The Historical Role of Communications Networks: A Conversation

By Richard R. John and Gengxing Jin ©

John

Jin

Note: This article is an abridged transcript of an interview with Richard R. John that was conducted for the *Chinese Communications Studies Review*. The interviewer was Gengxing Jin, an assistant professor of media and communications at the University of Shanghai for Science and Technology.

Dr. John received the 2011 AEJMC History Division's award for the best book of the year for his *Network Nation: Inventing American Telecommunications*. He's also the author of *Spreading the News: The American Postal System from Franklin to Morse* (1995). He teaches in Columbia University's Ph.D. program in communications and is a member of the core faculty of Columbia's history department. He teaches courses on the history of capitalism and the history of communications. His research focuses on the history of business, technology, communications, and American political development. He received his Ph.D. in the history of American civilization from Harvard University.

I: Media and Modernity

Jin: From *Spreading the News* to *Network Nation*, "communications" has been a main focus of your research and writing. How did you first become interested in the subject? And why does it matter for historians?

John: I came to the study of communications largely by accident. As a graduate student in the history of American civilization at Harvard in the 1980s, I was looking around for a dissertation topic. My initial plan was to study how canonical American authors wrote about failure; it occurred to me that a history of bureaucratic fatalism would be a good place to begin. I had written about industrial decline in early-twentieth-century New England in my undergraduate thesis, which I completed in 1981, also at Harvard (in social studies), and I was interested in expanding on this project.

The problem with bureaucratic fatalism was, how did one go about studying its origins? When did it begin? It occurred to me that it would make sense to ask: what was the first American bureaucracy? In a lecture that I attended shortly after I began my graduate studies, the nineteenth-century U. S. historian David Donald observed almost in passing that the first American bureaucracy was…the post office. He was glossing, I later figured out, a monograph on Jacksonian politics by the political scientist Matthew A. Crenshaw. Donald's observation about the post office intrigued me. Why, not, I asked myself, organize my dissertation around what a large number of contemporaries from various walks of life thought about a single bureaucracy, rather than, as had been my original idea, what a small number of canonical authors had written about a large number of bureaucracies? This is how I decided to write a dissertation about the post office: it was to be a case study

in the origins of bureaucratic fatalism — a phenomena much in evidence in the United States of the 1960s and 1970s, the America in which I grew up.

I did not immediately give up my interest in the history of failure, but I soon discovered, when I began to work in the sources, that bureaucratic fatalism was most emphatically not the lens through which nineteenth-century Americans customarily viewed the post office. And, so, I lost interest in bureaucratic fatalism, and decided to explore instead what Americans did in fact think about the post office.

While I had decided to write about the post office primarily because of my interest in American culture, I was not unaware that it was a large organization, and that large organizations were the specialty of Alfred D. Chandler, Jr., a historian I very much admired.

Chandler was a comparative institutionalist, a mode of inquiry that I had been introduced to as an undergraduate, but which I had not initially intended to pursue. Chandler's scholarship — in combination with his almost obsessive curiosity, herculean commitment to research, personal modesty, and gentlemanly demeanor — made a great impression on me. I have, incidentally, since written two review essays on his oeuvre: if anyone is interested, links can be found at my Columbia website. Chandler's presence at Harvard was one of the main reasons I decided to stay on at Harvard for my Ph. D. He was the perfect complement to David Donald, the co-director of my dissertation. Chandler got me interested in organizations, while Donald, a consummate literary stylist and a legendary taskmaster, kept me on track.

To help me better understand how giant organizations worked, I sat in on a course on the sociology of communications taught by the sociologist Daniel Bell. The break-up of the Bell System was in the news, and Bell devoted several lectures to this topic. It was here that I

first learned about Harold Innis's concept of the "bias" of communications, a topic that I would write about in *Spreading the News*, and that has remained an interest of mine ever since.

In looking back on my graduate years, I would add that there is at least one additional reason that had nothing to do with my graduate training that helps explain why I ended up writing about the history of an organization, and, in particular, a government agency. And this can be found in the circumstances of my upbringing.

My father was a rocket scientist-turned government administrator (for many years he was director of the Volpe Transportation System Center in Cambridge, Massachusetts); for this reason alone, it is perhaps not surprising that from an early age I had misgivings about histories of the United States that left out, as most did, big business, communications networks, the military-industrial complex, and the state.

My immediate surroundings mattered as well. I grew up in Lexington, Massachusetts, a town famous in the annals of American history as the site of the first military encounter in the American War of Independence. While the trappings of Lexington's colonial past remained, the Lexington I knew was a leafy, well-to-to bedroom suburb for professionals — doctors, professors, and engineers working on top-secret military projects. The colonial past seemed far away. The United States and the USSR remained locked in a Cold War, the Vietnam War raged, and a post-Watergate cynicism pervaded public discourse.

During my high school summers, which coincided with the bicentennial of the American Revolution, I dressed up as a colonial militiaman to give public presentations on the Lexington Common to the thousands and thousands of tourists who had flocked to my home town to learn about the War of Independence. When I drove with tourists to Concord along the "Battle Road," I could clearly see an air force base

through the trees that had been planted to shield the "colonial" landscape from the twentieth-century present. The juxtaposition was jarring: I was growing up in Leo Marx's military-industrial complex in the garden.

Though *Network Nation* was considerably longer than *Spreading the News,* it honed in on a narrower set of issues. My goal was to tell the history of the formative era of American telecommunication by tracing the commercialization, popularization, and naturalization of two networks, the telegraph and the telephone. When I began my research on this project at the Smithsonian Institution's Woodrow Wilson Center in 1998-1999, it was conventional to study the early history of the telegraph and telephone in relationship to developments that had taken place in the recent past. As a historian, I chose the opposite approach: instead of looking backward from the vantage post of the millennium, I looked forward from the early republic, a period that I knew pretty well, having recently completed my book on the post office. Though I did not ignore entirely the influence of communications on society — an influence I had written a good deal about in *Spreading the News* — my primary goal was to document how society shaped communications. Twelve years later, I published *Network Nation*.

Network Nation can be read as a supplement to, and even a critique of, a famous argument of Chandler's. Chandler contended, in a book that he published in 1962 entitled *Strategy and Structure*, that business *strategy* could shape organizational *structure*. Building on, and modifying, Chandler's strategy-structure thesis, I contended, in *Network Nation*, that political *structure* could shape business *strategy*. Chandler assumed that the influence on business strategy of the political structure had been vastly overrated, and that, at least in the period before the Second World War, governmental institutions reacted to changes that

originated inside organizations. Following the lead of the political sociologist Theda Skocpol, a major source of inspiration from my graduate days onward, I was determined to "bring the state back in."

Let me now say something about why communications is, or ought to be, a compelling subject for historians. Communications in my view is a field rather than a discipline: it is too capacious to be studied in a single way. In the English language, as a colleague who specializes in the Greek and Roman classics has reminded me, the words "communications," "communion," and "community" are etymologically linked. Each is an expression of a mysterious process: action-at-a-distance. Etymology, of course, is not destiny. Yet these associations remind us that communications has long been associated with some of the most profound dimensions of existence.

Action-at-distance is a metaphor not only for the mysterious gravitational force that holds the planets in their orbit, but also for the communion of souls. The "annihilation of space" that the poet Alexander Pope wrote about referred to the power of divine intervention to bring together distant lovers. John Durham Peter's *Speaking into the Air: A History of the Idea of Communication* makes this point particularly effectively: to be credible, any explanation for action-at-a-distance has to reckon with the mysteries of the universe. The affinities between communications, communion, and community may help explain why so many media scholars are deeply religious. This was true, for example, not only of Peters, a devout Mormon, but also of Marshall McLuhan, James Carey, Walter Ong, Jacques Ellul and, with qualifications, Harold Innis.

Yet communications is not only an otherworldly practice. For it also exists in the here-and-now. It is for this reason that I prefer to write "communications" with an "s" rather than "communication" without

the "s." The latter term, "communication," is used more typically in English to refer exclusively to the interpretation of a message, rather than to the means by which the message is shared.

Historical methods are useful for some communications-related projects, but by no means for all. Even so, I do believe, given the remarkable expansion of information technology since the mid-eighteenth century, that the historically grounded exploration of communications networks offers great promise for anyone interested in understanding the rise of capitalism and the emergence of the nation-state. The study of communications networks can also provide rich insights into nationalism, democracy, scientific research, military strategy, social psychology, literary culture, mass society, religion, reform movements, and many other topics. Historians who are interested in these topics would be well advised to pay more attention than they customarily do not only to the networks that circulate information, but also to the medium in which the information is conveyed. You don't ask a fish about water, McLuhan once quipped. The same has long been true of communications. Only now, with the emergence of new forms of digital media, is it becoming possible to begin to understand the media ecology of the past. The owl of Minerva, as Hegel once wrote, flies at dusk. So too do historians of communications.

Jin: In *Spreading the News* and *Network Nation*, you show how the post office and telecommunications, as agents of change, helped to make America. How do you understand the historical role of "communications" in the nineteenth century? For example, do you build on Daniel Bell's concept of an "information society"?

John: In *Spreading the News* I contended that the creation of a spatially

extensive communications network in the period between 1792 and 1835 helped to shape a nascent national identity for the inhabitants of a far-flung commercial republic. Many people were left out of the imagined community, a point that I was aware of, and wrote about, but that I would say even more about if I were writing this book today. But this imagined community did exist, and it did not just happen: it was a deliberate political achievement. Between 1835 and 1861, however, the same network would create a cultural dynamic that would drive Americans apart — laying the groundwork for a horrific civil war.

Daniel Bell's concept of the "information society" does not provide much insight into this story. I am quite certain about this, since I knew him slightly, and attended two of his lecture courses, one in college and one in graduate school. Once I even once got up the courage to ask him if my own project could in any way fit into his "information society" model. Bell responded that it could not. The reason was simple. For Bell, information could not become an agent of change at any point prior to the twentieth century, since it was only at this time that knowledge supplanted industry and agriculture as a mode of production.

I regard Bell's perspective as unduly narrow. And I am not alone. Economic historians such as Joel Mokyr have long emphasized that the eighteenth-century European Enlightenment was a kind-of "information society"; others have made comparable claims for early modern Europe.

In retrospect, I have come to recognize in Bell's tripartite stage-model a variant of the stage-based model of technical change that Chandler popularized in *Visible Hand,* a topic that I reflected on in two essays that I published on Chandler's oeuvre in the *Business History Review*. And, while I am on the subject of historiography, I might take the liberty of adding that I tried, in a 1995 essay on "American His-

torians and the Concept of the Communications Revolution," to fit Bell's "information society" into the broad sweep of American history. In this essay, and, in more detail in *Spreading the News,* I sketched some of the main features of a pre-electric telegraph "communications revolution" that had been organized around the mail, the stagecoach, the optical telegraph, and the newspaper. It was this communications revolution that the French aristocrat Alexis de Tocqueville observed when he toured the United States in 1831-32, and that he would later write about in *Democracy in America*. In so doing, I helped to reintroduce the concept of an early nineteenth-century "communications revolution" to the lexicon of American historians; it would later be picked up by Paul Starr in his *Creation of the Media*, before becoming a centerpiece of Daniel Walker Howe's Pulitzer-Prize-winning *What Hath God Wrought*.

Jin: I am impressed by your contention that the invention of optical telegraphy in the 1790s and the establishment of postal distribution centers in 1800, rather than the commercialization of the electric telegraph in the 1840s, marked the epochal separation of communication from transportation that James W. Carey and others have written so much about. Do you think Carey would agree with you? Will our current view of the history of communications be revised accordingly?

John: Carey was one of the first media scholars I read, and one of the first scholars of any kind to write expansively about the electric telegraph as an agent of change. For these reasons, I own him a great debt. Our relationship is not merely intellectual: When he died, I took his position at the Columbia Journalism School, where I now teach.

I only met Carey once. It was at a communications conference

somewhere in the United States, I can't remember the city. The media sociologist Michael Schudson — who, like myself, currently teaches in Columbia's Ph. D. program in communications — facilitated the introduction, aware of our shared interest in the history of electric telegraphy. I asked Carey about the priority of the optical telegraph in the separation of communications from transportation. Carey responded that he was aware of the existence of the optical telegraph, but remained convinced that the electric telegraph marked the key turning point. We agreed to disagree. I can't remember if we talked about the postal distribution center.

I have found it gratifying that my revisionist arguments about the optical telegraph and the postal distribution center are slowly being accepted, beginning with the publication in 2000 of Headrick's *When Information Came of Age*. In my view, Carey was unduly influenced by Lewis Mumford, whose *Technics and Civilization* had been organized around the historical significance of different kinds of motive power as agent of change (wind, steam, electricity). Energy transitions matter, but so too does state-building, a factor that Carey downplayed. For Carey, the "transmission"-binding bias in American communications was a cultural imperative rather than the byproduct of political fiat. In *Spreading the News*, I made the case for governmental institutions as agents of change.

The rediscovery of the optical telegraph owes something to national pride. The French government built the biggest optical telegraph network, and, perhaps not surprisingly, French historians have long assigned the optical telegraph priority in the honor role of telecommunications breakthroughs. I agree. As the field becomes more cosmopolitan, and we are less swept up in what Carey himself termed the rhetoric of the "electrical sublime," I would guess that a new consensus might

well emerge, in which the optical telegraph assumes its rightful place in the annals of communications.

Since you asked about the postal distribution center, let me say a bit more about this important yet often ignored institution. To transmit the mail around the country, administrators found it necessary to create a network in which certain offices were, in the language of network theory, nodes. These nodes were the distribution centers, which had been formally established by the Federalist postmaster general Joseph Habersham in 1800. Their establishment marked the decisive juncture at which the transportation of the mail was distinguished from its circulation, or what we could call its communication.

The millions and millions of pieces of mail that circulated in the nineteenth century depended on the administrative coordination that the managers of the distribution centers provided. For this reason, I would call them the nation's first middle managers — a claim that Al Chandler accepted as a revision to his contention that middle management originated in mid-nineteenth century railroads.

If we are serious about recognizing the role of communications networks as agents of change, then it would seem hard to deny that the mail, and not the telegraph, was the true "Victorian Internet." When this analogy becomes more widely acknowledged, then I would imagine that even the postal distribution center will finally get the recognition it deserves.

Jin: You object to "imputing agency" to technology and argue that to contend that technological inventions led in some predetermined way to the establishment of a particular organizational structure or business strategy is to "obscure the historical process by imputing agency to electrical equipment, batteries, and wires." Yet I also notice that, in the

introduction to *Network Nation*, you mention that the mail, the optical telegraph, the electric telegraph, and telephone were so different that they were organized in different ways. Could you please remind us what you mean by this?

John: The communications networks that I wrote about in *Spreading the News* and *Network Nation* were organized differently primarily because of the institutional arrangements in which they were embedded. These institutional arrangements had little to do with the motive power that facilitated the circulation of information, or what media scholars sometimes call messages. It was, for example, entirely possible for an optical telegraph to be owned and operated not by the state, but by merchants, as was the case in the United States and Great Britain.

Political economy, and not motive power, held the key. In the United States, the optical telegraph and the post office emerged in a republican political economy; the telegraph in an anti-monopoly political economy; and the telephone in a progressive political economy. That is, the independent variable was not the motive power, but the political-economic rules of the game. Technology proposed; political economy disposed.

II: Bringing Institutions Back In

Jin: Historical writing on telecommunications has been informed by different interpretative traditions. The first is associated with the so-called Toronto School of Harold A. Innis and Marshall McLuhan and their U. S. epigones James W. Carey and Neil Postman; its central concern is the challenging of counter-mythologies and the crafting of a media-centric grand narrative. I wonder if Thomas Hughes's *Networks*

of Power could be put into this tradition, given his expansive under-
standing of agents of change? Then there is the comparative institution-
al analysis approach, into which I would put your *Network Nation* and
Paul Starr's *Creation of The Media: Political Origins of Modern Com-
munication.* In the closely related field of legal studies we can also think
of *The Master Switch* by Tim Wu, although as you wrote in your fore-
word to the Chinese edition of *Network* Nation, Wu's book relied on
outdated secondary scholarship. The third approach is phenomenology,
a tradition that can be stretched to include Claude Fischer's *America
Calling*, Carolyn Marvin's *When Old Technologies Were New*, and
Thomas Streeter's *The Net Effect: Romanticism, Capitalism, and the In-
ternet.*

John: Can we bring together these three quite different approaches?
Much depends on what questions you are asking. If you are interested,
as I am, in communications networks, then it seems to me that compar-
ative institutionalism holds the most promise. In fact, when I was in
graduate school, I had hoped to work with Paul Starr (a Daniel Bell stu-
dent); unfortunately, Starr didn't get tenure at Harvard, which preclud-
ed me from having him on my committee. I have already commented
on my indebtedness to Innis's concept of communications "bias." Phe-
nomenology is trickier. Communications networks have indeed been
shaped by cultural norms, as Marvin and Streeter documented, and
users matter, as Fischer demonstrated. Yet none of these works really
engages with political economy. This is not necessarily a problem,
though it does point up some enduring, and very possibly unresolvable,
tensions in the field.

    Where Hughes fits is an interesting question. Though he regarded
himself as a contextualist, which in your tripartite scheme would prob-

ably align him with the phenomenologists, the causal significance he assigned to technological momentum has affinities with the internalism of Innis and McLuhan.

I would classify Hughes as a comparative institutionalist, though it is a tribute to the breadth of his vision that he might be put into either of your other two categories.

Let me say a bit more about Hughes, whom I met several times, and with whom I had numerous opportunities to exchange ideas. Hughes is best known for writing about big-city electrical power stations, which he termed "systems." I have learned a great deal from him — but, perhaps above all, he taught me about the importance of the city as a unit of analysis.

Hughes's approach to the history of technology was quite different from my mentor, Alfred Chandler. Chandler was ultimately less interested in the *context* in which large-scale organizations operated than in their *internal* workings. In the useful terminology of John Staudenmaier, author of *Technology's Storytellers*, this made Hughes a *contextualist* and Chandler an *internalist*. I have found the distinction between internalism and contextualism useful in my own research. Like Hughes, I am a contextualist, even though I am drawn, as was Hughes himself, to the internalist agenda that preoccupied Chandler.

Hughes was more interested in language than Chandler, or, at least, he was more willing to talk about it. One year, at an annual meeting of the Society for the History of Technology (SHOT), Hughes and I were on the same panel. In his presentation, if I remember correctly, he told the audience that he was a "systems" person and that I was a "networks" person. I am quite certain that he confided this to me in private. Even though I had earlier written a book with "system" in the title, when he made this comment he was right. I remain sensitive to the problems

with the "network" concept — problems that Leo Marx, Rosalind Williams, and many others have written about. Even so I find network to be the best metaphor to describe the institutions that we have devised to circulate information from person to person over large distances and at high speed.

As Hughes's comments suggest, he and I have a lot in common. But in one regard we are quite different. In my writing, I have emphasized the causal agency of the political economy, while Hughes has remained committed to the organization — which, famously, he called the "system." For Hughes, the regulatory environment was an afterthought; for me, it was constitutive. Price-and-entry regulation was a precondition for the rise of the big-city telephone exchange, not a consequence of its rise. Politics for Hughes mucked thing up; I regard it as generative. Even so, Hughes — who, after all, was an exemplary historian in every regard — definitely influenced my thinking about units of analysis. Following his example, I have come to conceive of the urban telephone exchange as a *system* embedded in a larger regional, interregional, and, eventually, even national *network*. My characterization of the mail as "system" in *Spreading the News* also owed something to Hughes — though, as I noted above, I have since become more of a "networks" person than a "systems" person.

Wu's *Master Switch*, while influential, is quite derivative and lacking in analytical heft, as Paul Duguid and Paul Starr documented in devastating reviews. While Wu wrote in a fluid and engaging style, he overplayed the importance of maverick inventors, neglected the key role of municipal governments in the regulatory process, and echoed Bell public relations hype in his characterization of Vail, whose prescience he overstated, and long-distance telephony, whose significance he exaggerated.

Fischer made too much of the conversational habits of housewives in explaining the popularization of the telephone, a common mistake in much of the scholarship published around the time he completed his research. The telephone, not the telegraph, was the first electrically mediated communications medium to have been configured as a mass service for the entire population, rather than a specialty service for an exclusive clientele. The concepts "mass service" and "specialty service," incidentally, pay homage to the distinction that historian of technology Phil Scranton made between "mass" and "specialty" production.

But the question remains: who did the configuring? The key actors were not the users who discovered new ways of communicating by telephone — by inventing, as Fischer put it, "sociability" — but, instead, the managers of the big-city operating companies who recognized that they could make money — and, not incidentally, insulate themselves from political pressure — by aggressively marketing telephone service to the entire population. In both Chicago and New York City, this shift occurred around 1900 — long before Fischer's California housewives began gossiping on-line.

The most intriguing challenge to my argument in my view has come not from Fischer, but from Robert MacDougall. In his splendid book, *The People's Network*, MacDougall has made an intriguing case for the agency in the 1890s of telephone users in mid-western U. S. cities in convincing the managers of non-Bell independent telephone operating companies to popularize the new medium. Users matter. Even so, the kind of technical, administrative, and political challenges that these independent telephone companies confronted were far less complex than the challenges that faced big-city telephone companies in Chicago and New York City. For this reason, I regard 1900 — a convenient date, since it ushered in a new century — as a landmark in the

history of telecommunications, since it marked the approximate moment at which big-city telephone companies shifted from providing a specialty service for an exclusive clientele to providing a mass service for the entire population. Popularization and sociability are not the same thing. And even if you find MacDougall's account of telephone popularization more compelling — in my view it is a matter of big cities (John) versus middle sized towns (McDougall), with the most important technical, administrative, and marketing innovations originating in the former (John) — the shift he described had nothing to do with Fischer's California housewives.

Five books that you didn't mention, but that, in my view, make notable contributions to our understanding of communications networks in the period between the 1840s and the 1910s, are Ben Schwantes's *Train and the Telegraph*; Simone Müller's *Wiring the World*; Christopher Beauchamp's *Invented by Law*; Heidi Tworek's *News over Germany;* and Robert MacDougall's *People's Network.* I can also recommend, as a very readable general history of the U. S. post office, Winifred Gallagher's *How the Post Office Created America.*

Jin: The "romantic individualism" narrative that foregrounds a hero or inventor has long enjoyed a privileged place in the history of technology. *Network Nation* is a corrective to this narrative. The "romantic individualism" narrative continues to dominate today's tech media coverage and popular discourse, except that we now focus not on Samuel Morse or Theodore Vail but on Steve Jobs and Mark Zuckerberg. Why do people at different times find "romantic individualism" so compelling? How does *Network Nation* counter "romantic individualism"?

John: Romantic individualism sells books, and, by no means inciden-

tally, wins patent battles. This is particularly true in the United States, where, until recently, the patent office recognized as the rightful inventor not the first to file, but the first to invent, a topic that Beauchamp explored with great sensitivity in *Invented by Law.*

The almost always laudatory, and, indeed, often fawning, preoccupation of today's journalists and tech insiders with the current generation of high-tech moguls is a byproduct not only of the influence they wield as owners and managers, but also of public relations hype. PR is part of history, and historians have an obligation to do all we can to describe it, explain how it works, and prevent it from distorting the historical record.

Hype is a neglected factor in historical writing, not only because publicity has and can shape the course of events, but also because it can inform historical interpretation. The idealization of Jobs and Zuckerberg is but the most recent chapter in the long history of the influence of corporate public relations on business history. Morse needed publicity to sell his telegraph patent rights; Vail used the press to blunt calls for government ownership. Individuals matter in history, but they don't always make history as they please. If, however, they have a capable enough PR team, they can do their best to make sure that their version of events ends up in the history books. The same, needless to say, can be said of corporations, political parties, and nations.

To underscore my point about hype, let me retell a story that I recounted in *Network Nation.* The inability of Samuel Morse to secure a market for his invention helps explain why his backers (including the patent commissioner) praised it to the skies. How else could he win the congressional support he needed to convince Congress to buy him out?

Morse's electric telegraph became famous not because it was the first to be commercialized: it was not, having been preceded by the

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commercialization in Great Britain of an electric telegraph that had been invented by William Cooke and Charles Wheatstone.

Why then do we remember Morse and not Cooke and Wheatstone? In large part, because of the influence of hype on the course of events — and on history writing.

Morse had no choice but to publicize his telegraph. This was because, unlike Cooke and Wheatstone, Morse lacked a reliable market. Cooke and Wheatstone had discovered that railroads would pay to use the electric telegraph as a signaling device. This was not true of railroads in the United States, as Ben Schwantes demonstrated in his prize-winning *Train and The Telegraph*. And so Morse was stuck: he had to publicize the telegraph, since, unlike Cooke and Wheatstone, he didn't have a reliable user that was willing to foot the bill.

To tempt investors, Morse's silent partner Francis O. J. Smith praised Morse to the skies (even though Smith personally despised Morse as a charlatan and a fool). Morse's invention also received lavish coverage in patent commissioner Henry Leavitt Ellsworth's annual reports. Morse's invention helped Ellsworth not only to boost the reputation of the government agency over which he presided, but also to advertise American inventive genius in an age in which Great Britain proclaimed itself the "workshop of the world."

Another consideration may well have shaped Ellsworth's decision. Morse had fallen hopelessly in love with Ellsworth's daughter, Anne — as Ellsworth well knew — raising the possibility that, by boosting Morse, Ellsworth may have been helping to try to secure for his daughter a handsome dowry. Anne is best known as the woman who is credited with choosing for the first telegraph message the Biblical phrase "What Hath God Wrought." For Morse, she was, or so he hoped, his future bride.

Morse's "romantic individualism" was very different from the aura that has come to surround Steve Jobs or Mark Zuckerberg. Morse was an artist and not a promoter and he had no interest in commercializing the new medium himself. Instead, Morse hoped to sell his invention to the very government that had awarded him his patent. Ellsworth — the patent commissioner — did everything he could to close the deal. Nice work if you can get it. The only problem was, Congress wouldn't go along — and much to Morse's chagrin the telegraph was commercialized as a private enterprise.

What began as hype became history, and, over time, a publicity campaign gone wrong became transmogrified into a simple-minded fairy tale about Morse's genius. In this retelling, Morse fought single-handedly against all manner of adversaries, and Anne Ellsworth became not Morse's love interest, but merely a star-stuck little girl in the presence of the Great Man.

Morse was by no means the last American telegraph promoter to turn to publicity to improve his position. In the 1870s and 1880s, Jay Gould, then the nation's most notorious financial speculator, manipulated the press on numerous occasions to affect the price of Western Union shares — another media event that I documented in detail in *Network Nation.*

Publicity was, if anything, even more consequential for the history of the telephone. To blunt public pressure for government ownership, Bell publicists popularized the idea that long-distance telephony was one of the technical wonders of the age. If the public identified Bell as innovative, lawmakers would be less inclined to buy it out.

Jin: We cannot, of course, ignore the importance of culture in the popularization of the telephone. As we know, Carolyn Marvin's *When Old*

Technologies Were New emphasizes cultural determinants such as gender. In *Network Nation* you mentioned that office clerks in Chicago gossiped about sports on the telephone, yet Claude Fischer thinks that women in small towns in California drove the popularization of the telephone, and in my research, I found that women in Shanghai were quite enthusiastic about shopping by telephone. What then was more important, culture or institutions?

John: The one-sentence answer is that institutions and culture both matter, but that I have found, in my research, that institutions matter more.

I am not surprised that Shanghai women liked to shop by telephone. Many women in the United States did too. Yet I have not seen any evidence that telephone shopping posed a problem for operating company managers. Women rarely lived in big-city commercial centers, the epicenter of telephone congestion. Telephone managers in the 1890s and 1900s devoted a great deal of thought and resources to reducing the call-connection delay. Office clerks clogging telephone lines to gossip about sports and their personal affairs was one of the most disruptive factors that they could not control. Fischer mostly wrote about the post-First World War period, long after the initial popularization of the telephone in Chicago and New York City, which, as I observed in my response to a previous question, occurred around 1900.

The business strategy of big-city Bell-affiliated telephone companies helps to explain why telephone managers in the 1890s occasionally blamed women for gossiping on-line. Garrulous male office clerks posed a more serious operational problem, since the most congested telephone exchanges were located in the downtown business district, which was in this period an overwhelmingly male preserve. Blaming

women for a problem that had in fact been caused by men helped telephone company officials maintain good relations with their most valuable customers — that is, the businessmen who paid for flat-rate telephone service. The vilification of women as loquacious gossips helped to discredit flat-rate telephone billing, hastening the shift in Chicago, New York, and several other big-city exchanges to measured service. Operator-assisted switching was expensive, impeding telephone popularization. Local flat-rate service would not return until several decades later, following the widespread introduction of the automatic telephone exchange.

Jin: Specialists in media and communication studies are often fascinated by the *newness* of a particular technology, especially if it can be plausibly characterized as path-breaking. People tend to constantly project too many unrealistic aspirations onto new media objects and turn a deaf ear to the institutional or cultural contexts embedded in technology. Since both the postal system and the telephone were once "new media," how does *Spreading the News* and *Network Nation* deal with "newness"?

John: The novelty of the telegraph was a problem for its first promoters, since, at least at first, they had no reliable market. This circumstance goes far toward explaining, as I have already discussed, why there was so much more effusive commentary about the telegraph in the United States than in Great Britain, and why we remember American telegraph inventor Samuel Morse and not the British inventors William Cooke and Charles Wheatstone. Cooke and Wheatstone had the railroad: Morse looked to Congress to buy him out.

The telephone was less novel than the telegraph: it was basically a high-end message delivery service. It is worth recalling, for example,

that the average distance of a telephone call originating in 1900 in Chicago (then the second largest city in the United States) was a mere 3.4 miles. This is one reason, among many, that the telephone was less hyped. Merchants, professionals, and industrialists had a pressing need to remain in touch with their suppliers and customers. If the call-connection delay could be reduced — a big "if," at least in the 1880s, given the limited state-of-the-art of switchboard design — and the network was built up enough to connect the right kind of people, business users were willing to foot the bill.

Newness, in short, is not only or even primarily an intrinsic attribute of a network; no less significant was the political, economic, and cultural setting in which the network evolved. In some instances, indeed, newness can be little more than promotional hype.

III: Politics Had Artifacts

Jin: In one passage in *Network Nation*, you include a very important phrase: "politics had artifacts." How do you interpret that? Is this a reversal of Langdon Winner's "Do Artifacts Have Politics?"

John: I was indeed thinking of Winner — a political theorist whose work I much admire. Winner's basic unit of analysis was the technical artifact — such as a bridge or a nuclear power plant. He is concerned with the effects of these artifacts on political forms and cultural norms. My unit of analysis is the political economy. The telegraph and the telephone evolved differently for reasons that had less to do with technology or economics than with politics and culture. Winner is less interested in this relationship, which is why I found useful his provocative question "do artifacts have politics?" By recasting it, I highlighted a contrast

in emphasis and in method.

Jin: Your book argues that though the telephone is technically indebted to the telegraph, organizationally it is closer to the mail. How do you distinguish innovation from invention, and what do you mean by that distinction?

John: The telegraph and the telephone both rely on electricity as a motive power. But they are otherwise quite different. The first telephone operating companies had more in common with message delivery services and gas works than with telegraph companies. When Theodore Vail became president of Bell, he built on his experience at the Post Office Department. Innovation is the scaling up of invention, through its commercialization. When an invention became widely used, it became a genuine innovation, making it for the comparative institutionalist, the more appropriate subject for inquiry.

The maintenance of communications networks is also, I might add, a worthy topic for research. Though I didn't write about maintenance much in either *Spreading the News* or *Network Nation*, it has been drawn to my attention as a historical subject by Lee Vinsel and Andrew L. Russell in their influential recent book, *The Innovation Delusion.*

Jin: We know that technology is a central force and driving mechanism in capitalism, with the business firm as its primary institutional unit. How did *Network Nation* place itself at the intersection of three different academic genres: the history of technology, business history, and comparative institutionalism?

John: *Network Nation* explored the relationship between the political

economy and the certain technically advanced business enterprises, of which the largest and most powerful were Western Union, the Bell System, and the largest big-city telephone operating companies, including the Chicago Telephone Company and the New York Telephone Company. I tried to identify key decision makers (as is *de rigueur* for a business history), and to show how technical artifacts, such as the telephone switchboard, evolved (as is customary for a history of technology). I was also interested in the political economy in which these organizations operated (a keynote of comparative institutionalism).

A fourth subfield that I drew upon, incidentally, is known as American Political Development (or APD). This subfield, which originated in political science, emphasizes path dependence, heuristics, and institutional legacies. Each of these concepts has proved very useful in my thinking about communications networks.

Jin: I read *Network Nation* as part of an academic dialogue between you and your mentor, Alfred Chandler, Jr. In *Visible Hand,* Chandler charted the rise of the salaried managerial class in organizing and running large-scale enterprises, and contended that the corporation's organizational structure developed in response to its business strategy. You argue, in contrast, that the business strategy of communications firms such as Western Union and Bell had been shaped by political structures (governmental institutions and civic ideals). But I notice that the final chapter of *Network Nation* affirms the value of managerial capitalism, as you refer to the rise of Bell's managerial elite as a self-perpetuating class that resisted the financial pressure of investors, while they negotiated and compromised with the government. This elite was the coordinator that made the Bell System work. Does this go back to Chandler's argument?

John: This question gets to the heart of a topic that, in retrospect, I have come to regard as central to the argument I made in the final chapter of *Network Nation*: the legitimation of the managerial corporation. It is a topic that I have returned to now in my current project on anti-monopoly thought.

When I began my research for *Network Nation*, I assumed, following Chandler, that the railroad was the first managerial corporation, and that the managerial corporation originated in the 1850s, when the four East Coast trunk lines crossed the Appalachian Mountains. Middle management in government, it bears repeating, had existed in the Post Office Department since 1800: someone had to staff the distributions centers. In business, however, middle management — and with it, the managerial corporation, would not emerge until mid-century.

Chandler wrote more in *Visible Hand* about the railroad than the telegraph. Yet when Chandler wrote about the telegraph, he followed Robert Luther Thompson's *Wiring a Continent*, which had characterized Western Union as a "natural" monopoly following its takeover of its two primary rivals in 1866. Thompson reached this conclusion, I am convinced, because he was trying to find a convenient way to wrap up his book, which had devoted many chapters to the pre-Civil War period. To justifying ending his book in 1866, he mystified the history of the telegraph for the rest of the century.

For Chandler, then, the managerial corporation had been legitimated in both transportation and communication by 1866.

My research led me to raise questions about both of these claims. Though the railroad did have multiple layers of management, it would only slowly acquire legitimacy as a managerial enterprise, that is, an enterprise that, while ostensibly owned by its shareholders, was in fact operated by and for a self-perpetuating managerial elite. Richard White

has made this point quite effectively in *Railroaded*, his recent history of the transcontinental railroad, in which he shows how financial insiders, rather than expert managers, dominated the inner circles of the first railroad corporations to span the continent.

Similarly, while Western Union was the dominant network provider in 1866, no one regarded its ascendancy as apolitical.

For these reasons, I would now date the ascendancy of the managerial corporation to the 1910s, rather than to the mid-nineteenth century. For it was only at this time that the managerial corporation became widely accepted as a legitimate form of business enterprise.

Chandler sidestepped the question of legitimacy by downplaying the influence on the business enterprise of governmental institutions and civic ideals. In addition, he wrote virtually nothing about the public relations campaigns that corporate managers launched to legitimate their enterprises. Bell managers invented corporate public relations in the 1910s to forestall a government takeover, and ramped up their efforts following the U. S. entry in the First World War in 1917. PR matters, even if its significance is often downplayed, forgotten, and repressed. Roland Marchand's magnificent *Creating the Corporate Soul* — which brilliantly dissected Bell's 1910s PR campaign — showed how the process worked.

IV: The Long History of Anti-Monopoly

Jin: In your study of the history of telecommunications you demonstrate that anti-monopoly has fostered innovation, and that market segmentation, municipal franchise regulation, and government entrepreneurship have led to a series of highly innovative communication systems from the Post Office Department to the Bell System. Why is a net-

work organization like Bell more likely to acquire a monopoly than other firms? Why were policies such as uniform rates (or what today might be called "net neutrality") counterproductive?

John: The willingness of contemporaries to invest great significance in what economists today call network externalities can help explain why the Bell System took the form that it did. By 1907, for example, telephone experts agreed that rival big-city telephone operating companies were wasteful, a huge win for Bell. This outcome, however, was a consequence not only of technology and economics, but also of politics and culture.

Municipal franchise law established the rules of the game, and it could be very expensive to obtain the urban rights-of-way necessary to string telephone wires. Political corruption was endemic and many city officials were in on the take.

The specter of corrupt city aldermen profiting from municipal franchise politics greatly troubled reformers. Ending intra-city telephone competition was one way to limit graft. Telephone company managers agreed. By re-envisioning telephone service as not a privilege but a right — a shift that hastened, and was in part hastened by, the rapid expansion of their user base — they built an electoral bloc interested in good telephone service that was large enough to enable them to prevail against corrupt city officials.

What deserves emphasis, in short, is the creative role of government regulation, and in particular, in the case of the telephone, municipal franchise law. Regulation can foster innovation that makes the fruits of invention accessible to all. In the case of the telephone, it hastened its popularization — which I defined as the reconfiguration of a specialty service for an exclusive clientele as a mass service for the entire popula-

tion.

The telegraph was more lightly regulated than the telephone: predictably enough, it was much less innovative. The only exception was a brief period of hothouse growth in the 1870s that had been spurred by the anti-monopoly National Telegraph Act of 1866. The National Telegraph Act had been intended to promote competition among telegraph network providers, and for a brief period, it worked. Taking advantage of the act's provisions, rival telegraph magnates William Orton and Jay Gould squared off in an epic contest to gain control of patents held by the inventors Thomas Edison and Alexander Graham Bell. In a remarkably short period of time, the Edison-Bell rivalry led to four blockbuster inventions: broadband telegraphy, the telephone, the phonograph, and the electric power station.

The telephone was always highly regulated, and, with a few exceptions, such as automatic telephony, the Bell System would remain for much of the twentieth-century — and especially following the establishment of Bell Labs in 1925 — a world leader in churning out blockbuster inventions of all kinds. Telegraph rates varied by type of user (news brokers got lower rates than merchants); telephone rates varied not only by user type (business versus residential) but also by various other criteria (including quality of service). Beginning in 1910, Congress declared the telegraph and the telephone to be common carriers under federal law. Common carriage did not oblige network providers to charge the same price for the same service, as proponents of "net neutrality" would later advocate; rather, it fostered a byzantine array of cross subsidies that would remain central to the Bell System until its court-ordered dissolution in 1984.

Net neutrality is not neutral. On the contrary, it is biased in favor of information-intensive Big Tech platforms such as Google, Amazon,

and Netflix to the disadvantage of information service providers, brick-and-mortar retailers, and the press. Telephone rates were always regulated — first at the municipal level and for much of the twentieth century at the state level. No one regarded these regulations as neutral; on the contrary, they were intended to promote a particular vision of the common good.

Jin: How is the monopoly power of today's Big Tech platforms different from the monopoly power of the industrial trusts of a century ago, such as Standard Oil and the Bell System? How can the historical tradition of anti-monopoly in telecommunications help us critically think about monopoly today?

John: These are searching questions that lie at the heart of the "new Brandeisian" critique of Big Tech platforms that FTC commissioner Lina Khan has embraced, drawing on the work of non-neoclassical economists, historians, and journalists.

Let me highlight a few comparisons that may help to provide a perspective on current events. First: my premise. Big Tech publicists have repeatedly tried to convince the public that we are living in a brave new world in which all the rules have changed. This is simply not true. Big Tech continues to operate in a political economy that was built up over the decades. By challenging the hype, historians can underscore the merits of longstanding principles such as common carriage, market segmentation, and even municipal price-and-entry regulations.

Common carriage — that is, the presumption that a network provider has an obligation to provide access to a service on a non-preferential basis — is a cornerstone of American communications policy. Common carriage is not the same thing as net neutrality: cross subsi-

dization has been the norm, with different classes of information paying different rates. Within a class, however, all information has been treated alike.

Market segmentation has shaped U. S. communications policy for over one hundred years. The 1913 McReynolds settlement, for example, which is often misleadingly called the Kingsbury Commitment — thanks in large part to Bell public relations hype — forced Bell to sell off its shares in Western Union, which it had acquired in 1909. Though the McReynolds settlement is rarely featured in histories of U. S. communication policy, it had far reaching consequences, since it doomed Vail's vision of "universal service," which Vail understood to embrace low-cost short-distance telephone service and low-cost long-distance telegraph service. To put the first great Big Tech anti-trust settlement in terms that might be easier to grasp, the McReynolds settlement cost "AT&T" its second "T": AT&T, after all, stands for "American Telephone & Telegraph."

Anti-trust pressure in the 1920s blocked Bell from becoming a player in radio broadcasting. In 1956, the justice department obliged Bell to license its patents on a non-preferential basis, and to exit the computer business; in 1984, it chose to give up its operating companies to settle yet another antitrust suit, opening up the market to rivals that in the years to come would hasten a great deal of experimentation in the telecommunications sector. Anti-trust is not the only regulatory tool that the government has at its disposal. Yet it reminds us that the future of telecommunications need not resemble its past.

Municipal price-and-entry regulations were of enormous significance in the early years of the telephone business, and in the United States would remain in place until 1996. The absence of such regulations in Canadian cities — as Robert MacDougall has demonstrated —

slowed the popularization of telephone service, a nice illustration of the analytical potential of comparative institutionalism.

V: Toward a Digital Future

Jin: It has been over ten years since the publication of *Network Nation*. The past decade has seen the emergence of a global point-to-point digital interconnected society, and the invasion of our daily lives by the Big Tech platforms. If we were to extrapolate from your argument, we might conclude that these changes have been "products not only of technological imperatives and economic incentives, but also of governmental institutions and civic ideals." Given the upcoming publication of the Chinese translation of *Network Nation*, why is the U. S. experience important for readers in different institutional and cultural contexts, such as China?

John: Though the U. S. political economy is very different from China's, political interventions in both countries have powerfully shaped the institutional order. Big Tech platforms are, in one form or another, here to stay. Yet their power can be constrained.

Decentralization can be planned, as Chandler reminded us in his pioneering books and articles on the American corporation. Planned decentralization is also, of course, a hallmark of federalism — a cornerstone of the American experiment in self-government.

In the years since the publication of *Network Nation*, it has become increasingly evident to thoughtful lawmakers from across the political spectrum that Big Tech imperils the constitutional order that has traditionally fostered the common good. Amazon, Facebook, and Google — to name but three of today's High Tech behemoths — have become

powerful actors on the global stage, with a raft of implications for innovation, inequality, and civic norms.

The U. S. experience can help Chinese leaders recognize that markets are politically constructed. Anti-monopoly laws have proved effective in segmenting markets to promote what contemporaries called "fair trade," while common carriage regulations have bolstered insurgent new entrants and restrained incumbents. Municipal regulation, a regulatory tool that is often disparaged by policy analysts, has proved surprisingly effective in popularizing new media, such as municipal broadband.

Jin: In the introduction of *Network Nation*, you wrote that "the network metaphor highlights the spatiality of early American telecommunications." Chicago and New York played a crucial role in the early history of American telephony. Similarly, the port cities Shanghai and Tianjin have played an important role in Chinese telecommunications. My question, then, is twofold: on the one hand, what does a city mean to a telecommunications network? on the other hand, what does the telecommunications network mean to the city?

John: Cities have for centuries been seedbeds of innovation not only in business, but also in public policy. Nowhere is this more true than in telecommunications. Spatial propinquity can help create a fertile ground for the implementation of new methods and techniques. Recurring contests over rights-of-way created incentives that hastened popularization, especially if municipal price-and-entry regulations remained in place. Unfortunately, historians of telecommunications routinely assume that the nation is the most relevant unit of analysis, putting at center stage an actor that, at least in the formative era of the tele-

phone, properly belongs in the wings.

The critical role of the city as an agent of change was one of the most important discoveries that I made in the course of researching *Network Nation.* I had not initially intended to write about big-city telephone operating companies; in fact, when I discovered how prominently they figured in the documentary record, I initially felt demoralized. How was I possibly going to finish a project that had already taken me more time than I had anticipated? I had two small children at the time, and I was eager to get on with my life. And so too, perhaps needless to say, was my wife!

Once I discovered how important cities were to the early history of the telephone, I had what one might describe as a gestalt shift. A subject that virtually every other historian of communications had regarded as peripheral, with the notable exceptions of Robert MacDougall, Meighan Maguire, and Robert Horwitz, turned out to be absolutely central. Spatial propinquity mattered, not only for telephone managers coping with the unprecedented challenge of shortening the call-connection delay in big-city telephone exchanges, but also for telephone inventors.

Chicago and New York City were the key sites of innovation, with Chicago being ground zero. In both cities, municipal franchise law set the stage. Yet people mattered too. In Chicago, the popularization of the new medium owed much to the visionary leadership of Angus Hibbard, the manager of the Bell-affiliated Chicago Telephone Company. In the 1890s, Hibbard introduced innovative high-speed operator-assisted switchboards, experimented with new kinds of telephone sets — including the pay-as-you-go nickel-in-the-slot — and devised new billing schemes that helped to shift telephone users from flat rate to measures service. Hibbard's strategy effectively mobilized the city's dense network of technical expertise: the Chicago Telephone Com-

pany's downtown telephone exchanges were located a short distance from the massive factories of Western Electric, Bell's equipment supplier. Flat rates were regressive: they favored big-business users and impeded widespread adoption. With the introduction of measured service, it became for the first time commercially feasible to provide at least a basic level of service to the entire population. By 1900, a new age had begun.

Jin: My last question relates to the history of technology. The global COVID-19 pandemic highlighted the indispensability of information and communications technology (ICT) for parcel delivery and social interaction — e.g. in academic conferences organized through Zoom and Tencent. ICT is fast becoming a focus for research throughout the humanities and the social sciences. One is reminded of this statement by Mark Poster: "One cannot but see earlier developments from the situation of the present." Are institutions today different from the institutions you studied?

John: In the United States, China, and many other nations, Big Tech poses lawmakers with a modern-day variant of the *imperio in imperium* problem that perplexed political theorists in the Middle Ages. In the present, as in the past, politics have artifacts and political structure shapes business strategy. But what is the relevant political unit? The political economy that shaped the telegraph and the telephone in the United States was at once national, subnational, and transnational. When we think about ICT today, we might want to keep this in mind: the nation is not the only, and in some instances not even the most consequential, unit of analysis.

More communications is not necessarily the same thing as better communications either now or in the past. Historical inquiry can show

how mutual understanding has strengthened essential social bonds, promoted worthwhile innovations, and fostered moral progress. Yet nothing is certain and, if things go badly, poor communications is, as an independent factor, rarely to blame. In interpersonal relations, as well as in our fleeting attempts to glimpse eternity, misunderstanding is a feature and not a bug.

Let me add, as a final observation, that I am very grateful for the care you have taken in reading my work and posing such searching and well-informed questions. I have learned a good deal from this exchange, and look forward to learning more about your own promising research on the history of Chinese telecommunications.