did more to revolutionize the basic structure and pattern of American commercial life than any other of the proliferating new technologies of the nineteenth century. The telegraph hastened the process of urbanization and significantly reduced the costs of information while facilitating commercial and managerial transactions in virtually every sector of the economy. By offering high-speed communications over thousands of miles, the telegraph made possible the expansion of coordinated enterprise on a large scale over greatly expanded markets at a non-prohibitive cost. The development of the large, national, integrated corporation would have been inconceivable without it.[2]

One such corporation was the Western Union Telegraph Company itself. In the mid-1870s Western-Union was the country's largest single corporate enterprise. It was a highly sophisticated, well-managed, and innovative monopoly, constantly expanding its business and constantly improving its technology. By virtue of its size and economies of scale and through its ongoing introduction of ever more efficient means for transmitting messages over electrical wire, Western Union was able to sustain high profits, lower its costs, and ward off threats from smaller, less efficient, less profitable competitors.[3]

Yet by 1880, Western Union had forgone an opportunity to take control of one new technological device, the "speaking telephone," that had demonstrated its promise for rendering electrical communication over short distances more efficiently than the telegraph. Western Union's failure to develop the telephone, which would ultimately displace the telegraph as the primary mode of telecommunications in the United States, was not merely an oversight. It was a calculated business decision. How can such a monumental failure be explained?

In May 1877, the telephone was brought to market by a small, unincorporated association of four men who held the patent rights to Alexander Graham Bell's now famous invention – a small, clumsy, rectangular box that could receive and transmit sounds replicating human speech electrically over a grounded iron telegraph wire.[4] The Bell patent holders had few resources, but they were determined to exploit what they thought was a unique and saleable invention. A few months earlier, they had failed to interest the president of Western Union, William Orlon, in their patents for $100,000;[5] and so, having no other plausible buyer, they were compelled to establish the value of the telephone themselves. They advertised the telephone as a substitute for short-distance, point-to-point telegraph service, and created the Bell Telephone Company to handle the business transactions. By the end of the year, the company succeeded in renting more than 5,500 telephone instruments at annual rates of $40 and $20 for business customers and "social," or residential, users, respectively.[6]

The success of the Bell telephone, and the potential threat it offered to part of Western Union's own business, brought that company into the field with its own patent claims by the end of the year. Western Union was determined either to eliminate or to absorb the Bell Company, a small but significant new source of competition.[7] For nearly two years, the Bell interests and Western Union struggled for control of the nascent telephone business and the technology that supported it. After the first successful commercial telephone exchange switchboard was introduced by a Bell agent in Connecticut in January 1878, the battle lines formed around the emerging local central telephone office, where any one telephone subscriber could be electrically connected to any one of many other subscribers within a fifteen-mile radius. If the Bell Company were left unchallenged, it would have competed for much of the traffic of Western Union's district telegraph offices-systems which dealt primarily with the multi-point interchange of local business messages via telegraph and messenger, in conjunction with Western Union's long-distance, nationwide telegraph network.[8]

The competition was vigorous. In financial strength, productive capacity, technical resources, and distribution outlets, Western Union wielded advantages throughout. It acquired an impressive array of patents and controlled the long-distance wires over which Bell's message traffic had to be transferred, if Bell's customers wished to transmit anything beyond their immediate neighborhoods. And yet, on November 10, 1879, Western Union pulled out of the telephone business. In a contract that served as a settlement to a patent infringement suit brought by Bell against Western Union a year earlier, Western Union conveyed, under license, to the Bell Company, all of its eighty-four patents on telephones and telephone hardware (i.e., signaling and switching devices), 56,000 telephones in fifty-five cities, valuable assets in plant and equipment, and agreed to a commitment not to reenter telephony until 1896.[9]

In return for giving up its telephone rights, Western Union would receive from Bell a 20 percent royalty of the rental income from every Bell telephone leased in the United States. Western Union received a number of other concessions from Bell that would help protect its [Western Union's] control of the more lucrative elements of its telegraph business, including, most importantly, the long-distance transmission of business traffic. Telephone exchanges were generally limited to a fifteen-mile radius, and any telephonic connection between such exchanges was restricted to "personal conversation" only. In other words, such connections were "not to be used for the transmission of general business messages, market quotations, or news for sale or publication in competition with the [main] business of Western Union."[10] The Bell Company agreed, moreover, to transfer to Western Union exclusively, all extra-exchange telegraphic messages received over its telephone wires.

Clearly, the agreement was a strategic disaster for Western Union. By giving up its telephone interests, Western Union lost control of the technology that would ultimately relegate wire telegraph to a secondary and diminishing role in telecommunications. By 1896, when the Bell-Western Union agreement expired, telephones were already generating more revenues than the nation's telegraph system, and were well on the way to becoming the preferred mode of telecommunication in both the business and the newly emerging residential markets.[11] Why, then, did Western Union commit what, in retrospect, looks like such an obvious strategic blunder?

The question is more compelling when we consider the disparity in size and in the financial, technological, and organizational strength of the two competitors. Initially, the Bell enterprise consisted of Alexander Graham Bell, a teacher of the deaf and a novice inventor with no taste for business; Bell's youthful laboratory assistant, Thomas Watson; and Bell's two financial backers, Gardiner G. Hubbard, a Boston patent attorney, and Thomas Sanders, a Lowell, Massachusetts, leather merchant. These four Bell patent holders had little capital, no manufacturing facilities, no distribution outlets, no sales force, and (save for Watson and an office clerk) no full-lime personnel to manage the development of the business or the technology on which it was based. When these men formed the Bell Telephone Company in July 1877, they licensed local agents, on a geographically exclusive basis, to provide simple, point-to-point telephone lines to subscribers, along with a pair of telephones.

It was the licensees, the forerunners of the modern Bell System operating companies, who strung the wire, installed the telephones, collected the rentals, and maintained the service. To make the hardware, the Bell entrepreneurs licensed an electrical manufacturing company in Boston, operated by Watson's former employer, Charles Williams, Jr. At Williams' shop, Watson supervised the production of telephones and auxiliary equipment, tinkered with improvements on the hardware, and purchased finished products which he then shipped to the operating licensees on Bell's behalf. The Bell interests earned no income on either the provision of services or on the production of equipment. They made their profits entirely from leasing the telephones to their licensees.[12]

This loose set of vertical relationships made it possible for the Bell patent holders to bring the telephone to market. But because these organizational relationships were held together entirely by the Bell Company's claim to "controlling" patents – which, if defensible, gave Bell a legal monopoly of the telephone market for seventeen years – it was crucial for the company to protect these claims as fully as possible against would-be competitors who could easily copy the mechanically simple telephone device. Threats of infringement litigation worked well enough against other small concerns wanting to enter the market, but such threats were of no avail against a corporation like Western Union, whose superiority in financial, technological, and organizational strength might easily overwhelm the foundling Bell enterprise before it could become firmly established.[13]

Western Union was largely owned and controlled by the great nineteenth-century industrialist, William H. Vanderbilt, his family, and his "allies". The company was capitalized at $40,000,000, a staggering figure for the time, and it controlled a vast network of wire, offices, and agents that extended to nearly every established settlement in the United States. Western Union had achieved its control of the nation's telegraph business through the merger and absorption of major competing companies. It subsequently protected its monopoly through its willingness to buy out well-financed competitors and through its aggressive program of technical research and development and patent acquisition. Western Union owned a third interest in, and effectively controlled, the Western Electric Manufacturing Company of Illinois, the world's largest and most advanced developer and producer of electrical equipment.

Western Union commanded a large cadre of electricians and inventors who marched in the vanguard of research and development in electrical technology.[14] By mid-1878, the company had acquired patents on telephone receivers, transmitters, and other equipment. Two of these patents were the potentially precedential claims, pending adjudication, of Elisha Gray, whose caveat on the telephone had been filed on the same day as Bell's first patent in 1876-and of Thomas Edison, whose microphonic transmitter was different in principle and superior in performance to Bell's magneto model.[15]

Western Union used its advantages in economies of scale and scope in competing for prime telephone markets in the country's major urban centers. It tried, sometimes successfully, to buy out Bell licensees. It offered potential agents – many of whom were already operating district telegraph offices – access to existing wire plant, lenient terms of credit, indemnification against possible losses in patent suits, and lower priced telephone equipment, all easily subsidized from the company's $3 million a year in net profits. The Bell Company, which struggled even to pay its manufacturing costs through 1878, could not hope to match Western Union's terms. Western Union, moreover, could effectively discriminate among whom it allowed to convey messages from local telephone facilities to its long-distance wires. And midway through 1878, the introduction of the Edison transmitter gave Western Union a clear technological lead. By 1879, Western Union had prevailed in several important cities, including Chicago and New York, and its rate of growth in telephony exceeded that of Bell.[16]

Early in the struggle, the Bell patent holders attempted to negotiate a merger of their telephone rights with those of Western Union. Bell's treasurer, Thomas Sanders, who was rapidly exhausting his personal fortune to finance the Bell Company's operations, particularly favored a negotiated settlement. Otherwise, he feared, Western Union would "crush us by fair means or foul." But because of the stubborn desire of Bell Company's president, Gardiner Hubbard, to preside over a consolidated telephone company in which the Bell patent holders would hold half the stock (demands which Western Union found utterly excessive), negotiations fell through. That course having failed, the Bell interests had no choice but to compete.[17]

They competed on several fronts. In September 1878, the Bell Company sued Peter Dowd, a Western Union agent in Massachusetts, for infringement of Alexander Graham Bell's pair of basic telephone patents – one on the principle of telephony and one on the hardware. From that point, the Bell Company stressed its patent claims both as a way of keeping its own agents in line and as an inducement to potential licensees. Bell refrained from trying to compete with Western Union on price, emphasizing, instead, the quality of its service and equipment in its marketing strategy, which proved successful.[18] To keep abreast of technological developments, the company began its own program of research and development, hiring expert electricians to increase the work of Thomas Watson, while searching aggressively for new patents from outside sources. By the end of the year, the company was able to develop a microphonic transmitter superior to Edison's in performance.[19] And throughout, Bell constantly increased its rate of production and recruitment of operating agents in order to keep pace with the demand that was now being fanned by the very process of competition.[20]

To manage and afford all this expanded activity, the Bell interests placed their affairs on a more formal administrative footing and sought wider sources of capital. Gardiner Hubbard hired Theodore Vail away from the superintendency of the National Railway Telegraph Service to fill the position of general manager. Vail initiated formal contracts and systems of accounting controls over the licensees and established a system of traveling agents to extend and monitor the licensee business. In the spring of 1879, the patent holders reorganized their holdings (for the third time since May 1877) as the National Bell Telephone Company, with $850,000 in capitalization, supported by a greatly enlarged group of stockholders from the Boston financial community. One of these financiers, William Forbes, took over the presidency of the firm from Gardiner Hubbard, whose part-time, informal, and unsystematic direction of the firm, had become a drag on its ability to grow and to coordinate its affairs efficiently.[21]

Forbes and Vail turned the National Bell Company into a more recognizably modern managerial corporation. They developed goals and strategies for the business on a long-term, as well as an annual, basis. They developed plans for the expansion of the technological capability of the telephone service, particularly through the financing and construction of experimental, intercity toll lines. They devised contracts that would allow the Bell Company to acquire equity in its operating licensees over time. They embarked on a program for shoring up the company's patent position, "to surround the business in patents," as Vail put it.[22] They licensed additional manufacturers for auxiliary apparatus to relieve the strain on Charles Williams, Jr., who was increasingly unable to expand his capacity rapidly enough to meet growing demand. And, perhaps most important, to defend their patents, they renewed negotiations with Western Union in order to find a compromise in their destabilizing competition war.[23]

In June 1879, the combination of two events exogenous to the Bell Company, brought Western Union to the bargaining table. First, Western Union was advised by its chief attorney, George Gifford, that vis-à-vis the law, he had become "convinced that [Alexander Graham] Bell was the first inventor of the telephone. . . that the defendant [Western Union] had infringed. . . , and. . . that the best policy for them was to make some settlement for the complainants."[24]

This alone is unlikely to have had daunted Western Union. Both sides were well aware that Western Union had both the resources and the will to outlast Bell in protracted litigation, and was probably able to delay the outcome for years. Indeed, some Bell officials were terrified at the prospect.[25] Moreover, a single patent rarely has the potential to control the business development of an industry, especially one whose technology was as complex as telephony with its manifold requirements for transmission, switching, and signaling. J.J. Storrow, Bell's chief attorney, knew that the patents of Bell and Western Union had to be pooled "in order to enable everybody to use good telephones," an opinion echoed by two of Bell System attorneys who argued, in 1890, that both Bell and Western Union had had sufficient patent strength "to practically exclude [each] other from the telephone business." At the very least, under these circumstances, Western Union could have bargained for a consolidation of patent claims on very favorable terms.[26]

Second, William H. Vanderbilt's notorious rival in industrial finance, Jay Gould, was gearing up the American Union Telegraph Company, in his second attempt in four years, to disrupt Western Union's telegraph monopoly. He bought up scattered, independent telegraph companies, forged alliances with key foreign concerns and American railway operators (who controlled the rights of way for telegraph lines), and cut rates on competing wires that were being rapidly constructed by some 5,000 men in his employ. In the first attempt to disrupt the telegraph monopoly, Gould had been bought out by Western Union for the nuisance value; but this time he seemed more determined.

Negotiations proceeded in earnest throughout the summer and fall. The upshot was, of course, not a merger but the creation of what one writer has termed "a duopoly in telecommunications with the market divided according to local service (Bell telephone) and long-distance service (Western Union telegraph)." In the end, Western Union was delighted to be rid of what its president referred to as "a bitter and wasteful competition."[27]

Endnotes

[1] This case is adapted from George David Smith, 1982, "The Bell-Western Union Patent Agreement of 1879: A Study in Corporate Imagination."

[2] Some standard discussions of this point are Thomas C. Cochran, *200 Years of American Business* (New York, 1977), pp. 77-79; Glenn Porter, *The Rise of Big Business, 1860-1910* (Arlington Heights, Illinois, 1973), p. 43; Elisha P. Douglas, *The Coming of Age of American Business: Three Centuries of Enterprise, 1600-1900* (Chapel Hill, 1971), p. 487; Alfred D. Chandler Jr., and Hermann Daems, eds., *Managerial Hierarchies* (Cambridge, Mass., 1980), p. 15; Joel A. Tarr with, Thomas Finholt, and David Goodman, "The City and the Telegraph: Urban Telecommunications in the Pre-Telephone Era," J*ournal of Urban History,* XIV (November, 1987), pp. 38-80.

[3] The standard work on the organization of Western Union is Robert L. Thompson, *Winning a Continent: The History of the Telegraph Industry in the United States, 1832-1866* (Princeton, 1947). A useful supplement for the market history of the telegraph after 1866 is Richard B. Du Boff, "Business Demand and the Development of the Telegraph in the United States, 1844-1860," *Business History Review,* LIV (Winter, 1980), pp. 459-79. See also, Alvin F. Harlow, *Old Wires and New Waves* (New York, 1936), pp. 255ff.

[4] The origins of the Bell Patent Association are detailed in numerous histories. Accessible accounts are Robert V. Bruce, *Bell: Alexander Graham Bell and the Conquest of Solitude* (Boston, 1973) and John Brooks, *Telephone: The First Hundred Years* (New York, 1976 and 1977); Robert W. Garnet, *The Telephone Enterprise: The Evolution of the Bell System's Horizontal Structure, 1876-1909* (Baltimore, 1985); George David Smith, *The Anatomy of a Business Strategy: Bell, Western Electric, and the Origins of the American*

Telephone Industry (Baltimore, 1985).

[5] Bruce, *Bell,* pp. 258-59.

[6] "The Telephone." May 1877, A T&T Historical Archives, 195 Broadway, New York City (hereafter cited as AT&T Archives), Box 1097.

[7] The story of the Bell-Western Union competition has become almost legendary and forms an important part of the folklore of the Bell System. Particularly interesting analyses of the struggle not found in the many standard histories of the industry are "Early Competition for Financial Control of the Telephone Industry," Federal Communications Commission, *Investigation of the Telephone Industry* [1939], Exhibit No. 2096f; Michael F. Wolff, "The Marriage that Almost Was," *IEEE Spectrum* (February, 1976), pp. 41-51. This story is explored in great detail in *The Anatomy of a Business Strategy,* esp. pp. 36-38, 76-80, 154-55.

[8] For Bell's challenge to the district telegraph offices, see Bell Telephone Company, "Instructions to Agents, No. 3," February l, 1878, A T&T Archives, Box 1001. See also J .E. Kingsbury, *The Telephone and Telephone Exchanges, Their Invention and Development* (London, 1915), chap. VIII; Smith, *Anatomy of a Business Strategy,* p. 36.

[9] The text relies on the printed version of the agreement entitled Contract, November 10, 1879, AT&T Archives, Box 1006. (The Western Union telephones referred to throughout this paper were actually the property of the Gold and Stock Telegraph Company, a Western Union subsidiary through which its telephones were marketed. Another subsidiary, The American Speaking Telephone Company, held the Western Union patents in telephony. While these subsidiaries were parties to the agreement, for convenience's sake, they are lumped under the rubric of "Western Union." In any case, Telephone policy of these subsidiary companies was dictated by Western Union).

[10] *lbid.*

[11] The Bell Telephone System generated more than $24 million in revenues in 1895, compared with Western Union's nearly $21 million for the fiscal year ending in mid-1896. (This does not account for other telegraph companies, however). By that time, the telephone was employed in more than 2,100,000 *daily* conversations. Western Union, by comparison, handled about 160,000 telegraph messages *per diem*. See the *Historical Statistics of the United States,* bicentennial edition (Washington, D.C., 1977), Il, pp. 786-87.

[12] These arrangements are detailed in Smith, *Anatomy of a Business Strategy,* chaps. 1 and Il.

[13] The patents were Alexander Graham Bell's: March 7, 1876, grant-U.S. Patent No. 174,465-0n the basic principle of telephony: and his January 30, 1877, grant-U.S. patent No. 186,787-on the telephone hardware. These patents, if deemed to "control" the use of telephone technology, would legally secure the patent holders from commercial competition until 1894. Others could use the patents for commercial purposes only if licensed to do so by the patent holder. Those trying to make or sell a patented device without a license were liable for "infringement" and subject to serious financial penalties.

[14] Bruce, *Bell,* pp. 260-61; Brooks, *Telephone,* pp. 61-62; Charles G. DuBois, "A Half Century of Western Electric Achievement," *Western Electric News,* VIII (November, 1919), pp. 1-6; Report on Western Electric Corporate Structure," FCC, *Investigation* (1939), Exhibit 1952, pp. 3ff.

[15] See Brooks, *Telephone,* pp. 61-62; James D. Reid, *The Telegraph in America* (New York, 1879), pp. 629-33.

[16] Smith, *Anatomy of a Business Strategy,* chap. 2, *passim*.

[17] Thomas Sanders to Gardiner G. Hubbard, December 5, 1877, AT&T Archives, Box 1006; Sanders to Hubbard, February 23, 1878, *ibid*., Box 1193; Sanders to Hubbard, January 30, 1878, *ibid*., General Manager's Letterbook. Sanders thought that the Bell Company should "make the best terms we can with this powerful combination [Western Union and its subsidiaries]," even if it meant selling the business.

[18] Thomas Watson to Theodore Vail, February 19, 1879, *ibid*., Box 1205.

[19] Frederic William Wile, Emile Berliner: Maker of the Microphone (Indianapolis, 1926), pp. 107ff.; Frederick Leland Rhodes, *Beginnings of Telephony* (New York, 1929), pp. 76-79.

[20] Smith, *Anatomy of a Business Strategy,* chap. 3.

[21] *Ibid.,* pp. 43-49; Garnet, *The Telephone Enterprise,* chap. 3. See also J. Warren Stehman, *The Financial History of the American Telephone and Telegraph Company* (Cambridge, Mass., 1925), pp. 12-15.

[22] Theodore Vail is quoted in N.R. Danielian, *AT&T: The Story of Industrial Conquest* (New York, 1939), p. 96.

[23] Smith, Anatomy of a Business Strategy, chap. 3; Garnet, The Telephone Enterprise, chap. 4.

[24] George Gifford testified to this in a subsequent patent suit involving the telephone in which he appeared as a witness for the American Bell Telephone Company. His remarks are printed in the "Brief for the American Bell Telephone Company," Supreme Court of the United States, October Term, 1886, *The Telephone Appeals,* pp. 2-3, 39-43.

[25] See, for example, Charles Cheever to Gardiner G. Hubbard, December 3, 1877, AT&T Archives, Box 1006. Cheever warned Hubbard that a legal challenge to Western Union would become an "extremely tedious" process. Thomas Watson in his Diary of a Trip, 1878, ibid., Box 1069, reported his encounter with Western Union vice president, Anson Stager, in Chicago during which Stager "told a horrible story of how the W.U. Co. could keep the matter in the courts five years." Theodore Vail wrote to Oscar Madden on May 29, 1879, *ibid*., General Manager's Letterbook, surmising that Western Union could afford to "lose" $500,000 on the telephone fight.

[26] J.J. Storrow, Memorandum, January, 1880, *ibid*., Box 1326; "Argument of Charles L. Buckingham and Edward G. Bradford for the defendant at Wilmington, Delaware, April 24 and 25, 1890," in their petition for Mandamus, pp. 1-8, U.S. Circuit Court, District of Delaware, June Term, 1890: The Postal Telegraph-Cable Company vs. The Delaware and Atlantic Telegraph and Telephone Company as quoted in FCC, *Investigation,* Exhibit 2096f, p. 25.

[27] Brock, *The Telecommunications Industry,* p. 98; Norvin Green (who replaced Orton as Western Union president after the latter's death in the spring of 1878) to William Forbes, September 3, 1879, *ibid*., Box 1006.