

## **CHAPTER 7**

### **The Spread of Regulation: 1914 - 1934**

**"To throw your voice directly  
without aid of wires . . ."**

**John J. Carty**

## The Establishment of Boundaries

The United States is unique in terms of its historical experience with telecommunications. This uniqueness is based on the fact that of all the nations in the World, the United States is alone in the use of private ownership to develop and operate its national telecommunications systems. While a few nations, most notably France and Great Britain, experimented with private ownership and development of both telegraph and telephone communications, in the end, both of these nations followed the world model, and nationalized their telecommunications systems under their postal services.

Great Britain, the last hold-out for nationalization, finally succumbed to the pattern of nationalization, and in 1912 placed the private telephone systems of Great Britain under the ownership and operation of their Postal service. After this point in time, the United States stood alone in terms of private ownership of the telephone and telegraph systems.

After the British nationalized their telephone system, the arguments for nationalization of the telecommunications system within the United States were once again advanced. The nationalization of the British telephone system also coincided with the election of Woodrow Wilson to the Presidency. Wilson, an admirer of the British culture and structure of government, would find it difficult to ignore this new development in the field of government ownership and oversight of the telephone system, especially since Wilson stood at the forefront of the Progressive Reform Movement.

By 1913, Congressman David J. Lewis of Maryland was advocating nationalization of both the telephone and telegraph systems. Arguing that the telephone and telegraph systems were in fact a monopoly controlled by one company, A. T. & T., Lewis stated that the mechanisms necessary for price setting, namely competition within the free market, had been lost.<sup>11</sup> Lewis further claimed, in front of Congress, that A. T. & T. was failing to not only provide lower rates, but also failing to operate within the spirit of a public trust, and placed the failure for public stewardship squarely in the administration of A. T. & T. Claiming that the ratio of telephone calls to telephone employees was too low, Lewis accused A. T. & T.'s management of having a lack of institutional efficiency, and a sense of the higher purpose of citizenship and responsibility: in essence, A. T. & T.'s corporate management was accused of being both technically incompetent, and morally bankrupt. ("Lewis", New York Times, 1913). In conclusion, Lewis called for the complete nationalization of both the telephone and telegraph system.

The newly appointed Postmaster General, Albert Sidney Burluson, immediately seized upon the opportunity that Lewis presented, and appointed a special committee, composed of post office officials, to examine the possibility of nationalization.<sup>12</sup> The final report, that was issued in 1914, had a familiar echo almost from the very beginning of its analysis:

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<sup>11</sup> Echoing the arguments of Senators Brown and Sherman over the telegraph in 1866, Lewis went on to assert that United States telephone and telegraph rates were the highest in the world, while United States postal rates were the lowest. He concluded by calling for the nationalization of both systems, and promising that nationalization would lower both telephone and telegraph rates by fifty percent ("Lewis", New York Times, 1913).

<sup>12</sup> Burluson was a Southwest populist, whose family's political traditions had roots in the Jacksonian Democratic Party. (Brooks, 1976). A populist based reformer, with a deep distrust of big business, especially national corporations, Burluson was ready to assume the mantle of Postmaster General Cave Johnson's argument concerning the Constitutional Authority of the Post Office to own and operate the telecommunications network of the United States.

"The framers of the Constitution provided that Congress shall have the power . . . to establish post offices and post road" (Burleson, 1914)

The Burleson Report went on to claim that the government operation of the telegraph and telephone fell under ". . . the capacity of the government to conduct the public utilities which fall properly within the postal provisions of the Constitution...". As for the current operation, by the private sector, of the telephone and telegraph systems of the United States, the Burleson Report concluded that ". . . telephones and telegraphs were inevitably monopolistic and when operated under private control do not render the maximum of public service at minimum cost to the whole people." (Burleson, 1914). The report concluded by recommending the complete nationalization of both the telephone and telegraph systems.

Theodore Vail attacked the nationalization proposals, and advanced the argument that the United States telephone system was superior to any other in the world because it had been developed privately.

"We are opposed to government ownership because we know that no government-owned system in the world is giving as cheap and efficient service as the American public is getting from all its telephone companies. We do not believe our government would be any exception to the rule" (Vail, 1913)

In the same report, Vail also raised the spectrum of political patronage and abuse, while at the same time accusing the government of seeking to create a monopoly:

"Government ownership and operation would destroy individual initiative, they would create monopoly and increase and strengthen its evils by placing it in the control of officials and servants responsible to themselves as a political party." (Vail, 1913).

Vail's position, in general, was supported by the national press, who agreed with Vail's perception that the United States telephone system was superior to any other in the world:

"It won't be done because it can't be done. It is immoral and uneconomic. There is nothing new and nothing good about it." (New York Times, 1913; Coon, 1939).

". . . that the government should enter into competition with the telephone system is almost incredible." (Harpers Weekly, 1913, Coon, 1939).

The newly elected President, Woodrow Wilson, was also skeptical of Lewis's and Burleson's claims - especially after he was informed that the cost of acquiring both the telephone and telegraph systems would be two billion dollars - and after the signing of the Kingsbury Agreement, which he praised as an example of the newly developing relationship between government and private industry, refused to further consider the matter.

For the next two years, Lewis and Burleson, along with their supporters, restrained themselves, and made only occasional speeches in support of nationalization. But Theodore Vail, realizing that the possibility of nationalization was not dead, took every opportunity offered to him to publicly speak-out in lauding the quality of telephone service, and praising the development of the industry under private hands.

In 1914 the old world order disintegrated, and war between the nations of Europe erupted. At first, the war was seen as a short-lived experience, one in which a few glorious cavalry charges and naval engagements would quickly be followed by a negotiated peace. But the war did not quickly end, and instead evolved into a stalemated ground war with casualties in the tens of thousands, and a sea war that attacked without warning using the submarine.

The United States, at first, remained neutral in the engagement, but as the years dragged on, and American shipping and business became affected, the United States found itself drifting toward the War. By 1916, the United States Military began to consider the need for preparing for a land and sea based war. One of the areas critical for military success was communications.

A test mobilization of the national telephone system was arranged under the Navy Department. Using the existing telephone system, and linking the telephones to the existing American Marconi shore to ship radio stations, the Navy Department was successfully able to communicate with all its facilities and ships for three days relying completely on the A. T. & T. system (Coon, 1939).

While the Navy experimented with the telephone system, the Army arranged with A. T. & T.'s Engineering Department to create a complete telephone system, including operators, which could be constructed in the United States, and then shipped and reassembled in France if a declaration of War were issued by the American government - it was assumed that such a declaration would be against Germany (Coon, 1939).

Finally, on April 2, 1917, Congress declared war on Germany, and the United States, for the first time since the Civil War, moved to a complete war footing in both the public and private sector. Almost immediately, the railroads were nationalized, and commercial traffic was placed under government control. Shortly there-after, the War Industries Board was established, and given authority over coordinating industrial output, pricing, and rationing of public and private goods.

In this atmosphere of creating a national war effort, calls for nationalizing the telephone and telegraph system once again surfaced. Postmaster Burleson and Representative Lewis, once again, led the call for nationalization, but this time their efforts were aided by both high ranking government officials and the national press.

The nationalization of the railroads appears to have been the spring that unlocked the support of the newspapers. Telephones and telegraphs were so closely associated with commerce and transportation, that it appeared to be illogical to nationalize one system, such as the railroad, and not nationalize the other systems that actually controlled the routing and delivery of goods. (Coon, 1939).

Gradually, in the minds of the press, the perception developed that government operation would be more efficient and less costly. But as the impression of corporate inefficiency grew in the public mind, a shift also occurred in the general view of public ownership of access to telecommunications lines. The new view saw the rights of ownership to telecommunications falling into the public sphere, and away from the private side of society:

"One by one we will separate the few things that belong to the people from the possession of small private monopolists." (New Orleans Item, 1918).

"There are some things that a government such as ours, dealing with large units and actuated only by the thought of service, can do better than any individual . . . Great emergencies show what things the government can do best. The people should hold

the strings in matters in which they are so vitally interested, just as they have always held the strings on their mails and highways." (Cleveland Press, 1918).

While the debate over nationalization raged, A. T. & T. continued to work with the Departments of the Navy and Army, creating ground to air radio for airplanes and ship to ship communications. A. T. & T. argued for continuation of the private ownership of the telephone system, and pointed to its efforts with both the Navy and Army as examples of its superior technical and managerial efforts. But the mood for nationalization was too great.

Congress did not immediately act on the issue of telecommunication nationalization. The demands of developing a national war effort required the immediate attention of Congress, and it was not until July, 1918 that Congress could focus its efforts on the telephone and telegraph systems.

The one year time lag between the declaration of War and the Congressional Committee hearings over nationalization of telephone and telegraphs, had allowed Postmaster Burluson the necessary time to gain the support of high ranking government officials for his position. At the July hearings Newton D. Baker, Secretary of War, Josephus Daniels, Secretary of the Navy, and Postmaster Burluson all spoke in favor of nationalization. While the original bill being considered was called a "war necessity", the long run view of the matter was very different

"I would have the government control and own telegraph, telephone, and all means of communication permanently" (Josephus Daniels, 1918)

"If the efficient management and direction is given the telegraph and telephone that has been given the Postal Service, the probability is that they never will be returned to private control." (Burluson, 1918).

Interestingly, A. T. & T. was not notified of the "public" hearings on the House bill, and thus had no representative there to speak in favor of keeping the system in private hands. (Danielian, 1939: Coon, 1939: Brooks, 1976).<sup>13</sup>

Finally, on July 16, 1918, Congress passed a joint resolution giving the President authority to nationalize the system, and on July 22, 1918, Woodrow Wilson signed the resolution nationalizing the telephone system.

While the Post Office, Under the direction of Burluson, took over the administration and ownership of the telephone system, the Post Office did not have the technical staff or managers trained in telephone operations. As such, the entire management and worker system of A. T. & T. was left in place to actually operate the telephone system for the Federal government. In addition, stock holders were guaranteed an eight dollar annual dividend on each share of stock held. ("Walker Report, 1938).<sup>14</sup> Five months later, on November 11, 1918, Germany surrendered, and the War was over.

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<sup>13</sup> When A. T. & T. found-out that a bill was pending, they immediately dispatched Vice-president Kingsbury to attend the Senate Hearings on the bill. But Kingsbury's request to be heard by the Senate Committee was denied, and the bill was forwarded for a floor vote in both Houses without allowing any representative of either the private telephone or telegraph companies to be heard before the vote (Danielian, 1939: Coon, 1939: Brooks, 1976).

<sup>14</sup> Under the terms of the agreement to nationalize the system, which were negotiated between A. T. & T. and the Post Office on July 29, 1918, the Federal government was obligated to maintain the system, and to eventually return the system to A. T. & T. in as good of quality as when it was nationalized. In addition, all management and workers of A. T. & T. would

But the end of the War did not end public ownership of the telephone system. The Post Office continued to operate the telephone system, and it became evident that it had no intention of returning the system to private hands. But the financial agreement with A. T. & T. began to strain the budget of the Post Office, and on January 20, 1919 the Post Office raised long distance telephone rates by twenty percent. Two months later, in March, 1919, the Post Office took the unprecedented action of also raising local telephone rates (Danielian, 1939).

Both the general public and the State public utility commissions angrily objected to the local rate increase. The state public utility commissions filed a lawsuit in Federal Court stating that the Post Office had violated the constitutional authority of the states by enacting the local telephone increase. Eventually, on June 2, 1919, the Supreme Court ruled that the local rate increase was legal because the authority of the entire system had been vested in the Federal government, and thus was not under the authority of the state governments (United States Supreme Court, 1919).

The reaction from Congress was immediate, and on July 11, 1919 Congress passed a resolution stating that on August 1, 1919, the entire telephone system was to be returned to their original private owners (Public Law, 1919). The feelings of anger at the Post Office were so great, that even the original sponsor of the nationalization proposal, James B. Atwell of Louisiana, rose in Congress to apologize to the American public for introducing the bill (Danielian, 1939).

The return of the telephone system to private hands settled the issue on whether or not the industry would be either public or private. The final decision placed ownership, and development, in the private side of society, but still retained an oversight right on the part of the public side. Thus A. T. & T. was now free to develop within the confines of the corporate offices in New York, and not the Halls of Congress in Washington.

But before A. T. & T. could move into the future, another internal issue needed to be resolved, and that was the issue of corporate leadership.

The death of J. P. Morgan, in 1914, created a situation in which power within A. T. & T. became centralized within the position of President of the firm. While the Board of Directors still exercised authority over investment decisions, this authority was greatly curtailed by the weight of opinion from the President, and the day-to-day operational authority vested in the President's position ("Walker Report", 1938).<sup>15</sup> The net result of the centralization of power within the office of President resulted in the office of the President becoming an almost independent position of authority within the telephone industry (Danielian, 1939).

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maintain their current salaries and benefits, and stockholders were guaranteed an eight-dollar-a-year dividend on their stock holdings ("Walker Report", 1938).

<sup>15</sup> In addition to the operational authority of the President of the firm, another factor came into play that also reduced the influence of the banking industry. Up to 1914, A. T. & T.'s need for capital funds was largely met by the issuance of bonds and blocks of stocks that were handled through various banking groups - most notably those connected with the J. P. Morgan and Company group. After 1914, though, the need for capital funds was accomplished through either direct sale of stocks on the various stock exchanges, or through the conversion of various debt notes into stock from A. T. & T. to the affiliated Bell Companies. The use of conversion of capital debt notes into stock holdings in the various Bell affiliates, increased A. T. & T.'s direct ownership in the affiliated Bell companies, and eventually led to A. T. & T. owning almost one hundred percent of the stock of the Bell affiliates (Stehman, 1925).

Theodore Vail, by 1914, had become the dominate personality within A. T. & T., and his vision of a unified system dominated both the organization and the telephone industry of the United States. But Vail recognized that his increasing age limited the time that he had left to influence the industry. In order to assure himself that his vision would continue on after he left A. T. & T., Vail began to influence the process of succession to the Presidency of A. T. & T. (Paine, 1921).

Inside A. T. & T., Harry Bates Thayer was Vail's closest associate and friend, and shared Vail's vision of a unified system. In addition, Thayer also believed in promoting the engineering culture within the organization that stressed development and advancement based on training and field experience. During the 1910s, Vail and Thayer worked closely together on all aspects of the development of A. T. & T., and it became obvious to all within A. T. & T. that Thayer was being groomed by Vail to succeed him as President of the firm (Brooks, 1976).<sup>16</sup>

During the years of nationalization, 1918 and 1919, Theodore Vail had spent a considerable amount of energy traveling back and forth from Washington to New York. Now well into his 70s, extremely overweight, and suffering from heart and kidney trouble, Vail's health began to deteriorate. Finally, in July, 1919, Vail resigned as President of A. T. & T., and accepted the less demanding role of Chairman of the Board. In the process of resigning, he selected, and had appointed by the Board of Directors, his old friend as the new president of A. T. & T. (Brooks, 1976).

But Theodore Vail was not a man who assumed that the "best laid plans" would always come into existence. Experienced in the twist and turns of both corporate and government existence, Vail recognized that unintended consequences would occur, and one should have some form of insurance just in case the worst did happen. While Thayer was Vail's hand-picked choice for successor, nothing could guarantee that Thayer would actually be able to stay in the position of President long enough to assure that Vail's vision would be continued. In order to assure himself that the vision would be fostered, Vail not only selected his own successor, Thayer, but also selected the man that would succeed Thayer, Walter S. Gifford.<sup>17</sup>

In order to advance Gifford to the position of First Vice-President, the existing First Vice-President, U. N. Bethell, was forced by Vail into early retirement.<sup>18</sup> With Thayer and Gifford

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<sup>16</sup> Harry Bates Thayer had started his career in 1879, when he was hired as a shipping clerk in Western Electric. After Western Electric was joined to A. T. & T., Thayer became a dedicated Bell employee. Based in New York, Thayer quickly moved-up the corporate ladder, first becoming the General Manager of Western Electric, then its' Vice-President, and finally, in 1909, both the President of Western Electric and a Vice-President of A, T. & T. (Brooks, 1976).

<sup>17</sup> Walter S. Gifford started his career with Western Electric. Shortly after his graduation from Harvard, Gifford took a position as a clerk in the Chicago office of Western Electric. He rose through the ranks of Western Electric, and became a protégé of Theodore Vail during his early years. But he became dissatisfied with the work at Western Electric, and in 1911 he resigned from Western Electric, taking the position of President of an Arizona cooper mining company. His experience in Arizona was less than satisfying, and six months after taking the position he once again approached Theodore Vail, seeking to be rehired by A. T. & T. Vail immediately rehired Gifford, and made him the Chief Statistician for A. T. & T. During World War I Vail released Gifford so that he could accept a position as an Director of the Council of National Defense. In November, 1918, he returned to A. T. & T., and Vail placed in him the position of Controller, one of the top five staff positions within A. T. & T., and directly under Vail's supervision. During the transition period when Vail became Chairman of the Board of Directors, and Thayer became President of A. T. & T., Gifford was made First Vice-President of the Company (Brooks, 1976).

<sup>18</sup> Bethell, who had been First Vice-President of A. T. & T., since 1912, did not enjoy the confidence of Vail that he would continue the vision of the company as Vail saw it. Using his position as President, Vail forced Bethell into agreeing to a generous retirement plan, thus paving the way for Gifford to assume the position. (Danielian, 1939).

now in place, Vail felt comfortable in passing the reigns of control, and in July, 1919 he resigned as President of A. T. & T., and accepted the position as Chairman of the Board of Directors (Danielian, 1939).

But Vail's health continued to deteriorate, and in April, 1920, he died in John Hopkins Hospital in Baltimore, Maryland. Vail's retirement from the Presidency of A. T. & T., followed by his death in less than ten months, marked the end of an era for the development of both A. T. & T., and the government regulation of the telephone industry. But the placement of Thayer as President of A. T. & T., and Gifford as the First Vice-President, assured A. T. & T. that the company would continue to develop along the lines originally conceived by Vail.

When Thayer assumed the Presidency of A. T. & T. he encountered a fortuitous moment for correcting some troubling problems for the company. The first was the restrictions placed on the company, by the Kingsbury Agreement, which limited A. T. & T.'s ability to acquire independent telephone companies.

The Age of Progressive Reform was drawing to a close in late 1919. Republican Conservatives had gained control of both the Executive and Congressional branches of the Federal government, and the national experience with telecommunications nationalization had been so negative, that a new opportunity arose for A. T. & T. In 1920 a bill was introduced into Congress known as the Willis - Graham Act. Telephone competition had become unpopular, and so under the terms of the Act, which was passed in 1921, A. T. & T. was exempted from the Anti-trust provisions of the Sherman Act in terms of acquiring other telephone companies. In essence, the Federal Congress gave A. T. & T. permission to consolidate the telephone system under a single authority (Congressional Record, 1921).

While the Willis-Graham Act removed a major barrier to A. T. & T.'s future expansion, a far greater issue faced Thayer over the developing area of wireless communications.

While A. T. & T. had been involved in the process of building a consolidated telephone network, other entrepreneurs and scientists had been exploring the possibilities of communicating across the ether. The idea was known as the radio.

In 1864, James Clark Maxwell submitted a paper to the Royal Society entitled "A Dynamical Theory of the Electromagnetic Field". The paper presented the basic theories necessary for developing the concept of communications using electromagnetic waves. By 1888 Heinrich Hertz was able to generate and measure these electromagnetic waves. Finally, in 1894, Oliver Lodge was able to demonstrate the transmission and reception of wireless communications. But it was Guglielmo Marconi who understood the commercial possibilities of the new method of communications, and it was he who was granted, in 1896 by the British government, the first radio patent (Aitken, 1976).

At first Marconi concentrated on developing the device as a navigation aid for ships. But the possibilities for long distance communication were too obvious, and finally, in 1901, Marconi transmitted the Morse Code signal for the letter "S" from Cornwall, England across the Atlantic Ocean to Newfoundland. The development of radio communications, after the successful trans-Atlantic signal, quickly moved into both the commercial and military markets of the world. But



radio was now under the exclusive control of a British based company, and indirectly under the influence of the national policies of the British government (Baker, 1971).

While Marconi continued to develop radio, A. T. & T. was concentrating on developing its long distance wire voice communication. While long distance telephone service was in place, the quality of the signal was still poor, and trans-continental communication in the United States had only been extended from the East Coast to Denver. (Reich, 1985).<sup>19</sup>

In the 1906, Lee de Forest invented the vacuum tube. A. T. & T.'s engineers realized that the vacuum tube could be used as a signal repeater, and would allow them to overcome the distance limitation. Shortly thereafter, A. T. & T. acquired de Forest's patent for the vacuum tube, and began to experiment with its use in long distance communication. By 1914, A. T. & T. had perfected the use of the vacuum tube as a repeater, and was stringing the last long distance telephone line link across the United States. Finally, on January 25, 1915, Alexander Graham Bell, sitting in New York, talked to Thomas Watson, who was sitting in San Francisco. By May, 1915, regular long distance telephone service was in effect between the East and West coasts of the United States (Aitken, 1985).

During this time, A. T. & T. ignored the development of radio. To A. T. & T., radio could not replace the telephone because the signal for radio was broadcast, and thus could not be kept confidential. The lack of privacy of communications, in the mind of A. T. & T. officials, seriously limited the potential commercial use of radio, and thus would not replace the telephone as the preferred, and dominate, form of voice communications (Aitken, 1985).

But while A. T. & T. expressed no interest in developing the radio, that was not the attitude of the United States Department of the Navy. As early as 1904, the Navy Department recognized the use that radio could serve for creating direct communications between its ships. The Navy worked with the American Marconi Company, a subsidiary of the British based Marconi Radio Company, to develop radio communications. But the Navy, and the United States Federal government in general, were uncomfortable with their reliance on a British based company who held the exclusive patent on the use of radio technology. From 1904 on, several special internal committees of the various Departments of Defense recommended that the United States develop the radio outside the limits of the Marconi patent, and thus free the United States from dependence on a foreign government for this new technology (Stone, 1991).

But efforts to produce a new base for radio technology in the United States were blocked by a wall of patents. Various United States corporations, involved directly or indirectly with communications technology, held a series of proprietary patents on various aspects of communications technology. A. T. & T. held the patent on the vacuum tube, a necessary ingredient required for developing the new technological base, but other necessary patents were also held by Westinghouse Corporation, General Electric Corporation, and even the United Fruit Company. In order for a new technological base for radio communications to be developed, agreements would have to be reached between the various patent holders in order to utilize their technical knowledge in the new system (Danielian, 1939).

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<sup>19</sup> The major technical problem facing A. T. & T.'s engineers was the lack of a means for amplifying the signal. The Pupin loading coil, developed by in 1900, helped with transmission quality and distance, but could only extend the signals amplification up to 1500 miles. Once the 1500 mile range limit was reached, the signal's strength dropped off rapidly, and eventually was lost (Reich, 1985).

The outbreak of World War I convinced the Navy Department that an American owned radio technology was critical for national defense, and the Navy's Bureau of Steam Engineering and the Division of Naval Communications were assigned the task of unraveling the patent wall. In 1918, General Electric was approached by the Navy, and was asked to head an effort to bring the various patent holding companies together in the radio effort. The Navy agreed to give the exclusive purchase of radio equipment to whatever group or company could develop the new system. In 1919, General Electric formed a new corporation called the Radio Corporation of America, RCA, and began the process of negotiating the patent agreements (Aitken, 1985).

With the backing of the Navy, General Electric approached A. T. & T., and began the process of negotiating a cross-licensing agreement for the use of patents. On July 1, 1920 A. T. & T. and General Electric signed an agreement for cross-licensing use of their patents by RCA. Several months afterwards, both Westinghouse and the United Fruit Company also signed similar agreements, and became members of the patent pool (Archer, 1939).

But the final agreements that were signed to create the patent pool, and the RCA Corporation, went far beyond just patent use. All members of the patent group received both common and preferred stock in the Radio Corporation of America, and thus became joint owners of radio technology in the United States. In addition to ownership rights, all members of the patent pool were given rights to develop wireless telegraphy. General Electric and Westinghouse also received rights to manufacture wireless receiving sets, and operate transmission stations. RCA was given exclusive rights to sell radios. A. T. & T. received rights in wireless telephony, and to manufacture and sell radios that were connected to and operated with the public telephone system.

At the time of the radio agreement, commercial use of radio had not been considered a viable option. In the minds of the telecommunications business officials, radio was seen as a new form of telegraphy. This all changed, though, in 1920 when Westinghouse Corporation opened the first radio broadcast station, KDKA, in Pittsburgh. Westinghouse had been seeking a way to expand the sale of its crystal based radio sets to radio amateurs seeking to pick up distant radio signals. One of these "broadcasters in the Pittsburgh area was a Westinghouse employee who frequently broadcast music. In order to boost sales of radios in Pittsburgh, Westinghouse increased the power of the station, and set-up a regular schedule of broadcast transmissions. The new station was an instant success, and sales of radio sets in Pittsburgh boomed (Barnouw, 1966).

The success of the Pittsburgh station started a rush to establish new radio broadcasting stations, and within two years over five hundred radio broadcast licenses had been issued in the United States (Head, 1956). But the success of commercial broadcasting undermined the original agreements of the patent pool members.

The boom in broadcasting led to a boom in the sale of radio sets, and A. T. & T. sought to enter the lucrative market of radio set manufacturing and sales. Under the original patent pool agreement, the manufacturing and sale of radios was exclusively held in the hands of Westinghouse and General Electric. But the original agreement contained a clause that stated that such sales were for the exclusive use of "amateurs". A. T. & T. interpreted the clause to mean to individuals who were engaged in scientific experimentation with radio, not just listening to radio broadcasts. By changing the interpretation, A. T. & T. claimed that they had a right to manufacture and sell radio sets that were only for the use of general public listening of radio broadcasts (Stone, 1991).

Westinghouse and General Electric objected to A. T. & T.'s interpretation of the original agreement, but A. T. & T. ignored their objections and continued to produce and sell radio

receivers. Shortly thereafter, A. T. & T. sold its shares in RCA (Horwitz, 1989). Once it had divested itself of the RCA stocks, A. T. & T. moved into radio broadcasting.

While it was obvious to A. T. & T. that radio was a major development in communications, they were uncertain as to what eventually would be the actual applications or uses the new technology.

"Nobody knew . . . where radio was really headed. Everything about broadcasting was uncertain. . . . Our first vague idea, as broadcasting appeared, was that perhaps people would expect to pick up a telephone and call some radio station, so that they could give radio talks." ("Gifford", 1927, in Brooks, 1976).

Not sure as to what the real nature was of this new technology, A. T. & T. decided to go into broadcasting on a limited experimental basis. Gifford was placed in charge of the development of radio services, and in 1922 authorized the construction of an experimental station based in the corporate offices in New York City. The development of the broadcasting operation was placed under the authority of an assistant vice-president, A. H. Griswold (Coon, 1939).

While both Thayer and Gifford were still trying to understand the nature of this new technology, and its possible commercial uses, A. H. Griswold had already formulated a new vision for the radio within A. T. & T.

"What I have in mind ultimately is, that in each locality an important group of people will get together and form a broadcasting association. In that group of people should be the type that the community looks to as being the leaders of the community . . . For that association we would erect, own, and operate a broadcasting station; they to provide all the programs; they to give the public what the public desires but we to have the latest facilities known to the art and all the things that go with them including remote control lines and speech input equipment. The station is to be operated by the Bell System under definite guarantees from the association as to expenses plus a reasonable return . . . We have to be very careful, up to the present time, not to state to the public in any way, through the press or in any of our talks, the idea that the Bell System desires to monopolize broadcasting; but the fact remains that it is a telephone job, that we are telephone people, that we can do it better than anybody else, and it seems to me that the clear, logical conclusion that must be reached is that, sooner or later, in one form or another we have got to do the job . . . Whatever monopoly feature there is in it will be created by the local group itself which will get everyone interested in radio into that local group, and if anyone desires to own his own private broadcasting station, they will say to him, "Come on in with the bunch, we represent this community in radio broadcasting."" ("Walker Report", 1938).

Under Griswold's view of broadcasting, broadcast time was made available to any groups wishing to have a public forum. Individuals would pay a fee to use the broadcast facilities, and then could send general messages to the public. In essence, A. T. & T. stated that broadcasting over their system was form of radio telephone, not commercial broadcasting, and thus was covered under their charge as a public utility (Horwitz, 1989).

Griswold's vision of "Toll Broadcasting", as it was named by A. T. & T., put it into direct confrontation with the ambitions of Westinghouse Corporation and General Electric, who in fact under the patent pool agreement were given exclusive rights to broadcasting. Griswold further acerbated the conflict by first denying wire access for remote broadcast to other radio stations, and

then extending the broadcast facilities of A. T. & T. in an attempt to create a national broadcasting network (Coon, 1939).

Griswold's vision of "toll broadcasting" had a counterpart in the vision of broadcasting held by David Sarnoff, President of RCA. Sarnoff originally conceived of broadcasting as a "Public service", one in which the profits from radio manufacturing would be used to offset the cost of operating broadcast stations. Under Sarnoff's vision, broadcasting would avoid commercialization by rejecting the use of advertising to underwrite the cost of broadcasting. Instead, financing for broadcasting would be accomplished by a means of both support from radio manufacturers, and public endowments from wealthy individuals. By this method, radio broadcasting would be free of commercial influence, and could concentrate on the public service aspects of providing information to the general citizen (Horwitz, 1989).

But the use of both Griswold's "toll broadcasting" approach, and Sarnoff's "public service approach", did not lead to the necessary revenue required to underwrite the cost of operating broadcasting stations. In addition, A. T. & T.'s underwriting of their own network, coupled to the wire access prohibition against the broadcast members of the patent pool, forced Sarnoff to abandon the concept of "public service" broadcasting, and instead resort to the use of commercial advertising to underwrite operating station costs (Archer, 1939).

The net result of the development of broadcasting in the early 1920s was to bring A. T. & T. and the broadcasting group into direct conflict with each other. Griswold's "toll broadcasting" monopoly approach had to be stopped if the broadcast group were going to be able to make their broadcast stations commercially viable using advertising as the main means of revenue generation (Archer, 1939).

By 1925, A. T. & T. had created over twenty six such broadcasting systems, and interconnected the systems through their long distance telephone system. In essence, they had created the first national radio network. But the other members of the patent pool that had rights to broadcast transmission, objected to A. T. & T.'s system, and accused them of rationalizing a violation of the original patent pool agreement.

In 1924 and 1925 the Secretary of Commerce, Herbert Hoover, held two radio conferences to discuss both the problems associated with the toll versus regular broadcasting, and the need to find a method to finance the developing industry. But before a government backed solution to the conflict could be developed, A. T. & T. conceded the field to the radio broadcasting group.

While the issue of radio broadcasting was becoming more involved, A. T. & T. also found itself expanding into other areas of the broadcasting and the entertainment industry. By 1924, the Western Electric laboratory had perfected the use of sound in motion picture productions, and in 1925 it began to experiment with sound motion pictures in various theaters around the United States. Experiments with transmission of pictures over telephone wires had been successfully accomplished by 1923, and in 1925 A. T. & T. had successfully broadcast television pictures from distant locations (Brooks, 1976).

Under the Presidency of Thayer, A. T. & T. had begun to expand into various operations in both broadcasting and entertainment, but as its operations began to expand, so did the level of industrial conflict. Legal issues between members of the patent pool, coupled to real fears that A. T. & T. was seeking to create a new monopoly in radio broadcasting, and possibly future television and motion pictures, began to create a sense of public and governmental uneasiness over the intentions of A. T. & T. (New York Times, 1924).

A. T. & T.'s recent experience with government nationalization, caused some reflection within the corporate offices of A. T. & T. Gifford was the most concerned about the possible problems that might develop, especially in terms of challenging A. T. & T.'s monopoly position within the telephone industry, and its foundation as a "natural monopoly". While the issue of expansion was being discussed as early as 1924, no action on the matter was taken until 1925 (Harkness, 1924).

In 1925, Thayer resigned as President of A. T. & T., and, following in the Vail tradition, became Chairman of the Board of Directors. Gifford, as originally planned by Vail, assumed the Presidency of A. T. & T. Gifford immediately entered into negotiations with the patent pool members over the issue of radio broadcasting. By July 1, 1926, an agreement was reached between the contending parties. A. T. & T. pulled completely out of the broadcasting industry by selling its broadcasting stations to RCA.<sup>20</sup> In return, A. T. & T. was given the exclusive rights to all radio and wireless telephone services in both the domestic and international markets. A. T. & T. also allowed for wire access to its system for remote broadcast and network use by the broadcasting group, but still retained the right to use any and all patents held by the group in the development of wire transmission of television (Danielian, 1939).

In essence, Gifford's settlement with the radio group, and his withdrawal from the broadcast industry, once again focused A. T. & T. on wire telecommunications, and the development of Vail's "Universal System". Gifford's settlement assured his mentor, Theodore Vail, that his vision would ultimately be fulfilled.

While A. T. & T.'s accommodation with the other members of the Patent Pool seemed to have resolved the conflict within the broadcasting industry, another event, shortly after the signing of the agreement, once again threw the industry into turmoil.

Up to 1926, regulation of radio frequencies had been under the control of the Secretary of Commerce. Under the authority granted by Congress with the Radio Act of 1912, the Secretary of Commerce issued rules which compelled licensees to comply with frequency broadcast allocations, power transmission limits, and hours of operations. But in 1926, a federal district court ruled that the Secretary of Commerce had not been given the authority to either refuse a request for a license, or to require minimal rules of operations, under the Radio Act of 1912 (*United States v. Zenith Radio Corporation*, 1926).

Broadcast stations immediately boosted their power output, and began to interfere with broadcast signals from other stations. The situation became so serious, that eventually the major broadcasters began to lobby for government regulation of the industry. (Friedrich and Sternberg, 1943).

From 1921 to 1927, over fifteen bills to regulate the radio industry had been entered into Congress. All of them died in Committee. Opposition to the bills arose from conservative legislators who advocated that radio broadcasting should have the same principles of freedom of expression enjoyed by newspapers. To these conservative legislators, First amendment rights of speech should automatically be extended to radio communications, and any form of government regulation, other than the issuance of a license, was an abridgment of Constitutional rights of speech.

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<sup>20</sup> Later that year Sarnoff, using the A. T. & T. stations as a base, formed the first national commercial broadcasting company, the National Broadcasting Company, NBC.

"The air belongs to the people, and I do not see how Congress has any right to say who shall talk and who shall not talk and who shall have a radio and who shall not have one." (Bingham, 1926).

The conservative wing of Congress was opposed by the remnants of the Progressive Reform movement, who still advocated stronger government control over industries, and opposition to the creation of monopolies.

The 1926 Federal District Court opinion in the Zenith case, though, changed the nature of the debate. Without even the authority to issue licenses, the development of the radio system was fast becoming an unfettered communications system bordering on public anarchy.

A fourth radio conference was held on the matter, and recommendations from the industry were advanced for limitations of both broadcasting times and station power. These recommendations were then advanced in House Resolution 5589, later known as the Radio Act of 1927.

H. R. 5589 proposed that a radio commission would be established to issue station licenses. The commission would have the authority to assign both frequency bands and station wavelengths for broadcasting, plus the times of operations and the allowable power levels for transmission. The bill also advanced the idea that in terms of the overall "public interest", radio service within the United States was to be distributed equitably, and fairly, to all the various states. Operators were given editorial control and discretion over broadcast content, but required to present all views on matters of public concern (Kahn, 1984).

While the bill was under consideration within the Senate Committee, an amendment was attached which imposed on all broadcasters common-carrier obligations, but the broadcasters and conservative legislators objected to the inclusion of the common-carrier obligation. The argument that such a provision would interfere with the stations First Amendment rights of speech, successfully blocked the introduction of the common-carrier concept into the broadcast industry. The amendment was dropped, and in its place two provisions were added. The first provision prohibited stations from discriminating in terms of their advertising rates. The second provision required that stations had to provide equal time for all political candidates standing for public office (Kahn, 1984).

While the conservative legislators were able to block the introduction of common-carrier principles into the broadcast industry, they had to compromise with the remnants of the Progressive movement who demanded certain anti-monopoly concessions. The final bill that was passed by Congress contained two anti-monopoly provisions. The first gave the Radio Commission the authority to revoke a broadcasting license if the broadcaster was found guilty in federal court of attempting to monopolize the broadcast industry. The second provision prohibited any broadcaster from holding a financial interest in any aspect of wire communications (Kahn, 1984).

On February 27, 1927 the Radio Act was passed by Congress, and the Federal Radio Commission was created. With the passage of the Radio Act of 1927, the telecommunications industry was divided into two separate areas of law and regulation. Wire-based communications operated under the principles of common-carrier law, while wireless based broadcasting was protected under modified concepts of constitutional free speech. At the time, the separation was seen as a reasonable solution to the growing development of the two forms of telecommunications industries.

One other development during this time should also be mentioned. As we have seen in previous sections, research and development, within A. T. & T., played a critical role in developing the company's overall business strategy. As early as 1880, Bell Telephone's Technical Department had over thirty-five researchers engaged in research and development. In 1881, the Electrical Department assumed the mantle of technological research, and continued to promote research until 1884, when the Mechanical Department was organized, and placed under the direction of Hammond V. Hayes. Shortly after the expiration of Bell's patent monopoly, in 1894, research was shifted to the Engineering Department, first under the continued direction of Hayes, and after 1907 under the direction of John J. Carty. Finally, in 1919, the Engineering Department of A. T. & T. was divided into two separate departments: the Department of Operation and Engineering, and the Department of Development and Research (Coon, 1939).

The Western Electric Company also had developed a research and development program within its organizational structure. Early in its affiliation with Bell Telephone, Western Electric had established two experimental laboratories, one in Chicago and the other in New York City. In 1907, the Chicago laboratory was closed, and research efforts were consolidated at the New York City location. In 1924 this Western Electric laboratory, along with part of A. T. & T.'s Patent Department, was incorporated as the Bell Telephone Laboratories.

The cross licensing agreement between the members of the patent pool opened the door for further research within the Bell Labs. Over 1200 patents were covered under the cross-licensing agreement. A. T. & T., with the largest in-house research and development organization in the world, suddenly had access to many years of advanced research conducted by some of the best electrical researchers in the world. The Bell labs took full advantage of this opportunity, and supported by the corporate home office, expanded its areas and extent of research (Danielian, 1939).

Finally, in 1933, the A. T. & T. Department of Development and Research was also incorporated into the Bell Telephone Laboratories, thus consolidating all research and development within the organization. The final organization, under the direction of John J. Carty who was promoted to a vice-president position within A. T. & T., employed over 45,000 people, with fifty percent of those employees either engineers, chemists, metallurgists, or physicists (Coon, 1939).<sup>21</sup>

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<sup>21</sup> The expansion of research and development within A. T. & T. and Western Electric, after 1907, can be attributed directly to the promotion of Carty as the head of research, and the acquisition of the De Forest vacuum tube patents. Carty, who assumed the leadership of research and development after the forced resignation of Hayes in 1907, was a strong proponent of in-house research. Prior to his ascension to the head of research, A. T. & T. had tended to acquire patents from outside developers of communications technology, and then perfected applications within its research divisions (Hill, 1947). Carty, supported by Vail, advocated the development of basic research within A. T. & T.'s own organizational structure (Carty, 1909). Under Carty's direction, A. T. & T. and Western Electric expanded its base in basic research, seeking to locate processes that could be patentable, and thus corner communications technological development within A. T. & T. Carty was fortunate to assume the leadership of research at a time when A. T. & T. had acquired the De Forest vacuum tube. The vacuum tube was not only the key ingredient in developing modern radio, it was also the main ingredient in developing advanced telephone and telegraph service. With one move, A. T. & T. gained the patent key to developing all three aspects of existing telecommunications, plus, it was quickly discovered, the future development of television. A. T. & T.'s continued research with the vacuum tube led to a point that by 1920 A. T. & T. owned patents and patent rights to every aspect of vacuum tube technology (Faulhaber, 1987). It was this position of technological dominance which made it essential that A. T. & T. join the radio patent pool in order for a new technological base for the radio to be created. In addition, A. T. & T.'s research laboratories work with the vacuum tube led to its technological expansion into radio, television, motion pictures, and telefacsimile (Reich, 1977). In the 1920s the vacuum tube was the equivalent of our age's microchip.

To underwrite the costs of such extensive research, the majority of the research expenses were included as part of the License Contract Agreements between the affiliated Bell Companies and A. T. & T. Research work which was directed at telephone equipment was billed to Western Electric on an annual basis, and then included in both the price for the production of existing equipment, and the annual services charges for telephones placed in individual offices and homes. Annual research costs for both basic and applied research were included in the charges that eventually were passed on to each subscriber of telephone service, even though the research might not have any direct application to existing or future telephone service (Danielian, 1939). It was this inclusion of research charges that would come back to haunt A. T. & T. in the not too distant future.

## **The Political Economy of Boundaries**

### **The External Political Framework**

While the issue of private versus public ownership of the telecommunications system in the United States had been debated, on and off, since the 1840s, in general the principle of private ownership of both telegraph and telephone systems had been accepted as an established fact within the context of American social values and beliefs. Court rulings in favor of patents rights and corporate ownership rights, coupled to an aggressive defense both politically and legally by Western Union and A. T. & T., had created a belief in the superior quality of service which could be created through private development rather than government ownership.

While private ownership of the network was generally accepted as an established fact, some individuals and groups continued to believe that nationalization of telecommunications was not only proper, but necessary for the overall well-being of the society. To these individuals and groups, the original argument advanced by Postmaster General Cave Johnson in the 1840s, namely that the Federal government had the authority to operate the telecommunications system under the Constitutional authority that created the postal service, still was a valid position, and justification for nationalizing both telephones and telegraphs. To these groups, as both the telephone and telegraph became more involved in the society, and penetrated every aspect of both commercial and social life, the necessity for government ownership and control increased.

This belief in the need to nationalize the telecommunications systems was especially evident in the early 1900s in that arm of the Progressive Reform movement which sought to bring industrial development under strict government oversight and control. But the concept of government ownership, that existed at this time, sought to create a type of ownership that exhibited aspects of both public and private ownership rights. The first such example of this was the creation of the Panama Canal Railroad system, but later developments led to the Tennessee Valley Authority, the Federal Home Mortgage Administration, the Nuclear Energy Commission, and numerous other examples. As such, the Progressive Reform movements call for nationalization of telephone and telegraph systems took on the qualities of a uniquely American model.

The concept of nationalization of industries, especially those that exhibited qualities associated with public utilities, had been promoted by various arms of the progressive reform movement. This was especially the case in terms of municipal ownership of such utilities (Holcomber, 1911; King, 1914).

The telephone had been one of the areas considered, exhibiting public service aspects that could be controlled by government. But A. T. & T.'s successful movement toward regulation by state public utility commissions, and the subsequent extension of Federal authority under the Mann - Elkins Act and the Justice Department's Kingsbury Agreement, effectively closed-off the concept



of municipal ownership and regulation of the telephone system. The proponents of a nationalized system were now left with only one avenue in which they could advance their ideas, and that was total nationalization of the system under the Federal government.

While the Progressive Reform movement supported the use of anti-trust legislation and regulation, the actual enforcement of the anti-trust belief was often within the purview of the courts. Government regulation of industry often resulted from a case-by-case approach decided within various lawsuits brought against the violating industry. While the lawsuit approach was effective in extending government regulation, it was also criticized by members of the Progressive Reform movement for its inefficiency. To these individuals, legalistic approaches flew in the face of developing a coherent and scientifically rational approach to both governmental and social reform (Abbott, 1901: Croly, 1914).

To this wing of the progressive reform movement, the solution for this sporadic process was the creation of forms of pseudo-state oriented organizations. An examination of the development of industry and society, in their view, showed that ownership and operation of industries were becoming two separate areas of control. As stock market control expanded into more and more investors, with less and less influence over the daily operation of the various industries, the possibility arose to socialize the upper management, and financiers, in the various industries with the true concepts of democracy and Christian tolerance. The rise of professionalism within public, private, and academic communities of the country, reinforced this perception. From this perceptive, business was seen as a form of public trust (Abbott, 1901: Small, 1895: Hadley, 1903).

This concept of public stewardship and trust also influenced those economists and members of the progressive reform movement who felt that government ownership of certain industries was required in order to assure economic justice within the society. Heavily influenced by the German public service, these advocates stressed that public ownership of certain socially critical areas of industrial life would encourage the development of a higher level of socially responsible individual. Formal training in government, coupled to competitive entrance exams, would foster habits of self-discipline and social responsibility. In turn, the members of such government owned industrial administrations would gradually develop a higher sense of citizenship and justice, and this would ultimately lead to a redistribution of wealth and power within the overall society (Commons, 1894: Ely, 1890, 1903).

The combination of public stewardship concepts, and the creation of a sense of citizenship and justice within administrative groups, influenced both the theoretical and political elements of the Progressive Reform movement, and the strategies chosen to influence industry either through the use of government oversight or ownership of industries .

The crisis generated by World War I allowed for the full expression of these Progressive theories within the telecommunications industry. For the first time, advanced scientific and professional training could be merged under the concept of public ownership and stewardship. Rather than advancing the cause of corporate profits, the new paradigm of management would advance the rights of the citizens.

But the real world expression of the theories did not lead to the perceived, and promised, social benefits. Rather than leading to an increase in the quality of the service and a decrease in the price for public access, the experiment lead to the opposite result, an increase in costs for the services. In addition, the Federal government agencies chartered to promote the new form of stewardship were perceived as violating the historical belief in the separation of constitutional authority between the

Federal and State governments. The actions on the part of the Post Office in the running of both the telephone and telegraph systems seemed to actually reflect the criticisms that had been leveled against the industry.

In the end a contradiction in the logic of the reformers was revealed. Once power had been invested into the hands of the reformers, they repudiated their own position of public stewardship by enacting the very rate increases that they had promised would not occur with government ownership. In a single move, the Progressives completely undermined the legitimacy of their own position, and caused the political pendulum to swing back toward private ownership.

### **The External Economic Framework**

While A. T. & T. was in the process of building a consolidated telephone system, it had generally ignored the developments within the area of wireless communications. A. T. & T.'s concentration on wire based communication was predicated on the belief that privacy of conversation was preferred by both personal and commercial users of electric communications.

In many ways, A. T. & T.'s attitude toward wireless communications was similar to the earlier attitude Western Union held toward voice communications. Positioned within a dominate location in the telecommunications industry, the company was unable to see the possibilities that the new technology might offer in developing alternative modes of communication.

The development of wireless communications also occurred at the same time that Theodore Vail once again attained a major position in the development of the company. Continuing to advance his strategy of creating a unified local and long distance network, A. T. & T. focused on overcoming the technical problems inherent in creating a long distance wire-based network. The perfection of the use of the vacuum tube, and the eventual extension of long distance service from coasts to coast, was a major factor in Vail's long-term strategy of maintaining A. T. & T.'s dominance within the telephone industry.

But the United States Navy's concern over dependency on a foreign corporation for its wireless communications, allowed for a change in the corporate view of wireless communications. The eventual creation of the radio patent pool allowed A. T. & T. to have access to advanced research within the area of wireless communications. But once again, the corporate impression of wireless was similar to the Western Union's attitude toward telephones, namely the new technology was seen as a method of eventually rounding out the telephone system rather than offering an alternative transmission system.

The final agreements established by the members of the radio patent pool, in essence, divided-up the telecommunications sectors, and distributed control over various aspects of the telecommunications industry to its members. The divisions that were reflected in the agreement clearly defined the authority of each member in terms of both research and commercial development, and reflected the underlying view of each of the member's positions within the various telecommunications industries that were emerging

But the emergence, in 1920, of the Westinghouse Corporation's Pittsburgh station opened competition within the equipment sectors of each of the patent pool members. The opening also occurred at the same time that Theodore Vail died, and left a vacuum within the company as to the future development of the firm. The expansion of radio broadcasting, coupled to the increase in sales of radio sets, had undermined the original agreements of the patent pool members.

Seeking to gain a new area of commercial development, A. T. & T. voided the agreements in terms of equipment manufacturing. Rather than reigning in the escalating conflict, A. T. & T. President Thayer allowed the matter to further deteriorate. The development of Vice-president Griswold's "toll broadcasting" concept, and the retaliatory aspects of denying long distance lines for network broadcasting, further destabilized the patent pool group. A. T. & T.'s final decision to enter into national broadcasting brought the issue, finally, to the attention of the Federal government.

After Thayer left the President's position, and Gifford assumed authority over the company, the original vision of the firm that had been advanced by Vail once again dominated the company. The three contracts that were eventually signed by the members of the radio patent pool to resolve the conflict, reconfigure the evolving communications industry. A. T. & T. agreed to withdraw from radio broadcasting, and sold its WEAJ radio station to RCA. In return, the radio group, while having exclusive rights to broadcast, agreed to purchase all wire carriage needs from A. T. & T. exclusively. The right to build and sell both radio receivers and transmission equipment was left with the radio group, but A. T. & T. obtained exclusive rights to all wire telegraphy on land. RCA was given exclusive rights to wireless telegraphy in both the United States and International communications, but A. T. & T. was given exclusive patent rights to any form of communications equipment or patents that could be utilized in wire telephony, including wire transmissions of television (Barnouw, 1966).

The division of the 1926 agreement, in essence, established the legal parameters of both commercial development and government regulation of telecommunications which would be in existence in the United States for the next fifty-eight years. The industrial structure that was established under the agreement was further certified by the actions of Congress in passage of the 1927 Radio Act.

The rejection of common-carrier concepts for wireless broadcasting, coupled to the prohibitions against broadcast ownership by wire-base communications companies, codified the contractual agreements reached between A. T. & T. and the other members of the patent pool, and defined the overall separation of the two industries.

### **The Internal Political Framework**

The death of J. P. Morgan, in 1914, created a situation in which power within A. T. & T. became centralized within the position of President of the firm. While the Board of Directors still exercised authority over investment decisions, this authority was greatly curtailed by the weight of opinion from the President, and the day-to-day operational authority vested in the President's position ("Walker Report", 1938). The net result of the centralization of power within the office of President resulted in the office of the President becoming an almost independent position of authority within the telephone industry (Danielian, 1939).

Theodore Vail, by 1914, had become the dominate personality within A. T. & T., and his vision of a unified system dominated both the organization and the telephone industry of the United States. But Vail recognized that his increasing age limited the time that he had left to influence the industry. In order to assure himself that his vision would continue on after he left A. T. & T., Vail began to influence the process of succession to the Presidency of A. T. & T. (Paine, 1921). Vail's selection of both Thayer and Gifford to assume the leadership of A. T. & T. established the framework for corporate succession that would dominate A. T. & T. through the 1970s.

When Thayer assumed the Presidency of A. T. & T. in 1920, he was able to first remove the restrictions placed on the company, by the Kingsbury Agreement, by seeking the passage of the

Willis - Graham Act. In essence, the Act meant that the Federal Congress gave A. T. & T. permission to consolidate the telephone system under a single national authority (Congressional Record, 1921).

Thayer was also able to move the company into the emerging area of broadcasting and entertainment. But A. T. & T.'s move into this new area of industrial development placed it in direct conflict with the broadcasting group.

Under the Presidency of Thayer, A. T. & T. began to expand into various operations in both broadcasting and entertainment, but as its operations began to expand, so did the level of conflict. Legal issues between members of the patent pool, coupled to real fears that A. T. & T. was seeking to create a new monopoly in radio broadcasting, and possibly future television and motion pictures, began to create a sense of public and governmental uneasiness over the intentions of A. T. & T. (New York Times, 1924).

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Carty, who assumed the leadership of research and development after the forced resignation of Hayes in 1907, was a strong proponent of in-house research. Prior to his ascension to the head of research, A. T. & T. had tended to acquire patents from outside developers of communications technology, and then perfected applications within its research divisions (Hill, 1947). Carty, supported by Vail, advocated the development of basic research within A. T. & T.'s own organizational structure (Carty, 1909). Under Carty's direction, A. T. & T. and Western Electric expanded its base in basic research, seeking to locate processes that could be patentable, and thus corner communications technological development within A. T. & T.

Carty was fortunate to assume the leadership of research at a time when A. T. & T. had acquired the De Forest vacuum tube. The vacuum tube was not only the key ingredient in developing modern radio, it was also the main ingredient in developing advanced telephone and telegraph service. With one move, A. T. & T. gained the patent key to developing all three aspects of existing telecommunications, plus, it was quickly discovered, the future development of television.

A. T. & T.'s continued research with the vacuum tube led to a point that by 1920 A. T. & T. owned patents and patent rights to every aspect of vacuum tube technology (Faulhaber, 1987).

It was this position of technological dominance which made it essential that A. T. & T. join the radio patent pool in order for a new technological base for the radio to be created. In addition, A. T. & T.'s research laboratories work with the vacuum tube led to its technological expansion into radio, television, motion pictures, and telefacsimile (Reich, 1977). In the 1920s the vacuum tube was the equivalent of our age's microchip.

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While the inclusion of research costs into basic telephone charges was an issue within the administration of A. T. & T. even in the 1920s, a more pressing issue existed in terms of A. T. & T.'s growing involvement in other aspects of telecommunications, namely wireless communications (Danielian, 1939). The cross licensing agreement between the members of the patent pool opened the door for further research within the Bell labs. Over 1200 patents were covered under the cross-licensing agreement. A. T. & T., with the largest in-house research and development organization in the world, suddenly had access to many years of advanced research conducted by some of the best electrical researchers in the world. The Bell labs took full advantage of this opportunity, and supported by the corporate home office, expanded its areas and extent of research (Danielian, 1939).

But the corporate strategy of seeking to gain monopoly control over toll broadcasting, and the subsequent conflict between A. T. & T. and the other members of the patent pool, led to the corporate decision by A. T. & T. to withdraw from the arena of wireless communications. While the corporate agreements that were signed between A. T. & T. and the patent pool members in 1926 divided communications technological ownership into two spheres, wire based and wireless, in fact the research efforts of both sides of the agreement still relied upon the joint sharing of technological discoveries and patents between the two spheres of scientific knowledge. While private ownership rights had been clearly defined, the rights of ownership of scientific knowledge could not be segregated by walls of legal contracts.

Still, the 1926 agreements did provide a focus for research within A. T. & T., and within the Bell Telephone Laboratories. The development of improved wire communications became the major emphasis for the Bell labs, and was confirmed under the technological monopoly granted to A. T. & T. by the cross-licensing agreements. The combination of A. T. & T.'s dominate patent monopoly in wire communications, coupled to its extensive investment in a research facility to promote the extension of its dominance, led to a dampening effect in terms of outside research related to wire based communications. With very little incentive to pursue research in an area already cornered by one of the largest companies in the world, research in wire based communications fell off, and eventually disappeared in North America except within the confines of the Bell laboratories (Faulhaber, 1987).

The 1926 cross-licensing agreements, in essence, regained for A. T. & T. the de facto patent wall that it had lost in 1894 with the expiration of the original Bell patents. The expansion of the Bell Telephone Laboratories would assure A. T. & T. that the patent wall would remain in place.

### **Structuring Principles**

During the period from 1914 to 1934 we see the continuing evolution of principles related to the relationship that exists within the American society between the public and private sectors. Many of the issues that previously surfaced during the late 1800s and early 1900s continue to impact on the social development of values within the society.

The first structuring principle revolves around the continuing expansion of government within the society, and the use of government to restrain the perceived negative consequences of continued industrial growth within the nation. The previous progressive reform debate over whether to nurture controlled industrial development, or to use legal methods to force either a breakup of the industries or stringent government oversight, continue to define the basis for government actions and rationalizations.

The initial call for nationalization of telecommunications within the country by the wing of the Progressive Reform movement seeking stringent government oversight, are opposed by a generally accepted belief in the positive impact of private ownership and development. Both officials in the private and public sectors are reluctant to accept such a radical redefinition of the separation of public and private spheres. These officials are supported in their position by a general public and press acceptance of the existing arrangement, and a generally positive image of the benefits that have been achieved through the current separations.

This attitude is quickly altered due to the perceived threats to national and personal security generated by the United States entry into World War I. The atmosphere created by the national emergency, and the subsequent movement to a total war footing within all aspects of personal and public life, destroys the wall of values separating the public and private sectors of life. In this atmosphere of patriotism, the advocates for nationalization advance the argument for government control, and successfully undermine the principles of private ownership that have been in existence within the society. The final result is the nationalization of the telecommunications industry, and the creation of general public support for the use of expansive government control over the private sector.

But the ending of the War, and the continuation of government control, forces the government to exercise not only the rights of ownership, but also the responsibilities entailed in ownership. The capital intensive nature of telecommunications economics requires the infusion of new funds. Public ownership has removed the possibility of the use of traditional methods of fund raising, namely the sale of bonds and stocks in the private investment markets. The lack of access to private funds, requires that the public sector use rate increases on individuals to secure the necessary funds. In the process of raising rates, the public sector violates a fundamental structuring principle held within the society, namely the separation of powers between the Federal government and the State governments.

The subsequent upholding, by the Supreme Court, of total Federal authority, and the rejection of State authority, violates social perceptions of the proper balance of government within society. An immediate, and widespread, reaction against the creation of a principle of total Federal authority results in a collapse of the arguments and values for government nationalization, and a complete and total rejection of the progressive argument for government oversight and control. In the

process of rejection, the original lines between the public and private sectors within the telecommunications industry are reestablished, and the public sector advocates position for nurturing industrial development come to the forefront.

In the newly established view of industrial development support, A. T. & T.'s private ownership rights are not only reestablished, but also expanded. Federal authority remains limited to I. C. C. oversight of long distance rates, while internal regulation is dominated by the State Public Utility Commissions. The principle of a "natural monopoly" is extended to the telephone industry through the passage of the Willis-Graham Act, and the exemption of A. T. & T. from coverage under the Sherman Anti-Trust Act. The allowance of A. T. & T. to continue to acquire independent telephone companies certifies, on the national level, the policy of creating a single unified system under the private ownership of a single firm.

The division of authority between the Federal and State governments, coupled to the development and certification of a single unified system policy at both levels of government within the principle of a natural monopoly, allow for certification of two existing structural principles with the telecommunications sector. The first principle, commercialism, recognizes the importance that telecommunications plays in the development of commerce and industry on a national level, and places authority for oversight of that principle at the Federal level of government. The second principle, equity of access, recognizes the expanding personal use of the telephone within the society and the promotion of such access to all citizens. This principle is placed under the authority of the State governments, and within the structure of authority vested within their Public Utility Commissions.

During this same period of time the underlying structural principles of telecommunications within the society are also expanded in two directions, the first being national defense, the second being technological development.

The involvement of the Department of the Navy in the development of a new platform for wireless radio, forges a link between the concepts of national defense and telecommunications. While telecommunications, up to this time, had been primarily directed at commercial and social applications, the movement into defense development expanded the perceived nature of telecommunications. The expansion of the use of telecommunications into the support of a national defense effort placed another value within the structuring principles of the telecommunications industry. Now, in addition to the commercial and individual equity values reflected within the regime, was placed another value that linked the quality of the system directly to the support of national security. The protection of both personal and social security was now embedded within the industries principles.

In addition, the reliance on the Defense Department's use of private companies to foster both the research and development of this area resulted in a direct organizational and legal connection between both the public and private spheres of society within this critical area of national defense. This also assured an on-going and continuous relationship into the future.

The second area of principle expansion involved the concept of technological development. The development of both wire based and wireless communications relied on the same areas of scientific knowledge. The ensuing conflict of ownership and contractual rights between the members of the radio patent pool resulted in an artificial boundary being drawn within this body of scientific knowledge, and a subsequent division of ownership rights within this body of knowledge at a private level. What, in principle, had been a body of commonly held public knowledge was suddenly withdrawn from public ownership by a group of private companies. This division was

further legitimated by the Federal Government's Commerce Department, and the eventual establishment of the Radio Commission in 1927.

In the process of dividing the areas into two bodies of application, namely wireless and wire based communications, ownership rights to technological development were assigned to respective members of the patent group. The net result was that not only was the body of scientific knowledge divided, the rights to future research within the bodies of knowledge were also assigned to private owners. In order to ensure that these ownership rights would be protected against outside research, major private investments were made in research laboratories in order to discourage any research outside of the control of the private owners. Thus there was established the principle that advanced research in these defined areas of technological development would be handled by the designated private owners.

One final structuring principle within the telecommunications regime was also reinforced during this period. The controlled ascension of both Thayer and Gifford to the President's position within A. T. & T. reinforced the developing rights of management within the private sphere to control the operation of large industries. In essence, the successions placed the right of decision making within corporate managers, not owners of the firms stocks. This process was further advanced by the expanded use of stock sales to fund capital costs. By the sale of stocks to a broad spectrum of individuals, control of large blocks of stocks by individuals or groups was reduced, resulting in little or no influence being exercised over corporate management.

Within this self-contained group of management, Theodore Vail could assure himself that his vision for A. T. & T. would be continued to be pursued, along with the engineering culture he had grounded within his protégés.

### **Process Model**

The attempt by the Progressive Reformers to nationalize the telecommunications industry, ultimately failed because of general societal opposition to the concept of centralized authority within the political and constitutional structure of United States government. The nationalization advocates advanced a model for decision making authority which removed all elements of localized input from the decision process. State and municipal government authority over various aspects of telecommunications were rescinded, along with Congressional oversight, by placing complete authority within the Executive Branch of the Federal government via the Post Office Department.

While initially supported by society due to the national emergency nature of World War I, the mood quickly changed once the War was over. The return to peace also saw a return to the traditional support for separation of authority within the constitutional order, and the re-establishment of the belief in private sector development within the various industries of the United States.

The return of the telephone and telegraph systems to private hands also saw the modification of the telecommunications policy regime that had come into existence prior to World War I. The authority of the State Public Utility Commissions was extended, along with the concept of a natural monopoly, by the passage of the Willis-Graham Act. Under the Willis-Graham Act's permission, United States Department of Justice oversight through use of the Sherman Anti-Trust Act was removed from the policy regime. By exempting A. T. & T. from coverage by the Sherman Act, and allowing A. T. & T. permission to acquire other independent telephone companies, Congress altered the policy regime in several important directions.



The first alteration was in recognizing the concept of a natural monopoly within telecommunications at the national level. The permission given to A. T. & T. to acquire independent telephone companies established a de facto national policy of creating a single, unified system under the ownership and direction of A. T. & T. The second alteration was the placement of the majority of oversight on this development within the State level of government rather than the Federal level. While the Willis-Graham Act promoted the development of a unified system, Federal authority was not extended. Federal oversight was limited to I. C. C. review of long distance rates. Fundamental decisions over the development of telephone service were left in the hands of the various State Public Utility Commissions.

] While the majority of oversight on wire based communications was placed at the State level, the authority for oversight of wireless communications was centralized at the Federal level. Since broadcasting extended over state boundaries, the perception of regulation and oversight was seen as a federal level of interest rather than solely a state based decision. The allocation of frequencies for broadcast and power were placed within the Radio Commission created by the Radio Act of 1927.

Thus by the end of 1933 the policy regime that had been created to oversee telecommunications within the United States was composed of two broad divisions. Land based wire networks, which required the physical construction of communications systems, were largely under the authority of the state governments. Federal authority was only exercised in the area of cross state transmissions, long distance, and strictly limited to only review of rates charged for such services. Wireless communications networks, which required only the construction of a single broadcast station, were exclusively under the authority of the Federal government. While this authority could be exercised over the actual operation of such networks, frequency and bands used for broadcasting, power of station output, and hours of operation, no authority was given over rates charged for advertising on such networks.

In terms of the development of the telephone policy subsystem, this time period tends to conform most closely to the classical definition of the "iron triangle" concept. A. T. & T. has been exempted from the concepts of anti-trust litigation, and has been given permission to once again pursue the strategy of take-over and consolidation. In addition, Federal oversight is limited to rate review for long distance service, while all other matters related to the industry's conduct are localized within each of the separate State Public Utility Commissions.

The newly emergent broadcasting industry has accepted limited restraint on it's actions by allowing the Federal government to have exclusive oversight on the allocation of broadcast spectrums. This oversight function, though, has been severely restricted by extending aspects of First Amendment Free Speech principles to the operation of the industry. In addition, A. T. & T. has secured it's position within the industry by being recognized by the industry through it's contractual and patent agreements as the exclusive provider of land lines for rebroadcasting on all national networks.

Surrounding both the telephone and broadcasting industry structures has been the development, at the Federal government level, of both laissez faire principles, and a Hooverian Mutualistic philosophy of industrial development. Under this scientifically rational approach, industrial and governmental leaders allow the two industries to structure their operations and relationships based on the principles of efficiency and maximization of profits. The government agencies buffer the industries from public and political pressure, and allow for the creation of industrial development based on the preferences of the various companies.

Thus, by the beginning of the 1930s, we see that the telephone policy subsystem has become composed of the continuing triangle of the State Public Utility Commissions, the Interstate Commerce Commission, and A. T. & T. as the 'network manager". The Justice Department has now been removed from the oversight role, and in its place has been developed an Executive level of oversight through the Commerce Department's Industrial Conferences. In addition to the telephone policy subsystem, and new broadcasting subsystem has also emerged composed of the broadcasting companies, the Federal Radio Commission, and once again Executive level oversight through the Commerce Department. A. T. & T. exists as a member of both subsystems through its recognition as both the "network manager" of voice transmissions, and the "network manager" of the broadcasting network's long distance retransmissions.

### **The Duality of Structure**

The 1920s saw telecommunications, in the United States, divided into two broad categories, each operating under structures associated with earlier developments within United States history.

In the case of the telephone and the telegraph, the physical technology utilized, namely wire based networks, had resulted in a construction of reality that had an orientation toward physical objects. Since the actual network of communication was composed of physical wires and poles, laid-out across the land in set corridors of defined rights-of-way, the network was viewed as a form of transportation system. This was further supported by the fact that communications along the transport medium was also two way. In addition, communications along the transport system was specific from one individual to another individual, and considered private.

When constructing a body of regulatory law to oversee the operation of the network, the tendency was to place such law under principles associated with other transport systems, namely common carrier principles. In addition, since the service was considered to have a public service component to it, and necessary for commercial and personal life, the common carrier principle of access to all requesting use seemed to fit well with the technological base from which the system operated. Thus wire-based communications networks were grounded in structures of common carrier models of regulation, such as railroads and shipping.

Wireless communications, on the other hand, were not physically grounded to any form of transport corridor. The nature of broadcasting, in which a signal was generated from a set location to a broad geographical area, did not require the construction of a physical system of transportation. The very technology, in which the radio signal could be received by anyone owning a radio receiver within the broadcast power of the generating station, tended to place wireless communications outside of common carrier transport models.

In addition, the broadcast nature of radio, in which the signal could be received by all listening to the specific band, tended to place the communications into the area of public speech rather than private speech. Further reinforcing this view was the fact that radio frequencies necessary for broadcasting were generally considered to be public domain, a limited and scarce natural resource held in common by the people. Since not everyone would be able to operate a radio station due to the limited number of frequencies available, and since the messages that would be broadcast tended to be publicly distributed, the structuring of government oversight was influenced by existing structures which exhibited public speech aspects, namely first amendment rights of the press. While the basic orientation was toward first amendment rights, the limited number of frequencies somewhat modified the extension in this direction by also emphasizing the public trustee nature of the technology.

Wireless communications model, thus, tended to be structured around first amendment models grounded in Freedom of the Press, but also including elements of common carrier responsibilities of providing access to all seeking to reach the general public. From this base was created the concepts of editorial rights of broadcasters similar to newspaper editorial rights, but modified with the obligation of presenting balanced programming.

In terms of the process of structuration, during this period we see that two distinct movements have occurred within both the policy subsystem and the overall society.

The first movement occurs as the overall ontological security of the society is threatened by the outbreak of World War I. While, at first, the outbreak of War is only viewed with a sense of uneasiness, eventually it mounts to a major portion of the society's consciousness as the United States becomes an active participant in the conflict. The perceived threat to the nation's existence is translated into a national mobilization which alters the process of structuration which has been evolving within the society.

The patterns of social conduct, consciousness, and knowledge fall before the immediate threat, and result in a complete reordering of the authoritative and allocative resources within the society, plus the systems of social actions and practices. Due to the national emergency, deep principles related to both the rights of individuals and government are altered. In this atmosphere of crisis, the telephone and telegraph industry are mobilized into the war effort, and the private property concept is violated through the take-over by the government of the entire communications network. In addition, the principle of fragmented governmental authority is transformed, and centralized government commands the ordering of society.

While the war crisis allows for the altering of existing processes of social existence, once the War is over, and the threat to the national ontology is removed, we see a return of the previous pattern of social development. Once again, the underlying principles of private property rights are restored within the telecommunications industry, along with a return of the traditional governmental fragmentation of authority.

In addition, though, to the return of previous principles of social practices and systems of existence, we also see the further extension of the engineering prestige within both the broader society and the telephone and communications industry. The success of the United States in the First World War is credited to not only the Army and Navy of the United States, but also to the engineering culture which brought the methods of engineering science to play in the mass mobilization of the society.

In this atmosphere of praise for scientific rationalism, both the private and public sector advance the concept of decision making based on facts and efficiency. In addition, the principles of economics and statistical research are advocated as the basis for selecting choices of action. Both government and business actions are now seen as based on rational data rather than public choice, and social engineering is now accepted into the frame of normative knowledge within the society as the correct manner for allocating both resources and legitimacy within the both the governmental and industrial arenas.

### **Unintended Consequences**

The failure of the nationalization of the telecommunications industry resulted in a return to the balance of regulatory authority between the Federal and State levels of government that had been

developing prior to World War I. But the return to the constitutional separation of authority was short lived, and by the late 1920s was once again placed in a potential area of conflict.

The passage of the Radio Act of 1927, and the creation of the Radio Commission, led to the intended consequence of bringing order to the development of radio broadcasting within the United States. Under the Commission's direction, allocation of spectrum, power of broadcasting, and oversight of hours of operation, led to an expansion of radio broadcasting in the United States. But the authority for regulating this area of telecommunications was exclusively Federal.

The unintended consequence, though, of the Act was the legitimization of the communication separation reached earlier under the contracts signed between A. T. & T. and the other members of the Radio Patent Pool. The artificial distinction between wire based and wireless communications, and the development of separate bodies of law to regulate them, would only last as long as the technological platform for communications remained separate. If, in the future, the technological platform of either industry crossed over into the other industry, conflict would arise as to which body of regulatory and general law would oversee the new communications platform, and which level of authority, State or Federal, had the right to exercise control.

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