A Comparative Analysis of the Early History of the Southern and Northern Telephone Systems

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Thomas P. Hughes, in his important work on electrical power, notes how regional differences affected the evolution of technological systems in the United States, Great Britain, and Germany [3, pp. 404-08]. For Hughes, technology is not a single, autonomous device, but a complex cultural artifact. Technological systems emerge from the interaction of the artifact and its regional environment. My work on the early history of the telephone in the South confirms this view. But I maintain that regional entrepreneurial styles also shape the development of large-scale systems.

In the early history of the telephone, differences in entrepreneurial style marked the evolution of these systems in the North and South. The growth of the southern telephone business was the product of conflicts between indigenous agents, who held one view of telephone development, and businessmen from the North and West, who attempted to foster another view. Southern agents, in contrast to their counterparts elsewhere, resisted technological and organizational innovations. This would have inhib-

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ited telephone growth but for the crucial work of a small group of outsiders, whom I identify as cross-cultural entrepreneurs. Combining northern technology with southern conditions, these men devised a new entrepreneurial strategy to bring the telephone to the South. By making an important organizational innovation, they opened up new channels of resources for the underdeveloped region.

Problems in the southern telephone industry began early. In 1877, Gardiner G. Hubbard, trustee for the Bell telephone patents, had trouble finding southerners interested in promoting the new device in their region. At the same time in New England, Hubbard was deluged with requests by eager entrepreneurs willing to try and make a go of the new business. Between 1877 and 1880, sixty-three agents worked in the towns, cities, and villages of New England, wrestling with the problems of marketing the new technology. In the South by contrast, only three men devoted their time and capital to the venture. Bell Company records indicate that only three more ever bothered to apply [4].

This initial lack of interest on the part of the South is difficult to explain. By 1877, word of the telephone had reached the region, carried by newspapers and informal channels of information. It appears to have reached the Middle and Far West, even in agricultural areas, quite quickly. Capital shortages in the South cannot explain the region's poor response either. Though venture capital was no doubt scarce, the telephone did not require a large expenditure of funds at this early stage.[2] Agents of the Bell Company paid an advance of two dollars on telephones rented and bought supplementary equipment such as magneto bells for fifty cents apiece [2, pp. 27-28]. In the early years of the business, before the invention of the exchange, the telephone was used mainly as a point-to-point form of communication. Customers themselves bought and set up poles and wire. Astute

[2]The system was set up to encourage small capitalists. The greatest expense, poles and wires at $100 to $150 per mile, was paid by the customer. Agents could procure such supplies through one of many electrical supply merchants.

agents could earn additional profits by selling such equipment to their customers.

The characteristics of New England agents demonstrate that barriers to entry in the new industry were quite low. The majority of New England agents were small entrepreneurs, not wealthy capitalists [4]. They did not have substantial resources of their own and depended on family, friends, and business associates for the funds they needed. Often wealthy customers took an interest in telephone promotion. Judging from the background of early New England agents, technical expertise was not a major requirement either. Some of them had been telegraph agents or electrical supply merchants; many seemed to have had an interest in science and electricity. But few were drawn to the telephone from secure posts in related industries. The telephone industry attracted instead those in search of an opportunity, men on the make prepared to carve out a place for themselves in an unproved business.

The absence of a similar class inhibited the growth of the new industry in the South. Early Bell agents Richardson & Barnard, established Savannah commission merchants, approached telephone promotion with caution. Afraid to commit too much capital and time to the venture, Richardson & Barnard placed the telephone low on their list of priorities. They had trouble giving it more attention because they could not find others willing to act as their subordinate sub-agents. Unpressured by eager southern entrepreneurs ready to enter the field, they had little incentive to change.

The Bell Company itself could do little to correct the southern situation. In the early years the firm was little more than a patent-holding company. It had neither the capital nor the personnel to engage directly in telephone promotion. Gardiner Hubbard's original strategy had been to appoint agents with money and business contacts who could promote the telephone on their own. In this way he hoped to induce capitalists to support the new business. Early agents were granted broad territories and encouraged to appoint sub-agents. They were to act as general agents and were to perform top-level managerial and entrepreneurial functions.

In New England Hubbard's strategy worked fairly well. In large cities such as Boston, substantial businessmen with capital and connections served as telephone promoters; in smaller towns and villages their sub-agents or independent field agents "pushed" the telephone, cultivating a more reluctant clientele. The telephone required careful promotion in more remote markets, and this placed great responsibility on the subordinate field and sub-agents. Working closely with the business community of their towns, they established the direct contacts with customers and investors necessary to make the telephone a commercial success. They devoted their full time to the business and worked within a restricted territory, usually a town or county. They extolled the value of the telephone to the local business elite and secured the support of regional manufacturers who needed lines from their factories to wharves, warehouses, or nearby towns. Within towns these agents found local merchants -- grocers, coal dealers, pharmacists -- who wanted to use the telephone district system to communicate with their customers [5, pp. 170-75].[3] The work of this ambitious group produced a healthy New England telephone business by 1878.

The few southern agents who did join the Bell Company in its first few years were much less successful than their New England counterparts in these endeavors. Richardson & Barnard made a noticeably poor showing in their territory of Alabama and Georgia. Working part time, they refused to venture their own capital resources in the business as Hubbard had requested. Nearby, agent C. A. Cary covered the territory of western Alabama with little more success. He ignored potential telephone

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[3]The telephone district system, similar to that of the telegraph, allowed customers to call a central office. From there their messages could be relayed to freight, livery, and cab companies. As the switchboard had not yet been invented, direct communication between customers was not possible.

markets like Birmingham and engaged in a series of dilettantish attempts at promotion [14].[4] His ideas lacked a systematic focus. Neither Richardson & Barnard nor Cary undertook the sort of close, community marketing that the New England field agents did. As a result, these two Bell agents had rented only about 180 telephones by 1878 [13; 24].

In Virginia, agent C. P. E. Burgwyn's attempt at telephone promotion was even poorer. Working in a populous state with the region's largest city, Richmond, Burgwyn nevertheless failed to rent a single telephone during his tenure. Like many of his successful counterparts in the North, Burgwyn was young, technically trained, and in search of a business opportunity. Yet he, too, proceeded cautiously, refusing to devote full time to the telephone. Like his fellow southern agents, he failed to combine forces with the indigenous manufacturing, mercantile, or political elite, leaving him with little financial support for his enterprise. Such valuable patronage would also have helped him secure municipal contracts, which were an important source of early telephone demand. Without such support, Burgwyn lost valuable opportunities to competitors such as Western Union [20].[5] He also found himself short of capital and had to avoid paying his debts to the Bell Company [20; 24]. These conditions reinforced his conservatism.

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[4]His schemes included connecting cotton buyers in Selma and Montgomery, stringing a cable across Mobile Bay to an island resort, and leasing telephones to mining firms in Mexico and Brazil.

[5]Western Union had entered the telephone business through its subsidiary, the Gold and Stock Company. This firm marketed Elisha Gray's harmonic telephone through its subsidiary, The American Speaking Telephone Company. Western Union committed its capital to a pitched battle with Bell before 1880. Burgwyn found them a formidable adversary in Virginia. He claimed they used their influence to prevent him from renting Bell Telephones to the Danville Railroad

Burgwyn perceived more clearly than either Richardson & Barnard or Cary the requirements of early telephone promotion, but he simply lacked the personal skills and salesmanship to fulfill them. He tried to interest municipal governments, railroads, and manufacturers in the new device; he tried to exploit opportunities in business and population centers such as Richmond and Norfolk. Though he understood that he had to innovate to make the new technology a commercial success, he evidently did not know how [20]. This makes his failure all the more significant, for it suggests that the limitations on southern entrepreneurship ran deeper than simply misperception of opportunity.

From the record of Richardson & Barnard, Cary, and Burgwyn, it appears that southern failure in the early telephone industry had two causes. First, few southern entrepreneurs bothered to participate in the business. Low participation in the South meant that those who did enter the industry had little assistance. Enjoying a sheltered position, southern agents grew complacent. Working only part time, they tended to place their other, more clearly remunerative, opportunities ahead of the telephone. The second cause, especially noticeable in the case of Burgwyn, stemmed from the personal qualities and entrepreneurial abilities of the agents. Even when they appreciated the requirements of telephone promotion, they could not make the crucial innovative moves which would open up the market for the new technology.

These failures were highlighted by the arrival in 1878 of James Ormes, a young, Massachusetts promoter who took over Virginia after Burgwyn's resignation [11, 25]. Ormes succeeded where the Virginian had failed. He rented telephones to mills, municipalities, and individuals, and impressed newly appointed Bell general manager Theodore Vail with his willingness to fight Western Union competition [25, 27]. But Ormes's greatest accomplishments came after his decision to embrace an important technological innovation -- the telephone exchange.

The telephone exchange, which had been invented more or less simultaneously in several places in 1878, did not involve a great leap forward in technical sophistication, but its potential impact on the telephone market was enormous. The new technology altered the structure of demand. It geometrically increased the number of connections a subscriber could make, greatly augmenting the telephone's utility. The exchange also made the telephone most valuable in central places and cities, where lines could be easily and cheaply hooked into the central office. Demand had been scattered under the private-line regime, but with the exchange it was concentrated enough to make even a single town a profitable territory for telephone promoters and agents.

At the same time the exchange altered the nature of telephone marketing. The equipment increased fixed capital costs and pushed the business toward a corporate form of organization [9; 12; 2, p. 59]. Local exchange companies owned their switchboards, poles, and wire; the consumer only rented the telephone itself. This made it impossible for even a wealthy agent to act alone. He needed new sources of capital and credit to promote even one good-sized city exchange [2, p. 69].

Under these conditions, the agency structure began to change. As it did, agents in both the North and the South resisted. Older general agents in both places fought the reorganization of their franchises. These men had been granted a large territory and promised a supervisory role. But the telephone industry's need for new resources reduced their roles and increased the roles of their sub-agents. The latter group, working closely with the business elite of towns and cities, did the actual work of exchange promotion and raised the needed capital. The Bell Company allied itself with innovative entrepreneurs ready to embrace the new technology. Through its control of patents and licenses, it provided top-level coordination. The general agents had neither the capital nor the managerial resources to direct such a system.

Though resistance was common among northern and southern agents, the process of change was significantly different in the two regions. These differences reveal the contrasting entrepreneurial styles of the North and South. In the South indigenous agents refused to employ the new technology. Unchallenged within the South, they stubbornly held onto their original franchises. Only through the efforts of cross-cultural entrepreneur James Ormes were agents Richardson & Barnard persuaded to give up their franchise and accept a more limited role. But Ormes found little help within the South for his efforts and had to turn to others from outside of the region for the capital he needed to promote telephone exchanges.

In New England the key innovators in the telephone exchange business were drawn from New England itself. Often they were Bell sub- agents and they provided pressure from below to unseat well-entrenched general agents who fought change. Faced with this challenge, many northern agents complained, but quickly accepted the reality of new conditions.

William Hayward, a New York-based telephone agent for Connecticut and western Massachusetts, was the most reluctant of the original New England agents to change. In 1877 he wrote to Bell admonishing the company for interfering in his relations with his sub-agents [23]. But through the innovative work of Thomas Doolittle in Bridgeport, Charles Cheever in Boston, and George Coy in New Haven, towns and cities in Hayward's territory quickly embraced the exchange technology. Hayward was convinced to turn in his territorial franchise for stock in the New Haven Exchange Company. As it turned out, this was a highly profitable move. But to make it Hayward had to rethink the telephone business and relinquish his original -- and very generous -- contract. He complained to Theodore Vail that his recompense was insufficient for the work he had undertaken and the risks he had borne [23]. But, in fact, Hayward had become superfluous. Cheever, Doolittle, and Coy were soliciting capital, signing up subscribers, and installing the new equipment. There was little room for a territorial overseer like Hayward in this business.

Henry Cozzens and his partner in the Rhode Island manufacturing firm of Cozzens & Bull approached the decline of their Bell agency in a different fashion. They made a valiant effort to change with the times and preserve for themselves an independent role. Cozzens & Bull bought equipment and began exchange operations in Norwich. But when they tried to maintain their intermediary position between Bell and the telephone customers, Theodore Vail quashed their efforts. He insisted they adhere to standard practices and rates. To their request that they be allowed to build their own intercity line between Norwich and New Bedford, he replied with a firm "no" [21]. Vail had already foreseen the birth of long-distance telephony, and he wanted to reserve the right to make intercity connections for Bell. Thus, in this case, rather than face reluctant agents, Vail had to retain aggressive ones from pushing too far.

Agents Stearns and George exhibited similar insight into the changing nature of the telephone industry. Abandoning their increasingly worthless private line franchise, they executed a district and exchange contract with Bell for Haverhill, Massachusetts [22]. As early agents in the important Massachusetts territory, they had been granted a large franchise and the right to appoint subordinate sub-agents. Tempting as it was to retain these rights, Stearns and George quickly made a strategic move into the exchange business and accepted a more limited role. But by embracing the new technology and reorganizing their business, they established for themselves a secure position in the rapidly changing industry.

James Ormes would have been pleased with responses like these from his fellow southern agents. Instead, he found them uncooperative and universally resistant to change. Unable to gain their financial or entrepreneurial support to promote exchanges in the South, he turned to outsiders. In a series of moves culminating in the formation of the Southern Bell Company, Ormes overrode the reluctant southern agents and reorganized the southern business in a manner that brought new resources and the new technology to the region.

In the first step of this process, Ormes secured his position in the South. After being appointed agent for Virginia, Ormes had quickly taken up additional duties as general district and exchange promoter for the seven seaboard southern states and part of West Virginia. Early on, it was not clear where Ormes's responsibilities began and those of the existing agents ended. Richardson and Barnard tried to protect their franchise from Ormes's encroachment. Even Theodore Vail himself admitted that they had legal title to a monopoly of the Bell telephone business in their territory. Ormes, thus, had to move very carefully as he set about promoting exchanges.

It is clear, however, that almost from the start Vail and Ormes planned to spurn the existing southern agents and remodel the southern telephone enterprise on their own [25, 28]. Burgwyn's failure, the poor response of southern capitalists, and the reluctance of Richardson and Barnard to move wholeheartedly into the exchange business had convinced Vail that southerners made bad telephone promoters. Ormes, an ambitious man who was covertly contemptuous of the South's business class, concurred with the Bell general manager [17]. Profit and prejudice went hand in hand as Vail and Ormes sought a way around the contracts of the early southern agents.

Their first tactic involved a series of quiet flanking maneuvers against the southerners. Vail assisted Ormes in capturing important big city markets such as Atlanta, though technically some of them fell within Richardson and Barnard's territory [27, 10]. Vail made invidious comparisons between Richardson and Barnard's failure to establish an exchange in their home town of Savannah and Ormes's success in this same endeavor in Richmond and elsewhere. He cautioned the southerners that by letting opportunities in the district and exchange business slip by, they endangered their status as Bell agents [28]. Vail's warning was somewhat disingenuous, however, for he had already written to Ormes, "Now is your chance to go in and occupy the territory" [28].

The spur of competition had little effect on Richardson and Barnard. Convinced that "there is a great deal of difference between doing business in the South than in the North," they ignored the new technology and jealously guarded their territory

[18]. Their reluctance to change resulted from their entrepreneurial outlook; they could not foresee the growth in demand for the new type of telephone service. Ormes had clearly demonstrated that opportunities existed. He showed that the South had towns equivalent to those in New England that were profitable centers of business. The Savannah merchants could not accept, however, the necessity of the radical organizational changes that the new business demanded.

The technology of the exchange called for organizational changes of a sort which aroused the deepest fears of southern entrepreneurs like Richardson and Barnard. Exchanges required a full-time effort in what was still an unproven business. They needed large initial outlays of capital and had to be run by incorporated firms managed by others. They forced agents to move aggressively out of their locality to seize potential centers of demand quickly. In a world of uncertainty, where information was difficult to obtain and capital markets operated imperfectly, such requirements seemed daunting indeed [1, 6]. This type of activity was quite unfamiliar to Richardson and Barnard. The southerners discounted the future profits of the telephone by these factors and avoided the difficult and risky strategy Ormes had formulated.

Rather than continue his attempt to induce reluctant southerners to assist him, Ormes solicited support from outside of the region. From the North and West he found the needed resources to promote the telephone. With Vail's assistance, he affected an important early compromise with Bell's chief competitor, Western Union, and created the nation's first regional telephone operating company -- Southern Bell. Under Ormes's leadership the backward South turned innovator. Adversity had prompted from this cross-cultural entrepreneur an ingenious response to the limitations of the southern economy.

The founding of Southern Bell came in two large steps. In 1879 Ormes attempted to secure his supplies for the telephone through the Baltimore manufacturing firm of Davis & Watts. Early Bell telephone agents for Maryland, Davis & Watts also had been selected by Bell as one of seven regional telephone equipment manufacturers [7]. Ormes, it appears, envisioned a mutually beneficial relationship between the South and the strategically placed manufacturers. They would supply working capital, technical expertise, telephone equipment, and, perhaps, telephones themselves to the South [17, 27, 29]. The South would provide a steady market for their output. But this arrangement hinged on a controversial point -- the right to manufacture telephones.

While some members of the Bell organization apparently considered granting this right to the regional manufacturers, others like Vail resisted [26, 27, 29]. Vail feared that letting control of the valuable telephone patents out of the parent company's hands would place them in danger and encourage infringement.[6] Bell's existence depended on its fragile legal claim to the telephone. As a result, the company never decentralized telephone production; it remained in Charles William's overburdened Boston shop until 1881 when Bell acquired an interest in Western Electric. The regional manufacturing system and Ormes's plans collapsed without the inducement of profits from telephone production.

Though this particular effort failed, Ormes had learned a valuable lesson. Only a few months later he established contact with Delancy Louderback, a representative of Western Union's subsidiary, the Western Electric Company. With Louderback's assistance and the help of others, mostly nonsoutherners, Ormes quickly secured exchange contracts in major New South cities [8]. This was a bold move, but a logical extension of those he had tried earlier. Ormes captured the most promising centers of demand, applying a consistent and systematic entrepreneurial strategy. Following existing commercial pathways, Ormes's regional plan produced a self-reinforcing telephone demand; one after another towns in competition for business adopted exchanges.

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[6]This issue is somewhat unclear. Smith [7] claims Bell never intended to let control of the patents out of its sight; but letters written by New England Telephone Company Treasurer Thomas Sanders suggest otherwise.

Ignoring the franchise of Richardson and Barnard and spurning their cautious approach, Ormes took the South by storm. Though exchange interconnection was not yet possible, Ormes's regional strategy laid the foundations for a telephone system.

Without new resources, however, these contracts remained just pieces of paper. Though Ormes had established contact with another electrical manufacturer, he had as yet received no capital to build his exchanges. In the second stage of the process, therefore, Ormes brought together the vast resources of Western Union (owner at this time of Western Electric) and the Bell telephone in the famous tripartite contract of 1879 [17]. In this agreement Western Union consented to withdraw from the telephone business of the South. In exchange it received 50-percent ownership in a firm to be founded by Ormes and his partners, under Bell license.[7] Bell itself received no interest in this new company, but its telephones would monopolize the southern market. Bell also agreed that its telephones would not be used to transmit messages for hire. As understood by Western Union, the agreement left the intercity communications business in the telegraph firm's hands. This important contract became the basis of a national settlement between Bell and Western Union, a settlement that gave Bell a virtual monopoly of telephony in the entire nation. Ormes, in compensation for his promotion efforts, received 37.5-percent interest in the new firm. He now had found the resources to give life to his entrepreneurial vision.

It was only a short step from this agreement to the founding of Southern Bell, and on 1 January 1880 the new firm began operations. Franchise stock was divided among the signers of the Tripartite, as had been agreed. Ormes sold some of his immediately, apparently to pay back the Boston-based supporters of his early efforts [30]. These capitalists and others from the city

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[7][17] The agreement also set up a system of reciprocal message exchanges between Southern Bell and Western Union. However, this never amounted to a large percentage of the business.

added more capital to the firm in the following two years.[8] Western Union continued to support the fledgling southern enterprise with new infusions of capital. Its managers headed Southern Bell's board of directors for a number of years. In 1880 Southern Bell secured its position in the South by granting Richardson and Barnard stock for their exchange in Savannah [30]. Southern Bell remained the sole promoter of the telephone in the South until the rise of independent companies in 1894.

This story is an example of how resources of capital, technology, and entrepreneurship move from one region to another. Never a simple process, in the case of the telephone in the South the transfer was almost blocked by indigenous resistance. They key to removing such inhibitions lay in the work of cross-cultural entrepreneurs such as James Ormes. He formulated an innovative strategy to promote the telephone and forged a new organization to carry out his plans.

Significantly, Ormes's ideas diverged markedly from those of native southerners. Ormes embraced the new technology of the exchange and aggressively sought resources to promote it. Unlike Richardson and Barnard, he was not inhibited by risk and, as a professional promoter, was ready to devote his full time and effort to the task. Ormes also differed from his fellow southern agents in another important way -- while he operated effectively in the southern economic setting, he was not tied to the South. Not having embraced the region's culture, he was free from its constraints.

Because of their outlook, southerners approached the telephone business in a manner much different than Ormes. They tried to avoid risk and sought security in local investments, an

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[8][19, 11] Apparently Ormes recognized that his talents lay in promotion and organization, not day-to-day management. He moved on to Europe to head Bell's Oriental Telephone Company, which was attempting to rent telephones in the East. Ormes died in Switzerland in 1895.

understandable reaction to uncertainty. Southern capitalists did not promote far-flung enterprises, for their purview did not extend beyond their local economy. Nearby investments were safer than others because they could be carefully supervised. Such investments were also an easy way for southerners to diversify, spread their risks, and leverage their total income. A southern landowner, for example, could expect his capital to pay dividends when invested in local projects that increased the demand for and value of his land.[9]

Ormes was not fettered by such considerations. He calculated his profits strictly from the potential of rapid telephone development. Not wedded to a local economy, he surveyed his entire territory for the most likely markets and proceeded to enter them in systematic fashion. In essence, his strategy severed the connection between the telephone business and the constraints of the local economy. This was a necessary step in the creation of a national telephone network.

The early history of the telephone indicated the general nature of the problem faced by builders of large-scale business systems. National organizations like Bell, through their ability to mobilize resources, produce technological advances, and promote innovative entrepreneurial strategies, can have an important impact on remote regional economies. But regional resistance to change and geographical variations in supply and demand conditions have the potential to inhibit the growth and scope of such organizations. The result of these conditions was, in this in-

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[9]Southern merchants and landowners did invest in industry, but generally in nearby enterprises which were small in scale and simple in structure. They fitted their investments into a complementary pattern that offered security and diversity. This localistic outlook apparently spurred the boom in railroad branch-line construction in this era. For Ormes and the Bell Company, dependent on local funds and unable to tap the larger national capital market, this mentality made it difficult for them to mobilize southern resources.

stance, a conflict between local and national interests. This conflict was resolved by the pioneering work of cross-cultural entrepreneur James Ormes. With outside resources he created a new type of organization to break down southern resistance to change. This was the first in a series of conflicts that had to be resolved as the Bell firm gradually developed the national telephone network.[10]

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[10]It is not incidental that Southern Bell was incorporated in New York and maintained its headquarters there until well into the twentieth century. Though staffed by southerners in the South, its top-level personnel were often nonsoutherners like E. J. Hall, the insightful AT&T, vice president. He served as Southern Bell president between the crucial years of 1898 and 1909.

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TWENTIETH CENTURY PROBLEMS AND OPPORTUNITIES