Communications Networks in the United States

From Chappe to Marconi

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ABSTRACT

The history of communications in the United States is a relatively uncultivated field. Generalizations abound yet conceptual frameworks are few. This essay contends that the history of the country's dominant communications networks can be understood as a chapter in the history of government-business relations, or what contemporaries would have called political economy, in the long nineteenth century that began in 1828 and ended in 1914. The three most important communications networks -- that is, the mail, the telegraph, and the telephone -- were shaped not only, or even primarily, by technological imperatives and economic incentives but also by the regulatory regimes in which they were embedded.

The history of communications in the United States is a relatively uncultivated field. Generalizations abound yet conceptual frameworks are few. This essay contends that the history of the country's dominant communications networks can be understood as a chapter in the history of government-business relations, or what contemporaries would have called political economy. In the long nineteenth century that began in 1788 and ended in 1914, the three most important communications networks -- that is, the mail, the telegraph, and the telephone -- were shaped not only, or even primarily,
by technological imperatives and economic incentives, but also by the regulatory regimes in which they were embedded.¹

The adoption of the federal Constitution in 1788 marked the beginning of a new epoch in US public life. The federal Constitution transformed the United States into a representative republic in which the creation of an informed citizenry became a civic ideal.² This new civic mandate for political communications was institutionalized with the Post Office Act of 1792, a landmark in US communications policy and one of the most far-reaching pieces of legislation to be enacted in the early republic.

The year 1914 is a logical end point for the epoch that began in 1788. This year marked the start of World War I, an event destined to have major consequences for US communications. In addition, and no less significantly, it witnessed the apogee of the long campaign, mostly forgotten today, to transfer the ownership and operation of the telegraph and telephone from private corporations to a public agency.³

The heyday of the government ownership campaign was brief. Following the takeover by the federal government of the telegraph and telephone in 1917, government ownership became the target of a withering critique. This critique popularized the still-controversial idea that communications networks were best owned and operated by corporations rather than the state. The normalization of the oft-contested idea coincided with the commercialization of radio as a broadcast medium, a circumstance that would have major implications for US communications in the decades to come.

Historians of communications have long characterized the commercialization of the electric telegraph in the 1840s as a turning point in world history. In so doing, they follow a convention that dates back at least as far as 1907, when historian Henry Adams ventured this claim in his celebrated autobiographical memoir, The Education of Henry Adams. Among the many social scientists to endorse this convention have been the geographer Allan Pred (1973, 1980) and the sociologist Anthony Giddens (1987).⁵ Among historians of communications, it has been an article of faith since 1973, when James W. Carey (1989) explored its implications in a much-cited essay, “The Telegraph and Ideology.” Carey’s thesis was elaborated on by his student Richard A. Schwartzlose (1989, 1990) in the first volume of his two-volume survey of the nineteenth-century newsbrokerage business, as well as by Menahem Blondheim (1994) in his monograph on the rise of the New York Associated Press.⁶ This convention would reach a wide popular audience in the 1990s through a long-running exhibit at the Smithsonian Institution on the “Information Age” (Tenner, 1992).⁷

The bifurcation of the history of US communications into two epochs – pre-electrical and post-electrical – is rendered intuitively plausible by the related presumption that, in the pre-electrical epoch, long-distance communications were primitive, irregular, and slow. This presumption is a lecture hall perennial. Had transatlantic communications not been so limited, or so it is often observed, the Battle of New Orleans in 1815 would never have been fought, since the protagonists would have known that the Treaty of Ghent ending the war had already been signed.⁸ While this
presumption is superficially plausible, it is contradicted by much of what we know about long-distance communications in the decades between 1788 and 1840. Much depends on the frame of reference. If one compares the 1788–1840 period with the years that preceded it, rather than with the years that it preceded, it no longer appears quite so backward (John, 1994). The transformation of the informational environment in the early republic was so dramatic that Pulitzer Prize-winning historian Daniel Walker Howe (2007) has contended, drawing on a raft of specialized studies, that it constituted a “communications revolution.” (For a survey of historical writing on the “communications revolution” concept, see Behringer, 2006; John, 1994).

In no realm was access to high-speed, long-distance communications more valued than in trade. For merchants dealing in agricultural staples, access to up-to-date information on market trends, known colloquially as “fresh news,” had long been a priority. The most highly coveted commercial information was the price of cotton and wheat in Liverpool, Le Havre, and the other leading commercial entrepôts of Europe (Albion, 1932, 1939; John, 1994). High-speed long-distance communications were so highly valued that, in 1825, a government administrator (Postmaster General John McLean) committed the government to outpacing any non-governmental carrier in the conveyance of information on market trends (John, 1995).

Political information was also in high demand, especially in times of great uncertainty. During the nullification controversy in South Carolina in 1832–1833, for example, the editors of a prominent New York City-based commercial newspaper – the Journal of Commerce – invested heavily in a Washington, DC–New York City horse express in the expectation that the information it yielded would enable them to outpace their rivals in the publication of dispatches originating at the seat of power (Blondheim, 1994, p. 19).

The electric telegraph is sometimes lauded as the first medium to divorce transportation from communications. Here, too, however, the reality is more complicated. The differentiation of transportation from communications had been a central element of postal policy in the United States ever since the establishment of the first mail distribution centers around 1800 and would be a defining feature of the optical telegraphs established shortly thereafter in Boston and New York City (John, 1995, Ch. 2; 2010a, Ch. 1).

The most elaborate optical telegraph of the age was invented in 1792 in France. It was the brainchild of Claude Chappe, a government functionary who had been enlisted by the revolutionary regime to centralize the circulation of information in Paris. The hub-and-spoke network that Chappe established was far more elaborate than any optical telegraph in the United States (Holzmann & Pehrson, 1995; Headrick, 2000, Ch. 6). In fact, the US-based optical telegraphs that Chappe’s innovation helped inspire are best characterized as lines rather than networks, since they had not been designed to unite the country, like their French predecessor, but rather, to link the North Atlantic sea lanes with an Atlantic seaport. Despite these limitations, the US optical telegraphs were a hallmark of the informational environ-
ment in the pre-1840 period. Many newspapers from these years, for example, carried the word “telegraph” on their masthead, a reminder of the extent to which the existence of the optical telegraph was common knowledge long before the coming of the electric telegraph. (For a related discussion, see Crain, 2003; John, 2010a, Ch. 1.) The optical telegraph was unquestionably one of the “greatest improvements of modern times,” declared linguist John Pickering in 1833 in a public lecture before the Boston Marine Society: “no means of conveying intelligence can ever be devised that shall exceed or even equal [its] rapidity [. . .] for with the exception of the scarcely perceptible relay at each station, its rapidity may be compared with that of light itself.” Unfortunately; Pickering lamented, many of the technical features of this remarkable medium remained little-known: “Every one of us hears and reads of news by the [optical] telegraph, from day to day, without ever considering, much less understanding any thing of the principles of this mode of communicating intelligence” (cited in John, 2010a, pp. 14–15).

The most important high-speed, long-distance communications medium in the United States in the pre-1840 period was not the optical telegraph but the mail. The enactment of the Post Office Act of 1792 created what one might call a republican regulatory regime for the circulation of information on public affairs. For the founders of the republic, the creation of an informed citizenry was far too important to be left to the vagaries of the marketplace. Instead, they entrusted this task to a government agency: the Post Office or what would soon become known as the Post Office Department. The mail became a “system” not only or even primarily because of the federal government’s organizational capabilities, but also, and more fundamentally, because lawmakers had invested a government agency with a civic mandate to facilitate the low-cost conveyance of information on public affairs (John, 1995). To institutionalize this civic mandate, the Post Office Act of 1792 permitted certain kinds of publications – including, in particular, newspapers – to circulate in the mail at rates far below the cost of their conveyance. In addition, and no less remarkably, this law permitted publishers to enter their publications into the mail at any post office in the country, creating a polycentric informational environment that set the United States apart from the nation-states of Europe (Brown, 1989; John, 1995; Kielbowicz, 1989; Starr, 2004).

James W. Carey (1989) has peremptively characterized communications policy in the United States as favoring the “transmission” of information over vast distances. Carey aptly identified one of the defining features of US communications, yet left unspecified the mechanism by which this policy was translated into practice. The most important of these mechanisms in the early republic was the clause of the Post Office Act of 1792 that transferred control over the designation of new post routes from the executive to the legislature. Ordinary citizens craved access to postal facilities and lawmakers were quick to oblige. (For a reconstruction of the postal petitioning process, see John & Young, 2002). By 1828, the year in which Andrew Jackson defeated John Quincy Adams to become the sixth president of the United States – an event often hailed as a landmark in the democratization of US electoral politics –
postal administrators had established hundreds of post offices and post routes that could not possibly cover their cost.9

The civic mandate of the Post Office Department had well-defined boundaries. Though the federal Constitution authorized Congress to “establish” post roads, this mandate was confined, at least in the states, to the designation of thoroughfares but not their construction. The road-building ban helps explain why stagecoach passengers in the early republic complained so often about the bumpiness of their ride. The Post Office Department had the authority to subsidize the operation of stagecoaches, but not the thoroughfares over which they ran (Holmes & Rohrbach, 1983; Jaffe, 2010; John, 1995, Ch. 2). In the territories, in contrast, the federal government’s road-building mandate was more expansive; in fact, the construction of roads was sometimes justified, at least in part, as necessary for the conveyance of the mail (Hudson, 2010; Southerland & Brown, 1989).

The primary limitation on postal policy in the early republic was fiscal. Lawmakers by 1800 had abandoned the presumption that the Post Office Department should return a surplus to the general treasury. In Great Britain, in contrast, fiscal considerations would remain important throughout the nineteenth century. The celebrated 1840 rate reductions known as “penny postage,” for example, would be justified in large part as a revenue-generating measure. US lawmakers had abandoned revenue generation by 1800. Yet not until after 1851 would they give up on the related idea that the Post Office Department should break even (Fuller, 1972, Chs. 2, 5). To balance revenue and expenditures without stifling network expansion, postal administrators became increasingly bold at asserting that the Post Office Department enjoyed a legally enforceable monopoly. The scope of this monopoly, in their view, embraced the conveyance on a regular schedule of certain kinds of information, including, in particular, personal correspondence. Though the precise definition of this monopoly remained contested, few lawmakers challenged its constitutionality, and the courts mostly acquiesced (John, 2004).

The most expansive feature of the Post Office Department’s civic mandate concerned the kinds of information that it had an obligation to convey at a cost that was sufficiently low so that this information would be accessible to the entire population. The most favored kind of information concerned public affairs; a preference—or in the language of media scholar Harold A. Innis, a “bias”—that spawned huge postal subsidies for newspapers, government documents, magazines, and the correspondence of lawmakers.

The Post Office Act of 1792 said nothing about the speed with which information was to be conveyed. Information on public affairs, after all, only slowly went stale. Commercial information, however, was a different matter. Here speed was often all-important, a circumstance that Postmaster General John McLean acknowledged in 1825 when he committed the Post Office Department to outpacing non-government carriers in the conveyance of information on market trends (John, 1995, Ch. 2). McLean’s gospel of speed furnished the rationale for the failed campaign of electric telegraph inventor Samuel F. B. Morse to graft his invention onto the Post Office
Department. Congress demurred and the telegraph was commercialized as a private enterprise, decisively severing the link between the government and the high-speed conveyance of information (John, 2010a, Ch. 1). Rapid delivery would remain a desideratum for postal administrators — and postal users — for decades to come. Yet never again could postal administrators boast that the mail was the *sine qua non* of speed.

The next major expansion in the civic mandate of the Post Office Department came in 1845. Goaded by irate users, and challenged by non-government carriers — the so-called “private expresses” — Congress significantly lowered the basic letter rate, an innovation that had the effect, as was its intention, of expanding the mandate for the low-cost conveyance of the mail to embrace information on personal affairs (Henkin, 2006; John, 2010a, Ch. 1). In Great Britain, postal administrators rationalized the low-cost conveyance of information on personal affairs (“penny postage”) as a fiscal measure that would increase the revenue that its post office returned to the Crown. In the United States, in contrast, this policy (“cheap postage”) was justified more broadly as a public good.

The electric telegraph would be commercialized in a regulatory regime quite different from the regulatory regime in which the mail had evolved. Yet this was by no means obvious to the first generation of telegraph promoters. These promoters, led by Morse’s business agent, Amos Kendall, envisioned the new medium as a creature of the state. And, in particular, Kendall presumed that the telegraph, like the mail, should be operated by the Post Office Department under centralized control. To bring this about, Kendall lobbied Congress to buy out Morse’s patent rights, which he construed as a federally guaranteed quasi-monopoly grant. When Congress demurred, Kendall transformed Morse’s patent rights into franchises that he licensed on a geographical basis (John, 2010a, Ch. 3).

The “supervening necessity” for the establishment of a telegraph network in the 1840s was not the railroad — as it had been in Great Britain, according to media scholar Brian Winston (1998, Ch. 1) — but, rather, merchant demand for commercial information on market trends. The commercial information that Kendall presumed to be the most valuable concerned the market price in Europe for cotton and wheat, the same kind of information whose conveyance Kendall had tried to facilitate a decade earlier as postmaster general under Andrew Jackson (John, 2010a, Ch. 3).

The electric telegraph is sometimes called the “Victorian Internet” (Standage, 1998). This characterization is superficially apt, since the electric telegraph and the Internet each utilized electricity as a motive power and each relied for their operation on a cadre of highly skilled “online” technicians. Yet it is both anachronistic and misleading. In reality, the electric telegraph and the Internet have remarkably little in common. Though the telegraph network was, in theory, open to anyone, in practice, telegraph rates were sufficiently high, and telegraphic facilities sufficiently limited, that it remained restricted to an exclusive clientele. Surprisingly little would change in the period between the opening of the first telegraph office in 1845 and the restructuring of the telegraph network in 1910. To the extent that a “Victorian
Internet" existed in the nineteenth century— that is, a medium designed to provide the entire population with the necessary facilities to circulate point-to-point information over long distances and at high speed—it was not the electric telegraph, but the mail.

Kendall’s patent-rights-oriented business strategy sparked a concerted opposition that doomed it to collapse. Rival promoters ridiculed Kendall’s plan to make Morse’s patent rights the cornerstone of a legally sanctioned monopoly, newspaper editors warned about the implications of the new medium for commerce, and lawmakers concurred (John, 2010a, Ch. 3).

Among Morse’s most pointed critics were the proprietors of the principal daily newspapers in New York City. Troubled by the potential implications of the electric telegraph for the newspaper business, they banded together to form a news brokerage called the New York Associated Press (NYAP). Contrary to what seems to be a common impression among historians of communications, the beginnings of the NYAP predated the Mexican–American War. A primary catalyst was the challenge to the New York City newspaper press posed by Samuel Colt, a Morse licensee who, in 1845, established the first electric telegraph line in New York City. Colt’s electric telegraph, like the optical telegraph that it supplanted, linked the North Atlantic sea lanes to the city’s merchant elite. It was designed; or so Colt boasted in a promotional broadside that he issued explaining its rationale, to supersede the New York City newspaper press by transmitting information directly from the sea lanes to the country’s major commercial centers, rendering the city’s newspapers irrelevant as a purveyor of up-to-date news (John, 2010a, Ch. 3).

The civic ideals that shaped the regulatory regime in which Morse’s critics emerged owed less to the republicanism of the lawmakers who founded the republic than to the antimonopolism of merchants, rival telegraph promoters, and the newspaper press. Each of these groups had by 1848 grown suspicious of the special privileges that lawmakers lavished on Morse and were determined to create a political economy in which market competition could flourish. Antimonopoly hastened the enactment of the New York Telegraph Act of 1848, a law intended to facilitate the entry into the telegraph business of insurgent promoters to compete against Morse. Similar antimonopoly laws would be enacted in the following few years in almost every state.

The regulatory regime that lawmakers established to coordinate the electric telegraph was not intended, like the regulatory regime it supplanted, to be coordinated by a single organization that was ultimately accountable to Congress. Rather, it relied on competition to ensure that no single company dominated the informational environment. So long as it was possible for new entrants to enter the business, or so lawmakers reasoned, no other legislation was necessary to protect the public good.

Among the beneficiaries of antimonopoly were the promoters who established Western Union, of whom the most successful was Hiram Sibley. Unlike Morse and Kendall, Sibley did not count on federally guaranteed patent rights to protect him against rival promoters. Rather, Sibley relied on the right-of-way privileges that state lawmakers had granted railroads under state law. By negotiating exclusive right-of-
way agreements with strategically located railroads, Sibley devised a business strategy that circumvented Morse's patent rights. Sibley’s business strategy would lead eventually to the emergence of Western Union as the country’s dominant telegraph company, an event that occurred in 1866.

The antimonopoly regulatory regime in which Western Union flourished presupposed the existence of rivals that would keep rates down and performance standards high. For this reason, the emergence of Western Union as the dominant network provider in 1866 was for many lawmakers a cause for concern. Among these lawmakers was Congressman John Sherman of Ohio. To check Western Union’s power, Sherman sponsored a major piece of legislation that would come to be known as the National Telegraph Act (1866). Neither Sherman nor anyone else in 1866 regarded Western Union as a “natural monopoly” that owed its dominant position in the telegraph business to technological imperatives and economic incentives. This is worth underscoring, since in the twentieth century this anachronistic characterization of the post-1866 telegraph business would become the conventional wisdom among business historians. The “natural monopoly” hypothesis, for example, figures prominently not only in Robert Luther Thompson’s *Wiring a Continent* (1947) but also in Alfred D. Chandler, Jr.’s *Visible Hand* (1977).

The National Telegraph Act was the federal counterpart to the many state telegraph acts that had been modeled on the New York Telegraph Act of 1848. Compliance was voluntary. No telegraph company was obliged to sign the law; several, including Western Union, briefly held out. Every telegraph company that did sign on was guaranteed certain privileges. In return, these telegraph companies agreed to permit Congress to buy them out at a mutually agreed-upon price and to convey information for federal government agencies at rates to be determined by the postmaster general (John, 2010a, Ch. 4).

The initial refusal of Western Union to assent to the National Telegraph Act is not surprising. After all, the primary rationale for the law was to open up the telegraph business to new entrants. Harder to explain was the willingness of Sibley in 1867 to abide by its provisions. Though Sibley had by this time stepped down as Western Union’s president, no company official ever questioned the legality of his decision. Why Sibley signed on is a matter of conjecture. It is conceivable that he assumed that the law would prove advantageous to the company’s shareholders, since it included a provision that protected their rights. It is also possible that Sibley feared that, if Western Union did not acquiesce, the US army might not defend its assets in the former Confederate states (John, 2010a, Ch. 4).

The primary benefit of the National Telegraph Act for telegraph companies was access to rights-of-way. In theory, assenting telegraph companies would henceforth have the right to string telegraph wires along any routes in the country that had been designated a post route. Had the courts construed the right-of-way clause broadly, Western Union would have been highly vulnerable to insurgent network providers, since the company relied heavily on exclusive right-of-way contracts to block would-be rivals from contesting key markets. With one exception, however,
the courts construed this privilege quite narrowly. The exception occurred in the late 1870s when, in a succession of right-of-way cases, the courts ruled against Western Union and in favor of financier Jay Gould, who was then an insurgent telegraph promoter, facilitating Gould's ultimately successful raid on Western Union. Following Gould’s takeover of Western Union in 1881, jurists reverted to the narrow construction of the right-of-way clause that had prevailed prior to Gould’s raid (John, 2010a, Ch. 4).

The primary benefit of the National Telegraph Act for the government was rate-setting. In keeping with the anti-interventionist logic of the antimonopoly regulatory regime, telegraph companies had the right to charge whatever rates they pleased. (Postal rates, in contrast, continued to be set by Congress; telephone rates would also be highly regulated, at first primarily by city councils.) One exception to this anti-interventionist logic was the federally funded telegraph line that contractors built in conjunction with the Pacific Railroad.

A second exception was the rate-setting clause of the National Telegraph Act. Every telegraph company that assented to this law was henceforth obliged to transmit telegraphic dispatches for federal government agencies at rates to be determined by the postmaster general. This might seem like a minor matter. In fact, a government-mandated rate cap made it economically feasible, for the first time, to forecast weather patterns with a fair degree of precision. Weather forecasting in the post-1866 period was a specialty of the US Signal Service, the government agency that had provided logistical support for the army during the Civil War. Now that the war had ended, the signal service cast about for something to do. The government-mandated rate cap made it possible for the signal service not only to collect the vast amount of weather-related data necessary to forecast the weather but also to circulate this information throughout the country, a major boon for commerce.  

The congressional buy-out clause in the National Telegraph Act had a far-reaching influence on the operations of the telegraph network. Everyone conversant with the business understood that all of the major network providers—including Western Union—had consented to permit Congress to purchase their assets at any point five years after its enactment. The purchase price was to be agreed upon by five commissioners—two of whom were selected by the government, two by the company, and the fifth by the other four.

Congress never exercised the buy-out option. Even so, the fact that by 1867 every major telegraph company in the country had assented to a congressional buy-out would have major implications for the policy debate over the telegraph network. Most obviously, the buy-out clause insured that this debate would revolve primarily around practical matters, such as the relative merits of government administration and corporate management, rather than the broader, more ideologically fraught issue of the proper relationship of capitalism, socialism, and democracy. Interestingly, few critics derided a congressional buy-out of the telegraph network as un-American or unconstitutional, a charge that critics would almost certainly have voiced had lawmakers attempted anything comparable after World War I.
The buy-out clause also shaped the market for telegraph securities. Telegraph investors understood that, if Congress bought them out, they were certain to net a handsome profit. Not surprisingly, it was widely rumored in the press that major Western Union investors, including the prominent railroad and steamship magnate Cornelius Vanderbilt, had secretly endorsed the buy-out and were lobbying behind-the-scenes to bring it about (John, 2010a, Ch. 4).

The consequences of the buy-out clause were by no means confined to telegraph investors. So long as a buy-out remained even a remote possibility, speculators in telegraph securities could boost the price of Western Union shares by floating credible rumors that Congress was about to act. It was equally easy to depress the price of Western Union shares. All a speculator had to do was to float a credible rumor that Congress intended to back a rival network provider (John, 2010a, Ch. 5).

No one proved more adept at manipulating the price of Western Union shares than Jay Gould. To roil the markets, Gould relied not only on the business press, which was easily influenced, but also on lawmakers, whom he had little trouble recruiting, and the courts, which proved equally malleable. To enhance his credibility, Gould invested in rival telegraph companies and in telegraph-related patent rights. For a brief period in the mid-1870s, a full-scale bidding war erupted between Gould and Western Union president William Orton over the patent rights to inventions that might conceivably prove useful in the telegraph business. The resulting entrepreneurial hothouse — a byproduct of the antimonopoly political economy in which Gould flourished — generated, in short order, four of the most notable inventions of the century: namely, the broadband telegraph; the telephone; the phonograph, and the electric power station (John, 2010a, Ch. 4).

Gould's takeover of Western Union in 1881 transformed the competitive landscape. Astonishingly, the country's most outspoken antimonopolist had suddenly emerged as the largest shareholder in the country's dominant telegraph network provider. Gould's sudden emergence as a communications magnate troubled citizens from all across the political spectrum. In no sense was it a partisan issue. Democrats were outraged and so too were Republicans. Perhaps unsurprisingly, Gould's ascendancy proved especially unsettling to the small yet influential cohort of business merchants, bankers, and wholesalers who sent telegrams and invested in corporate securities.

Congress would not enact a major piece of telegraph legislation until 1910. In that year, it decreed for the first time that the telegraph and telephone were common carriers; a legal term of art that carried with it the strong presumption that, like railroads and package carriers, they would be subject to permanent regulatory oversight to ensure that the interests of their investors were aligned with the public good. Yet the die had been cast with Gould's takeover of Western Union in 1881. No longer was it plausible to contend, as it has been during the heyday of the antimonopoly era between 1848 and 1881, that the only regulatory mechanism necessary to align the telegraph business with the public good was the enactment of legislation to encourage new entrants to challenge incumbents. To underscore this subtle yet
momentous intellectual sea-change, the political economist Richard T. Ely popularized a new concept. The telegraph business, Ely contended in 1888, was a “natural monopoly” that, as a result of its history, was impervious to competition. Ely did not popularize this concept to bolster the case that the telegraph was best coordinated as a managerial corporation, anticipating, as it were, the twentieth-century business historian Alfred D. Chandler, Jr. Rather, he floated it to strengthen the case for government ownership (John, 2010a, Ch. 5).

Politics had artifacts, to invert the well-known formulation of political philosopher Langdon Winner. Telegraph companies like Western Union flourished in an antimonopoly regulatory regime in which lawmakers looked to competition to regulate business behavior. As a consequence, telegraph managers confined themselves to the most lucrative markets and rarely invested in facilities that could not be expected to generate a steady return. Western Union managers were particularly loath to presume that the telegraph, like the mail, might one day become a genuinely popular medium. Western Union’s position was reiterated by its president, Norvin Green, as late as 1890. Fewer than 10% of US citizens would prefer the telegraph to “letter communication,” Green predicted, even if the cost were identical (cited in John, 2010a, p. 7).

In the telephone business, as in the telegraph business, political structure shaped business strategy. In the telegraph business, lawmakers repeatedly enacted legislation to encourage would-be network providers. This legislation created a regulatory regime in which, or so it was long assumed, rate regulation was superfluous and performance standards best left to market demand. The telephone business, in contrast, emerged in a regulatory regime that was in a dual sense progressive. The regulatory regime was progressive not only in the sense that lawmakers presumed innovation to be more-or-less continuous and unending, but also in the sense that they rejected competition as the primary regulatory mechanism. From the outset, telephone operating companies held municipal franchises that limited entry and mandated rate caps and performance standards. At no point in the early history of the telephone business—and not even during the so-called “competitive” period that followed the expiration of the original telephone patent rights in 1894—was open entry the norm. On the contrary, lawmakers regarded access to the network for new users to be a superior measure of network performance to access to the network for would-be network providers. The progressive regulatory regime obliged telephone companies to meet performance standards far stricter than the performance standards that the antimonopoly regulatory regime had required of telegraph companies. In return, it promised a more stable operating environment that proved in practice to be highly conducive to technical advance.

The commercial potential of the telephone had been established by 1878. Not surprisingly, given the widespread recognition that the new business was likely to prove lucrative, a brief competitive struggle ensued between Western Union and a group of promoters whose most valuable asset was the patent rights that the federal government had assigned to telephone inventor Alexander Graham Bell. The two
rivals cut a deal in the following year, and Western Union bowed out. For over 100 years – that is, from 1879 until 1984 – the dominant telephone network provider in the United States traced its origins to the investor consortium that coalesced around Bell’s patent rights.

The telephone business was more variegated than the telegraph business. Of the various institutions spawned by Bell investors, three were of special importance. These were the Bell-associated holding company that controlled the portfolio of patent rights around which the business evolved; the long-distance Bell-associated operating company, which was, early on, a money loser; and the local Bell-associated operating companies, which were for many decades at the center of the network. Much confusion has been caused by the mistaken presumption that the telephone business in its formative era was centrally controlled by the Bell-associated holding company, which, after 1900, would be known as the American Telephone and Telegraph Company, and which would eventually come to be known by its acronym, AT&T. In fact, the most consequential innovations in the pre-1914 period occurred in the Bell-associated operating companies, of which the most important were located in New York City and Chicago (John, 2010a, Ch. 8; Maguire, 2000; Welman, 2004).

The second competitive interlude in the telephone business occurred in the years that immediately followed the expiration of Bell’s original patent rights in 1894. Like the first competitive interlude, it was rapid, consequential, and short-lived. In particular, it witnessed the emergence of a rival, non-Bell consortium of telephone operating companies that would become known as the “independents.” The independents had their own equipment manufacturers, trade association, and trade press. They surged around 1900, peaked in 1907, and were rescued by lawmakers in 1913, victims, like so many similar ventures in US business history, of a fatal combination of promotional overconfidence and speculative finance.

The rise of the independents underscored the pent-up demand for telephone service that the Bell-associated operating companies had failed to meet during the previous 15 years. Independent promoters were emboldened not only by the existence of this demand, but also by a sympathetic legal environment. Had the courts been so inclined, they could have defined broadly the many patent rights that the Bell holding company retained. In addition, they might have banned exclusive market-segmenting interconnection agreements that independents entered into with each other to strengthen their competitive position. Yet the courts did not. In so doing, they segmented the market for telephone service and created the highly contrived competitive conditions in which the independents emerged.

The rapid expansion of the telephone business in the post-1894 period is of great significance for students of US communications. The telephone was the first electrical communication medium to be reconfigured to become accessible not only to an exclusive clientele – like, for example, the telegraph – but also to the entire population. In the United States, this reconfiguration began in the late 1890s and was mostly complete by 1907 (John, 2010a, Ch. 8).
The popularization of the telephone was a byproduct of two related yet distinct developments. The first was the rise of the independents. Thousands of citizens made their first telephone call on an independent telephone, partly because the independents were quick to cover the field, and partly because they ordinarily offered lower rates than their Bell rivals (Mueller, 1993, 1994).

The second and even more consequential development was the re-engineering of the big-city telephone exchange. Expansion posed an unusual problem for telephone managers that differentiated the telephone business from most other businesses with which it might be compared. If a manufacturer doubled his output, it was taken for granted that he could find ways to reduce his unit costs. In the telephone business, however, the situation was very different. Telephone switching was expensive and, in this period, every Bell-associated telephone exchange was operator-assisted. That is, it required the intervention of a telephone company employee – almost always a young woman – to complete the connection. If the size of the exchange doubled, the number of connections increased fourfold, obliging the telephone company to increase the size of its staff, and, in certain cases, upgrade its switching equipment (Mueller, 1989). To make matters even more complicated, telephone rates in the largest operating companies, including New York City and Chicago, were set not by the company, but by the government agency that had jurisdiction over the territory in which it operated. In New York City, the government agency was the state legislature; in Chicago, the city council.

Had big-city operating companies charged by the call, increased revenue would have offset at least part of the costs of expansion. Unfortunately for the companies, with a few minor exceptions, they did not. In large part, this was because, early on, users preferred a fixed (or “flat rate”) calling plan that provided them with an unlimited number of calls inside a particular territory (John, 2010a, Chs. 6-7).

Flat rates were a good deal for heavy users, the vast majority of whom were businessmen. But they were too high to appeal to non-business users, a potentially huge market that at this time remained untapped. By championing flat rates, big users defended a rate structure that slowed, and in some instances blocked, telephone popularization. Big-user preferences also exerted a subtle influence on the writing of telephone history by fostering the mistaken presumption that ordinary people opposed measured service (Fischer, 1992; Lipartito, 1995).

Under the circumstances, telephone operating company managers had good reason to keep their exchanges small. Why, then, did they expand? In New York City and Chicago, two reasons loomed uppermost. First, managers feared government regulation and regarded network expansion as a counterweight. If the user base expanded, a larger percentage of the electorate would have an interest in telephone service. Second, they recognized that it might be possible to increase revenue if they could recruit new users willing to experiment with novel calling plans that linked usage with cost. These calling plans – which, collectively, were termed measured service – offered users a variety of options that greatly increased the attractiveness...
The outcome of network expansion was dramatic. The New York City telephone exchange had 9,627 telephones in 1895 and 361,302 in 1910; the Chicago exchange had 11,680 in 1895 and 239,083 in 1910. Much of this expansion occurred in residential districts, a sector that telephone managers had not much cultivated prior to this time. Almost all of the new users signed up not for flat-rate service but for some kind of measured service. In this way, the telephone companies were able to recoup some of the costs of network expansion (John, 2010a, Ch. 8).

The fact that no comparable expansion occurred in this period in Toronto, Canada is revealing. In Canada, the national government prevented municipal or provincial authorities from regulating telephone rates. As a consequence, company managers had less of an incentive to expand. 21

Network expansion blunted political pressure for potentially ruinous rate caps. Yet it had its own risks. What if a new medium emerged that provided users with point-to-point real-time communication, but which did not require the enormous investment in a wire network? This risk troubled the managers of the holding company that had invested in the Bell-associated operating companies and led them in the early 1900s to embark on an ambitious research-and-development program. The goal of this program was to obtain patent rights to a new medium called wireless telegraphy that was being rapidly commercialized in the United States by the Italian inventor Guglielmo Marconi.

Wireless telegraphy evolved into radio, a medium long regarded primarily as a form of broadcasting. In the early 1900s, however, it seemed far more likely that radio would be commercialized as a point-to-point medium in direct competition with the telephone. Researchers funded by Bell’s holding company worked assiduously to parry this challenge, fearful that, if they did not, their huge investment in a wired telephone network would become worthless.

For technical, economic, and political reasons, these fears proved unwarranted. Bell’s research agenda would, however, have unanticipated consequences that did shape its business strategy. Research on wireless telegraphy led Bell engineers to invent a device that could amplify an electrical signal, an invention that historians of technology hail as the advent of electronics. This device—the three-element vacuum tube—enabled Bell engineers to link New York City and San Francisco in a single transcontinental telephone network, a feat they achieved in 1915.

The significance of transcontinental telephony is easily misconstrued. Bell public relations announcements trumpeted it as a public good with momentous economic, cultural, and political implications. 22 A multitude of AT&T-centric Bell staffers, historians, and social scientists have followed their lead (Auw, 1983; Boettinger, 1983; Galambos, 1992; Latour, '1987; Pool, 1983; Pool, Decker, Dizard, Israel, Rubin, & Weinstein, 1977; Smith, 1985). In fact, the primary significance of transcontinental telephony in its early years was promotional. By linking Bell with technical advance,
it blunted the oft-voiced critique that Bell was technically backward. This public relations benefit more than offset the cost of maintaining the long-distance network, which was considerable.

Transcontinental telephony played little role in the contest between Bell and its independent rivals. This contest peaked in 1907, long before the line was completed. Two events in 1907 proved especially critical in dooming the independents' challenge. The first was the collapse of a major independent-backed combine, the United States Independent Telephone Company of Rochester, New York. This collapse made it virtually impossible for other independents to raise revenue in the financial markets, a crippling blow. The second was the rechartering of the Chicago Telephone Company by the Chicago city council, an event that signaled the demise of antimonopoly as a solution to the problems that economic consolidation posed (John, 2010a, Ch. 9).

The collapse of United States Independent and the rechartering of Chicago Telephone preceded the return to Bell of Theodore N. Vail, the telephone executive who would serve as president of American Telephone Company from 1907 until his death in 1920. Beginning in 1878, Vail had held various posts at a number of Bell-associated operating companies, before leaving the telephone business in 1889. In 1907 Vail returned. The timing of Vail's return is worth underscoring, since many AT&T-centric historians credit Vail with inventing the business strategy that would lead to the emergence by 1913 of the telephone business as a regulated monopoly in which Bell enjoyed a dominant position, an outcome that would stabilize the telephone business for the next 70 years. In fact, Vail would not re-enter the telephone business until after telephone service had been popularized, an event that occurred between 1894 and 1907, when he was out of the business. The irrelevance of Vail to the popularization of the telephone has been deliberately underplayed by AT&T-sponsored corporate hagiography and the scholarship that has given it academic legitimacy, both of which invested Vail with almost divine powers as the savior of the telephone network over which he would preside for 13 years.

The events of 1907 posed a major dilemma for independent promoters, investors, and equipment manufacturers. Henceforth, it would prove very difficult for them to obtain the necessary venture capital to remain viable rivals to Bell. How, then, might they protect their own investment in a fixed-wire telephone network? Two options suggested themselves. First, they might sell out to Bell. This solution was economically attractive, yet politically problematic. Pro-independent lawmakers might disallow the merger as anticompetitive, while the remaining independents would warn that the sale to Bell of any independent property would weaken their own investment, since, at this time, the interconnection of Bell and independent telephone networks remained a matter of contestation.

The second option was to mobilize the state to insulate the independents from the market. This option appealed to a small but influential cohort of uncompromising independents; most of which were relatively modest in size, that refused to negotiate with Bell, the preferred strategy for the large independents. To protect themselves from market pressure, the uncompromising independents convinced the
federal justice department to reopen a lawsuit charging Bell with anticompetitive behavior. This lawsuit led in 1913 to a settlement between Bell and the federal government that had been brokered by Attorney General James C. McReynolds. The McReynolds settlement is sometimes misleadingly known as the "Kingsbury Commitment," after a Bell vice president, a convention that obscures the extent to which it was an independent victory and a Bell defeat. It had three main provisions. First, it established an orderly process to facilitate the interconnection of Bell and independent telephone exchanges that minimized the likelihood that, if Bell purchased the assets of a one-time rival, it would find itself slapped with a lawsuit charging it with engaging in anticompetitive behavior. Second, it obliged Bell to divest Western Union, frustrating Vail's plan to unite the telegraph and telephone in a single interlinked network, a plan that had hastened the popularization of telegraph service for the first time in 1910. And, third, and, for the independents, most critically, it put the imprimatur of the federal justice department behind the Bell-independent segmentation of the telephone market, making it far easier for the many independents that remained to obtain the necessary funding to upgrade their facilities (Hochfelder, 2002; John, 2010a, Ch. 10; for a different perspective, see Schiller, 1998).

World War I marked the beginning of a new chapter in the history of US communications. Though the United States would not enter the war until 1917, the outbreak of hostilities in Europe affected US communications in two ways. First, it underscored the enormous importance of communications as a weapon of war. The United States in 1914 remained a minor player in international communications. The British government controlled much of the world's international telegraph network and a British company – Marconi – dominated radio research (Aitken, 1985; Headrick, 1999). Federal lawmakers regarded this situation as unacceptable and took steps to hasten US government control over both radio and international telegraphy. The Navy appropriated Marconi's patents in 1917; in the following year, the Post Office Department assumed control of all international telegraph lines that had been landed on the US coast. The US radio business grew directly out of these wartime actions. The Radio Corporation of América (RCA), for many decades a leading manufacturer of radio equipment, traced its origins to the patent pool that the US Navy established, in conjunction with several other interested parties, including Bell, in 1919. The first commercial radio broadcasts occurred in the following year (Douglas, 1987).

World War I also witnessed a major shift in popular assumptions regarding the relative merits of government administration and corporate management. Popular support for a congressional buy-out of the telegraph and telephone network was high in 1914. It was, in fact, for this reason that Bell publicists took such care to boost the transcontinental telephone. By demonstrating that Bell could promote technical advance, they rebutted one of the major arguments for a government takeover. The federal government would, in fact, take over the telephone and telegraph in 1917 (John, 2010a, Ch. 11). Government administration, however, proved highly unpopular, dooming government ownership as a realistic policy option. This failed experiment hastened the legitimation of the managerial corporation as an
organizational form, an outcome that cast a long shadow not only on US communications, but also on the US political economy (Vietor, 1994).

In the period between 1788 and 1914 the mail, the telegraph, and the telephone evolved in relationship not only to technological imperatives and economic incentives, but also to governmental institutions and civic ideals. The mail was reshaped beginning in 1792 by a republican regulatory regime that presumed that the citizenry had a right to convenient access to information on public affairs. By 1825, this presumption had expanded to embrace information on market trends; by 1845, to information on personal matters. The telegraph was commercialized in a political economy in which republicanism was rapidly being supplanted by antimonopoly. In the antimonopoly regulatory regime, lawmakers presumed that the public good would be best promoted by legislation that encouraged new entrants to challenge incumbents. Equal access became associated less with citizens — as it had been, for example, in the republican regulatory regime — than with would-be network providers and their expectant clients. The telephone emerged in a political economy in which antimonopoly made little sense as a regulatory mechanism. In its place, lawmakers created a progressive regulatory regime. The fruits of technical advance, they assumed, should be accessible not only or even primarily to would-be network providers and their clients, but also, and in particular, to end users, whom they conceptualized not as citizens but as consumers. The progressive regulatory regime remained largely uncontested until the 1970s, when it would be challenged by a revival of antimonopoly — the intellectual rationale for the break-up of the Bell System in 1984 and the Telecommunications Act of 1996. Antimonopoly has not gone uncontested. Yet it remains, to a far greater degree than republicanism or progressivism, the hallmark of the political economy of communications in the United States today.

NOTES

1 For a more general discussion of nineteenth-century "regulatory regimes" and their potential as an organizing theme for historians of the nineteenth-century United States, including historians of communications, see John (2006) and Beckert (2012, esp. pp. 322, 334–335).

2 Historians of communications in the early US republic have long been intrigued by the role of communications media in creating and sustaining an informed citizenry. On the concept of an informed citizenry, see Brown (1996). On the influence of communications media on civic identity, see John (1995), Schudson (1998); and Starr (2004). For a complementary approach to the relationship between communications and civics that focuses on ideas rather than institutions, see Wood (2006).

3 Especially influential, at least among social scientists, has been Giddens's sweeping claims regarding the epochal significance of the electric telegraph in transforming conventional assumptions concerning time, space, and speed. For a related discussion, with additional citations, see Behringer (2006).

4 One oft-remarked feature of Carey's essay on the electric telegraph was the extent to which his deployment of vivid metaphors to underscore the world-historical significance
Of the new medium rendered his essay vulnerable to his own well-known critique of the "rhetoric of the electrical sublime." For a related discussion, see Marvin (1988).

Schwarzlose focused primarily on the electric telegraph as a technology; Blondheim on its role in fostering novel organizational forms. My own approach shifts the focus from the electric telegraph to the political economy in which it was embedded. For a related discussion, see Nerone (2008).

The Smithsonian exhibit ignored the mail entirely, at least in part because its history was featured in another gallery of the museum.

One diplomatic historian (Nickles, 2003) has gone so far as to make the counterfactual claim that the existence of a cable link between Great Britain and the United States might have diminished the likelihood that the United States would have declared war on Great Britain in 1812.

The phrase "postal system," while not unknown at this time, would not become common until mid-century.

The Post Office Department influenced electoral politics in the early republic in two distinct ways. First, it created an informational environment that facilitated the nationwide circulation of campaign literature. Second, it provided party leaders with material incentives — in the form of lucrative offices and contracts — to reward party workers should their candidate prevail. See John (1995, Ch. 6; 2006).

The letter-rate reductions mandated by the Post Office Acts of 1845 and 1851 built on and extended, the highly advantageous newspaper rate structure established by the Post Office Act of 1792. The mid-century postal reform acts hastened a second communications revolution; the first communications revolution dated from the 1790s.

Though the civic rationale for communications regulation in the United States was more expansive than the fiscal rationale for communications regulation in Great Britain, the history of postal reform in Great Britain is far better documented (John, 2010).

The relative unimportance of the railroad to the electric telegraph in the United States in the pre-Civil War era has been recently underscored in an exemplary dissertation by Benjamin Schwantes (2008).

Both networks were also dependent on large numbers of semi-skilled workers, a fact that is too often overlooked (Downey, 2002).

The characterization of Western Union as a "natural monopoly" provided Thompson with a convenient bookend for his monograph on the early telegraph business. For Chandler, in contrast, the natural monopoly hypothesis enabled him to elide the thorny interpretative issues raised by the continuing competitive challenge that Western Union would in the post-1866 period confront. On the limitations of Chandler's argument, see DuBoff and Herman (1980). The post-1866 competitive challenge was analyzed by Grodinsky (1957) and underplayed by Klein (1986).

The economic benefits of weather reporting can be measured by comparing the number of shipwrecks on the Great Lakes that occurred in periods during which the government's weather-reporting service was in operation with the number of shipwrecks that occurred in periods during which the service had been suspended (Craft, 1998).

The related yet distinct and in some ways antithetical contention that the business strategy of corporate managers shaped the organizational structure of the modern corporation was popularized in the 1960s by business historian Alfred D. Chandler, Jr. Chandler's contention had the effect, as was its intention, of depoliticizing managerial decision-making. The contention that political structure shaped business strategy, on the
contrary, highlights the centrality for the history of communications not only of politics, but also of the state. For a related discussion, see John (2008).

The importance of the competitive period (1894–1907) in hastening the popularization of the telephone has been emphasized by a number of telephone-history revisionists, beginning with R. Gabel (1969), and continuing with Lipartito (1989, 1994, 1997), Mueller (1993, 1997), and D. Gabel (1994). The achievement of these scholars—and, in particular, of Mueller and Lipartito—in directing our attention to this oft-neglected moment in telephone history is undeniable. Yet it is one thing to recognize the significance of this competitive interlude in hastening the popularization of the telephone, and another to discount the influence on telephone popularization of other factors, including, in particular, the investment strategy of big-city Bell operating companies and the political contests over municipal franchises in which these operating companies became embroiled, contests in which rival operating companies almost never posed a major competitive challenge.


The continuing significance of metropolitan networks in communications history is a theme of Graham and Marvin (2001).

The mistaken presumption that ordinary citizens preferred flat rates to measured service has been subtly reinforced by the popularity of flat-rate pricing schemes for the users of Internet service providers.

The United States–Canada comparison is developed systematically in McDougall (2004). See also Armstrong and Nelles (1986). The Canadian political economy was significantly different from the US political economy and so too were the business strategies of US and Canadian telephone operating companies. For this reason, it is risky to generalize about telephone service in US cities by using evidence drawn from Canadian cities. In America Calling, for example, Claude Fischer (1992, pp. 54–56, Ch. 3) relied in part on a recent monograph on Canadian telephone service to generalize about telephone usage patterns in the United States. In so doing, he underestimated the innovativeness of big-city telephone operating companies and exaggerated the agency of female telephone users. A further problem with Fischer’s analysis stemmed from his reliance on American Telephone and Telegraph institutional public service announcements as a proxy for corporate opinion. Unlike the sales-oriented advertisements sponsored by big-city Bell operating companies, these public service announcements were intended neither to expand the market for telephone service, nor to reach the ordinary telephone users who made the vast majority of telephone calls and generated the bulk of Bell’s revenue.

The Bell public relations campaign is described in John (2010a, Ch. 11) and Marchand (1998, Ch. 2).

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