

CHAPTER 5

Monopoly Years: 1880 - 1894

" . . . the necessity of occupying the field . . . "

Theodore Vail

The Creation of a Network

From 1880 to 1894 American Bell Telephone Company embarked on a strategy to solidify its position of control over the telephone industry in the United States. In order to attain this goal, Bell crafted a strategy that eventually led to the establishment of hierarchical control over its licensees, and legitimized its patent monopoly status (Bickers, 1991: 81).

American Bell's first move was to gain control over the licensees. The cost of direct acquisition of the licenses was beyond the financial capacity of the firm. An alternative strategy was selected in which Bell began a process of gradually increasing its indirect control over the original obligational network established by Gardiner Hubbard. Slowly, over the next fourteen years, an organizational hierarchy emerged.

American Bell Telephone began by changing the terms of existing licenses, and any new licenses granted to provide local telephone service. Under the new policy, exclusive rights to provide service were linked to defined geographical territories. Conditions for territorial rights included; a prohibition on interconnection with any competing companies; and a restriction that the licensee could not participate in any other businesses unless licensed by American Bell Telephone. Another condition placed on the licensees was a prohibition on the licensees right to build and operate any form of long-distance service. Long distance service was reserved, exclusively, to the parent company, American Bell Telephone. The licensee was also required to surrender thirty percent of their stock to American Bell - in time this condition was raised to one hundred percent of the licensee's stock - , and to raise their own capital for the construction of lines and rights-of-ways (Danielian, 1939).

To further increase its hierarchical control over the industry, American Bell next moved to vertically integrate manufacturing of equipment into the organization. A series of technical standards for both equipment and wires were developed, and all licensees were required to meet these standards in order to retain their license. Prior to 1881, Bell had licensed several small electrical companies to manufacture the telephones and switching systems used in the business. To gain more control over the industry, in 1881 American Bell purchased thirty-three percent of the Western Electric Company. Western Electric was integrated into the company by requiring that all equipment for the system had to be manufactured exclusively by Western Electric (Smith, 1985).

The third element in American Bell's strategy involved the development of a long-distance telephone network that would tie all the local telephone networks into an integrated national network. Both Theodore Vail, General Manager of American Bell Telephone, and William H. Forbes, President of American Bell Telephone, felt that the control of long-distance telephone service would, eventually, create a barrier to prevent potential competitors from entering the telephone market after the expiration of the patent monopoly in 1894. To implement this policy, in 1884 American Telephone and Telegraph was incorporated as a solely owned subsidiary of American Bell Telephone. AT&T was granted, by American Bell Telephone, the exclusive right to operate all long distance telephone service in the United States. Technical problems, at first, limited the development of long distance service, but by 1893 American Bell Telephone had developed an adequate long distance service connecting all the major cities in the United States (Brooks, 1976).

The final part of American Bell's strategy was to legitimate its de facto monopoly by creating a patent wall around the company. American Bell sought to secure the exclusive property rights to all forms of telephone technology by either obtaining patents on all aspects of telephone technology, or contesting the right of any new entrant into the telephone industry to provide telephone services which required the use of that technology. To accomplish this end, American Bell first created an

engineering department whose primary purpose was to stake out legal claims on any refinements to telephone technology. The second part of the strategy was to file patent infringement lawsuits against any new entrant. Initially, the threat of a patent lawsuit was enough to force many of the new entrants out of the telephone business, and to sustain American Bell's de facto monopoly. This strategy eventually led to the United States Supreme Court, in 1888, granting American Bell Telephone a de jure monopoly by affirming that Alexander Graham Bell was the sole, and exclusive, creator of the telephone. The Supreme Court's ruling legitimized Bell's monopoly over the telephone industry, and effectively delegated the determination of telephone public policy to American Bell Telephone Company (Stone, 1991).

The Political Economy of the Creation of a Network

The External Political Framework

Western Union's settlement with Bell Telephone did not stop Jay Gould from continuing his assault on the Western Union Telegraph Company. With the financial assistance of Jim Keene and Russell Sage, Gould continued to buy and sell Western Union stock - first driving the stock's price down through large block sell-off, and then reversing course by buying back the deflated stock, thus driving the stock's price up. Gould's use of the fluctuating value of Western Union stock was augmented by columns in the New York World newspaper, which relentlessly attacked the credit of Western Union with each drop in the stock's price. By 1881, Western Union stock value had dropped to the same level that it had experienced in the 1850s. In 1882, Cornelius Vanderbilt surrendered the field, and sold his stock portfolio in the Western Union Company to Gould and his partners. Jay Gould was now the undisputed master of Western Union Telegraph Company, the nation's primary means of acquiring both commercial and news information (Danielian, 1939: 42 - 43)

Gould's assault, and eventual take-over of Western Union, was aided by a decision handed-down by The United States Supreme Court involving the Pensacola Telegraph Company. In 1866, the State of Florida granted the Pensacola Telegraph Company a corporate charter giving the company sole and exclusive rights to establish and operate telegraph lines in the Northern counties of Florida. The Company exercised their exclusive control of the territory until 1874, when the Pensacola and Louisville Railroad Company signed a contract with Western Union to allow Western Union to construct and operate a telegraph line along the railroad's right-of-way. The Pensacola Telegraph Company immediately filed suit in the United States District Court for Northern Florida to enjoin Western Union from constructing the system. In 1875, the Federal District Court for the State of Florida ruled in favor of Western Union. Pensacola Telegraph appealed the ruling to the United States Supreme Court (Pensacola Telegraph Company v. Western Union Telegraph Company, 1877. 96 U. S. 12, File Number 7342).

In the majority opinion handed down by the Supreme Court, Chief Justice Waite used the 1866 Sherman Telegraph Act to support the Court's decision in favor of Western Union. Under Waite's contention, the Commerce Clause of the Constitution granted Congress full authority in the area of national commerce. Waite went on, though, to state that Congress was not limited in its powers to only those instruments of commerce that were in existence at the time of the Founding of the Republic. Waite held that the authority of Congress, in this area, needed to keep " . . . pace with the progress of the country.", and was adaptable " . . . to the new developments of the time and circumstance." The Telegraph was one of these new "circumstance", and thus " . . . comes within the controlling power of Congress, certainly as against hostile State legislation." Since the United States government extended across the breadth of the nation, it's powers to legislate national commerce could not be restricted by the actions of any one State. State regulation of interstate

commerce violated the principles of Constitutional authority, and since the telegraph was national in character, and affirmed under the 1866 Sherman Act, the State legislature of Florida could not restrict the operation of Western Union within the State of Florida (*Pensacola Telegraph Company v. Western Union Telegraph Company*, 1877, 96, U. S. 9 - 11).

Western Union officials viewed the ruling as a means to extend their own control over the telegraph industry. But, in fact, under the power of the ruling, any telegraph company could operate a telegraph system anywhere in the United States, as long as it met two conditions: One, it's system could not interfere with the operation of another telegraph system; and, two, the telegraph company had the permission of the railroad to operate and construct telegraph lines along the railroad right-of way. It was this opening that Jay Gould used to construct and operate his competing company. Western Union tried to block Gould by appealing to the Supreme Court for an injunction against the new company, but the Court refused to hear arguments, saying that the matter had been settled with the Pensacola decision (*Western Union v. American Union*, 1879, 9 Bissell 74).

In a very short period of time, twelve months, Gould had created a competing telegraph system, and was engaged in a fierce corporate war with Western Union. Eventually, Gould's assault, opened under the Pensacola ruling, resulted in his take-over of Western Union.

Public reaction to the Gould corporate victory was hostile. Fear of Gould's market tactics, and past abuses in the use of the telegraph system, fueled a public and press opposition to Gould's control of Western Union. Much of the opposition revolved around the fear of confidential telegraphic information being used by the new owners of the company for their personal advantage.

While mail was considered private, the early telegraph was not accorded the same respect. Telegraph lines were constantly being tapped by reporters, police, businessmen, and political parties. The government also engaged in the monitoring of telegraph messages. During the first year of the Civil War the Union government seized copies of all telegraphs sent from major cities. In 1877 Congress seized over 30,000 telegram copies while investigating election fraud. Public pressure concerning the invasion of privacy of the telegraph had been mounting for some time, and now reached a level of alarm with Gould's control of Western Union (United States Congress, Senate, Report on the Committee on Post-Offices and Post Roads on Postal Telegraph, May 27, 1884, 48 C., 1 S., Senate Report 577, Part III, 4 - 36).

Between 1883 and 1884 four bills were introduced into Congress to regulate the telegraph industry. Senator Nathaniel Hill of Colorado introduced a bill seeking, once again, to nationalize the telegraph industry (Congressional Record, 48th Congress, First Session, 379, January 14, 1884). Vermont Senator George Edmunds also introduced a nationalization bill similar to Hill's (Congressional Quarterly, 48th Congress, 1st Session, 379, January 14, 1884). Elihu Washburne once again introduced his proposal for an experimental line between New York and Washington (Congressional Quarterly, 48th Congress, 1st Session, 379, January 14, 1884). Senator Henry L Dawes of Massachusetts, helping his old friend Gardiner Hubbard, introduced a bill that would revive the idea of the Postal Telegraph Company (Congressional Quarterly, 48th Congress, 1st Session, 379, January 14, 1884).

Western Union's lobbying organization, now controlled by Gould, attacked all four bills on the grounds that each of the bills amounted to an unlawful seizure of private property, and an interference by the government in the natural processes of competition in a free market (United States Congress, Senate: February 7, 1884: 6 - 22). Western Union's arguments, and influence,

were effective. The four bills languished in the House Postal Committee, and eventually were withdrawn by their supporters.

But the issue of regulating the telegraph industry did not disappear after the defeat of the four nationalization bills. During the 1860s and 1870s competition between railroads had reached a fever pitch. The excessive number of railroads competing for limited market shares led to a series of rate wars between the railroads. As part of the various railroad tactics, railroads resorted to refusing to transship goods from one line to another line. The end result was an unstable, and often arbitrary, market for shipping, which left many in both the agriculture and manufacturing businesses, unable to move goods without paying exorbitant shipping charges (Kelly, 1992: 374).

Various State Legislatures attempted to regulate the shipping industry through the establishment of State Railroad Commissions. But the use of State Commissions proved an unsatisfactory answer because of the varying powers of these Commissions from State to State. The entire matter came to a point of crisis when, in 1886, the United State Supreme Court ruled that the Illinois State Railroad Commission's prohibition on long haul versus short haul rates for the Wabash, St. Louis and Pacific Railway Company was an intrusion of the State of Illinois on Federal Commerce Powers (*Wabash, St. Louis, and Pacific Railway Company v. Illinois*. 1886: 118, U. S. 557, 373, 392).

The Wabash decision forced Congress to act, and, in 1887, Congress passed the Interstate Commerce Act. The Act empowered the newly created Interstate Commerce Commission to oversee the setting of rates and access to the railroads. While the Act was primarily interested in the railroad and transportation industries, the Interstate Commerce Commission was also empowered to oversee the telegraph industry, and require that all telegraph companies would interconnect their lines (Flannery, 1995: 59).

While the passage of the interconnection law did not advance the regulation of the telegraph industry to the same level that the proposed nationalization bills had advocated, it did establish the first Federal authority over regulating the telecommunications industry. While it had a direct, and immediate, impact on the telegraph industry, the telephone was not included in the authority of the I.C.C.. At this time, telephone service was still seen by the Congress as more local in nature rather than a national system of communications.

In order to deal with the possible abuse of private communications, as part of the same Act, Congress required that a subpoena had to be issued by a Court before telegraph messages could be seen by anyone other than the sender and the receiver. Shortly there-after, the State governments also responded, and by the mid 1890s three quarter of the States had also passed laws prohibiting the disclosure of telegraph messages. While the privacy of the telegraph was protected, the newly invented telephone remained open. Wiretapping of telephone lines became a common practice engaged in by the police, private citizens, stock brokers, and even organized crime (Katz and Graveman, 1991: 113 - 117).

One additional action, though, occurred during this same period of time that did affect the nature of telephone communications. The original settlement agreement with Western Union contained a clause that prohibited Bell Telephone from engaging in the transmission of news stories. This restriction drew the opposition from newspaper publishers, especially in Massachusetts. The large newspapers in Massachusetts began a public campaign, directed at the State Legislature, that called for the regulation of Bell. Under the position of protecting the public interest, newspapers began to call on the State Legislature to not allow Bell to operate as a monopoly, and in essence to use the State's reserve powers to either void the Bell Charter, or amend it to allow for competing

companies. Realizing that the press opposition might result in further government regulation, Western Union relaxed its stand on the transmission of news accounts by Bell. Almost immediately, opposition by the newspapers against Bell Telephone evaporated (Tosiello, 1971: 447 - 449).

The External Economic Framework

During this period of patent monopoly the Bell System grew into a national industry. By 1893 over 260,000 telephones were in service, and local and long distance service had been extended to every major urban center. Also, by 1893, equity in the company had grown to \$20 million in common stock, and \$18 million in accumulated surplus. The return on investments, during the same time period, was over forty-six percent (Gabel, 1969: 343)..

But during this same time period, the wave of telephone expansion slowed. Prior to 1880, telephone usage expanded annually by a rate of four hundred and sixteen percent, but after 1880, the rate of expansion slowed to an annual rate of thirty-three percent (Garnett, 1985: 160 - 163).

TOTAL TELEPHONES IN USE IN THE UNITED STATES
1876 TO 1892

1876	2,592
1880	47,880
1884	147,715
1888	194,966
1892	260,795

"WALKER REPORT". (1939), table:e 32: 143 - 144

A more revealing figure on the rate of expansion, though, is the number of stations opened to serve local areas. During the time from 1885 to 1894 stations increased by only a rate of 6.3 percent annually. ("Walker Report", 1938, table 32: 143)

The major reason why local telephone development slowed was a decision, on the part of American Bell's Board of Directors, to concentrate on developing markets only within large and medium sized cities. Small communities and rural areas remained undeveloped. To American Bell's Board of Directors, the marginal efficiency of capital was higher in the cities. than in the less populated areas of the country (Wisconsin Telephone News, 1906: 1).

American Bell's strategy to achieve rapid penetration of telephone service into the urban markets, was coupled to the company's experimentation and expansion of improved long-distance communications. Initially, though, technical difficulties in developing a clear signal over long distances slowed the development of long distance telephone communications. As a result of the slow development of long distance service, telephones were being used, primarily, for local telephone service. Only the wealthiest of business people could afford the high rates for long distance service - brought on by the fact that a separate wire system was required to communicate between cities (Brooks, 1976).: In spite of the technical problems associated with long distance service, Theodore Vail was convinced that long distance service was the key to a permanent monopoly. Vail planned the development of local service with the eventual purpose of interconnection with the long distance system. (Garnett, 1985: 66 - 73, 78 - 80, 88 - 89).

The initial decentralization of the company had resulted in many local companies developing different kinds of equipment and wires, making it difficult to link the system together for long

distance service. It was this issue that Vail was trying to resolve with the push toward standardization of equipment and lines, with the intention, eventually, to create an integrated national telecommunications network (Wasserman, 1985: 33 - 125).

But the end result of the decisions to concentrate on urban area expansion and long distance development, was that the telephone spread slowly outside the major urban areas of the Northeast and the Midwest. In addition, Bell's strategy resulted in both rural residents being ignored, and no attempt made to lower rates of service. Rather, developments in science pushed the company, and it concentrated on resolving problems with switchboard congestion, interference from trains and trolley lines, and replacing its overhead wires in urban areas with underground cables (Fisher, 1987: 5 - 26).

The emphasis on science and urban service areas, in effect, meant that rural areas and marginal population areas of less than 4,000 residents went unserved - which, in effect, meant the majority of the residents of the Midwest, Southeast, and Western States. Because of the lack of government institutions authorized to oversee telephone operations, States and local communities were unable to legally pressure Bell into resolving any of the issues related to either extension of service or rates. While corporate charters could be altered by State Legislatures, there were no governmental institutions in place with authority to resolve complaints or differences between current and potential customers of Bell Telephone.

But before the end of the Monopoly Era, 1894, two attempts were made to develop some initial regulation of the telephone industry. In 1884, the State of Indiana passed a law limiting telephone rates to three dollars per month (United States v AT&T, 1974: episode 3, par. 15)). While the intentions of the Indiana State Legislature were admirable, the rate limitation was quickly determined to be unworkable, and abandoned. The only other State, before 1894, that attempted to establish some type of regulation over telephone rates, was Mississippi, which, in 1892, established an independent commission with jurisdiction over both telephone rates and practices (Hills, 1911: 15). But for the majority of States and local communities, rate and service regulation were still in the future.

Initially, Bell's defeat of Western Union resulted in a positive public perception of the firm as the little corporate David which slew the corporate Goliath, Western Union. But Bell's expansion strategy undermined the initial positive image, and quickly Bell began to be perceived as another arrogant national monopoly, refusing to upgrade the quality of its local and long distance lines in order to correct poor transmission, and ignoring customer relations:

" . . . the system's attitude toward the public was characterized by arrogance and indifference." ("Walker Report", 1938: 561).

It was during this time that the negative image, and term, "Ma Bell" arose.

The Internal Political Framework

Many of the "Great" American corporations that are in existence today, originated with the discovery, and patenting, of new knowledge. Westinghouse House Corporation started out with George Westinghouse's patent on automatic railroad air brakes, General Electric Corporation's founding is grounded in the electrical patents of Thomas Edison, and International Harvester Company's beginnings are based on McCormick's patents on reapers and grain harvesters. The use of new knowledge to advance corporate wealth and strength is an old tradition in the United States.

Bell Telephone was no different than any other American Company, in this sense, with its development and expansion predicated on the discovery of new knowledge by Alexander Graham Bell - the only item of value held by the original company.

The protection of the patent monopoly strategy, though, was also based on the far-sightedness of Theodore Vail. The patent monopoly strategy required two simultaneous goals. The first goal was to protect the existing patent from any infringements by would be competitors. The second goal was to establish a research department who could expand the original patent monopoly through the creation of new patentable theories and equipment (Casson, 1910: 77 - 107).

In order to protect the existing patent, Vail organized, in 1879, the Patent Department. The Department was staffed with full-time patent attorneys whose primary task was to file lawsuits on infringements, and secure new patents from any work either developing within the research departments of American Bell, or which were purchased by Bell from other inventors (Casson, 1910: 77 - 107).

The Patent Department lawyers were dedicated, to say the least, to their work. During the period after the agreement with Western Union, (1878 to 1893), Bell defended its patents in over 600 lawsuits filed against rival inventors (Herring and Gross, 1936: 47). Usually these lawsuit efforts were enough to drive potential competitors out of business (Danielian, 1939; Phillips, 1985).

But ultimately, in 1888, a combined patent case by Bell reached the Supreme Court, which ruled, 4 to 3, that Bell's patent was exclusive.

"It is quite true that when Bell applied for his patent he had never actually transmitted...spoken words so that they could be distinctly heard and understood at the receiving end of his line, but in his specifications he did describe accurately and with admirable clearness his process...and he also described with sufficient precision to enable one of ordinary skills in such matters to make...a form of apparatus which, if used in the way pointed out, would produce the required effort." (Telephone Cases, 126, U. S. Reports 1, 989, 1888)

While Bell's patent was now firmly secured by the Supreme Court's decision, it was, by this time, scheduled to expire within six years. As early as 1879, though, after he had become General Manager of Bell Telephone, Theodore Vail had realized that a day would come, in the not too distant future, when the patent would expire.

"One of the first things that was fully developed in our minds was the necessity of occupying the field; not only that but of surrounding ourselves with everything that would protect the business, that is the knowledge of the business, all the auxiliary apparatus, the development of all kinds of apparatus for the development of the business, which was a very important feature. Just as soon as we started into the district exchange system we found out that it would develop a thousand and one little patents and inventions with which to do the business which was necessary, and that is what we wanted to control and get possession of." (Vail, 1907: 1542 - 1543).

Recognizing the importance of continuing patent development to the future of the Company, Vail embarked on a policy that would both sustain the current patent, and also extend Bell's patent

domination over the entire telephone industry. In order to do this, he organized an engineering department to develop patentable processes for refining the telephone system

"So from the very commencement we had our experimental department, so-called - either experimental or engineering, as you choose - whose business it was to study the patents, study the development and study these devices that either originated by our own people or came in to us from outside. Then early in 1879 we started our patent department, whose business was entirely to study the question of patents and the patentability of these devices, to examine all patents that came out with a view to acquiring them, because, as I say, we recognized that if we did not control these devices, somebody else would, and we would be more or less hampered in the development of the business." (Vail, 1907: 1542 - 1543)

While the agreement with Western Union had removed one barrier to creating the monopoly, the issue of the patent was not completely settled. Vail recognized that one successful court challenge would place the entire business at jeopardy.

"As I say, at that time the patent was not adjudicated upon, and there was some doubt as to whether it would be sustained or not, and we simply continued our efforts to surround the business with all the auxiliary protection that was possible, in order to make it indifferent to us whether the patent was extended or not." (Vail, 1907: 1542 - 1543)

The original Experimental Department, established in 1879, quickly gave way to a more organized effort. In 1881 the Electrical Department was created. The purpose of the Department was to study the devices being created by other telephone equipment manufacturers, and conduct experiments in telephone communication theories and possible field applications. The research conducted by the Department allowed Bell to draft infringement lawsuits against other equipment manufacturers, and, at the same time, assess any new developments that either could be patented directly by Bell, or acquired from other inventors.

While the charge for the Department was rather broad, the limits of advanced basic research within a corporate setting somewhat narrowed the work of the Department. Hammond V. Hayes, who became head of the Department in 1886, expressed these limitations in terms of what was possible within the research laboratories, at that time, of American Bell Telephone.

"I have determined for the future to abandon this portion of the work of this department, - (basic research) - devoting all our attention to practical development of instruments and apparatus. I think the theoretical work can be accomplished quite as well and more economically by collaboration with the students of the (Massachusetts) Institute of Technology and probably of Harvard College" (Hayes, 1892: 206)

The narrow focus on research, slowed the general development of telephone technology by American Bell, but did result in an aggressive campaign to acquire new developments through outright purchase of inventions from other developers, especially in the area of long-distance communications.

The Internal Economic Framework

In order to develop American Bell Telephone Company into a major industrial power, the Company was required to create an infrastructure controlled from a central office out of what was, in essence, a loose confederation of interests. Two men played a critical role in this development, Theodore Vail and William H. Forbes.

Both Vail and Forbes brought different strengths and weaknesses to the endeavor, but both were committed to an almost religious determination to make the company succeed. In many ways, the two men recognized their own areas of expertise, and created a system of development where each man oversaw those areas in which he personally had the greatest expertise. In Vail's case it was organization and technological processes, in Forbes case it was people and finance.

While the patent department, and lawyers, handled the issue of legitimating Bell's patent monopoly, Vail and Forbes concentrated on integrating the loose confederation into a an organizational hierarchy.

Organization and Technological Processes

Theodore Vail's first cousin, once removed, was Alfred Vail, Samuel Morse's technical collaborator. Vail grew-up in Morristown, New Jersey where Morse had conducted his initial experiments at the Vail Iron Works. He attended grade school and high school there, and for a time he studied medicine under one of his local uncles. At the age of 19 (1864), though, he took a job with Western Union in New York City as an apprentice telegrapher.

To some extent, his nature was conflicted. He once thought of being a minister, and had a strong religious sense, but at the same time he was sensual and self-indulgent. While in New York he would stay up nights drinking and playing billiards, and then read the Bible to seek God's guidance away from, what he considered, his sinful ways. Apparently his all-night carousing affected his job, and his boss in New York suggested he find another job. - he eventually found another position in Western Union's White Plains office. During this time his only ambition was to own a sable coat and a ruby ring (Garnet, 1985: 29 - 32).

In 1866 his family moved to Waterloo, Iowa. He went with them, and became a telegraph operator for the Union Pacific Railroad. In 1869 he married his cousin Emma Louise Righter, and moved to Omaha as a postal clerk. His executive abilities grew with the postal service, and in 1873 he moved to Washington, DC. to work for the Railway Mail Service. He revolutionized overnight mail services, and in 1874 became the Railway Mail Services assistant superintendent. Eventually, in 1876, he was promoted to Superintendent. Vail knew Gardiner Hubbard while working for the Railway Mail Service, and, eventually, Hubbard convinced him that the telephone would revolutionize the world. In 1878, when Hubbard offered him the Bell General Manager's job, he accepted (Garnet, 1985: 29 - 31).

After Bell's victory over Western Union, Vail, in addition to building the research department, concentrated on improving equipment production, and integrating the process into the company.

The vertical integration of manufacturing into the Bell Company has its roots in the corporate war between Bell Telephone and Western Union. After purchasing the Gray patents, Western Union turned to an old associate, Western Electric, to produce the Gray telephones.

Western Electric had originally been incorporated in 1872, in Illinois, as the Western Electric Manufacturing Company. The original owners of the firm were, Elisha Gray, who had an excellent reputation for developing new innovations in telegraphy, Enos Barton, Western Union's chief

telegrapher in Rochester, New York, and General Anson Stager, Western Union's general superintendent. The business thrived, producing, for Western Union, many of Gray's inventions - such as fire alarms and burglar alarms that could be connected to the existing telegraph lines. When Western Union needed to produce telephones, it turned to the Western Electric Company, which immediately began to turn out high quality telephone sets at a high rate - at this time Gray was no longer associated with the company, having sold his stock in the company in 1875 (Lovette, 1944: 271 - 275).

Until 1881, Bell obtained its telephones from the shops of Charles Williams, Jr. of Boston. Williams shop had employed Thomas A. Watson, and was used by Alexander Graham Bell to conduct many of his early experiments. The arrangement with Williams was based on a personal relationship with Bell and Watson, and also on the fact that Williams extend to the fledgling company a very generous line of credit. But Williams shop was hard pressed to meet the growing demand for telephone sets, and even as early as 1879 Theodore Vail was complaining about the backlog on telephone orders produced by the Williams Shop's methods of production (United States vs. AT&T, 1974: Stipulation/Contention Package, episode 2, par. 140).

Licenses for equipment manufacturing were expanded to various shops in Baltimore, Cincinnati, and Chicago. But even after the expansion of manufacturing to shops outside Boston, Bell Telephone was still hard pressed to deliver equipment on demand. In order to locate a more reliable, and higher volume, producer, Vail opened negotiations with the Western Electric Company.

By this time, 1881, Western Union was pressuring Western Electric to either sell the company outright to Western Union, or face the real prospect of having Western Union assign its work to another company. The pressure by Western Union toward Western Electric was the direct result of the take-over of Western Union, in 1881, by Jay Gould. Gould's take-over of Western Union was marked by a high level of public uneasiness, and ruthless business tactics. Not only did Gould, almost immediately, make harsh demands on Western Electric, he also purged Western Union's corporate and field officer ranks - including General Stager, still a one third owner of Western Electric (Smith, 1985: Chap. 4).

Gould's heavy-handed management of Western Union, and the corporate firings, generated a sense of personal animosity against Gould within both the stockholders of Western Electric and Stager. The alternative offered by Vail appeared, to Stager and the stockholders, as both a way to maintain Western Electric's independence, and remove the company from the influence of Jay Gould.

Vail's offer to purchase 33 percent of Western Electric, and grant it sole rights to manufacturer telephones, was accepted by Western Electric, and, on July 5, 1881, American Bell Telephone Company became manufacturing partners with Western Electric Company. All licenses for manufacturing American Bell equipment were transferred to Western Electric. On February 26, 1882 a new contract was signed between American Bell and Western Electric. The new contract gave Western Electric exclusive rights to manufacture all equipment held under telephone patents owned by American Bell, and restricting sales, exclusively, to companies licensed by American Bell. In turn for the new contract, Western Electric agreed to give priority to the manufacturing of Bell equipment. Also, during the years between 1881 and 1883, American Bell Telephone increased its ownership in Western Electric, until, in 1883, it owned 52.5 percent of Western Electric's stock (Smith, 1985: Chap. 4).

The acquisition of Western Electric gave Bell control over both the methods of equipment production, and the standards for equipment that was produced. With the equipment side of the business now under corporate headquarters' control, licensees were required to conform their local operations to national headquarters' standards.

People and Finance

By the end of 1880 American Bell Telephone Company had been transformed from a personal, closely knit group of inventors and financial backers, into a formal corporation controlled by the majority owners of the company's stock. It would be wrong, though, to assume that there did not exist a personal relationship between the new owners. The new group that had assumed control of the corporation had both financial and social roots within the upper strata of Boston families, and between them, and their family relations, controlled fifty-six percent of the newly incorporated company's stock. The leader of the new group was William H. Forbes, who, in 1880, was elected President of American Bell Telephone (Danielian, 1939: 10 - 11, 40 - 41).

Forbes was the son of a prominent Boston shipper and early railroad developer. As a young man, he had been known for being both arrogant, and unruly. Eventually he was accepted into Harvard College, but he was ejected from Harvard College after being sent to jail for clubbing a night watchman during a college prank against Harvard's arch rival, Yale. The action was considered, by Boston society, as the ultimate fall from grace, and Forbes found himself, during the last half of the 1850s, banned from Boston's upper society.

When the Civil War broke-out, Forbes joined the First Massachusetts Cavalry. He served with distinction during the entire war, even being captured and escaping from the Confederate troops. His service won him several military honors. After the war, he returned to Boston, his reputation partially redeemed, and became a partner in his father's transportation business. Eventually, he also married the daughter of Ralph Waldo Emerson. By 1871, his reputation reestablished and once again accepted into Boston Society, the Harvard trustees relented on their original decision for expulsion, and awarded him his degree from Harvard College. By this act he was fully exonerated in the eyes of Boston's upper families (Pier, 1953).

At first, Vail and Forbes worked well together. While Vail concentrated on securing the patent monopoly and perfecting the technical and manufacturing aspects of the business, Forbes focused on gaining control over the multiple licensees that were the legacy from Hubbard's Presidency.

In order to gain greater control over the licensees, Forbes instituted a two pronged campaign. The first prong of the campaign was to change the license agreement under which the companies operated. New licensees were only offered a permanent license, not the optional five year agreement offered by Hubbard. In turn, the licensee agreed to surrender between thirty to fifty percent of their company stock to American Bell - depending on the degree of negotiation involved in securing the new territory. Licensees also agreed to not interconnect their telephone lines to any other company other than American Bell, and to not engage in other types of business that were not licensed by American Bell. In addition, a clause in the agreement required that all present and future long-distance service was under the exclusive ownership of American Bell, and could not be engaged in by the local company. As existing licenses came-up for renewal, American Bell required that the same type of permanent contract be signed for renewals. Gradually, over the next fourteen years, American Bell was able to extend its ownership and control over the licensees through the new contracts (Pier, 1953: 108 - 110).

The second prong of Forbes campaign was to consolidate service territories. As early as 1880, American Bell's management began to consider the possibility of merging licenses in contiguous areas into single operating companies. The mergers would allow for a greater service area to be developed, and, at the same time, reduce costs for establishing central switching stations and line interconnections. Both the State Legislatures in Ohio and Illinois introduced bills that would prohibit the consolidation of local telephone exchanges. Ohio and Illinois, in the early 1880s, were being heavily influenced by the Grange movement's anti-monopoly feelings, and viewed the service area consolidations as a form of industrial monopoly creation similar to the railroads rate problem that farmers were experiencing in the Midwest at that time.

In order to offset the passage of the bills, Forbes responded to the proposed legislation, and outlined American Bell's stated public intentions.

" . . . consolidation will only take place so far as groups of exchanges can be operated more cheaply and better from some central town. . . . where such connections naturally exist and it is desirable to give telephone connections between the exchanges each group can often be more effectively handled by one Company than by a number, each perhaps preferring a different plan to that of its neighbor. Moreover, in our test with the Western Union Company, it was demonstrated that two Telephone systems are not wanted in the same locality. Every person wants connection with all stations and unless a duplicate system is run into every station the subscribers are not served. Two Companies dividing the station in competition are only half the convenience to the public that one company reaching the whole will be." (Forbes, 1881: 352).

The Ohio and Illinois bills were eventually defeated, and the process of service area consolidation became a major company policy. While American Bell, using its license contract authority, moved toward consolidation of districts, great care was taken to make sure that ownership of the new companies was still retained by individuals who resided in the areas served. Forbes was very emphatic that local companies should,

" . . . keep local capital and influence interested in the business as far as possible." (Forbes, 1881: 352.)

By keeping companies closely linked to the communities being served, Forbes recognized that both local investors and public officials would have a vested interest in maintaining and improving the services offered by American Bell.

Forbes movement toward partial ownership of local companies, and consolidation of service areas, was part of a broader strategy developed by Forbes and Vail. Both men recognized that eventually the patents would expire, and some form of competition would arise. But future competitors in the local markets would have a difficult time challenging American Bell, if, by the time the patents expired, Bell had developed a long distance service connected to their local exchanges. By expanding the local networks, and connecting them into a national system, Bell would, in essence, have the only system in existence that could reach anywhere in the country from any of the local exchanges. Such a position, it was felt by both Vail and Forbes, would give American Bell the decided advantage over their future competitors (Langdale, 1978: 145 - 159).

In order to accomplish this target, Bell recognized that it would need to both increase the technological sophistication of the system to handle long distance communication, and raise a substantial level of new capital to underwrite the costs of both research and development and

eventual construction of the system (Vail, 1885). The Electrical Department was given the charge of developing the new technology required for the system.

The next step would be to raise the necessary capital to construct the system. But, in order to increase its capitalization, Bell would be required to increase its capital stock, and in order to do that it needed the permission of the Massachusetts State Legislature, the home chartering state for the corporation.

Bell was originally incorporated under the laws of the State of Massachusetts, a state which was an early experimenter in regulation using corporate regulations and incorporation laws. The Massachusetts laws impeded Bell's plans for expansion and increased capitalization (Holmes, 1890) In 1879. In 1880, the state legislature approved a requested capital increase, but at a much lower rate than Bell had sought. Also, during the capital increase hearings, the State, for the first time, raised the possibility of establishing rate regulation, an area Bell strongly opposed (Garnett, 1895: 59 - 610).

In order to finance the long distance expansion, Bell needed to increase its capital stock from ten million dollars to thirty million dollars. Bell requested that the State Legislature revise its charter to allow the increase. While the State legislature agreed and approved the capitalization increase, the Governor not only vetoed the Bill - saying the Bell's increase was more than required - ,but also stated that the State's public utility commission should be given the authority to regulate the Bell system. Bell eventually agreed to the corporate regulation of the business by the State Legislature, and the governor dropped his request for public utility commission regulation, while approving Bell's capitalization request - but, again, at a level lower than Bell had sought (Garnett, 1895: 103 - 105).

The lower level of authorization tipped the scales in the minds of American Bell's Board of Directors, and a decision was reached to create the long-distance subsidiary outside the State of Massachusetts. At this time, New York State was seeking to become the dominate financial market in the United States, and the State Legislature had revised its incorporation laws to the point that businesses in New York operated with very little interference from either the Executive or Legislative branches of State government. Because of the liberal incorporation laws, Bell decided to incorporate its new long-distance subsidiary in New York State, and on February 28, 1885, the American Telephone and Telegraph Company was incorporated as a New York corporation (Page, 1941: 214 - 216).

Theodore Vail resigned his position as General Manager of American Bell Telephone, and became the President of AT&T. Under the new agreement between American Bell and AT&T, AT&T focused on interconnecting the local companies and providing long distance service, while American Bell confined itself to licensing local companies, ownership of telephone equipment, investments, and supervision of technical standards. While the new company was now represented on Wall Street, investor still considered it a Boston Company, and, at first, the New York investment houses declined to buy stock in the new endeavor (Danielian, 1939: 45).

Legacy

By 1887, American Bell Telephone had transformed itself from a loose confederation of corporate interests into a vertically integrated corporation spanning the United States. To a great extent, the credit for this transformation process is shared by both Theodore Vail and William H. Forbes. But, common purpose does always mean common vision, and this was the case with both Vail and Forbes.

What had started out as a solid working relationship, deteriorated over the years. Forbes and his financial partners were interested in returns and strengthening the company's corporate position. Vail, on the other hand, was interested in creating a national communications system. In the end, when Forbes retired as President of American Bell Telephone, in 1887, the Board of Directors passed-over Vail's ascendancy to the President's position, and instead appointed a personal friend, John Elbridge Hudson. Vail resigned from both American Bell and AT&T, and for the next twenty years became involved in civil engineering projects in South America.

The lose of both Forbes and Vail simultaneously, left American Bell with a solid organizational structure, but no real vision of its future potential. For the next seven years American Bell continued to refine the developments left them by both Vail and Forbes. Unfortunately, for Bell, no attention was paid to the problems that might arise when the patent monopoly expired at the end of 1893.

Structurating Principles

During the second period of the life of the Telephone policy subsystem, we see the extension of principles originally in place during it's initial creation. Yet this time period is also marked by the beginning emergence of redefinition's of various aspects of these original principles, and the creation of government institutions which reflect both the older principles and the newly emerging concepts.

Private property rights still remain as the primary principle influencing both the private sector and the public sector. The American Bell Telephone Company begins to assert it's authority over the ownership of it's private property by the use of redefining the contracts between itself and its licenses. Under the protection of both State and Federal property laws and courts, the Company extends it's authority through restrictive contracts, and the requirement to own a portion of the licensees stock.

While extending it's authority over its licensees, it also redefines the specific areas of geographical operation of the various companies, and forces consolidation upon the licensees. It's initial moves in this area are met with opposition from several state legislatures who reflect the underlying historical belief in American society against the restriction of the free market place by the creation of monopolies. While the anti-monopoly sentiment being expressed by the State legislatures reflect a deep structurating principle within the American society, the conflicting value of the rights of private ownership of property dampen these State legislative effort. The end result is that American Bell Telephone Company is able to extend its control over the local service areas through the process of gradual adaptation.

Direct confrontation with the State legislatures is avoided through indirect methods of the extension of control. Equipment standardization along with the vertical integration of manufacturing within the firm, allow American Bell to create the beginnings of a hierarchy of control without direct confrontation over the anti-monopoly sentiment.

American Bell's efforts toward increased control are augmented by its aggressive assertion of its private property rights through the filing of numerous patent infringement lawsuits. Court rulings, at both the State and Federal levels, reinforce American Bell's authority and rights within this area. The eventual decision by the United States Supreme Court on American Bell's patent rights, effectively defines American Bell's authority and control in the area of telephone development, and reconfirms the principle of ownership and control of Bell's private property.

While American Bell's position and control over telephone technology is established, and their private property rights are affirmed, tension still remains within the policy subsystem over secondary issues related to the concept of fairness and equity of access. Spotty service development outside the urban centers, coupled to high rates for service, results in both a public and legislative negative image. Perceptions develop that American Bell is not interested in the Public Interest aspect of its firm. While, legally, Bell is able to move from State to State in its pursuit of profits, its decisions to ignore the wishes of its elected delegates in its home state of Massachusetts, and its subsequent development of AT&T as a New York corporation, breed a sense of uneasiness within the public sector. The lack of authority within the governmental order to control the public service aspects of multi-state companies begins to become a major factor in the public side of the private/public relationship.

Congress's inability to resolve the issue of regulation of national telecommunications monopolies is eventual brought to a crisis point by the ruling of the United States Supreme Court that telecommunications is in fact an issue involving the national commerce. The invasion of private communications within the telegraph industry, and the recognition that State Commissions cannot impede the flow of national commerce, lead to the assertion of the Federal government's authority in the area of telecommunications. The inclusion of the interconnection requirement for telegraph systems under the I.C.C., and the prohibition against revealing telegraph communications, shifts the institutional control of telecommunications away from the State level to the Federal level. But the control over rates of communication are not resolved by the I.C.A., and the issue of rates remains split between the two levels of public institutional control.

While the telephone is not included in this regulation, the precedent of Federal control over the institutional arrangements in the telecommunications area are set, and lead to the next stage of the development of the telephone policy subsystem.

Thus the telephone industry continues the process of structuration by, once again, basing its development on the social order's concepts of the "rights of private property". Exerting its "Rights", the industry further consolidates its position through patent law, contract law, and organizational structuring. The industry's institutional form begins to emerge through the process, and extends itself both horizontally and vertically. Eventually, the form that emerges by the end of 1893 is a complete consolidation of all aspects of the industry within its corporate structure, and forms a completely closed, and self-reliant system.

At this point in time, the "knowledgeable human agents" controlling the process of structural development are all on the private side of the public/private relationship. Vail and Forbes, sharing a level of "mutual knowledge", drive the development of the industry toward the eventual consolidation. While successful in their efforts, the two agents eventually disagree on the ultimate "ends" of the process. Forbes concentration on profits run into opposition from Vail's vision of a national network. The conflict between the differing views of the process's ends, ultimately leads to a disintegration of the relationship, and a loss of the agents "knowledge" to the company.

The loss of the two "agents" occurs at a critical time when the company begins to enter a new stage of structuration. While the "allocative resources" of the industry are now firmly under the control of the company, the "authoritative resources" emanating from the broader social order begin to slowly shift.

Driving this process of reallocation of the "authoritative resources" is the emergence within the social and governmental order of the concept of regulatory oversight of the telegraph industry.

While the telephone industry is not, at this time, the target of this new redefinition by the Federal government, the extension of this new "normative" frame into the industry is seen by the tentative attempts of a few state legislative bodies to link the principles of a "public service company" concept to the telephone industry.

Responding to this perceived threat to its "ontological security", the company successfully defeats the state government's attempt to redefine the nature of the industry. While the company is able to secure the existing definition of its existence and relationship to the broader social order, it now enters a time when foundations for its "property rights", namely its patent monopoly, are about to expire.

Process Model

The Monopoly Years, 1880 to 1894, were a period of time in which the American Bell Telephone Company concentrated on increasing its authority over the development and use of the telephone within the United States. For the most part it can be seen as a time when the Company was able to develop with little interference from the public sector. While several attempts were made at the local and state level to bring some type of regulatory control into the telephone industry, these efforts were spotty, and at best limited.

This is not to say, though, that during this time period telecommunications did not receive government attention. On the contrary, the telegraph industry experienced several changes that, eventually, would affect the development of the telephone. Probably the most significant development in this area was the creation of the Interstate Commerce Commission, and the 1886 ruling by the Supreme Court that telecommunications was an integral part of national commerce.

Up to the 1880s, telecommunications within the United States had continued to be an area of policy dispute. The division between State and Federal authority over regulation of companies was a major block in terms of resolving where the ultimate public interest was that was involved in communications. The United States Supreme Court ruling in the *Pensacola* decision settled this debate, and placed the oversight of the system squarely in the hands of Congress. But while Congress was willing to accept the Court's charge, and establish requirements for interconnection between telegraph systems, it was not willing, at this point, to award the oversight of rates to a national agency - such as it did with the I.C.C.'s authority over railroad rates. The nationalization bills that were introduced in 1883 and 1884 were no more successful in changing Congress's attitude than the earlier Sherman and Washburn bills had been. Instead, Congress limited its oversight to ensuring, in the public interest, that all citizens would have equal access to the system, and that their communications would be maintained with a degree of privacy.

The State government's emulated the Congressional decision by also passing privacy bills, and empowering State Public Utility and Railroad Commissions with oversight on interconnection. Thus, while the public sector did assert its authority in this area, it limited its oversight, and continued to split oversight between the State and Federal governments under the prevailing concepts of dual federalism.

American Bell Telephone was little affected by these national and state developments. While it was obvious that government attention was slowly being turned in its direction, especially at the State level, the corporate management of American Bell operated under the premise that it was free of any governmental restraints other than State incorporation laws.

From 1880 to 1894, the telephone industry continues to operate within the parameters of Campbell, Hollingsworth, and Lindberg's Sectoral Development Model. Seeking to continue the process of maximizing the levels of transaction cost efficiency within the industry, American Bell Telephone extends its control through the establishment of operating and equipment standards. In addition, it redefines the licensing agreements with the local companies, and gains a dominant position by controlling the majority of stock within the local companies.

In order to further maximize efficiency, it proceeds to redefine the operating territory of each of the local exchanges, and reestablishes the new exchange configuration in such a way that it will form the backbone network for an eventual long distance system. While effective long distance service is still in its infancy, the company orients its long term strategic plans to the eventual long distance concept, and concentrates on dominating the major urban areas of service on the assumption that these areas will prove to be the major demand markets for the future long distance exchanges.

While a formal policy network has not yet emerged, we begin to see the first tentative movement in this direction. The extension of government oversight on telecommunications through the authority given the I. C. C. over telegraph interconnection, coupled to the first state government attempts at regulating local telephone exchanges, signals that the telephone industry, in the minds of the public sector, does exhibit qualities of a "public service company".

Initial attempts by the state governments to extend oversight through a regulatory process are successfully defeated by the company through the exertion of its private property rights established under patent laws and court rulings, and the perpetuation of the localized system of mutualistic relationships with local business and community leaders.

Federal efforts at regulatory control are limited, at this time, to only the telegraph industry. The telephone industry is ignored during this time because it has not yet reached the level of a national communication system, thus is still perceived by the general society as being under the influence and regulation of the State legislative requirements. But while the industry is able to continue to operate with limited government oversight, the principles of the extension of government authority over new modes of commerce and communication have already been established through Supreme Court rulings. Thus, by the end of 1894, the foundation is laid for the next developmental stage in the eventual emergence of the telephone policy subsystem.

The Duality of Structure

The development of the Interstate Commerce Commission, and the vesting of authority over interconnection of telegraphs to the Commission, was the first step in recognizing the importance that communications had to the development of national economic prosperity. While the structures of social beliefs still retained a focus toward limited government, this attitude was offset by the recognition that the creation of community wealth was dependent on both processes of creation and information.

Yet the idea that communication could play a critical role in commerce, and thus was within the public sector to define for the public interest, was difficult to institutionalize within the existing system of government. The Constitutional fragmentation of authority left both the Federal and State governments with equally strong positions over who would have authority over the new industry. In the end, the fragmentation of state authority made it impossible to regulate a national industry, and the Supreme Court interceded to settle the difference.

Once the decision had been made as to where authority would lie, the Congressional arm of government sought to place the new regime within the existing institutions and beliefs of government. The proposals to nationalize the system were rejected as violations of structural beliefs concerning private property within the overall society. Left with little to relate to, Congress made a tentative step by invoking the concept of the public interest, and requiring equal access through interconnection. Thus a belief was located that allowed for oversight based on the principle of the public interest, but at the same time did not alter the prevailing structures of private property ownership and control.

While the telephone industry was not directly affected by the Congressional decision relating to the telegraph industry, the precedents were set that eventually would extend these social constructions of reality into its arena of existence.

Unintended Consequences

Congressional action in terms of the Interstate Commerce Commission regulation of the telegraph industry, and the corporate strategy being pursued by American Bell Telephone, were leading to a convergence in which the telephone would find itself deeply involved in the nature of the rights of the private side of society versus the public interest side of the public sector.

The decision by Congress to empower the Interstate Commerce Commission with limited authority over the interconnection of telegraph lines, set in action a series of moves on the part of both the public and private sector. The Congressional intention of creating interconnection between telegraph systems did have its initial effect. Unfortunately, the issue of Western Union's monopoly did not change, and in essence, Western Union still retained its dominate control over long distance communications.

Because of Congress's inability to address the telephone in the I.C.C. legislation, regulation of the telephone, for the most part, was still retained within the scope of the various State's authority. The unintended consequence of this action was that eventually, when the need arose to address the national character of the telephone industry, clearly defined areas of authority were split between the Federal and State governments. While the Federal government had authority over the national aspects of commerce conducted over the telephone, the State governments retained authority of service within their own respective borders. Thus there did not exist any centralized authority which could exercise coordinating control over the telephone industry.

The decision by American Bell Telephone left the rural and under populated areas of the United States behind in terms of having access to the telephone for commercial purposes. While the strategy led to the intention of increasing access to urban markets, and developing an integrated long distance area, the unintended consequence was that a large potential market for development was left open for the future. It was this market which the newly created independent telephone systems would target after the patent monopoly expired, and which would lead, eventually, to government control over the telephone industry.

The development of a research and development arm of American Bell Telephone had the intended consequence of creating a division that could, and did, move the extension of long distance telephone service. The unattended consequence though, was that the research arm of the Engineering Department was not sufficiently large enough to corner all research in the area of telephone technology. As a result, inventors were able to create new devices and means of communications which by-passed Bell's original patent, and over which American Bell Telephone could not claim exclusive rights.

The efforts of both Vail and Forbes had created an integrated company with control over the service. But the integration of the company was grounded on Bells' continued control over telephone technology. Once the patent monopoly expired, the hierarchy created by American Bell disintegrated. As a consequence, there was no way to maintain an integrated communications network without the patent monopoly, and there were no institutional mechanisms to determine either the reasonableness of rates or the adequacy of service.

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