

CHAPTER 4

The Early Period: 1876 - 1880

**"Mr. Watson, come here,
I want you."**

Alexander Graham Bell

The Discovery of an Industry

Alexander Graham Bell was a professor of Speech who had a vision of people, in distance places, speaking to each other over electrical wires. He called his vision "The Grand System", and he called his invention the telephone.

In the early 1870s, while working with deaf children in Boston, Bell met two men whose children were under Bell's instruction: Thomas Sanders and Gardiner Hubbard. Both men became interested in Bell's telephone experiments, and provided money and encouragement for Bell's endeavors. On February 28, 1875, Bell, Sanders and Hubbard signed the Bell Patent Association Agreement. Under the terms of the Agreement, Sanders and Hubbard agreed to supply Bell with the capital needed to develop the telephone, and Bell agreed that each man would hold equal shares in any patents that would be developed from his work (Danielian, 1939: 39).

In 1876 Bell filed patents describing two methods of transmitting voices; the magneto-induction principle and the variable-resistance principle. A few hours later, on the same day, Elisha Gray, an inventor from Chicago, also filed a variable-resistance patent (Finkelstein, 1989: 153 - 154). The Age of the Telephone had dawned, and with it patent litigation.

Elisha Gray and Bell immediately became embroiled in a series of patent disputes. Bell and his backers became discouraged by the thought of a possible lawsuit, and, in 1877, they approached Western Union, offering to sell Western Union the patents to the telephone for \$100,000 (Lewin, 1987: 38).

At this time, Western Union's management conceptualized the telephone as an unreliable substitute for the more accurate telegraph. Since the majority of the business community, at this time, relied on written records, Western Union saw no advantage to the commercial community in the use of the telephone. The impression formulated by Western Union officials was that the telephone was limited to personal communications within a limited area, such as a city. At best, Western Union conceived of the telephone as augmenting the telegraph, possibly rounding-out the existing communications system. The idea of a national voice network, to Western Union, was out of the realm of possibilities. As such, Western Union declined Bell's offer for purchase (Thomas B. Doolittle, 8/3/1906: AT&T Archives, Box 1057).

In spite of Western Union's opinion, Bell and his backers decided to proceed in the development of the telephone, and on July 9, 1877 formally established the Bell Telephone Company. The new company was organized under Massachusetts laws as a Trust - a voluntary, unincorporate association, similar to many personally connected associational types of companies in existence in New England at this time. Initially, the company issued five thousand shares of stock that were equally divided between four persons: Hubbard, President of the Trust - sole Trustee and decision-maker for the trust; Sanders, Treasurer of the company, and exclusive agent for approving any disbursements from the companies accounts; Bell, designated the Chief Electrician, and the primary public relations agent for the company; and Bell's assistant, Thomas A. Watson, who was designated Superintendent, and in charge of the actual production of telephone equipment (Fagen, 1975: 28).

The new company, under Hubbard's direction, began an aggressive campaign of establishing the telephone system. While the initial service was limited and poor, by 1878 businessmen in New York, Boston, and Chicago were using the telephone for commercial purposes.

Western Union, once it saw Bell enter the commercial market, realized its' mistake in not purchasing the Bell patents. Seeking to thwart a potential competitor, Western Union purchased Elisha Gray's patents, in 1878, and started the American Speaking Telephone Company and the Gold and Stock Telephone Company. Bell Telephone immediately filed a patent infringement lawsuit against Western Union (Garnet, 1985: 32).

For one year Bell Telephone and Western Union engaged in a fierce expansion of telephone service. The basic strategy, used by both companies, was to "race to occupy the field", and each company sought to establish telephone service in any market open in a major city. Suddenly, a year later, on November 10, 1879, Western Union and Bell Telephone agreed to an out-of-court settlement of the patent lawsuit. Western Union's decision to reach the settlement with Bell was caused by a combination of factors involved in an ongoing corporate stock war, and solid legal advice.

At this time Cornellius Vanderbilt owned the largest share of stock in Western Union. The most ruthless of America's "Robber Baron" financiers, Jay Gould - an old nemesis of Vanderbilt's - had embarked on a hostile takeover campaign of Western Union by creating the American Union Telegraph Company; a combination of marginally profitable, small, regional telegraph lines. Gould sought to challenge Western Union in the national telegraph business, and eventually force Western Union into buying-out his telegraph company at an inflated price (Goulden, 1968: 38).

As part of Gould's strategy, Gould's American Union Telegraph began to acquire Bell franchises in various large city markets, and linked the telegraph and telephone services. Gould then informed Western Union that he was thinking about buying the entire Bell system as a means of weakening Western Union. The ensuing struggle with Gould undermined Western Union's financial position, and revenues for the company began to decline (Finkelstein, 1989: 154 - 155).

While engaged in the patent war with Bell, Western Union's chief attorney, George Gifford, advised Vanderbilt that the Bell patent claims were solid, and eventually Bell would win in the courts. In essence, Western Union would eventually be found guilty of infringing on Bell's patents, and would have to pay a large settlement. Gifford urged Vanderbilt to settle with Bell (Gifford Affidavit, 9/19/1882: AT&T Box 1006).

Vanderbilt, realizing that a war with both Gould and Bell at the same time was suicidal, and that he would eventually lose the patent fight with Bell, selected the lesser of two evils, and agreed to a settlement with Bell Telephone. Under the terms of the settlement, Western Union agreed to stay out of the telephone business until Bell's patents expired in 1893. Bell, under the same agreement, agreed to stay out of the telegraph business for the same period of time. Vanderbilt and Bell also agreed to not compete against each other in their respective area of business, and to not allow any other telegraph company to use the Bell services - thus denying Gould any leverage in the telegraph market. In addition, Bell acquired Western Union's 56,000 telephones in fifty-five cities, and Western Union received twenty percent of the Bell revenues until the patents expired. Overnight, Bell Telephone had become a national company. (Goulden, 1968: 38).

Thus, by the end of 1879, two national monopolies had been created in the telecommunications industry: Western Union for telegraph, and Bell Telephone for telephones. The next year, 1880, Bell Telephone changed its name and became the American Bell Telephone Company (Finkelstein, 1989: 155).

The Political Economy of the Discovery of an Industry

The External Political Framework

The middle 1870s, in the United States, was a period of political troubles. In 1875, former Senator John B. Henderson, was appointed Special Prosecutor to the Whiskey Ring case. The case, involving the abatement of Federal whiskey taxes by Federal Agents of the Treasury Department - and the use of bribes by whiskey distillers - ,eventually reached the highest levels of the Grant Administration. When President Grant learned that Henderson sought to indict Secretary of the Treasury, O. E. Babcock, Grant dismissed Henderson as Special Prosecutor. A year later, in 1876, during the one hundredth anniversary of the nation, William W. Belknap, Secretary of War, was impeached by the House of Representatives on charges of accepting bribes while in office - he subsequently resigned office to avoid trial by the Senate. In 1876 Samuel J. Tilden and Rutherford B. Hayes ran for the office of President. While Tilden received the majority of the popular votes, Hayes was elected President by the Electoral College. Hayes election was the result of a deal between Hayes and the electoral delegates from the Southern states, in which Federal troops would be removed from the South, thus ending the Period of Reconstruction (Bowers, 1962).

The scandals of the Grant Administration showed, publicly, that the concepts of the Jacksonian "Spoils" system still held sway over the daily operations of government, and that collusion between public officials, government agents, and private interests had reached historic, and even constitutional, proportions (White, 1958).

During this same time period, the development of the transcendentalism and revivalism movements began to undermine the public acceptance of the spoils concept. Public perception began to shift, and a new view of government began to emerge. Under this new view it was felt that there was a higher law than majority rule, a higher law grounded in natural rights. What before had been an acceptable attitude toward the spoils system, now began to be questioned, and the issue of the proper role of government and law over men began to be discussed. This was the beginning the reform movement that later would be known as Progressivism (Nelson, 1982).

The communications industry was also beginning to be influenced by this new development in American political thought. Each Congress from the thirty-ninth - December, 1865 - through the forty-second - March, 1873 - considered proposals for telegraph regulation (Lindley, 1971: 42). The consolidation of the telegraph industry under Western Union, in 1866, was a major factor in the attitudinal shift that occurred at the Federal level.

In 1866 two different proposals for regulating the telegraph industry were presented to Congress. Senator B. Gartz Brown, a Republican from Missouri, felt that the solution for Western Union's hegemony was direct intervention, by the Federal government, in the telegraph industry. Brown proposed that the government should build, and operate, a telegraph system in direct competition with Western Union. At the same time that Brown introduced his bill, Senator John Sherman, a Republican from Ohio and later father of the Sherman Anti-trust Law, filed a bill that sought to use Federal funds to underwrite the construction and operation of a private telegraph company that would compete against Western Union. Both Brown and Sherman recognized that the telegraph had become a national institution, and that the use of existing regulations by State courts and State laws was no longer effective (Congressional Globe, 39th. Congress, 1st. Session: 2/23/1866, 979 - 980: 4/5/1866, 1773).

Both proposals sought to define the telegraph problem, and the need for government regulation, based on three areas of societal concern. The first argument was that rates for telegraphs were too high. Both Brown's and Sherman's arguments in this area were predicated on the assumption that the recent consolidation of Western Union, and in essence the creation of a monopoly, had led to

the destruction of competition, and that this would inevitably result in higher rates for customers (Congressional Globe, 39th. Congress, 1st. Session: 2/23/1866, 979 - 980: 4/5/1866, 1773).

The second argument, also related to rates, was that the recent consolidation had been accomplished by Western Union expanding the level of stocks issued by the company, and inflating their value beyond the real assets of the company. In essence, both Brown and Sherman were accusing Western Union of "Watering" their stock - issuing stock at a face value that was not based on the real value of the company, thus over-inflating the companies worth. Under this approach, Brown and Sherman argued, the additional value of the company's stock would have to be paid for by increased revenues which would result in over-charges to customers (Congressional Globe, 39th. Congress, 1st. Session: 2/23/1866, 979 - 980: 4/5/1866, 1773).

The third argument presented in defense of the two bills was that Western Union was unwilling to publicly declare what its true costs of operation were, and, that without such information, it would be impossible for consumers to know if they were, or were not, being charged a fair price for the service. Brown and Sherman felt that government regulation would lead to public disclosure of costs, and provide the needed information to assess, accurately, Western Union's claims of seeking only a modest return on their investments (Congressional Globe, 39th. Congress, 1st. Session: 2/23/1866, 979 - 980: 4/5/1866, 1773).

While agreeing, in principle, on the problem, both Brown and Sherman disagreed on the solution. Brown conceived of letters and telegrams as being fundamentally the same thing. To Brown, both a letter and a telegraph were written documents, and the same form of communications. Under Brown's rationale, since letters and telegrams were identical, they were both covered under the Constitution's postal clause, and thus were under the authority of Congress to both regulate and provide direct services. Brown felt that the Federal government was Constitutionally empowered to build and operate a telegraph system in direct competition with Western Union, and by developing such a system, the government would bring competition, and lower prices, back into the telegraph industry. In essence, Brown's arguments were a repetition of Postmaster Cave Johnson's arguments of the 1840s, but with an economic emphasis rather than Johnson's political emphasis. (Congressional Globe, 39th Congress, 1st Session, 2/23/1866: 979 - 980).

Sherman took a very different tact in his proposal. Sherman recognized that telegrams and letters were different in both their nature and purpose. While it was true that both were forms of written communications, the telegraph was fundamentally different than a letter because of its immediacy of transmission and receipt. It was the speed of communication which changed the communication, and, in essence, the uses found for the new type of written document. An expanding and dynamic economy relied on speed of information, and turn around of response, in order to fuel the commercial transactions of the nation - thus the telegraph played a major role in the commercial development of the United States. Sherman also recognized that the novelty of the telegraph, and its developing uses, required that the Federal government move slowly in this area before making any final, and irrevocable, decisions. The best way to accomplish this development, and at the same time to bring competition back into the market place, was for the Federal government to underwrite the construction and operation of another private telegraph system. By adopting Sherman's proposal, the government would obtain the true costs of operation, which could then be compared to Western Union's claims, but still limit government interference in the free market. Eventually, under Sherman's proposal, accurate information for making a final decision could be developed. and, at the same time, the problem of the development of a national monopoly would be resolved (Congressional Globe, 39th Congress, 1st Session, 4/5/1866: 1773).

The response to Brown's proposal was immediate, and negative, by both the public and private sector. Postmaster William A. Dennison rejected Brown's arguments. In a letter to the Senate, Postmaster Dennison systematically destroyed Brown's foundation for defining the problem. Dennison concluded that Brown's proposal was unacceptable. It was unacceptable because, to Dennison, the proposal violated the principles of constitutional authority under the present form of government. To Dennison, a letter and a telegraph were not the same. Letters were sent in bulk, telegraphs were sent individually. Letters required minimal attention in transmission, telegraphs required constant attention while being transmitted. Letters were sent once, telegrams required retransmission at repeating stations. In essence, according to Dennison, a telegram was not like a letter, and thus was not covered under the postal clause of the Constitution, thus the Federal government had no constitutional authority to enter this area of service (Senate Document 49, 39th. Congress, 1st. Session: 2).

While Dennison destroyed Brown's constitutional argument, Western Union destroyed Brown's economic arguments. Western Union agents examined Brown's documentation that he had submitted with his bill, and discovered that Brown had used construction cost figures dating back to the early and mid 1850s when telegraph competition had been at its fiercest. Western Union argued that the sunk costs for early telegraph development had now been recovered through consolidation and improved efficiency. To replicate what Western Union now operated would require a major capitalization by the Federal government. Brown had estimated the cost of construction of a competing system at \$2,000,000, but Western Union's estimate, which were supported by Postmaster Dennison, put the cost at over \$7,000,000. In addition, Western Union argued with Dennison's support, the telegraph did not promote monopoly, but actually destroyed monopolies. Under this argument, the telegraph promoted the distribution of information in both the financial and news markets, thus providing consumers with greater information about choices and prices available in the market place of all products offered in the society (Senate Document 49, 39th. Congress, 1st. Session: 7 - 31).

Sherman's bill received more favorable treatment. Realizing that the data needed for effective regulation was controlled by a single source, Western Union, Sherman's proposal sought to side-step the problem by developing an alternative data source - namely a competing National Telegraph Company. Such a company, under close government supervision, would become an independent and impartial source of information for government decision-makers. It would develop reliable figures on the actual costs of construction and operation of the telegraph system, and a means for determining what "fair" rates should be for transmission. Eventually, the accumulation of data would allow Congress to decide if the telegraph industry should either be regulated or privatized, but do so in such a way that it did not interfere with the operation of the free market, or stymieing the development of electrical communications (Congressional Globe, 39th. Congress, 1st. Session, 6/27/1866: 3428 - 3429).

Rather than charging head first into the lion's den, Sherman requested, and was granted, that his bill be considered by a select committee of Congress. The select committee rejected Sherman's argument that an exclusive charter could be granted to the proposed National Telegraph Company, to the committee such a charter would violate the constitutional authority of Congress. But the committee did recommend that the proposed company should have the right to construct such lines along the nation's post roads, and in early June favorably reported a bill out of committee granting the proposed company the right to construct lines on federal lands and post roads (Congressional Globe, 39th Congress, 1st. Session: 6/27/1866: 3430 - 3484). The bill was immediately sent to the Senate floor for a vote.

While the Senate, generally, feared the growing power of corporate America, they also felt a deep distrust toward granting any single company a special privilege. Senator Grimes, Republican from Iowa, rose to object to the sole charter, and with a floor vote, amended the bill to allow for the chartering of any company who wished to establish telegraph lines on Federal lands or postal roads. The Senate approved Grimes's amendment, and then approved the bill. The next day the bill was forwarded to the House, where, with Grimes's amendment still attached, the bill was approved. On July 24, 1866, President Johnson signed the bill into law ((Congressional Globe, 39th. Congress, 1st. Session, 7/24/1866: Appendix, 382).

Under the terms of the bill, any state-chartered company had a right to construct telegraph lines along the post roads or across Federal lands. The government had a priority of use on the line, but commercial traffic was also allowed. Rates for operation were set, annually, by the Postmaster General, with companies filing full financial disclosure forms with the Postal Service. Companies were also prohibited from selling their lines to other companies. At the end of five years, 1871, a special commission of the Federal government would establish the fair costs of the lines, and purchase the system from all the companies involved in the construction of the various lines (Congressional Globe, 39th Congress, 1st. Session, 7/24/1866: Appendix, 382). In essence, by mid-1871, the Federal government was committed to nationalizing the telegraph industry of the United States.

The passage of the Sherman bill put Western Union on notice that the Federal government was going to become a major influence over their industry. Western Union's response was immediate.

William Orton, President of Western Union, saw the Sherman bill as an attempt to reintroduce into the telegraph industry the same factors that had originally led to chaos in the industry in the 1850s. To Western Union officials, the consolidation of the telegraph industry had brought order and reason into the business, and the Sherman bill would only result in the reintroduction of confusion and uncertainty. In their view of the world, Western Union saw the monopoly that had been created not as a vacuum in the market place, but rather a means to bring reason and science into business. To these men, government sought to artificially create forces in the market which would only lead to disastrous consequences for everyone in the society (Kirkland, 1961: 115 - 116).

Starting in 1867, Western Union created the first modern lobbying organization at the Federal government level. In 1867 Western Union created a lobbying group in Washington, D. C. that utilized extensive franking privileges to Congress, an in-house publication which was extensively distributed to members of Congress, and hired full-time lobbyist with extensive contacts and personal connections on Capital Hill. For its time, Western Union out-distanced any comparable group in Washington, and especially out-distanced any equivalent institutional systems that existed in the Federal government.

Western Union agents in Washington freely distributed telegraph franks to any member of Congress requesting them. As many as thirteen hundred franks at a time would be requested from Western Union's office, and used to solicit favorable support from various Congressmen. In addition, in connection with their contracts with various railroad companies, free rail passes were also distributed to the members of Congress by Western Union agents (Orton to Blaine, 7/6/1869: Orton to Painter, 1/11/1869: Orton to Tinker, 1/13/1869: Orton to Stockton, 3/16/1869; Western Union Archive, Letter Box V).

In 1867 Western Union also established the Journal of the Telegraph. The "Journal" became the official voice of Western Union, and was distributed to all Congressional offices. While publishing articles that dealt with the development of telegraphy, and innovations being placed into

the communications system, the "Journal" was also used to attack any proposals presented in Congress that would advance the nationalization effort, or implementation of the Sherman bill. At a time when many members of Congress, and the Federal government, were unfamiliar with the scientific principles involved in telegraphy, and the concepts of modern economics being developed at this time, the "Journal" stood as the sole source of "scientific" information related to the communications industry (Journal of the Telegraph: 1867 - 1873).

To round-out their lobbying organization, Western Union hired a staff of full-time lobbyist that either had extensive experience with Congress, or had valuable direct connections to members of Congress. Probably the most important lobbyist hired by Western Union was Uriah Hunt Painter. Painter was a former telegraph contractor, and thus well-known to Western Union officials. In addition to his knowledge of the telegraph business, Painter was also the Chief Clerk to the House Postal Committee, the committee charged by Congress to consider all telegraph bills. While still employed by the Postal Committee, Painter worked for Western Union, notifying them of hearings, and crafting responses to undermine any proposals, related to the telegraph nationalization, which were under Committee consideration (Orton to Painter, 1/11/1869: Western Union Archives, Letter Box V).

With an effective, and, for its time, advanced lobbying organization in place, Orton, and Western Union, were ready to take on any Congressional proposal that would challenge the telegraph industry.

In 1868 two bills were introduced into Congress that would begin the process of implementing the Sherman nationalization bill. The first bill, introduced by Representative Elihu B. Washburne, Republican from Illinois, would have provided for the construction of an experimental telegraph line from Washington, D. C. to New York City (House Miscellaneous Document 129, 40th. Congress, 2nd Session). Washburne's bill was a modest proposal, and not viewed with alarm by Western Union (Orton to Painter, 1/11/1869: Western Union Archives, Letter Box V).

Of far more serious concern to Western Union, though, was the second bill that was introduced in the House. John F. Farnsworth, also an Illinois Republican, introduced a bill two months after the Washburne bill which proposed to grant a national charter to a private telegraph company that would be called the United States Postal Telegraph Company. Under Farnsworth's proposal, the telegraph company that would be created would send telegrams received at post offices across the United States, and would operate under a contract with the Postal Service - with a ten year renewable contract. As part of the price of capitalization of the telegraph lines, capitalization costs to the Federal government would be fixed at \$300 to \$500 per mile, and in turn the Postal Service would guarantee the telegraph company with a ten percent annual return. If revenue fell below the ten percent level, the Postal Service would be obligated to pay the difference to the company (House Miscellaneous Document 129, 40th. Congress, 2nd Session). The Farnsworth bill, in essence, was a serious attempt to implement the Sherman Bill.

The instigator of the Farnsworth bill, and the chief corporate sponsor of the United States Postal Telegraph Company, was Gardiner G. Hubbard of Boston, future partner of Alexander Graham Bell. Hubbard, a graduate of Harvard Law School, and a successful Boston businessman, sought to create a national telegraph system by taking the remaining small regional telegraph companies still in existence, and linking them into a national system. Under Hubbard's plan, the United States government, in essence, would capitalize the existing systems at a higher value than their current assets, and then guarantee them a ten percent annual return, on the higher value, for a period of ten years (House Executive Document 35, 40th. Congress, 3rd Session, 1/11/1869). Hubbard's plan was, in fact, the same type of stock "watering" scheme that Western Union had been accused of by

Sherman and Brown, but this time done with the use of Federal funds rather than the private investment market.

Both the Washburne and Farnsworth bills were referred to the House Postal Committee. Western Union was ready. Articles began to appear in the "Journal" in which the statistics used to support both bills were attacked. In addition, companion articles spoke on the greater issue of government regulation and private ownership of the telegraph industry. Both Washburn and Farnsworth were unable to gain equivalent "scientific" expertise to support their positions, and, in essence, the "Journal" became the definitive authority on telegraph policy - and challenger to the proponent's position (Journal of the Telegraph: 1868 - 1870).

While attacking the authority of the two bills, lobbyist began to freely distribute telegraph franks and railroad passes across Capital hill. At the same time, Painter worked with Western Union officials to undercut the position of the bills inside the Committee. In the end, Western Union's response worked, and in February, 1869 the two bills were adversely voted out-of-committee - thus sending them back to their respective originating Congressmen without floor action. The committee was especially critical of Hubbard, implying that he sought to create personal profit at the public expense (Lindley, 1971: 105 - 107).

Washburne attempted to gain support from his fellow Congressmen to have the bill introduced from the floor for a vote, but he was unable to secure the necessary number of signatures required for introduction. Eventually his bill died a still-birth (Garnet, 1985: 32).

Hubbard, on the other hand, was not as willing to give up the fight. Recognizing that the House Committee was against him, he sought to have the bill introduced by the Senate Postal Committee. For the next three years, Hubbard haunted the halls of the Senate, and the Senate Postal Committee, seeking a favorable recommendation. But his efforts were to no avail. Finally, in 1873, two years after the expiration of the Sherman bill, Hubbard returned to Boston to seek new endeavors in investment (Garnet, 1985: 32).

With the passage of 1871, and the failure to create any alternative telegraph system, the Sherman nationalization bill expired. Western Union had won the war to keep communications in the private sector, and, at least temporarily, unchallenged by the Federal government.

In addition to stopping the nationalization challenge, Western Union emerged from the struggle as the undisputed champion of the free market in the United States. Its financial power reached not only into the banking and capital markets of the country, but also into the highest levels of political authority in the nation. For all practical purposes, Western Union had become a law unto itself, and a formidable foe to anyone seeking to challenge it in either the private or public arena

The External Economic Framework

In 1873, the previous decade's over expansion and uncontrolled speculation in railroads had led to a financial panic. The depression, that followed the 1873 panic, weakened the investment markets during the remaining years of the 1870s, and led to a limited, and wary, capital market. The investment and capital markets were further hurt by the investment tactics of the Robber Barons of Wall Street, whose ruthless methods undercut any confidence held by investors in the security of the market. Probably the most famous, and dreaded, example of the risk of investment, in the minds of investors, was the failure, in 1875, of the Erie Railroad - the greatest railroad in the Northeast. That year, 1875, Jay Gould, Jim Fisk, and Daniel Drew challenged Cornelius Vanderbilt's control of the Erie Railroad. In the ensuing stock war, Vanderbilt used the power of

the New York Courts to issue arrest warrants for Gould, Fisk, and Drew, while the three freebooters created an armed fortress in a New Jersey hotel - and printed watered railroad stock in the basement of the hotel. Eventually, the Erie Ring - as Gould, Fisk, and Drew were referred to in the press - drove Vanderbilt out of the Erie, and gained control of the railroad. The three then proceeded to bleed the company dry of both capital and profits. Within one year of its acquisition, Gould, Fisk, and Drew had driven the railroad into bankruptcy, while personally taking everything of value owned by the company (Grodinsky, 1957).

The stock and capital manipulations of types like Gould, Fisk, Drew, and Vanderbilt, combined with the lingering depression, created a chronic shortage of capital in the investment markets of the 1870s. It was against this backdrop that Bell, Sanders, and Hubbard sought to establish, and capitalize a new, and unproved, product and service - the telephone. To compound the newly developing company's troubles, the challenge by Western Union forced it to quickly expand its base of operation, creating even more pressure for capital. Even with the patent settlement in 1880, the cost of acquiring the Western Union system of telephones required an even greater level of capital infusion. It was because of these pressures for capital formation, that between 1875 and 1880 Bell Telephone went through five reorganizations and reincorporations.

Initially, the Patent Agreement of 1875 between Bell, Sanders, and Hubbard was a form of obligational network based on the concept of a joint partnership venture (Campbell, Hollingsworth, and Lindberg, 1991: 18 - 21). The agreement obligated the three men to share whatever profits developed from the enterprise, and to provide the necessary capital, manpower, and information necessary to sustain the effort.

At this point in time, the partner's vision of the end product differed. Both Sanders and Hubbard saw the device as a supplement to the existing telegraph system, and urged Bell to concentrate on developing a system of multiple messaging over a single electrical wire - this is what became known as the "Phantom-Circuit" principle developed by Bell Laboratories after the turn of the century. Bell, on the other hand, was convinced that the device's greatest utility was to be found in being directed toward the spoken rather than the written word (Casson, 1910: 28). Since neither Sanders or Hubbard had Bell's scientific background, they were not able to block Bell's development of a talking device - the secrets of the telephone laboratory were beyond the practical or discursive knowledge of the two investors.

It is impossible to determine if, at this time, Hubbard saw the device as an extension of his original United States Postal Telegraph Company network, or a new device which would be of financial value to Western Union. Possibly Hubbard saw the potential for both. But Bell's concept of a "Grand System" was, in many ways, similar to Hubbard's concept of the Postal Telegraph Company, and could not have escaped his attention - especially after spending five years promoting the failed telegraph system. But the final development of the telephone, and the filing of the patents, resolved the issue of what was the new device's nature. It was a speaking device, and its greatest potential laid in creating a market and demand for the spoken word heard across geographical distances.

Initially, the telephone was faced with many of the same problems that the telegraph had faced. A curious public, and excited press, greeted its introduction, but there was no real understanding on the part of the collective mind of American society, at this time, of the potential value of the telephone to the country. While it was obvious that it could be used for personal communications within a city, it was not obvious that its use could be extended across long distances, and used for commercial or news purposes. As such there was a reluctance on the part of investors and customers to actually become involved in the company (Casson, 1910: 42 - 46).

The potential patent challenge by Elisha Gray also presented the new company with the possibility of a protected, and expensive, lawsuit at a time when capital in the company was in short order. By this time Sanders and Hubbard had invested over \$110,000 in the device, and had received no returns on their investment. Sanders business was heavily in debt because of the investment, and the friends and family of Sanders were advancing him loans to cover operating costs in his shoe sole cutting business. Hubbard, on the other hand, realized that the development of the device would call for a major investment by a reluctant market, and in essence the creation of a new national wire communication network outside the existing telegraph system. The need for capital, the potential costs of a possible lawsuit, and the level of debt by the two partners, formed the basis for their approach to Western Union to sell the device (Casson, 1910: 55 - 58).

Gardiner Hubbard was the last person that William Orton, President of Western Union, wanted to see. During the protracted fight over the Postal Telegraph Company bills, Orton had come to personally despise Hubbard. In addition, the attacks against the Postal Telegraph bills in the Journal of the Telegraph, had created the impression, in the minds of Western Union officials, that Hubbard was not only dishonest, but also a faulty thinking businessman who was unable to grasp the true complexity of the communications industry (Lindley, 1971). Between the poor impression that Hubbard had with Western Union officials, and the general impression that the telephone was only a device for local area and personal use, Western Union declined the offer. To their way of thinking the telephone offered a limited potential for profit, with a very high initial capitalization. It was also felt, by Western Union, that, eventually, after someone else had created the market and funded the infrastructure for the new device, that Western Union could easily force a purchase at a time and place of their own choosing (Garnet, 1985: 46 - 47; Brooks, 1976: 53 - 53).

The rejection by Western Union left the three partners with no other choice than to proceed with the development of the company. Still under-capitalized, the three men formed the Bell Telephone Company under the incorporation laws of the State of Massachusetts. At this time, Massachusetts had a form of corporation law known as a Trust. All Trusts were basically voluntary, unincorporated businesses. These type of organizations were restricted in the levels of funds that could be used for investment and capitalization in the company - not a major problem for the company at this time - , but with similar types of legal protection afforded to fully incorporated companies - the most important being that only the firms assets could be held for debt purposes, not the personal property of the partners. In New England, at this time, this type of Trust organization was fairly common, and usually composed of individuals who were personally connected (Danielian, 1939: 9).

In order to establish the Trust, one person had to be designated the primary Trustee, and the other partners had to assign their rights to the patents to the Trustee. The Trustee was responsible for developing the firm commercially, and was the final authority for all company decisions. In this case Hubbard was assigned the role of Trustee. 5,000 shares of stocks were issued in the company, and divided in the following manner: Gardiner G. Hubbard, 1,387; Gertrude McC. Hubbard, wife of Gardiner Hubbard, 100; Mabel G. Bell, daughter of Gardiner G. Hubbard and wife of Alexander Graham Bell, 1,497; Alexander Graham Bell, 1,497; Thomas Sanders, 1,497; Thomas A. Watson, 499; and 10 shares each to Charles E. Hubbard and Alexander Graham Bell. The final distribution of stock gave the Hubbard family control of the Bell Telephone Company. (Danielian, 1939: 9).

The company operated under a set of regulations adopted by the board of managers which were designated as: Gardiner G. Hubbard, President; Thomas Sanders, Treasurer; Alexander Graham

Bell, Chief Electrician; and Thomas A. Watson, Superintendent in charge of equipment (Danielian, 1939: 9).

To attract investors, Hubbard expanded the obligational network, developed originally under the patent agreement, and later expanded with the limited partnership agreement. In essence he created a licensing and franchising method for expanding the business, without the need to increase capital through additional stock sales (Bickers, 1991: 81). Any person wishing to develop and operate telephone service in a local area, were given a charter from the Bell Telephone Company to provide services within the designated area. The investor was required to capitalize all the costs associated with the construction of the actual wire lines that serviced the designated area. Bell Telephone Company provided all the equipment necessary to operate the system, including the telephones - and, eventually, the switching systems. The new company leased equipment from Bell Telephone, and in turn leased telephones to customers. Licenses were granted for a five year period. At the end of five years, Bell would extend the agreement if the investor had fulfilled its obligations, or Bell could exercise a right to purchase clause, and acquire the company at the fair market value. A permanent license agreement was also possible, but if a licensee wished to exercise that right, they had to agree to issue to Bell Telephone thirty to fifty percent of their stock (Federal Communications Commission Special Investigation, 1936: Docket 1, Exhibit 130, "Origin and Development of the License Contract: 1 - 2).

The arrangement allowed Bell to expand services quickly with a limited amount of out-of-pocket capital investment on the part of the company - by 1879 185 such agreements had been granted, covering the majority of the major cities in the United States. But the agreements also had a long-term problem for the parent company, namely that the local companies were virtually autonomous, in their local operations, from the central Bell headquarters (Stehman, 1967).

The use of the leasing arrangement was a method, developed by Hubbard, to seek to exercise some corporate control over the local franchises. Hubbard had been chief legal advisor to the Gordon - McKay Shoe Machinery Company. At this time, shoe manufacturing equipment was not sold to shoe producers, but rather leased. Each pair of shoes produced resulted in a royalty being paid to the shoe machinery company. Hubbard adopted the same principle with telephone equipment in order to accomplish two purposes. First, the leasing operation would result in money flowing immediately into the cash starved company. Second, even though the local companies were independent, the leasing of equipment gave Bell a handle on local operations by requiring that technical standards be established and maintained. In addition, any copies or infringements on the equipment could be quickly traced - a major concern to the company since the simple devices could be produced in a small machine shop with a limited amount of technical knowledge. The leasing arrangement had one final point in its favor, namely, in the event that a franchise closed, all the equipment necessary to operate the local system would be Bell's. A new competitor would thus be forced to negotiate with Bell before using the wire lines that had been constructed. (Tosiello, 1979: 77 - 81).

But the war with Western Union, especially Western Union's movement to establish exchanges in open cities, forced the company to raise more capital, and to actually invest in the local licensee's capitalization projects. Sanders opposed the investment in the local companies, but he was overridden by Hubbard. Sanders began to pressure Hubbard and the other partners, demanding that they expand the corporation, and bring in new stockholders. By this time, Sanders friends in the Boston financial community had become interested in Bell Telephone, and voiced a desire to invest in the Company. Hubbard, fearful of losing control, had strong reservations about expanding the owners, but also realized that the company desperately needed more capital if it hoped to meet

Western Union's challenge. Reluctantly, Hubbard agreed to the expansion (Tosiello, 1971 : 133 - 135).

In order to attract investors, but still retain a degree of control, Hubbard made two initial moves. The first move was to hire Theodore Vail. Vail, at the time of his recruitment, was Superintendent of the Postal Services Railway Mail Service, and had made a name for himself by revolutionizing the overnight mail service on the railroads. He was highly respected in the Postal Service and Congress, and many people associated with both Congress and the Postal Service expressed their regrets, and fears, when he left to become General Manager of Bell Telephone (Paine, 1921).

Hubbard had known Vail during his Washington years while promoting his Postal Telegraph Company, Little is known of Vail and Hubbard's direct association during this time, but apparently it was a positive relationship, because Vail immediately accepted Hubbard's offer to leave the Postal Service and cast his fortunes with the Bell Company. With Vail on-board, Hubbard now had the executive talent necessary to reorganize the company.

Secondly, Hubbard sought a compromise with Sanders. Instead of reorganizing the Bell Telephone Company, Hubbard agreed to allow the formation of a new Company, the New England Telephone Company, that would have sole and exclusive coverage of the New England market. Under the compromise, Bell Telephone would concentrate on developing other national and regional markets outside the New England home base. The Boston financiers agreed to the proposal, on the condition that the firm operated under a Board of Directors not controlled by Hubbard. Hubbard opposed the proposal, but Sanders, Bell, and Watson voted him down, and thus the independent New England Telephone Company came into existence (Garnet, 1985: 17 - 19).

But the demand for capital did not abate, and within a few months Sanders was once again demanding that the company be reorganized to allow for more investors. Hubbard, wishing to avoid the Boston financiers who had created the New England Telephone Company, sought to locate investors in Philadelphia and New York. He was unsuccessful. Hubbard reluctantly agreed to the expansion, on the condition that the New England Telephone Company was not incorporated into the new company. The Boston financiers involved in the New England Company agreed to the separation, and also to purchasing the stock of the newly incorporated Bell Telephone Company. In June, 1878, the Bell Telephone Company was established as an incorporated entity of the state of Massachusetts, with Hubbard as still President. (Garnet, 1985: 26 - 27).

The new Company issued 50,000 shares of new stock, which were immediately purchased by the Boston Financiers. But incorporation also meant the end of Hubbard's influence in the Company. Shortly before the new incorporation took effect, on July 30, 1878, the newly enfranchised investors, and Theodore Vail, demanded that the company be reorganized. The new stock holders immediately voted to retain Hubbard as the President of the company, but severally restricted his actions by requiring that all major decisions were made by the new Board of Directors - composed of the original partners and the new Boston Financiers. The chief leader of the financiers was William H. Forbes, one of the Boston Brahmins (Danielian, 1939: 10).

Forbes immediately began unofficial discussions with Western Union to find a settlement to the corporate war. Western Union was more inclined to talk to Forbes once they realized that Hubbard's position in the company was limited. Over the next several months, as the Gould challenge reduced Western Union's earnings, discussions were held over settlement. For a while both parties discussed the possibility of direct merger, but eventually, after Gifford's advice

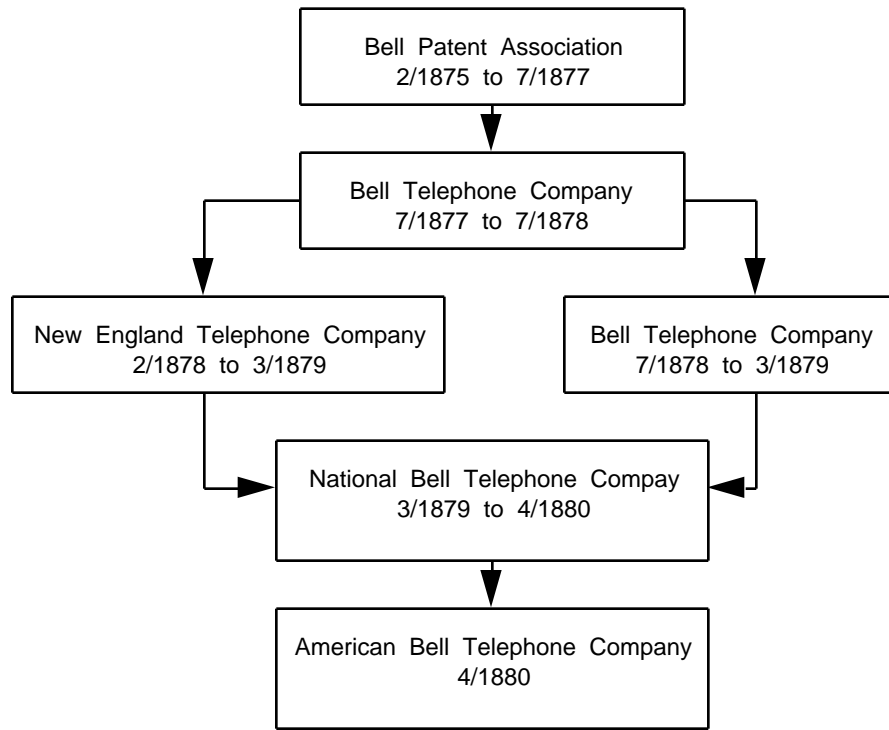
concerning the patents, it was decided, instead, to sign the settlement agreement under which Western Union would receive a portion of Bell's profits (Garnet, 1985: 44 - 55).

During the time of negotiations with Western Union, the Boston financiers were also engaged in negotiations with the New England Telephone Company concerning merger. Since the financiers of both companies were the same, the negotiations went smoothly, and in March, 1879, the two companies were reincorporated under Massachusetts law as the single National Bell Telephone Company. As part of the process of incorporation, the new majority stockholders accused Hubbard of financial mismanagement, voted Forbes in as President, and reduced Hubbard to only a member of the Executive Board of the Company (Garnet, 1985: 44 - 55).

The final cut to Hubbard, and the remaining original partners, came the next year. With the settlement of the corporate war with Western Union, a firm patent in hand, and control now vested in the Boston banks and financial houses, the Board of Directors once again reincorporated Bell under Massachusetts law. On April 17, 1880 the American Bell Telephone Company came into existence. In the process, both Hubbard and Sanders were excluded from the management structure of the company. In protest, Bell resigned from the company, while still being retained as a consulting engineer, and moved to Canada. Thomas Watson was given the position of general inspector of equipment, but removed from the actual construction of the equipment. Three years later, Watson resigned to pursue new interests.

The principles of economic Darwinism, that were so prevalent in the last half of the nineteenth century in the United States, had eventually succeeded in the telephone industry. What had originally been developed as a close family and socially connected network of collaborators and investors, fell to the financial might of the market and the need for capital. Bell Telephone was now controlled exclusively by the Boston financial market.

EVOLUTION OF THE BELL SYSTEM
1875 TO 1880



The Political Internal Framework

Up to this point in time, 1876 to 1880, there does not exist any agency of the Federal government with direct regulatory authority over either the telegraph or telephone industry. In addition, the national financial and investment markets are also free of any Federal regulation or control.

It would be incorrect, though, to assume that at this stage of governmental evolution in the United States there did not exist some form of either direct or indirect oversight by government on the development of the telephone industry. In fact, there were three levels of government involved with telephone development, two at the Federal level, and one at the State level. All three, in terms of the telephone industry, were directly involved in the assigning and determination of property rights.

In terms of the Federal level of government, the assigning and determination of property rights in the telephone sector was grounded in the Constitutional order of the government. Under Article 1, Section 8, of the Constitution, Congress is given authority;

"To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." (United States Constitution, 1787).

The development of modern patent law, in English speaking countries, can be traced to 1565, when the port of Antwerp was closed to English merchants. Antwerp was the most important trading port in Europe at that time. The closing of the port to the English was a severe blow to the

English economy, and led to an economic depression within England. In order to counter the economic boycott, the English, in the 1560s, adopted a series of laws that allowed English producers of products sole, and exclusive, rights to manufacture and sell those products in the English empire. It was an interventionist policy, developed by the State of England, in order to make England self-reliant, and free of foreign dependency on everything from soap to iron products (Price, 1906).

While successful in freeing England from dependence on foreign goods, the process also led to abuses in terms of manufacturing, and the granting of monopolies to friends of the Crown. In 1623, a new English statute was enacted which sought to clarify the rights of a state granted monopoly. Clause sixth of the statute defined the rights and privileges granted to inventors of new products, and gave the inventor an initial fourteen year right to the sole use of the patent (Holdsworth, 1945: 352 - 354).

Up to the seventeenth century, the determination and granting of patents had been in the hands of the Privy Council, but in the eighteenth century the English courts began to be involved in the process of determining who had ownership over a patent. Courts began to require full disclosure on the specifics of the patent, and became the final arbitrator on all disputes between claimants to a patent (Holdsworth, 1945: 429 - 430).

The Founders of the United States were influenced by both English political and economic thought, and recognized the connection between new inventions and the growth of economic activity. In adopting the Constitution, the drafters included a clause assigning to the Federal government the authority to issue patents. The first patent granted in the United States was issued in 1791, and covered a process for making pot and pearl ashes (Friedman, 1973: 225).

Flowing from English tradition, the United States created a process for granting patents, but, unlike the English tradition, the American system of patents required an initial examination of the patent claim by a legislative empowered body separate from the Courts. The process, established in 1790, required that the patentee arrange a meeting with the United States Secretary of State, Secretary of War, and Attorney General, where the patentee presented a detailed written description of the new invention, and a working model, for their review - the law was revised in 1793 to allow only the Secretary of State to grant the patent (Mitchell, 1892: 45 - 48).

In 1836, the patent law was again revised, and the United States Patent Office was established. The new office was granted quasi-judicial and executive authority over the granting of patents, and a corps of examining experts were established to investigate the initial claim for a patent (Mitchell, 1892: 48 - 49).

The principles of full disclosure and detail were required of new inventors, and the office was assigned the responsibility of ascertaining if the new invention was actually unique and original. Once such a determination was made by the office, a patent for the exclusive use of the device was granted to the inventor for a period of fourteen years. During that time the device was solely, and exclusively, available only to the patent holder. Anyone seeking to use the patent was required to obtain the permission of the patent holder, who was able to charge whatever costs they felt appropriate for a license to either use or manufacture the equipment described in the patent. At the end of fourteen years, the patent, and the information contain therein, fell into the public domain, and was considered to be common knowledge available to all the members of society (Friedman, 1973).

Again, following from English tradition, disputes over rights to a patent were not handled by the Patent Office, but rather were resolved in the courts. Federal District Courts would oversee all disputes, and review the evidence, originally presented in the patent disclosure, to determine if the patent holder held a legitimate claim. Rulings on patent decisions by Federal District Courts could be appealed to the highest court in the land, the Supreme Court, and a decision by the Supreme Court was considered final (Friedman, 1973).

By the 1870s, the assignment of patent rights was considered a basic principle in the development of the United States economy. In order to insure the integrity of patents, and the economic benefit derived to society from them, the Federal Court system was considered the primary governmental coordinating agency. This was due to the fact that, during the 1800s, the Federal Courts were the only government institution which stood above party domination. In essence, the Courts provided an integrating function for the society, and thus had a major role in both economic policy making and economic policy implementation (Skowronek, 1982).

The Bell company's patent claim was critical for the future success of the country, and linked, ultimately, to Federal Court rulings. While engaged in the development of the business, the owners were dependent on maintaining their exclusive patent rights to the device. If they were ever successfully challenged in their patent rights, then the whole enterprise was in risk of failure.

But the Federal Patent Office and the Federal District Courts were not the only government agencies involved in the success of the initial telephone industry. The third level of government involved in the development of the telephone industry were each one of the State Legislatures of the United States. While a centralized national regulatory function had been rejected by Congress, each state government had a degree of control over the operations of business through their incorporation laws and police powers. While nothing prohibited a company who was chartered in one state from operating in another state, especially if it involved interstate commerce - an area designated constitutionally to the Federal government - , while in that state the company was restricted in their actions by the laws of the State they were in, not the home chartering state (Bank of Augusta v. Earle, 1839: 13 Peters 519; 248, 251).

Each state had a separate economic development program, and viewed themselves as in competition with the other states for economic growth. The result was a varying set of laws and principles for incorporation across the United States. In some states incorporation laws had been passed that required only filing appropriate forms with various state agencies, such as the Secretary of States office. In others, special bills of incorporation were required, and could only be approved by a direct act of the State Legislature. Varying levels of authority were also assigned to local communities, with some having control over licensing local services, and others restricted by State charters (Dobbin, 1995).

Hubbard's policy of licensing had resulted in a loose confederation of companies comprising the Bell Company. Some companies were chartered locally, some on a state basis, and others were organized on a regional basis, but with incorporation at a combination of local and state levels. While Bell was a Massachusetts based company, seeking to develop a national service, it was still restricted in its operations in other states by the body of business and corporate law which set the legal principles for ownership and operation. within that state.

In the end, the success of the telephone, initially, was dependent on a combination of patent laws and state incorporation laws. The complexity of issues facing it would define the strategies it adopted in its next stage of development.

The Economic Internal Framework

Prior to the development of the modern state, the concept of the private sector did not exist separate from the concept of the public sector. The two spheres were intertwined in terms of traditions and views of existence, representing the political center of society (Sennett, 1977). The development of the modern state, and with it the power of the state to influence all aspects of day-to-day life, saw the transformation of this previously defined view of existence. The developing capacity of the state to influence all aspects of society brought forth the creation of a distinction between the public and the private. The private was structured as the opposite of the penetration of the state into day-to-day life. But in the process of the creation of this distinction, both the public and private became internally referential to each other, and were linked in a process of mutual transformation. The public became the domain of the state, while the private became that which resisted the encroachment of the state. But the state/public side of the relationship maintained a disproportionate weight of influence. The state/public sphere became the guarantor of law, and retained the power of defining what was private. The private thus became not only what was not delegated to the public sphere, but also what the public sphere defined and allowed as private rights and prerogatives (Giddens, 1991). In the United States this process, ultimately, was manifested in the determination of property rights, especially in relation to economic and business development.

All market transactions are, ultimately, based on contracts, which are enforced by the State (Williamson, 1985). The State, by defining the institutional and legal frameworks that are available for selection by entrepreneurs, influences the shape and direction of the economy (Block, 1986). The state does this through the definition and assignment of property rights, and eventually the enforcement of these rights. (Campbell and Lindberg, 1990) "Politics does not so much 'triumph' over economic forces. It enters into their overall configuration" (Weiss, 1988: 162)

The Jacksonian opposition to centralization in both the governmental and economic sectors, had resulted in the development of general incorporation acts, by the various State Legislatures, as a means of determining corporate property rights. The general acts were seen as a way to remove the artificial intrusion of politics into the economy, and ensure the diffusion of economic power and resources within the society - and to also stymie the growth of monopolies by providing equal access to capital and investment markets (Meyers, 1957: 1 - 23). In general, these laws were intended to avoid the process of seeking an incorporation charter from State Legislatures, thus negating any possible political influence that could be exercised in favor of one company over another.

But while the laws intentions were reasonable, State Legislatures continued the practice of passing special bills of incorporation, and either restricting or expanding corporations chartered within their own states through their use of the reserve clause power. The concept of the reserve clause power had been affirmed by the United States Supreme Court (*Dartmouth College v. Woodward*, 1819: 4 Wheaton 518: 96, 238, 240). This concept was a variation of the English Common Law principle of municipal corporations, a principle that stated that municipal corporations only possessed the powers necessary to perform the specific duties for which they were created. In essence it was a limitation on their powers of action. The principle had been applied to private charters of incorporation by the Marshall Supreme Court, and established the authority of State Legislatures to limit the private charters of incorporation granted to businesses operating within their state. The State Legislature, thus, had total discretionary power to alter or repeal, at any time, and for any reason, the charter contracts granted corporations operating within their state boundaries (Seavoy, 1982: 237 - 252).

Also, during the nineteenth century, various State Legislatures, such as New York, New Jersey, and Delaware, changed their business laws in order to attract capital, and fuel investments within their own areas (Hurst, 1982: 127). Thus investors and owners had a wide range of alternative locations and conditions they could select for developing their enterprises, but also varying levels of property rights and authority over ownership of their firms.

The end result, for the Bell Company, was a hodge-podge of State and local incorporation's spread-out across the breadth of the United States. While Bell, itself, was a creation of the State Legislature of Massachusetts, its affiliated members operated under different incorporation and property laws which were just as binding as those of the State of Massachusetts. Bell was thus faced with the legacy of developing, originally, under an obligational network structure which was premised on a confederation of mutual interests and loose control from the central office, but operating under a series of varying laws which granted to each one of the confederation members different levels of property rights and authority as defined under their State Incorporation Laws - which in many cases had different precedents and legal interpretations for what constituted corporate property rights.

Any attempt by Bell Telephone to change the confederation structure from its original obligational structure to a more integrated hierarchical structure would require extensive renegotiation with the licensees, and the necessity of developing such a structure outside of any uniform system of corporate ownership. Unlike Western Union, which owned both the equipment for transmission of messages and the wires used to transmit signals, Bell owned only the equipment that operated the system of communications, while the actual ownership of the wires used to transmit communications signals were retained by the various licensees. In essence Bell owned one half of the system, and the licensees owned the other half of the system, and without both parts of the system connected, the system held no value for either party. What had started out as a marriage of convenience, had become a marriage of necessity, and each of the partners in the marriage had different rights of property that could be used against the other partner.

In terms of Bell's property rights to equipment, the settlement with Western Union had removed the threat of a patent lawsuit with Elisha Gray. Under the terms of the settlement, Western Union ceded to Bell Telephone all outstanding telephone patents that it possessed - which included the Gray patents that had been purchased earlier by Western Union. While the immediate threat to Bell's patents from Gray had been removed, Bell's dependency on the exclusive patent rights to the telephone were not completely settled.

Scientific research and development, at this early stage of American corporate history, relied on independent inventors to develop new innovations and products. In some cases, individuals operated separately from any financial backers, creating new innovations, and then negotiating with companies for a royalty to use the new inventions. In other cases, such as Alexander Graham Bell's case, inventors received backing from financiers who shared in the ownership rights to the patents, and the subsequent royalties that were derived from leasing the use of the invention. In other cases, such as Western Union, specialists would be contracted with, such as Thomas Edison, to develop specific equipment for the use by the parent company. Under these arrangements, the company owned, exclusively, the patent, but the inventor received a portion of the profits of the firm derived by the application of the device. It was not until the 1890s that firms actually set-up internal research departments to advance their knowledge, and application, of science in their particular industries (Chandler, 1977: 374 - 375).

The development of patents prior to the Civil War confirmed the importance of research and development in fueling economic growth in the country. Prior to 1830, only ten thousand patents

had been issued in the United States, but after the beginnings of industrialization, patent filings increased by a factor of ten. In general, the Lockean concept of the "fruits of one's labor" underscored the concept of patents, and were further enhanced by the nineteenth century writings of John Stuart Mills on the benefits of laissez-faire capitalism. The prevailing social belief was that the development of inventions allowed for the production of cheaper consumer goods, and thus the granting of a monopoly patent benefited all members of the society (Friedman, 1973).

But the increase in patents also resulted in an increase in court challenges to patents by various inventors. As the body of disputes rose, so did the corresponding weight of evidence in terms of the originality of the invention. Courts became more and more skeptical of claims of originality, and required more detailed evidence to support such claims. As a result, not only the originality of the invention, but also the advanced knowledge of the inventor, became critical factors in upholding a claim of a patent monopoly. In general, the Federal Courts linked the level of expertise of the inventor to the invention, and sought to ascertain if the inventor had more than just practical knowledge of the theories associated with the device. Thus, the courts required that the inventor had both discursive and practical levels of knowledge of the scientific principles involved in the development of the new invention (Stone, 1991: 51 - 54).

Bell Telephone thus had a foot in the doorway of a patent monopoly by the concession of Western Union, but did not have a completely secure position. The ultimate test for Bell's patent monopoly would be in Court, and at that time it would be necessary to show, conclusively, that not only was the invention unique, but that Alexander Graham Bell had both the technical knowledge and creativity to have created the device alone.

Structuring Principles

Undergirding the development of the telecommunications industry, and policy subsystem, during the period from 1875 to 1880, was the Structural Principle generally referred to as private property rights, specifically those private property rights assigned to corporate entities within the United States. While economists have, generally, related these rights to the philosophical position of John Locke's "the fruits of one's labor", in fact these concepts have their foundations in English history prior to Locke. The originating principles of corporate rights, in English history, present a somewhat different view of what property rights meant, at this time, than has traditionally been advanced by various economists.

Corporate property rights originate within English Common Law under the concept of a "Public Service". Public Service concepts can be traced back to fourteenth century England, and the time of the Black Death (1348). The Black Death decimated the working class of England, and resulted in a manpower shortage for both common laborers and tradesmen - in essence it was a seller's market for labor. In order to head-off a major increase in labor rates, Parliament passed the Statute of Labourers in 1349. Under the statute, laborers and tradesmen were classified as "Common Callings", and were legally charged to practice their respective callings at reasonable rates to whomever applied (Aterburn, 1927: 421 - 428). At this time, the impact of the concept was somewhat limited as the majority of both laborers and tradesmen were in the employ of an individual, and did not offer their services, generally, to the public.

During the last half of the seventeenth the nature of the workforce, in England, began to change. After this point in time, the majority of the trades began to do business with the general public. The increase in the number of individuals involved in each enterprise, and the subsequent use of competition to control prices, resulted in the concept of a "Common Calling" losing its significance in business. But certain businesses, especially those involved in the transportation of goods or

persons - ship owners, teamsters, inn keepers - were treated differently. This was the beginning of the concept of a "Public Service Company" (Burdick, 1911: 514 - 525)..

Under the new concept, certain occupations, because they were involved in services that were public in nature, were required to serve all impartially and adequately. Because of the necessity of the public to use their services, these companies were prohibited from discriminating in the use of their service, or charging excessive rates, and were subject to forms of government regulation, on a case-by-case, within the bounds of legal precedents. While the owner of the business actually owned the property of the business, the public nature of the enterprise allowed the government, in particular the English Courts, to regulate the access and rates that could be charged by the owner. In theory, the practitioner of a public trade was under the same duties and obligations as a public officeholder (Burdick, 1911: 514 - 525).

While the concept of a Public Service Company was developing in England, another concept began to take shape, namely that of a patent monopoly. In 1529 Henry VIII of England called Parliament into session in order to dissolve England's ties to the Catholic Church, and create a new secular Church of England. In this way, Henry sought to divorce himself of his heir-less wife, Catherine of Aragon, and marry his mistress Anne Boleyn. Catherine of Aragon's nephew was King Charles of Spain, and Henry's treatment of Catherine eventually escalated into open war between England and Spain, in 1556, when Philip II ascended the throne of Spain. When Henry died, in 1553, England had fallen into a violent and bloody period in which first Edward I, and then Mary Tudor, ruled England. Eventually, Henry's daughter by Anne Boleyn, Elizabeth I, ascended the throne of England, and brought a level of civil stability back to the country (Bernhard, 1992: 14 - 15).

At this time, Elizabeth's England was hard pressed for capital, and fighting the greatest nation, at that time, on the face of the earth. Under Elizabeth's direction, England issued licenses for trading companies to deal directly with the Spanish colonies, which, at this time, was considered a form of piracy. The reaction by Spain was immediate, and the war escalated. (Bernhard, 1992: 14 - 15).

One of the acts of escalation was a decree by the Spanish Crown to close the Dutch port of Antwerp off from English trade. At this time, the Spanish Crown controlled Antwerp, which was the major trading port in Europe. The closure of the port, in 1565, was a crippling blow to English commerce and industry. In order to offset the impact, the English Parliament issued a series of decrees that allowed for the chartering of monopolistic trading companies that could exploit the riches of the New World. As part of this same process, patent monopolies were granted to persons engaged in making domestic products for consumption. These original patents, though, did not require original knowledge, but rather only knowledge of how to make products, and thus gave exclusive control of known production processes to specific individuals.(Price, 1906). While the process of patent grants did lead to producing self-sufficiency, it also resulted in public knowledge being withdrawn from public ownership, and being transferred into the exclusive hands of single individuals.

Over the next fifty-eight years, it became common practice for the Crown to grant to court favorites monopolies over production processes. The Crown used these grants in it's struggle with Parliament, brought on by Parliament's demand for more power in return for providing the Crown with the funds to pursue the war with Spain. The grants offered the Crown an outside source of revenue to pursue the War, without having to relinquish any powers to Parliament. As a result, common articles of commerce and consumption became the exclusive right of individuals, and the Crown enforced these sold rights with search and seizure acts, and heavy penalties. Many English merchants, who had been engaged in the production and sale of these items for centuries, were suddenly stripped of their common rights (Mitchell, 1892: 43).

In 1623, James II, voided all illegal monopolies, and declared that in the future patents could only be granted to inventors of new manufactures, and then only for a limited time. While James's law recognized the Common Law of property and creation, the right to grant the patent, at this time, was still retained by the Crown (Mitchell, 1892: 43 - 44).

Thus, by the time we reach the writings of John Locke (1632 - 1704), we already have established in English Common and Civil Law two concepts of private property. The first concept is that common knowledge of processes cannot be owned by any one individual, and are in fact the property of the collective members of the society. The second concept is that the use of private property can be restricted and regulated by the State, if its use has aspects which are either universal in access or necessary for the public benefit. In addition, by precedent, we have also established two qualifiers on the right of private property. The first qualifier is that unique and original knowledge can be held by an individual if recognized by the state as a new body of knowledge. The second qualifier is that the State can grant a monopoly in the specific use of private property if, in the mind of the State, its use is beneficial for the public welfare.

While Locke's writings recognize the instrumental nature of the State in helping to protect the individual's rights to private property, and form the basis for many of the theories related to private property in the original Constitutional order, it is Adam Smith (1776) who actually specifies this relationship of the government to individual property rights. In general, Smith advocates the use of the free market, unrestrained by government, to promote the common wealth. But Smith's free market does have exceptions, and times, when government intrusion is both correct and necessary. The Courts are seen as a major use of government to handle individual disputes over ownership between individuals. Infrastructures, such as roads, canals, and public works, call for forms of government regulation. The protection of patents and new knowledge are seen as areas of needed government intervention. Tariffs and temporary monopolies are called for to protect infant and high-risk industries. Regulation of banking and finance are needed to ensure equal access to capital. And even protection of children and the poor are called for by Smith.

Under Smith's view, there are two fundamental reasons why there should be exceptions made to the free market. The first reason is that markets are not always harmonious, and do not always operate efficiently. When this is the case, government intervention and regulation of private property is required. The second reason is that there is more than just one social value called the free market and private property. In fact, society is composed of many values, which at different times require that government intercede in the market and private ownership, in order to advance the general overall welfare of the society. (Smith, 1776).

The combination of English Common and Civil Law, Lockean concepts of the "fruits of one's labor", and Smith's principles of government involvement within the defining and regulating of private property, become the Structural Principles that are incorporated into the American system of private property rights.

Thus the early development of the Structural Principle of private property rights in the United States, as inherited from England, was not considered a laissez faire philosophy of limited government which was charged with just the promotion of private ownership and wealth. Rather there was a very active and involved role of the government in both the defining and regulation of private property within the society.

When transferred to the United States we see this process of government involvement in the definition of property rights in the establishment of two levels of Structures. The first is defining

what is common knowledge versus what is new knowledge. The second is promoting the public/collective benefit of private property versus promoting the private/individual benefit of private property.

In defining the difference between common versus new knowledge, we see the establishment of the concept of a patent monopoly. This monopoly has a limited time span in which the private individual may reap the "fruits of their labor", and, at the time of expiration, the knowledge then becomes part of the common knowledge available to the collective members of the society. This allocation of Structures under patent law is then translated into the Structural Elements of the United States Patent Office, as the original examiner and certifier of original knowledge, and the United States Federal Court system, as the final arbitrator and judge on questions of individual ownership and rights.

At the second level of the development of the defining of Structures within the Structural Principles of private property rights, we see the resolution of the promotion of public/collective benefit of private property versus private/individual benefit of private property defined within the concept of a Public Service Company as defined under the concept of the Reserve Clause right of various State legislatures to establish both the rights and limitations of companies operating within their geographical borders.

The State legislature's use of the Reserve Clause proceed to the creation of the Structural Elements defining corporate versus private ownership of property. In terms of private/individual ownership, the concepts of English Common Law ownership apply. But in terms of private/corporate ownership rights, definitions are held within the various State charter laws of the United States. Arbitration of Corporate rights of property, at this time, are held within State Courts, unless an appeal to the Federal level can be granted under Commerce Clause protection.

In terms of the evolution of Beliefs, under Structural Principles we still see grounding in limited government/dual federalism, private property rights, Lockean concepts of community wealth, and public/private mutualism. The original sense of organic community has now begun to change to one of a national community, and the issue of privacy of communication is no longer considered important.

In terms of Structures, constitutional fragmentation of power is still evident. The use of the individual State's police powers has evolved into the use of the State's Reserve Clause power. Family ownership has also evolved, and developed into obligational and investment networks. State mercantilism is still evident, but its emphasis on localized economic development has shifted toward a national market focus. The communications monopoly is still maintained, as well as the spoils systems, but the localized infrastructure concept has been replaced by a national focus.

In terms of the Elements of Structures, Hamiltonian versus Jeffersonian development has been replaced by Jacksonian decentralization versus the beginnings of the Progressive's reform movement, and the beginnings of national regulation. State ownership laws remain a major factor, but their are being supplemented by national patent laws. State direct subsidization has been replaced by state corporation laws relaxing restrictions on corporate ownership rights. Localized regulation still remains in place, but is beginning to be augmented by state corporation regulation. Postal and legal penalties on privacy have dropped from the area of consideration, but political patronage still plays a major role in the public sector. And finally the localization of financial markets has been replaced by a national financial market.

In terms of Giddens overall theory of the "Duality of Structure" and the process of "Structuration", we see that the newly emergent telephone industry aligns itself within pre-existing social structures and arrangements.

The industry's rights of private ownership are established under the pre-existing concepts of patent laws. The industry accepts the limited time for exclusive use of its knowledge in order to secure for itself a dominant position within the new industrial sector. This position of dominance is recognized by the only existing viable competitor, Western Union, and establishes the Bell Company as the de facto owner of the area of technological expertise.

While the industry has now secured its dominant position, it has also had to accept certain constraints on its own development. By securing its position under patent law, it has also had to accept the other side of the social equation; namely that elements of its workings exhibit qualities also existing under the concept of a "public service company". The industry's ability to operate is thus restrained by a tacit recognition that issues of public access and means of operation are subject to both public scrutiny, and, if necessary, public interference. Thus, as Giddens would emphasize, the institutional arrangements of the industry are linked to the broader character of social life, and form an interdependency between the individual industry's actions and the existing social practices of the overall society. It is at this point in time that the future processes of routinization and reflexivity between both institutional structures and social practices are established.

In order to ground the new industry within the existing social order and consciousness, an agreement is reached within the two industrial competitors related to the nature of the new industry. Seeking to establish "practical consciousness", both parties agree that the technological nature of the new industry is related to the older technological system of telegraphy. To avoid conflict between the two parties, the technological platform is divided between the two based on services offered rather than technological convergence. While the division is effective in deflecting competition, it does establish a future precedent within both industries in terms of "discursive consciousness"; namely that the rules of operation and relation of the industry to the broader society are based on practices within both industries. Thus future development of both industries in terms of the social order are linked to precedents established within both industries. Legal rulings and precedents established in one industry will thus be related to the other industry as the two industries move through time.

While the future basis for the telephone industry's development are in fact grounded in the older telegraphy order, the issue is ignored at this point in time. Since the existing social "structures" of legitimization and authority are fragmented at this time between the State and Federal governments, and the overall governmental philosophy related to action and involvement in the private sector is limited, the telephone industry accepts the underlying relationship between itself and telegraphy. Reinforcing the telephone industry's thinking in this matter is the fact that its only potential competitor, Western Union, has successfully turned away an attempt to extend government oversight into the industry.

By 1880 the newly emerging telephone industry has already established a process of "structuration" between itself and the broader social order; i.e. the various levels of government.

In order to secure its own "ontological security" the telephone industry has allowed to come into existence a "duality of structure" process. "Knowledgeable human agents", specifically Forbes, Vail, Vanderbilt, and Orton, have established both "practical" and "discursive" consciousness by recognizing that both the telephone and telegraph industries operate within the same principles of applied technology, but have divided the area of operation by type of service offered. In the

process of establishing this separation, they have established an area of "Mutual Knowledge", and grounded this knowledge in a "Normative" frame that recognizes both the rights and obligations of each industry to each other, and the rules for both legitimate and illegitimate conduct between the two parties.

Both parties have secured this division of "Allocative Resources" by establishing Bell's position under the "Authoritative Resource" concept of patent laws. In the process, though, of establishing this "Authoritative" allocation, the industries have established a larger link to the society as a whole, and created a "Duality of Structure" process to the broader social order. This new structure contains within its existence the principle of a "public service company", and thus recognizes, unintentionally, the rights of the public sector to interfere in the operation of the industry if the "public good" is somehow threatened.

Process Model

Twenty-one years before the creation of the Interstate Commerce Commission, and twenty-four years before the passage of the Sherman Anti-Trust Act, Congress wrestled with the problem of regulating and controlling a national monopoly, the Western Union Telegraph Company. In many ways, this initial attempt at regulation was the fore-runner of a new definition of the relation that exists between the public and the private aspects of American life, especially as it relates to the operations of business. Within this attempt we also see the beginnings of the reform movement which will eventually be known as Progressive Reform, and the first halting steps at changing the nature of government administration by attempting to ground decisions in "scientific" knowledge rather than political accountability to the prevailing dominant coalition.

We also see, during this initial stage, the reaction by the private sector to the process of governmental redefinition. To our age, familiar themes arise: the perception that government interference in the private sector will only result in chaos and a lack of rational efficiency in the free market; the necessity of the private sector to be ever watchful of the deliberations of government, and prepared to react, at a minutes notice, to any governmental movement which will circumscribe private corporate property rights; and the necessity to encourage and promote free market competition at the expense of the overall social impact.

In terms of a process model for the transformation of a regulatory regime, we see the initial recognition that electrical communication is different from other forms of communications, and produces a multitude of overall social benefits. But the benefits that are produced have come at a price, and that price has been an undermining, and redefinition, of the concept of a monopoly. What previously in the national experience had been a problem localized, now has expanded into a national sphere, not unlike the problems originally encountered in Elizabethan England.

The Constitutional mechanisms that were created to offset the potential growth of monopolies, fragmentation of the governmental authority and the creation of dual federalism concepts, are beginning to fail. In their place a free market mechanism has emerged which is able to walk the thin line between both the Federal and State governments, and thus avoid interference or control by either side of the Constitutional Order.

Yet social and collective adherence to the principles of fragmented government and the pursuit of individual wealth make it difficult for decision-makers in government to develop a possible solution which will encompass both the social/collective benefit and the private/individual benefit. Senator Brown's bill advances a solution that is too radical and foreign for the collective political mind, namely direct ownership, and is thus rejected. Senator Sherman's bill offers a compromise

between the two principles of collective versus individual rights by assisting rather than owning. The Sherman bill respects the rights of private ownership, but at the same time presents a definitional framework which promotes the underlying anti-monopoly sentiment within the overall social and political order.

As the Sherman Bill advances into the final collective selection process we see Senator Grimes modifying the concept to allow for another aspect of American values to emerge, namely the right of all to have an equal opportunity in the free market. Thus the bill, as it is finally passed, contains within it the values of anti-monopoly, and the right of government to define property rights, but institutionalized within a process that still promotes the free market and equal access to opportunity - namely the Lockean belief in the "fruits on one's labor".

But the final implementation of the bill is curtailed by the private side of the public/private relationship. The original premise of defining the problem in light of underlying Constitutional and cultural values, is questioned, and enough doubt is raised in the minds of the public decision-makers to reject the proposals for implementation. In the end, a solution does not emerge, and the pressure for change remains within the system, waiting for another day to once again be redefined.

At this point in time, we see that the policy subsystem has yet to emerge as a fully dynamic system of interaction between the public and private sectors of social existence. While the public sector recognizes that a new form of business structure is developing, namely national monopolies, the "spring of government is weak", and unable to mount an effective response. The combination of fragmented constitutional authority between the federal government and the state governments, coupled to the philosophy of limited government action, is reinforced by the courts positions in terms of defining private property rights.

During this time, the learning process within the policy subsystem is almost exclusively limited to the Campbell, Hollingsworth, and Lindberg's Sectoral Development Model (1991). Initially, the Western Union Company has sought to achieve the highest level of transaction cost return through a process of industrial consolidation. By 1866, Western Union's consolidation process has led to a stable industrial configuration, but it has also resulted in a social uneasiness concerning its dominant position.

The social concern leads to the development of proposals seeking to create alternative systems of service delivery, and thus threatening the level of equilibrium established within the industry. On the public side of the equation, the Sherman and Brown bills are offered to create separate competing entities, and eventually nationalize the entire system under the operation of the United States Postal Service. On the private side, competitors are organized under the direction of Jay Gould, and seek to create an alternative system that would challenge Western Union's dominant position.

The two challenges to Western Union's position emanate from the areas of resource change coupled to changes in the industry's power relations, and also from the area of a change in both State Sector and Private Sector Policy. Western Union, responding to the challenges, seeks to return its industry to the original level of efficient transaction costs.

It first successfully attacks the Sherman and Brown proposals, and is able to block the implementation of the Sherman Bill. While successful in terms of the public sector response, Western Union is not as successful in meeting the challenge presented by Jay Gould. The ensuing industrial war between Western Union and Jay Gould begins to weaken the position of Western Union.

While still engaged in its battle with Jay Gould, Western Union then must meet a new challenge brought on by Bell Telephone's technological innovation. Initially, the technological challenge is not recognized by Western Union. When Bell Telephone, though, begins to expand its services on a national level, Western Union sees the potential future challenge to its position, and seeks to drive the newcomer out of the emerging industry. Bell Telephone responds by introducing patent litigation into the conflict.

Western Union finds itself fighting a two front industrial war, Gould challenging on one side, and Bell Telephone on the other side. Seeking to maintain its position within the telegraph industry, Western Union reaches an agreement with Bell Telephone that equally divides the area of applied technology into two separate monopolies based on types of services offered. Bell Telephone, also seeking to maximize its levels of transaction cost efficiency, agrees to the separation.

The agreements that are reached between Western Union and Bell Telephone establish two national monopolies, and do so outside of any public sector certification. The final policy subsystem model that emerges, at this time, is exclusively within the private sector. The dynamics of the subsystem's change and learning process are established as primarily based on maintaining equilibrium within the transaction/cost model, and meeting challenges from outside competitors who would seek to challenge the dominant position of either company within their respective spheres of power.

The Duality of Structure

By modern standards, the Western Union Company of 1866 was not large, only \$40,000,000 in combined capital assets and stocks. But by the standards of the United States in the 1860s, Western Union was huge, in fact it was the largest corporation in the United States at that time. A general uneasiness began to develop in the minds of some of the members of the United States Senate, a feeling that Western Union was too large, and beyond the reach of the laws of the country. While a creature of the incorporation laws of the State of New York, and subject to restraint under New York standards, the company was national in scope, and operated in every state and territory. Faced with this national force, a national monopoly within a society with strong anti-monopoly attitudes, the government of the United States was limited in its actions by a fragmented power structure nestled within other prevailing social attitudes toward the rights of private property.

The reformers in Congress were influenced by the prevailing belief system toward government and private property. In the solutions advanced, for what the reformers perceived as the national problem, the advocates for reform proposed solutions that would foster government regulation of the industry, but without adding either administrative capacity or costs to the Federal government, thus promoting the system of limited government.

The lack of clear agreement over the preservation of existing structures of government, and the prevailing perceptions of the proper relationship between the public and private spheres of life, left the Sherman proposal open for attack by the private side of social existence. In the end, in spite of the general uneasiness over the growth of corporate power and monopolies, the existing structures of both government and law influenced the beliefs of the members of Congress, and caused them to reject a new definition of government. Rather, by default, the decision was made to allow the problems of the free market to continue to be self-corrective.

Unintended Consequences

Congress's decision to not implement the Sherman Bill led to a series of both intended and unintended consequences that would affect the next stage of the development of the telephone system in the United States.

The lack of Congressional action on the Sherman Bill, resulted in the intended consequence of maintaining the existing fragmentation of governmental authority within the Constitutional system, and the continuation of the principles of dual federalism. As a consequence, though, of the lack of Federal coordinating authority in terms of industrial regulation, the communication sector remained free to develop within the Darwinian economic forces of the late nineteenth century market place. The unintended consequence, for both Congress and the nation, was that Jay Gould's assault on Western Union continued even after Western Union's 1878 settlement with Bell Telephone. Eventually, in 1882, Jay Gould successfully drove Cornelius Vanderbilt out of Western Union, and became the major stockholder of the Western Union Telegraph Company. Thus, by the early 1880s, the country's major communication system for both commercial and news information was controlled by the most despised and unsavory of all the Wall Street Robber Barons.

Congressional inaction allowed for the continuation of free market competition within the telecommunications sector, a position intended by the Congressional decision. The unintended consequence of the decision, though, was not only the eventual control of Western Union by Jay Gould, but also the development of another telecommunications monopoly for telephones, the Bell Telephone Company. As a result, future political action would call for dealing with two rather than one national monopoly, and, in essence, doubling the complexity of government regulation of the private sector.

The creation of second telecommunications monopoly resulted in a second area of property rights becoming entangled in the issue of government regulation, namely the rights bestowed on an inventor through the assignment of patent rights. Bell's future success as a business was grounded on maintaining its patent rights, and facing every challenge to those rights in the Federal Court system. While Gray's patents were now the property of Bell, Gray's knowledge versus Bell's knowledge would still be a factor in any future Court review of the rights to the patent. Thus an unintended consequence of the settlement of the Western Union versus Bell dispute was the issue of prior knowledge and expertise, an area that could be used by challengers to dispute Bell's claims in Court.

The obligational network of Hubbard left the Bell system in a state of organizational fragmentation. The Boston financiers intentions of gaining control of Bell Telephone had been fulfilled, but they inherited an organization which was decentralized, and under no one single authority. The necessity to develop the company called for an active and organized system of management, but the structure of the company blocked any such moves in that direction. In order to achieve the growth required to become a part of every day life in the United States, Bell Telephone needed to reconstruct its organizational system in spite of its decentralized legacy.

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